

# COVID-19 Poster Design in the U.S. and China: A Cross-Cultural Visual Content Analysis

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## ABSTRACT

The spread of COVID-19 has caused severe concern around the world. Both the U.S. Center for Disease Control and Prevention (CDC) and the Chinese CDC have designed numerous posters to disseminate COVID-19 information and educate the public about the disease. To explore the differences in the visual design of these posters from a cross-cultural perspective, I conducted a visual content analysis of U.S. and Chinese COVID-19 posters. The results show that cultural differences have influenced the visual design of these posters. The findings indicate that technical communicators should customize visual design elements according to the culture of the target audience.

## CCS Concepts

• Social and professional topics • User characteristics • Cultural characteristics

## Keywords

Cross-cultural communication, visual design, health communication, covid-19, content analysis

## 1. PROBLEM & MOTIVATION

COVID-19, caused by SARS-CoV-2, was classified as a global pandemic soon after its emergence in 2019 [1]. According to the World Health Organization (WHO) Coronavirus Dashboard, as of April 12, 2023, there had been over 700 million confirmed cases and more than 6 million people had lost their lives to the disease worldwide [2]. Preventing the spread of COVID-19 has been a major challenge for health organizations, such as the Centers for Disease Control and Prevention (CDC), in many countries. To help mitigate the spread of the virus, both the U.S. CDC and the Chinese CDC have provided COVID-19 posters that can be used in public spaces to disseminate information, educate the public, and advocate for the importance of vaccination.

Among the various media that can be used to promote health information during the COVID-19 pandemic, such as brochures [3], videos [4], and social media posts [5], posters are an essential medium to raise public awareness of COVID-19 prevention and improve vaccination uptake [6]. Chen [7] analyzed COVID-19 posters collected from multiple authoritative websites from the perspective of semiotic resourcefulness. Based on design and semiotics theories, Zhang et al. [8] explored the visual symbols used in COVID-19 posters. Although COVID-19 posters from different countries have been examined in previous studies [8], limited research has been done on the influence of culture on the visual design of posters.

Culture plays a significant role in shaping visual design [9]. Different cultural values, norms, and beliefs can influence the choice of visual elements used in the posters. As the U.S. and Chinese COVID-19 posters reveal different tendencies in terms of visual elements, such as imagery, color, and typography, this study conducted a visual content analysis of U.S. and Chinese COVID-19 posters to examine how culture affects poster graphic design.

## 2. BACKGROUND & RELATED WORK

### 2.1 Visual Rhetoric

Visuals used to be perceived as dependent on the written text [10]. It wasn't until the 1990s that technical communication scholars argued that visual rhetoric should be regarded as a particular research area, including both textual and visual semiotic information [10; 11; 12; 13]. Kostelnick and Roberts categorized visual design into four levels: intra, inter, extra, and supra [12]. They further identified three categories of visual elements: textual, spatial, and graphic. Since most of the current research employed Kostelnick and Roberts' categorization of visual elements from a Western perspective, Kostelnick called for a cross-cultural turn in visual rhetoric, which emphasized that visual design should adapt to the local cultural context and focus on the local audience [14]. Since then, there has been a growing stream of cross-cultural visual design analysis.

### 2.2 Cross-cultural Communication

The widely used cross-cultural communication theories include Hofstede's [15] cultural dimensions and Hall's [16] high-context and low-context cultures. Hofstede argued that cultural differences can impact communication and design from five dimensions: uncertainty avoidance, power distance, collectivism/individualism, masculinity/femininity, and long-term orientation [15]. As Hall noted in his book, culture can be classified into high-context and low-context [16]. The low-context cultures assume the audience has very little background knowledge about the topic, which requires the writer to provide explicit and detailed information [17]. On the contrary, cultures with a high-context communication style believe that the audience is already familiar with the context and therefore, does not require extensive background information [18]. Many scholars used these two theories to conduct research on cross-cultural visual design. Incorporating Hofstede's [15] cultural dimensions into usability testing, Reinecke and Bernstein [25] found that culturally adaptive user interfaces can improve the user experience. Based on both Hofstede's [15] and Hall's [16] frameworks, Welhausen [24] discovered that visual messages in Ebola infographics were influenced by culture.

