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From Contact Prevention to Social Distancing: The Co-Evolution of Bilingual Neologisms and Public Health Campaigns in Two Cities in the Time of COVID-19

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Abstract

This article investigates the evolution of social distancing terms in Chinese and English in two geographically close yet culturally distinct metropolitan cities: Hong Kong and Guangzhou. This study of bilingual public health campaign posters during the COVID-19 pandemic focuses on how the evolution of neologisms and linguistic strategies in public health campaigns adapts to different societal contexts. A baseline meaning of the re-purposed linguistic expressions was established according to the BNC corpus for English and the Chinese Gigaword Corpus for Chinese. To establish the link between linguistic expressions and public health events, we converted them to eventive structures using the Module-Attribute Representation of Verbs and added interpersonal meaning interpretations based on Systemic Functional Linguistics. The two cities are found to have taken divergent approaches. Guangzhou prefers "contact prevention" with behavior-inhibiting imperatives and high value modality. Conversely, the original use of "contact prevention" in Hong Kong was gradually replaced by the neologism *social distancing* in English, triggering competing loan translations in Chinese. In Hong Kong, behavior-encouraging expressions are predominantly used with positive polarity and varying modality and mood devices, which fluctuate to track the epidemic curve of COVID-19. We conclude that lexical evolution interacts with social realities. Different speech acts, prohibition in Guangzhou but advice and warning in Hong Kong, are constructed with a careful bilingual reconfiguration of eventive information, mood, modality, and polarity to tactfully address the social dynamics in the two cities.

Keywords

COVID-19, social distancing, event representation, health communication, bilingual communication

Introduction

The COVID-19 pandemic is transmitted through respiratory droplets primarily as a result of close interpersonal contact within a community. To combat COVID-19, there has been a global call for social distancing as a public health practice for infection control (Fong et al., 2020; Wilder-Smith et al., 2020; Wilder-Smith & Freedman, 2020). According to the United States Centers for Disease Control and Prevention (CDC), *social distancing* during the COVID-19 pandemic means "remaining out of congregate settings, avoiding mass gatherings and maintaining distance—approximately 6 feet or 2 meters—from others when possible" (cf. Wanga et al., 2020, p. 182). From a public health perspective, *social distancing* is defined as a nonpharmaceutical intervention designed to reduce interactions with individuals who may unknowingly be infectious and have therefore yet to quarantine themselves (Wilder-Smith & Freedman, 2020). In terms of decision science, social distancing practices are behavioral changes aimed at preventing disease transmission by reducing contact between susceptible and infectious individuals (Reluga, 2010). In March 2020, the online Merriam-Webster (2020) Dictionary added *social distancing* as a new entry, describing it as a medical term that was first used in print during the SARS epidemic in 2003. It is referred to as

> the practice of maintaining a greater than usual physical distance (such as six feet or more) from other people or of avoiding direct contact with people or objects in public places during the outbreak of a contagious disease in order to minimize exposure and reduce the transmission of infection. (Merriam-Webster, n.d.)

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Linguistically, *social distancing* is a nominalized eventive expression, with the implicit meaning of keeping physical distance from others due to an obligation to act in the best interest of society.

The implementation of effective risk communication in public media is known to influence the public response to an epidemic (Chew & Eysenbach, 2010; Ding & Zhang, 2010; Guidry et al., 2017; Idoiaga Mondragon et al., 2018; Karan et al., 2007; Richardson, 2005; Zhang et al., 2020). Previous studies have also demonstrated that the strategic choice of terms and linguistic devices is critical in risk communication during public health crises. For example, Gesser-Edelsburg et al. (2016) showed that President Obama's choice to describe the Ebola crisis as an "epidemic" rather than an "outbreak" changed how the disease was conceptualized in the American media. Barry et al. (2018) also demonstrated that a small change in the name of drug intervention sites could enhance public support for harm reduction interventions to control the ongoing opioid epidemic. Coppola and Girandola's (2016) experimental study proved that adopting scalar adverbs in epidemiological information messages can facilitate the readers' cognitive processing of the designed communicative intentions in a preventive program. Other scholars have focused on how infectious diseases such as SARS, Ebola, and the flu are socially constructed in newspapers by deploying linguistic resources, such as conceptual metaphors (Baehr, 2006; Chung, 2011; Dobric & Weder, 2016; Wallis & Nerlich, 2005), "othering" mechanism (Washer, 2004), lexis choice, foci of attention, and tone of writing (Chung, 2011), demonstrating that such linguistic choices often reflect ideological concerns, as well as social and cultural values.

The challenge of managing COVID-19 has quickly put social distancing at the center of a heated debate, including the term's "misleading" semantics (Gale, 2020) as well as various expressions and discursive strategies for addressing social distancing in different language communities. The way that these linguistic choices have facilitated the successful adaptation of social distancing and helped to reduce the spread of COVID-19 has yet to be studied. Furthermore, a systematic investigation of the linguistic features, lexical variations, and the change in public health campaigns is missing from the existing literature. Such studies were never conducted in vivo during a pandemic. In light of this unique opportunity, this study synthesizes the Module-Attribute Representation of Verbal Semantics (MARVS) theory (Huang et al., 2000) and Systemic Functional Linguistics (SFL) (Halliday, 2000) to examine the co-evolution of bilingual neologisms and public health campaigns to combat COVID-19. This linguistic study examines the different trajectories of the development of social distancing terms in specific cultural and linguistic environments by extracting bilingual data from two neighboring global cities with different social structures: Guangzhou and Hong Kong.

Guangzhou and Hong Kong have been selected for this study as they are two global cities that share a similar Cantonese–English–Mandarin trilingual background and similar natural environments due to their close physical proximity, yet they each have distinct sociopolitical systems. First, Hong Kong's social dynamics and political structure are greatly influenced by its colonial legacy. Conversely, Guangzhou has undoubtedly maintained its Chinese identity and political system. The capital city of Guangdong, Guangzhou, has a population of over 15 million people. Hong Kong has come to be known as Asia's global city and has a population of 7.5 million people. Second, both cities are trilingual in Cantonese–English–Mandarin, although in different orders of dominance. As such, both cities provide English–Chinese bilingual versions of public announcements. This allows for a comparison between public messages urging for social distancing and enables the exploration of the nuanced contrasts underlined by sociocultural differences in bilingual texts, thereby uncovering the influence of social dynamics on language.

Research Questions and Hypotheses

The research questions are designed with the critical role of social distancing in mind. It is both a neologism coined in reaction to the COVID-19 pandemic and a coded attempt to modify collective human behavior throughout (almost) all cultures worldwide. To achieve nearly uniform collective behavior with a single dictum that is translated into different languages is a herculean task. The present study takes this rare opportunity to explore how the same concept of social distancing is linguistically realized in conjunction with the linguistic devices employed to promote it in different languages and cultures.

Research Question 1 (RQ1): Do Guangzhou and Hong Kong use different bilingual terms for social distancing in public health campaigns? Are such differences culturally dependent?

The answer to RQ1 will be framed in terms of the following hypothesis:

Hypothesis 1 (H1): The health campaign terms used are driven by the patterns of social interactions. H1 predicts that the terms used in Hong Kong and Guangzhou would differ in both the English and Chinese versions.

Research Question 2 (RQ2): Will the introduction of the new concept of social distancing lead to semantic changes in the terms selected to represent it?

The answer to RQ2 will be framed in terms of the following hypothesis:

Hypothesis 2 (H2): Social distancing as a new pattern of social behavior would be encoded with a new eventive structure. H2 predicts that the words used to represent the

meaning of social distancing will undergo semantic changes by acquiring a new event structure.

Research Question 3 (RQ3): Do Guangzhou and Hong Kong use different interpersonal linguistic devices to promote social distancing? Can the choices of different devices be predicted by the different social dynamics of the two societies?

The answer to RQ3 will be framed in terms of the following hypotheses:

Hypothesis 3 (H3): Differences would be manifested in the use of mood, modality, and polarity in both Chinese and English to disseminate eventive information for social distancing across campaign stages.

Hypothesis 4 (H4): More diversified mood, modality, and polarity devices are used in Hong Kong to adapt to the shifting concerns across campaign stages, reflecting a more complex social interaction pattern.

Theoretical Framework

Theoretical Framework for the Present Study

This study adopts the position that lexical evolution interacts with social realities and examines the intersection of lexical semantics and communicative functions. The lexical semantic theory we adopt is MARVS (Huang et al., 2000; Huang & Hsieh, 2014), which is a theory of verbal event representation. MARVS aims to represent word senses in terms of eventive structure, participants, and their properties. These design features will be explored to link meaning with social context. In addition, Systemic Functional Linguistics (SFL) is adopted as the functional communication theory. SFL, proposed by M. A. K. Halliday, views language as a social semiotic system and thus links lexicogrammatical analysis with context (Ezeifeka, 2015). Although neither theoretical angle independently addresses the mechanism of lexical evolution under social dynamics, together, they construe the linguistic dynamics underlying each. The theoretical framework used in this study is illustrated in Figure 1.

