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Audience Perceptions of COVID-19 Metaphors: The Role of Source Domain and Country Context

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ABSTRACT

Metaphors abound in descriptions of the COVID-19 pandemic: it is described, among other things, as a war, a flood, and a marathon. However, not all metaphors may resonate equally well with members of the public. Given that the pandemic has impacted people's lives across countries in divergent ways – both in terms of spread and in terms of government-imposed measures, we investigated whether audience perceptions of metaphors for the COVID-19 pandemic depend on source domain and country context. This mixed-design study examined how individuals across three European countries (Germany, Italy, and The Netherlands) perceived different COVID-19 metaphorical frames. Participants ($N = 216$) were randomly exposed to nine metaphorical frames and one literal-language frame and asked to express their perceptions in terms of liking, aptness, complexity, conventionality, and credibility. Results showed that audience perceptions of metaphorical descriptions of the COVID-19 pandemic differed between source domains and country contexts, but mostly in terms of aptness. These findings suggest that experience with the target domain may indeed be relevant for metaphor perceptions and highlight the importance of studying metaphor appreciation as a multifaceted phenomenon. Findings may also inform metaphor choice by governments, journalists, and other actors to describe this novel situation.

Metaphors abound in political, media, and personal descriptions of COVID-19 across the globe (Olza Moreno et al., 2021). While it is common to use metaphors to describe complex, unfamiliar situations (e.g., Lakoff & Johnson, 1980), such as the emergence of a new disease, not all metaphors may resonate equally well with members of the public. Indeed, various commonly used metaphorical frames for describing the COVID-19 pandemic have elicited resistance, including the tsunami frame (the virus does not spread like a tsunami but through a series of leakages in subterranean rivers and streams; Hulscher, 2020) and the perfect-storm frame (we may not have full control over the spread of the virus, but we are also not completely at the mercy of nature; Brandt & Botelho, 2020).

Empirical work investigating the use of metaphors for COVID-19 has focused on descriptions of the pandemic in news media (e.g., Jaworska, 2020) and on Twitter (Wicke & Bolognesi, 2020). In addition, researchers have published essays and editorials on the impact of metaphors for the pandemic from a more critical or philosophical perspective (e.g., Brandt & Botelho, 2020; Craig, 2020; Oswick, Grant, & Oswick, 2020). To date, however, research on audience perceptions of COVID-19 metaphors is still scarce (but see for example Schnepf & Christmann, 2020). This is

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remarkable, because people's reactions to metaphorical frames, in the form of appreciation or resistance, can be considered an indication of their beliefs and attitudes toward the frames and topic that are being discussed (e.g., Brugman, Burgers, & Vis, 2019).

Because metaphors have been shown to impact attitudes and, indirectly, behavioral intentions toward health-related issues such as sun protection (Landau, Arndt, & Cameron, 2018), mosquito bite prevention (Lu & Schuldt, 2018), and flu vaccinations (Scherer, Scherer, & Fagerlin, 2015), it is crucial to also investigate how people react to different COVID-19 metaphors. In this paper, we therefore examined audience perceptions of a series of COVID-19 metaphorical frames. Given that the pandemic has affected people's daily lives in divergent ways in different countries, we also examined to what extent different framings of the pandemic elicit different responses from people from different country contexts.

Theoretical framework

When new infectious diseases emerge, metaphors are often used to describe how such diseases may affect people's everyday lives (e.g., Larson, Nerlich, & Wallis, 2005). Several studies have examined the use and functions of metaphors that explain novel diseases such as the Severe Acute Respiratory Syndrome (SARS-CoV1; e.g., Wallis & Nerlich, 2005), avian influenza (H5N1; e.g., Kotevko, Brown, & Crawford, 2008) the swine flu pandemic (H1N1, e.g., Mundwiler, 2013), Ebola (e.g., Balteiro, 2017), and Zika (e.g., Ribeiro, Hartley, Nerlich, & Jaspal, 2018). Metaphors are particularly useful for communicating about novel diseases because they allow for the description of a complex target domain in terms of a source domain that is easier to understand (e.g., Lakoff & Johnson, 1980). As such, metaphors also work as a framing tool: each mapping between a particular target and source domain can emphasize a specific problem definition, cause, evaluation and solution for the same situation (e.g., Burgers, Konijn, & Steen, 2016).

Previous research has shown that the use of metaphorical frames may impact public perceptions of health-related issues. For instance, participants displayed a higher degree of perceived susceptibility to Zika virus (Lu & Schuldt, 2018), and a higher willingness to vaccinate against the flu (Scherer et al., 2015) when an illness was described metaphorically (versus non-metaphorically). In addition, a number of studies found differential effects for different metaphorical frames. People who were exposed to a text that framed cancer as an enemy were more likely to limit high-risk behaviors associated with cancer, such as excessive alcohol consumption or frequently eating red meat, than people who were exposed to a text describing cancer as an imbalance (Hauser & Schwarz, 2015). When cancer was framed as a battle versus a journey, participants thought cancer patients would feel more guilty and could make less peace with the situation (Hendricks, Demjén, Semino, & Boroditsky, 2018). In a similar way, participants also perceived cancer treatment to be more difficult and displayed higher degrees of fatalism in war-versus journey-framed texts about cancer (Hauser & Schwarz, 2020).