However, these two theories have been critiqued for the stereotypical understanding of value-based or preference-based cultural factors [19, 20]. Therefore, Li et al. [19] called for considering the cognitive cultural factors in cross-cultural communication research. They incorporated Nisbett et al.'s [21] theory on holistic and analytic thinking styles to analyze Western and Chinese user manual structures [19, 20]. Nisbett et al. argued that East Asian people tend to think holistically, which means that they think more about the big picture, while Western people tend to think analytically, which means they prefer to split the whole thing into tiny parts and focus more on each of the tiny parts [21]. Based on Nisbett et al.'s holistic and analytic thinking, Spencer-Rogers et al.'s [22] further proposed dialectical and linear thinking: while dialectical thinking means people have a high tolerance for changes and uncertainty, linear thinking means people expect step-by-step progression. Recently, scholars started to employ Spencer-Rogers et al.'s theory in the field of technical communication. Xie [23] used Spencer-Rogers et al.'s dialectical and linear thinking to analyze the different content reuse strategies adopted by U.S. and Chinese media. However, there was no previous visual rhetorical research adopting the theory of dialectical and linear thinking traditions [22] to examine the posters from a cognitive cultural perspective.

Given that COVID-19 posters are created to inform and educate the public about how to protect themselves, it is important to consider the cognitive cultural factors involved. In addition, there is a need to evaluate the validity of traditional cross-cultural theories, such as Hofstede's [15] and Hall's [16] value-based or preference-based theories, in the new context of medical posters. Since there are no previous studies that have examined medical poster design using three dimensions of cultural factors: value-, preference-, and cognition-based factors, this study addressed this gap by exploring two research questions:

- How do visual design elements in the U.S. and Chinese COVID-19 posters differ?
- What cultural differences are reflected in the visual design of U.S. and Chinese COVID-19 posters?

### 3. APPROACH

#### 3.1 Data Collection

To compare the visual design elements in U.S. and Chinese COVID-19 posters, I collected posters from the official websites of the U.S. CDC and Chinese CDC, respectively. I collected COVID-19 posters from the "Print Resources" section under the "COVID-19" section on the U.S. CDC website. I collected COVID-19 posters from two sub-sections of the "COVID-19" section on the Chinese CDC website: "World of Knowledge (知识天地)" and "Vaccination (疫苗接种)." I carefully examined the topic of every poster. After excluding those duplicated and irrelevant, I finally collected 29 posters from the U.S. CDC website and 35 posters from the Chinese CDC website.

#### 3.2 Coding Scheme

To examine the different visual elements in medical posters from three dimensions of cultural factors, I conducted a content analysis of U.S. and Chinese COVID-19 posters by adopting codes from Li et al.'s [20], Welhausen's [24], and Reinecke and Bernstein's [25] research. Since these coding schemes were developed for exploring different visual rhetorical productions, I modified the names of some codes to adapt them in the context of

medical posters. Li et al. [20] classified the elements in the visuals into three categories: content, visuals, and structure. Considering that content can include both visual and textual content, I followed and modified Li et al.'s [20] classification into textual, visual, and structural elements. Therefore, I ended up with six codes: "instructional elements," "calling for collective action," "authority figures," "chunking of information," "headings and structural markers," and "visual-textual relationship (redundancy)." The theoretical basis and references of each code can be found in Table 1.

**Table 1. Coding Scheme**

Elements	Codes	Theoretical Basis	References
Textual [20]	Instructional elements	Holistic/analytic thinking [21]; high-context/low-context [16]	[20, 24]
	Calling for collective action	Individualism/collectivism [15]	[24]
Visual [20]	Authority figures <sup>1</sup>	Large/small power distance [15]	[25]
Structural [20]	Chunking of information	Holistic/analytic thinking [21]	[20]
	Headings and structural markers	Holistic/analytic thinking [21]; dialectical/linear thinking [22]	[20]
	Visual-text relationship (redundancy)	Holistic/analytic thinking [21]; strong/weak uncertainty avoidance [15]	[20, 24, 25]

#### 3.3 Data Analysis

Using this coding scheme, I conducted a content analysis of 29 US COVID-19 posters and 35 Chinese COVID-19 Posters. After identifying the frequency of each element in the US and Chinese COVID-19 posters, I also calculated the percentage of each code.