To study the evolution of terms that address social distancing, we propose examining the changes in lexical eventive information through MARVS and then analyzing how the evolved (or original) eventive information is used in context by SFL. Specifically, we compare the alignment of the different interpersonal devices of mood, polarity, and modality with different social distancing terms in Guangzhou and Hong Kong to reveal the illocutionary acts that call for social distancing. More importantly, as is indicated in Figure 1, the dissemination of (evolved or original) eventive meanings is in fact achieved through a multi-brain mechanism that orients actual messages from the brain of the speech producer (P), mediated by the translator (T), to the brains of the audience (A) (Huang & Wang, 2020). During this process, it is

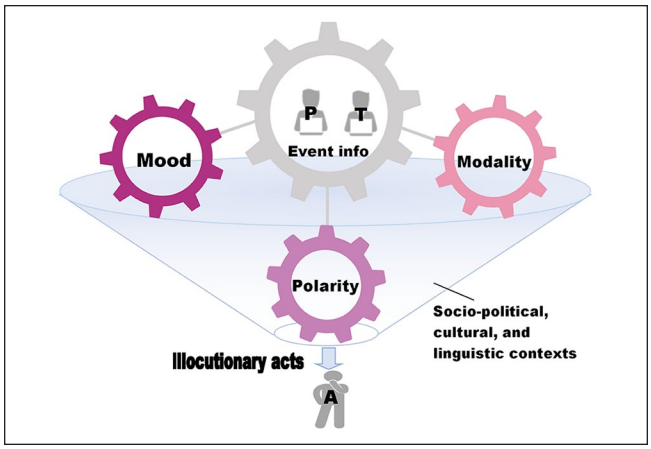

Figure 1. The theoretical framework for studying lexical events under social dynamics.
Note. P = speech producer; T = translator; A = audience.

the gearing of eventive information, mood, modality, and polarity, situated in the specific sociopolitical, cultural, and linguistic contexts, that prompts (possibly) suitable illocutionary speech acts to the audience in each community. It should be noted that Searle's (1979) taxonomy of "illocutionary speech acts" (doing something by uttering messages to the hearer in a certain context) is adopted. In the analysis of social distancing campaign messages, we only focus on the subcategory of illocutionary acts that Searle (1979) calls "directive speech acts," that is, the speaker's attempts (to various degrees) to get the hearer to do something, which can include acts such as advice, prohibitions, warnings, orders, questions, challenges, permissions, or requests.

In the following section, a brief introduction to the MARVS theory and Halliday's account of interpersonal meaning will be given.

MARVS Theory

The MARVS theory was proposed by Chu-Ren Huang and his colleagues in 2000 (Huang et al., 2000). This theory states that verbal senses are bundles of eventive information, and that the meaning of every verb can be decomposed into a single event, or a combination of events, each associated with participating roles. Therefore, the eventive information encoded in a verb can be represented in terms of two types of modules, the event modules and role modules, both in turn bearing certain internal attributes. Modules can be regarded as pre-packaged semantic information, while the attached attributes provide a more detailed description (Huang et al., 2000).

Event modules are the "building blocks of event structures" (Huang & Hsieh, 2014, p. 300). Event structures in MARVS are constructed with five atomic event modules (Huang et al., 2000). These modules can form atomic event structures when they are used alone, or they can form composite event structures when they are used in combination.

The definitions and symbols for the atomic event modules are listed below (Huang et al., 2000):

1. • Boundary (including a Complete Event): The event module of boundary can be identified with a temporal point and must be regarded as a whole. For example, "to begin," "to die," "to end."
2. / Punctuality: The event module of punctuality represents the single occurrence of an activity that cannot be measured by duration. For example, "to intend" or Chinese 打算 *dǎsuàn* "to plan to."
3. ///// Process: The event module of process represents an activity that has a time course. These represented events are typically measured by their temporal duration. For example, "to run," "to sing." These are activities that can be measured in terms of duration, such as an hour.
4. _____ State: State is a homogeneous event module. The concept of temporal duration is irrelevant in this module. It is bounded neither to a specific time point nor to a time course. For example, "to be happy," "to be smart."
5. ^^^^^ Stage: The event module of stage consists of iterative subevents. For example, Chinese 凋谢 *diāoxiè* "wither," or English "to decay," "to blink," or "to flicker."

Event modules can either stand alone or be combined together. For example, 坐 *zuò* "to sit" is represented as /___ (Huang et al., 2000). This represents a sitting event that is linguistically conceptualized as starting with a punctuality event of instantaneous body movement, followed by a state of keeping a sitting posture. The atomic boundary event, which is symbolized by a dot, often copes with other event modules to form composite events. An inchoative event is when the other event module has a starting boundary, for example, the inchoative process event 開會*kāihuì* "to convene a meeting," which is symbolized as •/////. A resultative event is when an end boundary point follows the other event module, for example, the resultative punctuality event 打死 *dǎsǐ* "to hit and kill," which is symbolized as /•. A bounded event is when the other event module is bounded at both starting and ending points, for example, the bounded process event 蓋*gài* "to build," which is symbolized as •/////•. Furthermore, regardless of the kind of event, the event-internal attributes are attached. Event-internal attributes are the properties associated with an event module. Examples include [control] for an event that can be controlled by the agent (e.g., 高興 *gāoxìng* "happy"), [effect] for an event that triggers certain specified effect (e.g., 割*gē* "slice"), and [accelerated] for an event that is carried out at an accelerated pace (e.g., 趕 *gǎn* "rush").

The role modules are composed of focused roles (participants) of events. The inventory of roles consists of well-established thematic roles, such as AGENT, THEME, GOAL, CAUSE, CAUSER, COMPARISON, INCREMENTAL THEME, and LOCUS. Their internal attributes refer to the semantic properties of these participants (Huang et al., 2000), such as [volition], which is assigned to the event participant who has the power to decide on whether to participate in the event or not.

The Interplay among Mood, Modality, and Polarity from the Systemic Functional Perspective

Interpersonal meaning addresses how speakers use language to relate to an audience and influence their attitude or behavior (Thompson, 2000). According to SFL (Halliday & Matthiessen, 2014), it is mainly realized through grammatical systems such as mood, polarity, and modality, the choice of which reflects the relationship between the speaker and the audience.

The first system, mood, relates to grammatical structures, such as declaratives, interrogatives, or imperatives, that project basic speech functions, such as statements, questions, offers, and commands. Typically, a speaker questions by interrogatives, commands by imperatives, and states by declaratives (Halliday, 2000).

The second system is positive versus negative polarity (Halliday & Matthiessen, 2014). A negation marker, such as *not* in English and 不 *bù* in Chinese, is the most common polarity shifter (Halliday & Matthiessen, 2014).

Finally, modality is the intermediate space between yes and no (Halliday & Matthiessen, 2014). Modality reveals the speaker's stance about the truth or event that is articulated. There are two types of modality: modalization (epistemic modality) and modulation (deontic modality). The former focuses on "usuality" and "probability," and the latter deals with "inclination" and "obligation" (Halliday & Matthiessen, 2014). Each type of modality is assigned a different degree of value: high, median, and low. The subtype that we focus on in this study, "obligation," means "required" at a high value, "supposed" at a median value, and "allowed" at a low value. Modality of different values can be realized by modal operators such as finite verbal operators and modal adjuncts. The former consists of high value finite verbal operators such as *must*, *ought to*, *need*, *has to*, and *is to*; median value operators such as *will*, *would*, *shall*, *should*; and low value operators such as *may*, *might*, *can*, *could*. The latter, modal adjuncts, typically include non-finite elements such as adverbials (e.g., *possibly*) or prepositional phrases (e.g., *by all means*) that express interpersonal meaning (Halliday & Matthiessen, 2014).

The three systems interact to deliver the interpersonal meaning: It is through the mood element that polarity and modality are realized, yet polarity decides the limits that modality works in (Halliday & Matthiessen, 2014), and mood can be modalized or modulated by certain modality operators to make the speech functions indirect or tempered (Eggins, 2004). In our analysis, we will further elucidate

how each system disseminates the obligation-driven event of social distancing.

Data and Methodology

This study takes a comparative data-driven approach. The English and Chinese bilingual public health campaign posters calling for social distancing that were officially released in Guangzhou (P_GZ) and Hong Kong (P_HK) from January 1 to April 30, 2020, were collected for comparison. For P_GZ, only one version of the poster was found, which was jointly produced by the Publicity Department and the Health Department of Guangdong Province on March 4 (Chen et al., 2020). For P_HK, 17 posters were found from the governmental thematic website on COVID-19 and the Facebook page for the Center for Health Protection in Hong Kong, which were jointly made by the Department of Health and the Center for Health Protection, Hong Kong. The two neighboring cities were among the earliest metropolises in the world to combat COVID-19 due to their connectivity to Wuhan by air and ground transportation. Both local governments activated emergency responses in late January 2020 and actively worked to push forward social distancing measures.

To precisely analyze the collected data, a comparable corpora approach is adopted to establish the baseline meaning of social distancing expressions. This study relies on the British National Corpus (BNC, 2007) and the Tagged Chinese Gigaword 2.0 corpus (Gigaword) (Huang, 2009) to establish the eventive verbal semantics of these expressions. BNC contains 100 million tokens of both written and spoken British English texts from the later part of the 20th century. A subcorpus of Gigaword, Gigaword_XIN, is adopted in the current study, which contains Chinese news texts of 311,660,000 tokens from the Xinhua News Agency in the Chinese Mainland. The newly released COVID-19 corpus (CORD19C) is also employed to be compared with the BNC for detecting the possible evolution in eventive information of certain English expressions. This corpus contains texts of academic articles about COVID-19 (195,070,375 tokens) from the COVID-19 Open Research Dataset (Kohlmeier et al., 2020; Wang et al., 2020). The two English corpora were analyzed with the corpus query system Sketch Engine (Kilgarriff et al., 2014), while the Gigaword Chinese corpus was searched through Chinese Word Sketch (CWS) (Huang et al., 2005), which is a language-specific version of Sketch Engine. Both Sketch Engine and CWS provide a special function called "Word Sketch," which automatically summarizes the collocates of a lemma in various grammatical categories and relations (e.g., subjects of) based on statistical calculations. There are different methods that can measure the collocation strength in Word Sketch: Sketch Engine uses logDice and CWS adopts Mutual Information (MI); both are able to indicate how strong a lemma is collocated with the search lemma. A detailed discussion of the measurements can be found in Church and Hanks (1990), Rychlý (2008), and Norberg (2016).

The data analyses in this study include three steps: (a) dictionaries were consulted for basic interpretations of expressions for social distancing; (b) MARVS representations of these expressions were analyzed based on corpus statistics; (c) the interpersonal devices used to disseminate the eventive information of social distancing associated events, including mood, modality, and polarity, were examined based on SFL.