Although metaphorical frames have the potential to influence outcomes such as perceived susceptibility and intentions to perform health-related behaviors, much less research has been conducted into perceptions of the metaphorical frames themselves (Littlemore, Sobrino, Houghton, Shi, & Winter, 2018). A number of rating studies investigating "metaphor goodness" tapped different forms of metaphor appreciation such as aptness, familiarity, and comprehensibility (e.g., Katz, Paivio, Marschark, & Clark, 1988; Littlemore et al., 2018). Another strand of research used appreciation-related constructs such as aptness and familiarity as independent variables to study outcome variables such as metaphor processing (e.g., Blasko & Connine, 1993) and comprehension (Jones & Estes, 2006). However, these studies did not investigate whether metaphor appreciation differs between different source domains for the same target domain.

Studying public perceptions of different metaphors for the same target domain is important, because analyses of natural language use suggest that certain source-domain frames to describe a target-domain situation may resonate better with audiences than others (e.g., Hauser & Schwarz, 2020). While some metaphorical frames may be evaluated positively and may have a positive impact

on attitudes and, indirectly, behavioral intentions, other frames may lead to resistance to the message (Gollust & Cappella, 2014). This is particularly relevant in times of a health crisis, such as the COVID-19 pandemic that currently affects people's lives across the globe in severe ways, because communication plays a key role in establishing public understandings of the situation, promoting support for government measures to confine the spread of the virus, and encouraging the adoption of preventative health behaviors such as social distancing (e.g., Sabat et al., 2020).

The most prominent case of resistance in both public and academic debates to COVID-19 metaphors involves the use of war-related metaphors such as “frontline,” “soldiers,” and “battle” (e.g., Bates, 2020; Sabucedo, Alzate, & Hur, 2020; Semino, 2021; Serhan, 2020). An important reason seems to be that the metaphorical frame associates survival with “fighting,” which may give the impression that any authoritarian measures adopted by governments are legitimate and that those who die from the virus were not fighting hard enough (Semino, 2021). Such source-domain associations could similarly affect audience perceptions of other COVID-19 metaphors.

Given that previous research has found effects for different metaphorical frames for health-related issues, but did not examine how metaphorical frames are potentially received differently by participants, we asked:

RQ1: In which ways do metaphorical frames describing the COVID-19 pandemic differ in terms of a) liking; b) aptness; c) complexity; d) conventionality; and e) credibility?

A second aim of this paper is concerned with the potential influence of country context on metaphor perceptions. Previous research has shown that people who speak different languages or have different cultural backgrounds sometimes use different metaphors to talk about the same target domain, but also interpret the same metaphors differently (e.g., Kövecses, 2005; Littlemore et al., 2018; Pérez-Sobrino, Littlemore, & Houghton, 2019). According to previous research, differences in metaphor interpretations could exist because people have differential knowledge of, or experience with, the target domain (e.g., Thibodeau, Hendricks, & Boroditsky, 2017). For instance, framing the outbreak of SARS – a coronavirus related to COVID-19 – metaphorically as war perhaps made more sense in countries in which the impact was severe (e.g., China and Taiwan; Chiang & Duann, 2007) than in countries with limited impact (e.g., UK; Wallis & Nerlich, 2005). This suggests that when people have different experiences with a target domain, they may understand and even appreciate the cross-domain mapping differently (Thibodeau et al., 2017).

The COVID-19 pandemic has affected different countries in different ways. In this paper, we specifically focus our attention on the countries of origin of the authors: Germany, Italy, and The Netherlands. Although these countries are geographically close, the course of the COVID-19 outbreak in spring 2020 differed between them, both in terms of number of cases and deaths (European Centre for Disease Prevention and Control, n.d.), as well as in terms of government-imposed measures such as severity and duration of lockdowns and other restrictions (European Centre for Disease Prevention and Control, n.d.). These differences suggest that people in the three countries under examination may have had different experiences regarding the pandemic. Because it is not entirely clear if and to what extent this could also mean that their perceptions of different metaphors for the pandemic may also differ, we posed the following second research question:

RQ2: Does country context influence perceptions of metaphorical frames of the COVID-19 pandemic, and if so, does this differ between different frames?

Method

To answer our research questions, we conducted an online experiment. Data, analysis script, output, and the online appendices we refer to in this paper are available at the Open Science Framework (OSF): <https://osf.io/9k6qt/>.