### 4. RESULTS

Table 2 indicates that Chinese COVID-19 posters include more textual content "calling for collective action" and "authority figures" than American posters. On the contrary, American COVID-19 posters include more "instructional elements," "chunking of information," "headings," and "structural markers" than Chinese posters. In terms of the visual-text relationship, American posters reveal more redundancy tendency, whereas this relationship in Chinese posters is less redundant.

<sup>1</sup> Authority figures refer to health providers and experts in this study.

**Table 2. Frequencies and Percentages of Codes**

Codes	China	U.S.
Instructional elements	7(20%)	20 (69%)
Calling for collective action	16 (46%)	2 (7%)
Authority figures	20 (57%)	5 (17%)
Chunking of information	9 (26%)	15 (52%)
Headings and structural markers	6 (17%)	20 (69%)
Visual-text relationship (redundancy)	20 (43%)	22 (76%)

### 4.1 Textual Elements

The first category of textual elements is the instructional elements. Since the instructional elements are specific instructions about how to complete a task, it is related to analytic thinking [20]. In addition, the instructional elements also require detailed information about the specific steps which reflect the tendency of low-context cultures [24]. For instance, both a U.S. poster and a Chinese poster depict the situation of “washing your hands frequently.” In the Chinese poster, there were only three Chinese words “washing your hands frequently (勤洗手),” while the US poster describes more specific instructional information about how to wash your hand. In addition, some posters include textual content calling for collective action, which reflects the collectivist culture [24]. For example, in one Chinese poster, the words in the red rectangle mean that all people should get vaccinated to protect everyone in society.

### 4.2 Visual Elements

As for the visual elements, I found that some posters include authority figures, including health providers and experts, which represent the high-power distance in that society. For instance, one Chinese poster includes a portrait of the leading expert of the Chinese CDC during the COVID-19 pandemic, which can enhance the credibility of the information on this poster.

### 4.3 Structural Elements

In terms of the structural elements, the first visual code is the “chunking of information,” which means dividing the poster content into small pieces. This way can help people comprehend the meaning of the poster, which reflects analytic thinking [20]. In a U.S. poster, the task of putting on the mask is split into three specific steps, which makes it easy to understand. Another category of structural elements is headings and structural markers, which can make the structure clearer. It reflects the analytic and linear thinking tradition, which requires a clear structure of the content to enable the readers to expect what they will learn next [21, 22]. Referring to a U.S. poster, the headings of “put on” and “take off” show the clear logical flow of putting on and taking off the masks.

The visual-textual relationship is also taken into consideration, which is coded as the extent of redundancy. The redundant visual-

textual relationship means that people focus on every single part of the poster, so the useful redundancy of the visuals and texts can help people’s comprehension, which can also avoid uncertainty and ambiguity. A U.S. poster uses both textual and visual content to emphasize that everyone should take action to prevent COVID-19, while in a Chinese poster, the figure of the expert is used to show the scenario with the assumption that there’s no need to use the visual and text to show the same meaning.

## 5. DISCUSSION

The results indicate that Chinese COVID-19 posters reveal holistic thinking, dialectical thinking, collectivism, strong power distance, weak uncertainty avoidance, and a high-context cultural tendency. American COVID-19 posters reflect linear thinking, individualism, weak power distance, strong uncertainty avoidance, and a low-context cultural tendency. The findings provide both theoretical and practical implications.

In terms of the theoretical implications, this study extends the cross-cultural visual rhetorical theories to the field the medical poster design by combining three dimensions of cultural factors, the value-, preference-, and cognition-based factors [19, 20] in the visual content analysis. This study also tests the validity of the findings of the traditional cross-cultural theories, Hall’s [16] high-context and low-context cultures and Hofstede’s [15] cultural dimensions in the new field of medical posters. The results indicate that these two theories are still applicable in the context of COVID-19 poster design.

The findings also provide practical implications for technical communicators. They should consider cultural factors when designing medical posters for audiences from different cultural backgrounds. They should be aware that culturally appropriate content can effectively disseminate public health information and promote disease prevention during the global public health crisis.

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