Results and Discussion

The results of this study are presented in three parts. The first section aims to address RQ1 and the related hypothesis (H1) by comparing the bilingual terms for social distancing that were used in public health campaigns in Guangzhou and Hong Kong. In the second part, semantic changes in the words that were used to represent the meaning of social distancing in the two cities are analyzed based on MARVS theory, with the goal of addressing RQ2 and H2. Finally, RQ3 and the relevant hypotheses (H3–H4) are addressed based on SFL, which compares the interpersonal linguistic devices used to promote social distancing in the two cities, as well as the underlying social dynamics.

RQ 1—Bilingual Terms for Social Distancing in Guangzhou and Hong Kong

One officially released bilingual poster was found in Guangzhou and 17 posters were collected in Hong Kong. To more accurately analyze the use of social distancing terms, posters in Hong Kong were divided into four stages according to the themes of the public health campaigns in response to the epistemic situations (Figure 2). Stage 1 (S1) (January 25–February 27), featuring "Fighting together: Reduce social contact," started on January 25, when the emergency response level, which is the highest level, under the "Preparedness and Response Plan for Novel Infectious Disease of Public Health Significance" in Hong Kong was activated. Stage 2 (S2) (February 28–March 26), which highlights "*social distancing*," began when the epidemic curve went down, and the government declared that public services were to gradually resume. Stage 3 (S3) (March 27–April 20) was urgently initiated to increase public awareness of the new requirements to reduce gatherings in anticipation of a second round of virus spread. Stage 4 (S4) (Apr 21–) is an ongoing stage that began on April 21, the date that the requirements were extended. Comparing the development of campaign stages and the epidemic curve (Figure 2), it can easily be seen that the shifts of campaign stages "chase" the waves of the epidemic curve.

The social distancing terms used in posters in Guangzhou and Hong Kong were compared across campaign stages to test whether the social distancing terms differed between the two cities in the English and Chinese versions (H1). Substantial differences were identified in the following two periods.

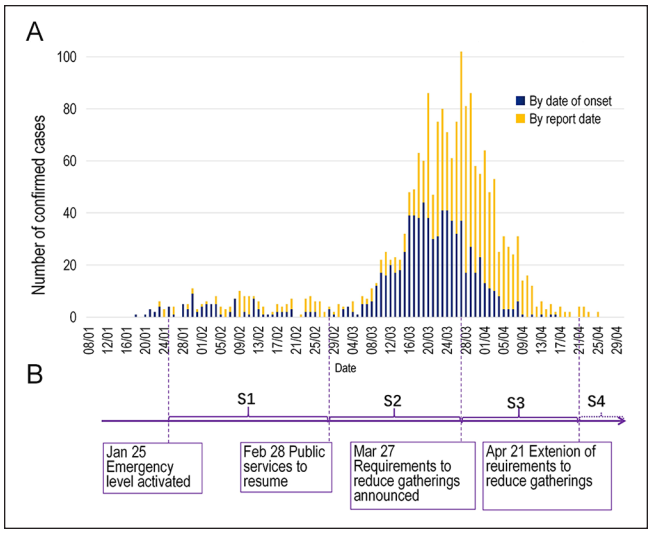

Figure 2. The public health campaign stages in relation to the epidemic curve of confirmed COVID-19 cases in Hong Kong by April 30, 2020: (A) epidemic curve of confirmed COVID-19 cases in Hong Kong (by 30 Apr 2020); (B) public health campaign stages.

Note. Figure 2A is made based on the details of confirmed COVID-19 cases in Hong Kong openly released by the Department of Health, Hong Kong at https://data.gov.hk/. Asymptomatic cases are not included. S = stage.

First, in the posters during Stage 1 from Hong Kong and the poster from Guangzhou (released on March 4, right after Stage 1 in Hong Kong), the meaning of social distancing was represented as "contact prevention" in both Chinese and English; however, a sharp contrast existed in the specific type of *contact*. In Hong Kong, social distancing was clearly depicted as **"social contact"** in both Chinese and English (i.e., 避免社交接觸 *bìmiǎn-**shèjiāo-jiēchù*** "avoid-**social-contact**" or 减少社交接觸 *jiǎnshǎo-**shèjiāo-jiēchù*** "reduce-**social-contact**" in Chinese and *avoid/reduce **social contact*** in English). Alternatively, in Guangzhou, it was described as "**physical contact**" in English but remained unspecified in the Chinese (i.e., 不接触 *bù-**jiēchù*** "no-contact" in Chinese and *avoid **physical contact*** in English).

Second, in the English posters during Stages 2 to 4 in Hong Kong, the neologism *(maintain) social distancing* emerged and soon replaced the "contact prevention" term used at Stage 1. Conversely, the corresponding Chinese version seems rather unstable, undergoing gradual changes from the faithful equivalent 保持社交距離 *bǎochí-shèjiāo-jùlí* "maintain-social-distance" in Stage 2 to the "contact prevention" term 减少社交接觸 *jiǎnshǎo-shèjiāo-jiēchù* "reduce-social-contact" in Stages 3 to 4, which is inconsistent with the English term.

In all, the above results show that the "contact prevention" expression is preferred in both the English and the Chinese versions in Guangzhou, but it is challenged by the neologism *social distancing* in Hong Kong in both languages. Therefore, H1 is fully supported.

RQ2—Semantic Changes in Social Distancing Terms in Guangzhou and Hong Kong

The differences discovered above indicate possible tendencies of lexical evolution that challenge the existing terms in public health. The question of whether the introduction of the new concept of social distancing in the time of COVID-19 would lead to semantic changes in the words chosen to represent this new meaning remains unanswered. To answer this question, it must be determined whether semantic changes exist in the eventive information of *contact*, (*social*) *distancing*, and their Chinese equivalents based on MARVS theory.

Comparing "jiēchù" in Guangzhou and Hong Kong: Preventing "physical contact" or "social contact"? As mentioned above, both Guangzhou and Hong Kong adopted "contact prevention" expression in the initial stage of the COVID-19 pandemic, but the same Chinese word *jiēchù* was represented differently in English in the two cities (i.e., *physical contact* in Guangzhou vs. *social contact* at Stage 1 in Hong Kong). To explain this, the senses of *contact* and *jiēchù* were identified in dictionaries, and then their lexical behaviors were examined in BNC and Gigaword_XIN. The possible deviations from the baseline meanings of these expressions in English and Chinese are carefully captured and compared in the following.

Contact *in English.* According to the online English dictionary Lexico.com (Oxford University Press, 2020), *contact* as a noun or verb has two broad senses, either physical or social, as shown below.

> contact
> NOUN
> ① The state of physical touching.
> ② The action of communicating or meeting.
> VERB
> ① Communicate with (someone), typically in order to give or receive
> ② Touch

Word Sketch results in BNC show that *contact* is used 2.56 times less frequently as a verb than as a noun (frequency 3,973/10,161). There seems to be little restriction on the social status of human participants for either nouns or verbs. As a noun, its closely collocated modifiers include both *physical* and *social* (see Table 1). It can also be modified by the words *personal*, *informal*, *frequent, intimate*, and be used in "and/or" parallel relation with *friends*, *friendship*, and *client*, indicating that it can be used in a wide range of contexts. As a verb, no specific requirement for the social status of subjects and objects has been attested. Its subjects (Table 2) can either be people, like *officer* or *police*, that own a relatively high social status, or *staff* that does not indicate any

Table 1. The Word Sketch Result of *Contact* (as Noun) in British National Corpus.

Modifiers of *contact*			*Contact* and/or		
Collocate	Frequency	logDice	Collocate	Frequency	logDice
close	222	9.33	*contact*	20	8.43
eye	126	9.29	*residence*	7	7.54
direct	193	8.97	*friendship*	8	7.4
physical	108	8.21	*influence*	10	7.19
personal	164	8.13	*friend*	30	7.07
information	92	8.06	*client*	9	6.99
regular	88	8.05	*exchange*	7	6.85
postgraduate	41	8.05	*information*	17	6.79
informal	45	7.89	*expertise*	6	6.7
frequent	42	7.81	*detail*	7	6.38
detail	25	7.36	*experience*	11	6.23
social	173	7.3	*discussion*	5	6.14
intimate	24	7.24	*support*	9	6.08

Note. "Physical" and "social" are bolded for emphasis by the authors.

Table 2. The Subjects of *Contact* (as Verb) in British National Corpus.

Collocate	Frequency	logDice
detail	35	9.09
telephone	10	8.02
worth	5	7.02
organiser	4	6.88
information	10	5.94
owner	5	5.88
club	4	4.91
staff	4	4.44
officer	4	4.4
police	6	4.3
school	4	4.01

Table 3. The Objects of *Contact* (as Verb) in British National Corpus.

Collocate	Frequency	logDice
police	125	9.54
office	135	9.42
cid	27	8.56
department	41	8.29
council	35	7.72
solicitor	21	7.7
edwards	14	7.57
brayshay	13	7.55
manager	29	7.43
foster	12	7.39
centre	31	7.34
officer	30	7.34
secretary	24	7.29
branch	17	7.2
bureau	11	7.17
adviser	12	7.15
institute	11	7.1
agency	13	6.91
association	14	6.87
station	15	6.74
doctor	17	6.7
agent	12	6.54
staff	14	6.11
company	25	6.05
group	23	5.99
friend	17	5.68
mother	11	5.59

special status. In addition, its objects (Table 3) range widely from *police*, *manager*, and *bureau*, which are typically used in a formal context, to *friends* and *mother*, which are typically used in an informal context.

Based on the dictionary interpretation and corpus analysis, a tentative sketch of the baseline meaning of *contact* can be made, as seen in (1). It is represented as a punctuality event (symbolized as "/") that can be either social (Sense 1) or physical (Sense 2), as it indicates a single occurrence of an activity that is typically not measured by duration (i.e., *contacting for an hour* marks the duration of the time spent on the repeated events, rather than the duration of an individual event). In Sense 1, *contact* is represented as an inchoative event and is symbolized by a boundary dot before the slash to indicate a combination of two atomic event modules—boundary and punctuality, meaning that it initiates communication with other people. That is to say, by the contacting event, a communication starts, but the ending result of this communication is not specified, be it successful or not. It is a social event with the human agent and theme as participating roles, and the event can be controlled by the agent, so [social] and [control] are its event attributes. In Sense 2, it is a complete punctuality event that happens instantaneously, meaning to

Table 4. Comparing Word Sketch Results of *Avoid Contact* in BNC (Left) and CORD19C (Right).

Modifiers of *avoid . . . contact* in BNC			Modifiers of *avoid . . . contact* in CORD19C		
Collocate	Frequency	logDice	Collocate	Frequency	logDice
cutaneous	1	9.27	*unnecessary*	23	8.19
eye	10	7.19	*face-to-face*	5	7.27
finger	1	6.22	*unprotected*	5	7.27
disturbing	1	5.99	*close*	89	7.04
skin	1	4.58	*direct*	58	5.38
physical	5	4.43	*sick*	4	4.93
informal	1	4.14	*high-risk*	4	4.24
electrical	1	4.11	*camel*	3	4.13
direct	3	3.57	***physical***	8	3.63
close	2	3.24	***social***	10	3.45
usual	1	2.87	*hand*	3	2.38
heavy	1	2.13	*such*	3	0.46
considerable	1	1.91			
financial	1	1.25			
much	1	1.04			
social	1	0.05			

Note. BNC = British National Corpus; CORD19C = COVID-19 corpus.
"Physical" and "social" are bolded for emphasis by the authors. The frequent collocates (frequency>=5) that indicate social contact are shaded by the authors for emphasis.

touch physically, with the theme and goal as participating roles and [physical] as the event attribute.

(1) MARVS representation of the baseline meaning of *contact* in two senses

Sense 1: "to communicate" • / <Agent, Theme> || [social] [control]

| |
[human] [human]

Sense 2: "to touch" ↯ <Theme, Goal> || [physical]

In particular, a further comparison of the Word Sketch Results (Table 4) of *avoid contact* in BNC (frequency = 57) and CORD19C (frequency = 677) reveals that avoid social contact has gained prominence at the expense of *avoid physical contact* in the time of COVID-19. The logDice value of *physical* as a modifier of contact in the pattern "avoid . . . contact" is higher than that of *social* in both corpora, but the value for *social* as a collocate increased significantly (from 0.05 to 3.45 in CORD19C), while the value of *physical* as a collocate decreased (from 4.43 to 3.63 in CORD19C). In addition, the top five collocates in terms of logDice in CORD19C refer predominantly to social contact (i.e., interpersonal interaction), while the top collocates from BNC are predominantly words of physical contact, with *eye* being the only social contact word.

As cross-validation, log-likelihood tests were run for the use of *avoid social contact* and *avoid physical contact*, comparing the frequency of occurrence in BNC and CORD19C. As Table 5 shows, *avoid social contact* is used significantly more in CORD19C ($p < .05$) than in BNC, but there is no significant difference for the use of *avoid physical contact* in these two corpora; this suggests that the use of "to avoid social contact" gained popularity because of COVID-19's impact on society.

Jiēchù *in Chinese.* The *Contemporary Chinese Dictionary* (Dictionary Editing Office, Institute of Linguistics, Chinese Academy of Social Sciences, 2002) assigns two senses to 接触 *jiēchù*:

① 挨上, 碰著 come into contact with; touch
② (人跟人) 接近並發生交往或沖突 come into contact with; interact with; engage

An examination of *jiēchù* in Gigaword_XIN (Table 6) suggests that the baseline meaning of this word in Mandarin Chinese is highly context dependent and that there are many limitations in its event and role attributes in each context type; therefore, grouping senses into contexts may give a clearer interpretation. For the purpose of this study, only two kinds of contexts are focused on: the medical context and the general social context. Below a summary of their eventive information is presented. Other contexts, such as the military context, will be discussed in separate article in the future.

A. Sense 1: *jiēchù* "to come into physical contact with" in the medical context

(2) MARVS representation of *jiēchù* in the medical context

/ • < Agent ⟷ Goal> || [physical]

├→ [potential affectedness] ←┤

[human][-volition] [-volition] [potential harm]

Table 5. The Log-Likelihood Values for *Avoid Social Contact* and *Avoid Physical Contact* in BNC and CORD19C.

Expression	Freq in BNC	Freq in CORD19C	Log-likelihood	Sig.
avoid social contact	1	10	4.408084484	0.035768984*–
avoid physical contact	5	8	0.020442101	0.886309233+

Note. BNC = British National Corpus; CORD19C = COVID-19 corpus; Freq = frequency; Sig. = significance.
*Significance at 5%; –: underused by BNC compared to CORD19C; +: overused by BNC compared to CORD19C.

Table 6. The Word Sketch Result of *jiēchù* in Gigaword_XIN.

Collocate	Freq	MI	Collocate	Freq	MI
Subjects			SentObjects_of		
高層 "senior officials"	184	47.6	開始 "start to"	110	41.35
近距離 "close range"	34	38.71	預備 "prepare to"	21	37.46
預備性 "preparatory"	25	37.35	願意 "be willing to"	19	26.0
異性性 "heterosexual"	13	36.63	旨在 "aim to"	15	23.54
事務級 "business-level"	18	36.05	繼續 "resume"	28	22.01
聯絡官 "liaison officer"	25	34.62	需要 "need to"	14	15.95
秘密 "secret"	60	33.81	願 "wish to"	7	14.22
事務性 "business"	26	32.21	包括 "include"	9	11.73
零距離 "zero-distant"	11	31.62	希望 "hope to"	7	9.36
人士 "pubic figures"	207	31.54	造成 "lead to"	5	8.55
領導人 "leaders"	186	31.09	代表 "represent"	6	6.58
經常性 "frequent"	34	30.51			
雙方 "both sides"	117	27.26			
性 "sexual"	59	26.93			
官方 "official"	44	24.73			
身體 "body"	42	24.46			
秘書長級 "secretary-general level"	5	23.72			
代表 "representatives"	160	22.79			
病人 "patient"	39	22.35			
病禽 "sick poultry"	5	21.1			
外交 "diplomatic"	54	20.36			
Modifiers			Objects		
經常 "often"	157	51.86	史 "history"	65	41.99
過 (experiential aspectual particle *guo*)	131	42.72	疫水 "infectious water"	12	36.14
了(perfective aspectual particle *le*)	381	41.53	網 "network"	56	31.15
從未 "never"	32	31.84	病人"patient"	57	26.83
早 "early"	41	31.83	機會 "opportunity"	89	26.23
初次 "first-time"	14	30.56	人士 "personage"	135	26.02
首次 "first-time"	62	29.29	禽鳥 "poultry and birds"	11	25.55
多 "more"	57	28.37	分泌物 "secretion"	9	24.38
頻頻 "frequently"	19	26.75	苯 "benzene"	10	23.45
私下 "private"	11	26.55	貧鈾彈 "depleted uranium bomb"	9	21.12
非 "no, not"	28	26.45	人員 "personnel"	149	20.95
廣泛 "wide"	25	25.68	大自然 "nature"	13	20.55
相互 "mutual"	37	24.75	職業病 "occupational disease"	10	20.26
著 (durative aspectual particle *zhe*)	40	24.47	血液 "blood"	19	19.87
單獨 "alone"	15	23.63	人群 "group of people"	17	18.1
親身 "in person"	13	23.57	對話 "conversation"	28	17.06
多方 "by all means"	14	23.08	家禽 "poultry"	10	17.03
從小 "since childhood"	10	22.74	渠道 "channel"	24	16.84
一 "once"	39	22.63	群眾 "people"	69	16.68
一般 "common"	13	20.95	禽類 "poultry"	7	16.67
很少 "seldom"	11	20.5	病毒 "virus"	26	16.6

Note. Freq = frequency; MI = mutual information.

Different from *contact* as a verb in English, the verb *jiēchù* in Chinese has an extra sense that relates to the medical context, meaning "to come into physical contact with (someone or something with potential harm such as infection with contagious diseases)." As represented in (2), when used in the medical context, *jiēchù* is a resultative punctuality event attached with a clear [physical] attribute. The starting of this event may not be controlled by the agent, so it may not have a noticeable starting time, but it does have an end boundary point completing the event (symbolized by putting a dot after a slash). According to the Word Sketch result in Gigaword_XIN (Table 6), its subjects are typically humans (病人 *bìngrén* "patient"), and its objects are mainly humans (病人 *bìngrén* "patient"), animals (禽鳥 *qín-niǎo* "poultry and birds"), micro-organisms (病毒 *bìngdú* "virus"), and potentially infectious (血液 *xiěyè* "blood") or hazardous materials (貧鈾彈 *pínyóudàn* "depleted uranium bomb"). The participating roles of this event include an agent and a goal, both being typically non-volitional in this particular context. The roles can be bi-directional (symbolized by "←→"), and there is a [potential affectedness] relation between them (i.e., one role potentially would affect the other role).

B. Sense 2:*jiēchù* "to come into social contact with" in a general social context

(3) MARVS representation of *jiēchù* in a general social context

• / ＜Agent ←→ Theme＞ ‖ [control][social] [change of state]

| |

[human][official] [human]

As represented in (3), *jiēchù* can also apply in a general social context as an inchoative punctuality event meaning "to come into social contact with," which is somewhat similar to *contact* in Sense 1 in English. It can also be controlled by the agent (represented as [control]) and owns a starting point; however, the difference from *contact* in English lies in that the human agents typically bear an [official] attribute, predominantly being governments, authorities, officials, or public figures (e.g., 高層 *gāocéng* "senior officials," 領導人 *lǐngdǎorén* "leaders," 人士 *rénshì* "personage") (see "subjects" in Table 6), and the themes are typically public figures (*rénshì* 人士 "personage") (see "objects" in Table 6). Furthermore, the verbs that indicate a change of state, namely, 開始 *kāishǐ* "start to" and 繼續 *jìxù* "resume," often take *jiēchù* as the object (see "SentObjects_of" in Table 6), suggesting that the event of *jiēchù* normally involves a change of state in the relationship between the agent and the theme. In a general social context, the eventive information of *jiēchù* in Chinese is far more complicated than *contact* in English, bearing an additional event attribute ([change of state]) for the event module, as well as an extra limitation of being [official] for the role of agent.

C. The blending of Sense 1 and Sense 2: Emergence of *shèjiāo-jiēchù* in Hong Kong

(4) MARVS representation of *shèjiāo-jiēchù* in a social-medical context in Hong Kong Chinese

___• ＜ Agent , Goal ＞ ‖[physical] [control] [social]

├→ [-kinship] ←┤

├→[potential affectedness]←┤

[human][volition] [human] [volition]

Our search for *shèjiāo-jiēchù* "social-contact" in Gigaword_XIN generated only one instance, which is an indirect quotation of the opinion given by a medical expert in Hong Kong, indicating that the use of *shèjiāo-jiēchù* may conflict with the baseline meaning of *jiēchù* before the COVID-19 pandemic. We believe that *shèjiāo-jiēchù* might be an evolved compound in Hong Kong Chinese, which can be understood as "doing physical contact in a social context." Its eventive information is tentatively depicted in (4). Through blending the medical and social contexts, the whole event becomes a nominalized state event (symbolized by "___") that inherits attributes from the two original senses shown in Sections A and B, with [control][social] from *jiēchù* in the social context (Sense 2) and [physical][potential affectedness] from the medical context (Sense 1). As a result, [physical] prevails over [social] in the emergent structure of *shèjiāo-jiēchù*. The attribute [change of state] in Sense 2 is also taken up, that is, the emergent meaning of *shèjiāo-jiēchù* is converted from a punctuality event with a [change of state] internal attribute to a resultative state event to be changed. It is typically used after 減少 *jiǎnshǎo* "reduce" but not after 開始 *kāishǐ* "start," nor is it followed by the perfective aspectual marker 了 *le*, so this event has an end boundary point but does not own a starting boundary point. The role attributes are also adjusted in range: the agent now refers to the general public in a collective sense, waiving original restrictions on social status in Sense 2, while the goal typically incorporates non-family members of the agent (symbolized by [-kinship]).

Physical contact *in Guangzhou vs.* social contact *in Hong Kong.* Through comparing the senses of *contact* and *jiēchù*, this study has revealed that *jiēchù* in Chinese owns a sense specific to the medical context, which *contact* as a verb in English does not have. Although they share a sense that is used in the social context with the same event structure, the English and Chinese versions vary substantially for that sense: the Chinese word *jiēchù* bears role limitations that typically restrict non-official, common people from serving as the agent of *jiēchù* in the social context. Therefore, the translation of *bù-jiēchù* "no-contact" into "*avoiding physical contact*" in Guangzhou rather than "*avoiding social contact*" or "*don't contact*" adheres to the baseline meaning of *jiēchù* in the medical context in standard Chinese, and simultaneously conforms to the baseline usage of *contact* in English.

Table 7. The Word Sketch Result of *Social Distancing* in COVID-19 Corpus.

Modifiers of social distancing			Verbs with social distancing as object			social distancing and/or		
Collocate	Freq	logDice	Collocate	Freq	logDice	Collocate	Freq	logDice
rigorous	26	7.65	*practice*	18	8.11	*closure*	31	8.87
government-imposed	9	7.2	*mandate*	11	8.07	*mask-wearing*	10	8.8
etiquette	6	6.53	*enforce*	6	6.88	*quarantine*	54	8.69
quarantine	15	6.36	*implement*	23	5.6	*etiquette*	10	8.38
self-imposed	5	6.3	*encourage*	7	5.36	*hygiene*	40	8.22
handwashing	5	6.06	*initiate*	21	5.19	*handwashing*	9	8.01
non-strict	4	6.04	*adopt*	5	3.82	*lockdown*	6	7.9
hygiene	13	5.84				*restriction*	20	7.61
restrictive	5	5.51				*self-isolation*	4	7.43
intermittent	6	5.49				*avoidance*	8	7.28
unprecedented	5	5.35				*obligation*	4	7.04

Note. Freq = frequency.

As has been analyzed above, the term *shèjiāo-jiēchù* "social-contact" used at Stages 1, 3, and 4 in Hong Kong shows a notable deviation from the baseline meaning of standard Chinese. While the adoption of *avoid social contact* at Stage 1 in Hong Kong accurately reflects the significantly increasing popularity of this collocation pattern in English in the time of COVID-19, it can be assumed that the coinage of the compound word *shèjiāo-jiēchù* in Chinese was triggered by the loan translation from the English expression *social contact*. Although *reducing social contact* is replaced by the neologism *social distancing* at Stages 2 to 4 in Hong Kong, the formidable reconfiguration of medical and social senses of *jiēchù* substantiates the emergent term *shèjiāo-jiēchù*, allowing it to compete with the literal translation of *social distancing*. This might be the reason for the adoption of the "contact prevention" term *jiǎnshǎo-shèjiāo-jiēchù* "reduce-social-contact" as the corresponding Chinese expression for *social distancing* at Stages 3 to 4.

To conclude our corpus-based semantic analysis of *contact* and *jiēchù*, in the context of social distancing during the pandemic, a semantic change was not observed in the bilingual data from Guangzhou, which translated *jiēchù* faithfully to *physical contact*. Conversely, the emergent term *shèjiāo-jiēchù* in Hong Kong underwent a radical semantic change by acquiring a new event structure. The semantic change was triggered by the increasing popularity in the use of *social contact* in English; however, it was formed by reconfiguring elements in baseline eventive information in relevant Chinese senses.

Social distancing *in later stages of Hong Kong: New meaning and its dis-ambiguation.* The term *social distancing* appears after Stage 1 in Hong Kong. This compound was first included in the Oxford English dictionary in early April 2020 as one of the new vocabularies "ushered" to the general populace by COVID-19 (Paton, 2020).

Social distancing, first used in 1957, was originally an attitude rather than a physical term, referring to an aloofness or deliberate attempt to distance oneself from others socially—now we all understand it as keeping a physical distance between ourselves and others to avoid infection (Paton, 2020).

A concordance search for *social distancing* in BNC and CORD19C provided 0 and 1,447 (7.42 per million) instances, respectively, showing that the term quickly gained popularity in the time of COVID-19. A Word Sketch search for *social distancing* in CORD19C (Table 7) was conducted and visualized Word Sketch results for *distancing* in BNC and CORD19C in Sketch Engine (Figures 3 and 4) were compared. The MARVS representation for its present eventive information, based on corpus results, is described in (5).

(5) MARVS representation (to date) of (doing) *social distancing* in the time of COVID-19:

•/////•____< Agent, Theme >|| [control] [social] [implicit: physical]

| |

[human] [obligation] [human]

Semantic changes can be clearly observed in the neologism *social distancing.* It is a nominalized eventive expression, often following a light verb (e.g., *practice*, *implement*) (Table 7) to realize its verbal event. In contrast with the Word Sketch result in BNC in which *social* does not modify *distancing* (Figure 3A), *social* is the most salient modifier (frequency = 861, logDice = 10.38) of *distancing* in CORD19C (Figure 3B). In BNC, collocates in "and/or" relation with *distancing*, such as *coldness*, *detachment*, *flippancy*, *alienation*, and *critique* (Figure 4A), all indicate an aloof meaning with a negative connotation in the social context. In CORD19C, *distancing* is associated with words related to epidemic prevention such as *closure*, *etiquette*, *obligation*, *lockdown*, *quarantine*, and *mask-wearing* (Figure 4B). Consistent with the explanation in the Oxford English Dictionary, the stark contrast in the collocates of *distancing* in BNC and CORD19C shows that *distancing* in the social context has shifted from a

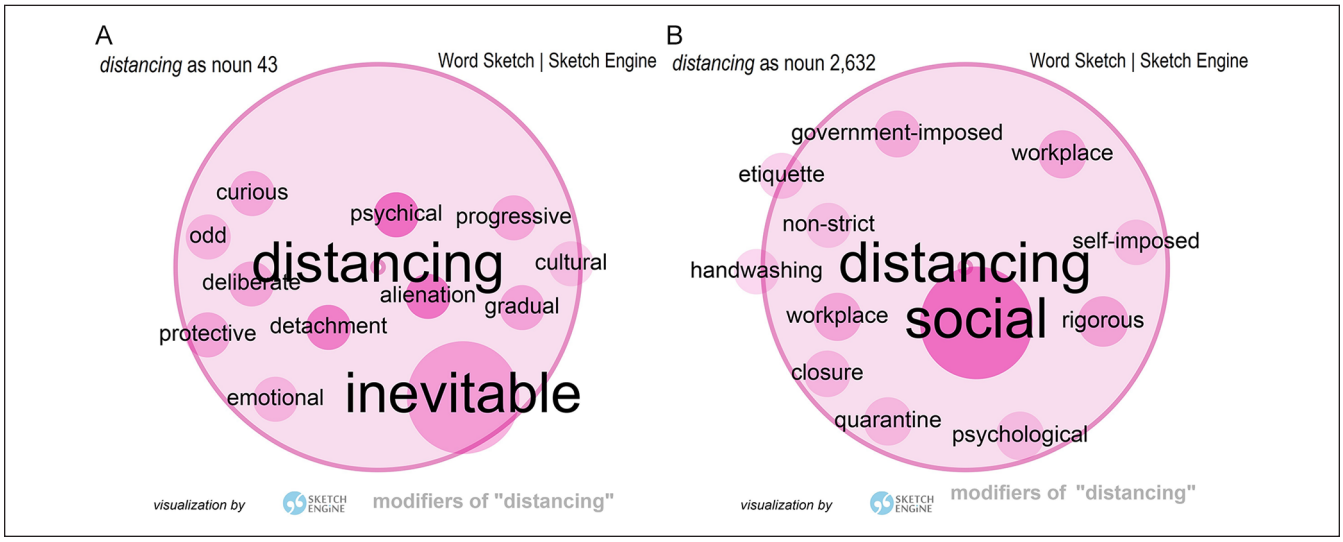

Figure 3. Visualized word sketch results for the modifiers of *distancing* in BNC (A) and CORD19C (B).
Note. BNC = British National Corpus; CORD19C = COVID-19 corpus.

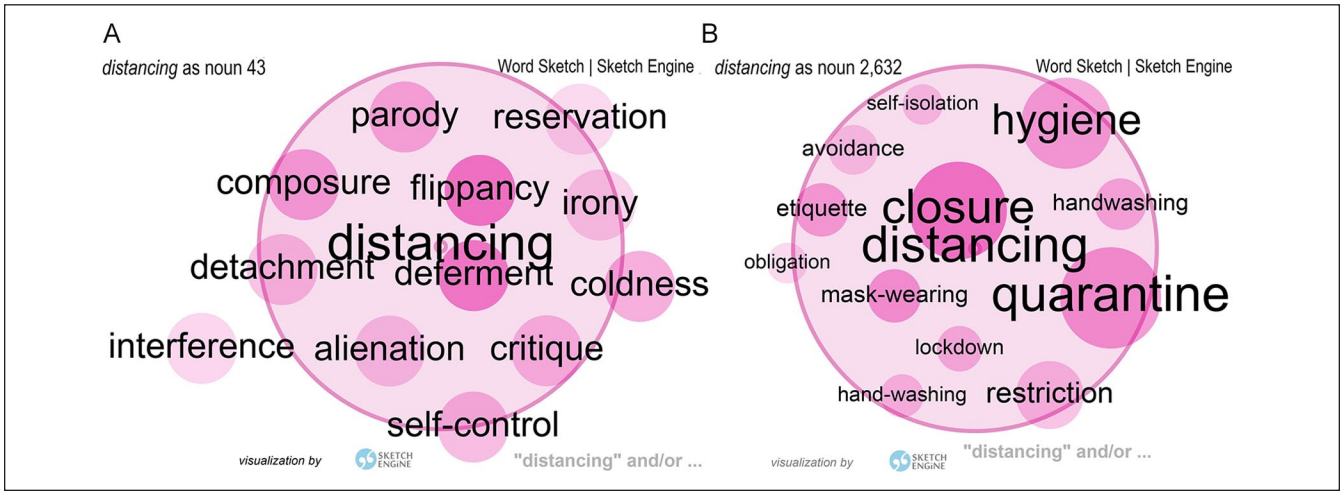

Figure 4. Visualized word sketch results for the collocates in "and/or" relation with *distancing* in BNC (A) and CORD19C (B).
Note. BNC = British National Corpus; CORD19C = COVID-19 corpus.

self-initiated individual action of deliberate alienation to a collective action of keeping distance from others to avoid infection. *Social distancing* is modified by *intermittent*, *rigorous*, *self-imposed*, and *government-imposed* in CORD19C (Table 7), so it can be inferred that the newly evolved event is an obligation-driven, durable process that initiates a follow-up state of physically keeping away from other social contacts. Therefore, this term can be represented in MARVS as a composite event structure composed of a bounded process event and a state event, the participating roles of which are the [human] agent and the [human] theme. The whole event is apparently social but implicitly physical, and the agent controls his own practice of this event out of social responsibility, so the event attributes include [control], [social] and [implicit: physical], and the role attributes for the agent include [human] and [obligation].

Our observation of this implicit [physical] attribute corroborates Schlücker's (2016) finding that in Germanic languages an implicit element, other than the constitute morphemes, can be incorporated into a compound in its formation process. Yet this self-contradictory characteristic of using the word *social* to imply "physical" in *social distancing* poses challenges for its translation. The noun 距離 *jùlí* "distance" can, to some extent, indicate the implicit [physical] attribute; however, it still suggests a weakening social bond when collocated with *shèjiāo*. Absent a simple solution, the "contact prevention" expression used first in Stage 1 (*jiǎnshǎo-shèjiāo-jiēchù*) is taken back in Stages 3 to

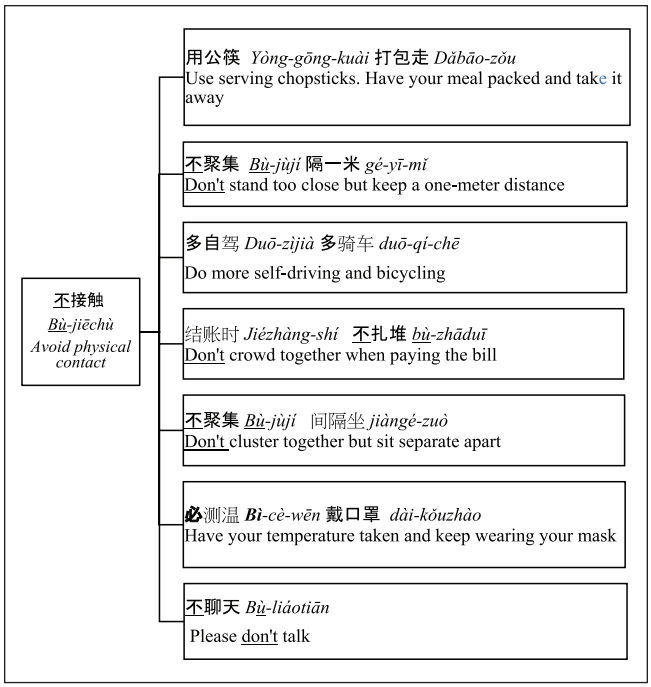

Figure 5. The text showing framing events of *avoid physical contact* in the poster from Guangzhou.

4 as the way to articulate the newly incorporated implicit meaning in Chinese.

In summary, the neologism *social distancing* that is used in Hong Kong undergoes a radical semantic change by acquiring a new event structure in the time of COVID-19, changing from a [social] event to an ambiguous composite event with mixed [social] and [physical] attributes.

In all, H3 is fully supported by the data in Hong Kong, but it is not supported by the data in Guangzhou.

RQ3—Interpersonal Devices Used to Promote Social Distancing in Guangzhou and Hong Kong

The eventive evolution of the social distancing expressions does not occur in isolation. Rather, these expressions are strategically disseminated with a variety of interpersonal devices in Guangzhou and Hong Kong. From the perspective of SFL, the mainly used devices include mood, modality, and polarity. To capture the differences in their use of interpersonal devices, the two posters that were made during a similar time period in the two cities were compared, and then the posters in Hong Kong were further analyzed across its campaign stages.

First, the poster in Guangzhou (P_GZ) and a featured poster in the COVID-19 thematic website at Stage 2 (P_HK_S2_1), which were made in March 2020, were compared. Figures 5 and 6 represent the text of the original posters, pinpointing events clustered under the frame of social distancing terms. Modal operators are bolded, and negative polarity markers are underlined.

In both posters (Figures 5 and 6), the imperative mood, the typical mood for "command," is consistently seen; however, the use of modality and polarity differ considerably. For modality, the poster in Hong Kong uses the median-level modality operator 應 *yīng* "should" and even adopts the modal adjunct 盡量 *jìnliàng* ("*if possible*," or "*as much as possible*" are the English equivalents) to soften the imposed obligation from the government. In sharp contrast, the high modality operator 必 *bì* "must" is used in Guangzhou. As has been introduced, a high value modality in "obligation" modality means that the audience is required to carry out the event, and a median value means that they are only supposed to do so. Therefore, the use of a higher value modality in Guangzhou gives the imperative sentence a stronger mandatory tone.

Regarding polarity, the extensive use of the negative polarity maker 不 *bù* "no; not" can be observed in P_GZ, whereas only one is included in P_HK_S2_1. Most of the English equivalents of *bù* are the corresponding negative imperative markers *don't*. The negative imperatives in P_GZ are clearly behavior-inhibiting, whereas the positive imperative *bǎochí-shèjiāo-jùlí* "maintain-social-distance" (*social distancing* being the English counterpart) in P_HK_S2_1 is behavior-encouraging.

Given the cohesive mood, yet the variation in modality and polarity in promoting social distancing, different subtypes of directive speech acts are constructed in Guangzhou and Hong Kong. Specifically, prohibition (through contact prevention) is seen in P_GZ, and advice (for *social distancing*) is seen in P_HK_S2_1.

Second, similar to the social distancing terms that vary across campaign stages in Hong Kong, the interpersonal devices used to promote social distancing messages also vary throughout the campaign stages. A detailed analysis of all of the sample texts in P_HK can be found in the Supplemental Appendix, and a summary of their linguistic variations among campaign stages is provided in Table 8.

Table 8 illustrates variations in the use of modality, mood, and polarity to frame different directive speech acts across the different stages: from advice (for contact prevention) to warning and advice (for *social distancing*). Interestingly, the tendency to avoid a direct prohibition is persistent in Hong Kong.

The degree of modality value follows and mimics the epidemic curve of COVID-19 in Hong Kong (Figure 2); it drops in Stage 2 in response to the curve falling in late February but soars in Stage 3 when the second wave of the coronavirus outbreak surged with global transmission.

In Stages 3 to 4, when the new requirements to reduce gatherings in Hong Kong were issued to combat the rising threat of COVID-19, the mood switched from imperative to declarative to deliver the warning messages. For example, the legal modal operator *shall* is used in Stage 3 within the declarative sentence "如違反規定，最高可被罰款兩萬五千元. . ."/"*Any person who contravenes the regulation* ***shall*** *be liable to a maximum fine of $25 000. . .*," leading to a

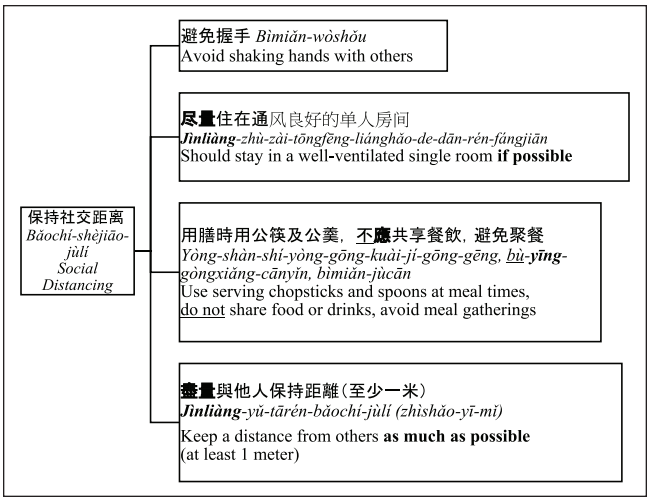

Figure 6. The text showing framing events of *social distancing* in a poster released at Stage 2 in Hong Kong (P_HK_S2_1).

speech act of warning. Noticeably, although high value modality is extensively used in Stage 4 to warn the public of the extension of the requirements, the warning is based on law, and is interwoven with advice, as in the clause "呼籲大家嚴格遵守"/"*They are advised to strictly comply with the regulations.*"

As for polarity, it has been predominantly positive in Hong Kong across the stages, which differs sharply from the extensive use of negative markers in Guangzhou that serves to trigger a typical prohibition speech act. Marked use of negative polarity can only be found in one poster (P_HK_S3_1), in the way of a Q & A between a master and his apprentice, rather than a direct prohibition to the public.

To conclude the above analysis, H3 and H4 are fully supported. In both of the Chinese and English posters, the use of mood, modality, and polarity to disseminate the eventive information for social distancing across campaign stages diverges markedly between the two cities.

Furthermore, more diversified mood, modality, and polarity devices are used in Hong Kong to adapt to the shifting concerns across campaign stages, reflecting a different social interaction pattern compared with Guangzhou (H7). In general, the shift from "contact prevention" (in Stage 1) to *social distancing* (in Stages 2 to 4), together with the strategic choice to use diversified interpersonal devices to promote social distancing to avoid a directly imposed prohibition, reflect Hong Kong's style of governance and complex social dynamics. In health-related activities, the intention motivating one's behavior influences their actual behavior (Shin et al., 2017), and intention is mainly predicted by one's gratification and confirmation for taking the activity (Shin & Biocca, 2017). In a society that is used to a high degree of individualism in social interaction, creating a uniform social behavior pattern with voluntary gratification and confirmation from individual community members is very complicated. It is negotiated with the gradually changing mood and modality and the very slight shift from positive encouraging to inhibition words in Hong Kong. It is crucial to note that these devices did not move uniformly as at least one device needs to be weakened to mitigate the stronger command expressed otherwise; this prevents the change from being too abrupt. Nevertheless, in Stage 4, the announcement in Hong Kong contained a uniformly strong stance with imperatives, declaratives, and strong modal verbs. This suggests that, through the stages, the uniform collective behavior of social distancing has been established and accepted. This staged transition directly contrasts the social interaction pattern in Guangzhou, where only one single, definitive announcement is needed.

The above analysis validated H7. The diversity in interpersonal devices in Hong Kong demonstrates that the single illocutionary act of a prohibition that is considered adequate in Guangzhou is inadequate in Hong Kong. The social dynamics in Hong Kong require the government to tactfully "negotiate" the transition to a more complex social interaction pattern through a series of speech acts that are seen in the four stages of posters. These steps toward a uniform behavioral pattern were carefully staged through the balanced (though consistently stronger) use of mood, modality, and polarity items. The release of each new set of stronger announcements also directly followed a major development in the pandemic and hence appeared (by design or by nature) as a reaction to the pandemic instead of government initiatives for tighter control.

Conclusion

In this article, the public health posters in Guangzhou and Hong Kong are studied to examine the evolution of social distancing terms and interpersonal linguistic strategies in public health campaigns. This study specifically focuses on how language use in public health campaigns adapts to different societal contexts, especially in terms of the different pathways needed to motivate people to accept the new behavior pattern of social distancing. Altogether four hypotheses have been tested. The first hypothesis, which is focused on the choice of social distancing terms in the two cities, is fully supported, showing that Guangzhou and Hong Kong diverged greatly in their choice of social distancing terms, with the "contact prevention" term being the only choice in Guangzhou and the neologism *social distancing* competing with the "contact prevention" term in Hong Kong. This demonstrates that the health campaign terms that are used are driven by patterns of social interactions. The second hypothesis, about the semantic changes in the event structure of social distancing terms, is only attested in Hong Kong. This shows that the emergence of a new verbal meaning arose from a new pattern of social behavior that is encoded with a new eventive structure, and the process of lexical evolution is also influenced by the patterns of social interactions.

Table 8. The Use of Social Distancing Terms, Interpersonal Devices, and Speech Acts throughout Campaign Stages in P_HK (by April 30, 2020).

Campaign stages	S1	S2	S3	S4
Campaign Theme	Fighting Together: *Reduce social contact* to protect yourself and others	*Social distancing*	New requirements to reduce gatherings	Extension of requirements to reduce gatherings
Number of posters	2	4	9	2
Social distancing terms (Chinese)	避免/减少社交接觸 *bìmiǎn /jiǎnshǎo-shèjiāo-jiēchù*	保持社交距離 *bǎochí-shèjiāo-jùlí*	减少社交接觸/保持社交距離 jiǎnshǎo-shèjiāo-jiēchù/ bǎochí-shèjiāo-jùlí	减少社交接觸 *jiǎnshǎo-shèjiāo-jiēchù*
Social distancing terms (English)	*Avoid social contact*	*Social distancing*	*Maintain social distance/ distancing*	*Maintain social distancing*
Mood in Chinese/English	predominantly imperative	predominantly imperative	declarative & imperative	declarative & imperative
Modality in Chinese/ English	rarely used; High (e.g., 須 *xū*/*need to*)	median (e.g., 應 *yīng*/*should*) & hedging	rarely used; legal (可 *kě*/*shall*), median (要 *yào*/-)	extensively used, mostly high (e.g., 必須 *bìxū*/*must*)
Polarity in Chinese/ English	positive	predominantly positive	predominantly positive (except in a conversation between a master and his apprentice)	predominantly positive
Speech acts	advice	advice	warning	advice & warning

Guangzhou's single public health campaign suggests that the public is not directly engaged in the formation of the concept, and as such, the emergent event type is not assigned a new word sense. Finally, the last two hypotheses regarding the different use of interpersonal linguistic devices are both proven. The two cities differed in the use of mood, modality, and polarity to promote social distancing, with Hong Kong exhibiting a more diversified style that reflects its more complex pattern of social interaction. This shows that the choice of different interpersonal devices can be predicted by the different social dynamics of the two societies. By testing these hypotheses, it can be seen that lexical evolution interacts with social realities. The lexical evolution of social distancing terms and the interpersonal devices used to disseminate the evolved eventive information come together across campaign stages, and their bilingual reconfiguration is influenced, or "filtered" by the specific sociopolitical, cultural, and linguistic contexts of speech communities, resulting in different illocutionary acts on the audience: prohibition in Guangzhou, and conversely advice and warning in Hong Kong. Guangzhou adopted the "contact prevention" term with standard conventionalized meanings in both Chinese and English and relied on one single illocutionary act to complete the public health campaign. The lack of need to amend or strengthen this direct prohibition speech act in Guangzhou underlines the collectivist culture of the city. This sharply contrasts Hong Kong's elaborately constructed four-stage negotiation to slowly build the need for and the mandate to create new, uniform social behavior. From "contact prevention" to *social distancing*, coevolution between neologisms and public health campaigns resonates with varying interpersonal devices in both English and Chinese. The shifts of these linguistic expressions over time use subtle cues to strengthen the illocutionary speech acts and slowly coax uniformity for social distancing actions; this is seen by the transition from unenforceable advice to a direct warning that is substantiated by a legal penalty. Yet, avoidance of direct prohibition was carefully adhered to, which reflects Hong Kong's individualist culture and complex social dynamics.

In conclusion, the careful examination of the co-evolution between social distancing terms and COVID-19 public health campaigns can inform the design of future public health information materials and contribute to the understanding of multilingual risk communication in public health crises. Further studies in other languages or for future lexical evolution will lead to a better understanding of both our social dynamics and the roles of linguistic devices in facilitating behavioral changes in a time of common threats.

Data Sources

1. Chinese Word Sketch (CWS). http://wordsketch.ling.sinica.edu.tw/
2. COVID-19 Thematic Website, the Government of the Hong Kong Special Administrative Region. https://www.coronavirus.gov.HongKong/
3. Facebook page of the Centre for Health Protection in Hong Kong. https://www.facebook.com/pg/CentreforHealthProtection/photos
4. Sketch Engine. http://www.sketchengine.co.uk/

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Supplemental Material

Supplemental material for this article is available online.

References

Baehr, P. (2006). Susan Sontag, battle language and the Hong Kong SARS outbreak of 2003. *Economy and Society*, *35*(1), 42–64. https://doi.org/10.1080/03085140500465840

Barry, C. L., Sherman, S. G., & McGinty, E. E. (2018). Language matters in combatting the opioid epidemic: Safe consumption sites versus overdose prevention sites. *American Journal of Public Health*, *108*(9), 1157–1159. https://doi.org/10.2105/AJPH.2018.304588

British National Corpus. (2007). *Version 3* (BNC XML ed.) [Distributed by Oxford University Computing Services on Behalf of the BNC Consortium]. http://www.natcorp.ox.ac.uk/

Chen, L., Zhang, T., Mao, S., Ou, S., & Zhang, Y. (2020, March 19). Guangwai Jiaoshi Yixin Zhanyi Yipin Dian Liang Quan Sheng Jichang Matou [Teachers of Guangdong University of Foreign Studies fight the epidemic with one heart in doing translation, and their translation works light up airports and docks in the whole province]. *Yangcheng Evening News*. https://ycpai.ycwb.com/ycppad/content/2020-03/19/content_710424.html

Chew, C., & Eysenbach, G. (2010). Pandemics in the age of Twitter: Content analysis of tweets during the 2009 H1N1 outbreak. *PLOS ONE*, *5*(11), Article e14118. https://doi.org/10.1371/journal.pone.0014118

Chung, S.-F. (2011). A corpus-based study of SARS in English news reporting in Malaysia and in the United Kingdom. *International Review of Pragmatics*, *3*(2), 270–293. https://doi.org/10.1163/187731011x597541

Church, K. W., & Hanks, P. (1990). Word association norms, mutual information, and lexicography. *Computational Linguistics*, *16*(1), 22–29. https://doi.org/10.3115/981623.981633

Coppola, V., & Girandola, F. (2016). Is the marker the message? The role of some scalar adverbs in the processing of a public health appeal and its effectiveness. *Journal of Language and Social Psychology*, *35*(5), 529–547. https://doi.org/10.1177/0261927X15614343

Dictionary Editing Office, Institute of Linguistics, Chinese Academy of Social Sciences. (2002). *Xiandai Hanyu Cidian* [The contemporary Chinese dictionary] (Chinese-English ed.). Foreign Language Teaching and Research Press.

Ding, H., & Zhang, J. (2010). Social media and participatory risk communication during the H1N1 flu epidemic: A comparative study of the United States and China. *China Media Research*, *6*(4), 80–91.

Dobric, N., & Weder, F. (2016). Media conceptualizing illnesses-the case of the flu. *Continuum*, *30*(1), 126–142. https://doi.org/10.1080/10304312.2015.1117573

Eggins, S. (2004). *An introduction to Systemic Functional Linguistics* (2nd ed.). Continuum.

Ezeifeka, C. R. (2015). Grammatical metaphor: In search of proficiency in research abstract writing. *SAGE Open*. https://doi.org/10.1177/2158244015577667

Fong, M. W., Gao, H., Wong, J. Y., Xiao, J., Shiu, E. Y. C., Ryu, S., & Cowling, B. J. (2020). Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings—Social distancing measures. *Emerging Infectious Disease Journal*, *26*(5), 976–984. https://doi.org/10.3201/eid2605.190995

Gale, R. (2020, March 26). Is "social distancing" the wrong term? Expert prefers "physical distancing," and the WHO agrees. *The Washington Post*. https://www.washingtonpost.com/lifestyle/wellness/social-distancing-coronavirus-physical-distancing/2020/03/25/a4d4b8bc-6ecf-11ea-aa80-c2470c6b2034_story.html

Gesser-Edelsburg, A., Shir-Raz, Y., Bar-Lev, O. S., & Green, M. S. (2016). Outbreak or epidemic? How Obama's language choice transformed the Ebola outbreak into an epidemic. *Disaster Medicine and Public Health Preparedness*, *10*(4), 669–673. https://doi.org/10.1111/j.1460

Guidry, J. P. D., Jin, Y., Orr, C. A., Messner, M., & Meganck, S. (2017). Ebola on Instagram and Twitter: How health organizations address the health crisis in their social media engagement. *Public Relations Review*, *43*(3), 477–486. https://doi.org/10.1016/j.pubrev.2017.04.009

Halliday, M. A. K. (2000). *An introduction to functional grammar* (2nd ed.). Foreign Language Teaching and Research Press.

Halliday, M. A. K., & Matthiessen, C. (2014). *Halliday's introduction to functional grammar*. Routledge.

Huang, C.-R. (2009). *Tagged Chinese Gigaword version 2.0* (LDC2009T14). Linguistic Data Consortium. https://catalog.ldc.upenn.edu/LDC2009T14

Huang, C.-R., Ahrens, K., Chang, L., Chen, K.-J., Liu, M.-C., & Tsai, M.-C. (2000). The Module-Attribute Representation of Verbal Semantics: From semantics to argument structure. *International Journal of Computational Linguistics and Chinese Language Processing*, *5*(1), 19–46.

Huang, C.-R., & Hsieh, S.-K. (2014). Chinese lexical semantics: From radicals to event structure. In W. S.-Y. Wang & C. Sun (Eds.), *The Oxford handbook of Chinese linguistics* (pp. 290–305). Oxford University Press.

Huang, C.-R., Kilgarriff, A., Wu, Y., Chiu, C.-M., Smith, S., Rychly, P., Bai, M.-H., & Chen, K.-J. (2005). Chinese Sketch Engine and the extraction of grammatical collocations. In *Proceedings of the Fourth SIGHAN Workshop on Chinese Language Processing* (pp. 48–55). https://aclanthology.org/I05-3007

Huang, C.-R., & Wang, X. (2020). From faithfulness to information quality: On 信 in translation studies. In L. Defeng & L. Lim (Eds.), *New Frontiers in translation studies. Key*

issues in translation studies in China. Springer. https://doi.org/10.1007/978-981-15-5865-8_6

Idoiaga Mondragon, N., de Montes, L. G., & Valencia, J. (2018). Understanding the emergence of infectious diseases: Social representations and mass media. *Communication and Society*, *31*(3), 319–330. https://doi.org/10.15581/003.31.3.319-330

Karan, K., Aileen, L., & Leng Elaine, P. Y. (2007). Emerging victorious against an outbreak: Integrated communication management of SARS in Singapore media coverage and impact of the SARS campaign in moving a nation to be socially responsible. *Journal of Creative Communications*, *2*(3), 383–403. https://doi.org/10.1177/097325860700200307

Kilgarriff, A., Baisa, V., Bušta, J., Jakubíček, M., Kovář, V., Michelfeit, J., Rychlý, P., & Suchomel, V. (2014). The Sketch Engine: Ten years on. *Lexicography*, *1*(1), 7–36. https://doi.org/10.1007/s40607-014-0009-9

Kohlmeier, S., Lo, K., Wang, L. L., & Yang, J. J. (2020). *COVID-19 open research dataset (CORD-19)* (Version 2020-04-03). Zenodo. https://doi.org/10.5281/zenodo.3715505

Merriam-Webster. (n.d.). *Social distancing*. Retrieved June 30, 2021, from https://www.merriam-webster.com/dictionary/socialdistancing

Merriam-Webster. (2020). *Coronavirus and the new words we added to the dictionary in March 2020: New words from the COVID-19 pandemic*. Retrieved June 30, 2021, from https://www.merriam-webster.com/words-at-play/new-dictionary-words-coronavirus-covid-19

Norberg, C. (2016). Naughty boys and sexy girls: The representation of young individuals in a web-based corpus of English. *Journal of English Linguistics*, *44*(4), 291–317. https://doi.org/10.1177/0075424216665672

Oxford University Press. (2020). *Contact*. Retrieved June 30, 2021, from https://www.lexico.com/definition/contact

Paton, B. (2020). *Social change and linguistic change: The language of Covid-19*. https://public.oed.com/blog/the-language-of-covid-19/

Reluga, T. C. (2010). Game theory of social distancing in response to an epidemic. *PLOS Computational Biology*, *6*(5), Article e1000793. https://doi.org/10.1371/journal.pcbi.1000793

Richardson, K. (2005). *Internet discourse and health debates*. Palgrave Macmillan.

Rychlý, P. (2008). A lexicographer-friendly association score. In P. Sojka & A. Horák (Eds.), *Proceedings of Recent Advances in Slavonic Natural Language Processing* (pp. 6–9). Masaryk University. https://nlp.fi.muni.cz/raslan/2008/raslan08.pdf#page=14

Schlücker, B. (2016). Adjective-noun compounding in parallel architecture. In P. ten Hacken (Ed.), *The semantics of compounding* (pp. 178–191). Cambridge University Press.

Searle, J. R. (1979). *Expression and meaning: Studies in the theory of speech acts*. Cambridge University Press.

Shin, D. H., & Biocca, F. (2017). Health experience model of personal informatics: The case of a quantified self. *Computers in Human Behavior*, *69*, 62–74. https://doi.org/10.1016/j.chb.2016.12.019

Shin, D. H., Lee, S., & Hwang, Y. (2017). How do credibility and utility play in the user experience of health informatics services? *Computers in Human Behavior*, *67*, 292–302. https://doi.org/10.1016/j.chb.2016.11.007

Thompson, G. (2000). *Introducing functional grammar*. Foreign Language Teaching and Research Press.

Wallis, P., & Nerlich, B. (2005). Disease metaphors in new epidemics: The UK media framing of the 2003 SARS epidemic. *Social Science and Medicine*, *60*(11), 2629–2639. https://doi.org/10.1016/j.socscimed.2004.11.031

Wang, L. L., Lo, K., Chandrasekhar, Y., Reas, R., Yang, J., Eide, D., Funk, K., Kinney, R. M., Liu, Z., Merrill, W., Mooney, P., Murdick, D., Rishi, D., Sheehan, J., Shen, Z., Stilson, B. B., Wade, A. D., Wang, K., Wilhelm, C., . . . Kohlmeier, S. (2020). CORD-19: The Covid-19 open research dataset. *ArXiv*. https://arxiv.org/abs/2004.10706

Wanga, H., Joseph, T., & Chuma, M. B. (2020). Social distancing: Role of smartphone during coronavirus (COVID-19) pandemic era. *International Journal of Computer Science and Mobile Computing*, *9*(5), 181–188.

Washer, P. (2004). Representations of SARS in the British newspapers. *Social Science and Medicine*, *59*(12), 2561–2571. https://doi.org/10.1016/j.socscimed.2004.03.038

Wilder-Smith, A., Chiew, C. J., & Lee, V. J. (2020). Can we contain the COVID-19 outbreak with the same measures as for SARS? *The Lancet Infectious Diseases*, *20*, E102–E107. https://doi.org/10.1016/S1473-3099(20)30129-8

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine*, *27*(2), Article taaa020. https://doi.org/10.1093/jtm/taaa020

Zhang, L., Li, H., & Chen, K. (2020). Effective risk communication for public health emergency: Reflection on the COVID-19 (2019-nCoV) outbreak in Wuhan, China. *Healthcare*, *8*(1), Article 64. https://doi.org/10.3390/healthcare8010064