Participants and design

Native German ($n = 48$), Italian ($n = 89$), and Dutch ($n = 79$) speaking adults¹ were recruited in June and July, 2020, via the (social media) networks of the authors. Individuals who were non-native speakers, below eighteen years old, and/or did not provide informed consent were excluded from participation in the study. Of the 255 participants who started the survey, 39 were excluded because they did not complete the survey ($n = 13$) or were not residents of the countries of interest ($n = 26$). Our final sample therefore consisted of 216 participants (59.7% women; 18–81 years, $M_{\text{age}} = 41.37$, $SD_{\text{age}} = 17.21$; 74.1% Bachelor/Master degree). A €15 gift voucher was raffled per country sample as an incentive to participate in the survey.

The survey was developed in three languages (German, Italian, Dutch) and employed a 3 (country context: Germany vs. Italy vs. The Netherlands) x 10 (nine metaphorical and one literal description of the COVID-19 pandemic) mixed design with country context as a between-subjects factor and metaphorical frame as a within-subjects factor.

Materials

Each description first introduced a frame-specific perspective on the pandemic, followed by a more detailed explanation of the problem and a possible solution (e.g., *Life in times of the corona crisis is like being threatened by a flood. We are almost drowning in the water. We need to raise the dykes*).² The metaphorical frames captured participants' potentially differential perceptions of their own involvement in the pandemic by describing the pandemic in three ways: (1) other dangerous events in which people die (a war, a flood, and a beast), (2) situations in which people actively participate (sailing a ship, running a marathon, and learning a new dance), and (3) activities that people have little or no influence on (riding a roller coaster, watching a horror movie, and sitting on a derailed train).

The metaphorical frames were presented in random order. The literal frame described the pandemic in non-metaphorical terms (as a difficult situation), and was always presented last to avoid that participants would be primed to compare each subsequent metaphorical frame to the literal one. Source domains were chosen based on well-known media descriptions of the pandemic as well as the #ReframeCovid database (*ReframeCovid, n.d.*). Online Appendix A contains an overview of all frames in all languages.

Procedure

Data were collected through Qualtrics in compliance with European data protection regulations (2016/679) and with the guidelines provided by the Research Ethics Review Committee of the Faculty of Social Sciences, Vrije Universiteit Amsterdam. After a general opening page, participants provided informed consent to take part in the study voluntarily. They were informed that their data would be kept strictly anonymous and confidential, and that the anonymized research data would be made accessible to other scientists. The survey started with a series of demographic questions (native language, age, gender, level of education, and country of residence). Next, we asked participants about

¹We also collected data from native English speaking participants. These data are not reported in the paper because these participants lived in too many different countries, which would have influenced our results.

²In line with the operationalization of metaphor as "indirectness by similarity" (Steen et al., 2010, p. 13), we consider directly expressed cross-domain mappings such as similes in the form of "A is like B" as metaphors.

their average news consumption and personal experience with the COVID-19 pandemic.³ Participants subsequently rated the nine metaphorical frames and one literal frame in terms of liking, aptness, complexity, conventionality, and credibility.⁴ Finally, participants were debriefed and thanked for their participation.

Measures

After exposure to each frame, participants were asked to provide their personal opinion about it. First, participants indicated their frame liking by answering the question “What is your general impression of this description?” on a 7-point semantic differential scale ranging from “positive – negative” (based on Van Mulken, le Pair, & Forceville, 2010; $M = 3.53$, $SD = 1.98$). Next, aptness, complexity, conventionality, and credibility were measured in random order using a 7-point semantic differential scale with items completing the sentence “I find this way of describing the corona crisis” We measured frame aptness by means of two items: (a) “inappropriate – appropriate” and (b) “inapt – apt” (Chiappe, Kennedy, & Smykowski, 2003; $M = 3.63$, $SD = 1.86$, Cronbach’s alpha = .94). Based on McQuarrie and Mick (1999), frame complexity was measured using two items: (a) “easy to understand – difficult to understand,” (b) “straightforward – confusing” ($M = 3.35$, $SD = 1.15$, Cronbach’s alpha = .73). Following Pierce and Chiappe (2008), frame conventionality was measured using the polar adjectives “uncommon” and “common” ($M = 3.65$, $SD = 1.94$). Finally, frame credibility was measured using three items from Nabi, Moyer-Gusé, and Byrne (2007): (a) “unbelievable – believable,” (b) “invalid – valid,” and (c) “unconvincing – convincing” ($M = 3.88$, $SD = 0.95$, Cronbach’s alpha = .81). See online Appendix C for the entire survey text.

Data analysis

Data were analyzed using R (version 4.0.2). The R package lme4 (version 1.1–23; Bates, Mächler, Bolker, & Walker, 2015) was used to fit various linear mixed effects models to each dependent variable. Country context and frame were included as fixed independent variables, and age, education and newspaper consumption as fixed control variables,⁵ and a random intercept was included for participants. Full models are reported even when individual predictor or control variables did not contribute significantly to the model fit over a null model. Since we compared many different frames, the full models allowed us to accurately reflect individual differences between the frames even when there was no reliable main effect of frame on a rating.

Results

The reference level in our multilevel analyses represents the grand mean of all the levels. The grand mean reflects the average of all group averages across the factors that are included in the model, which makes it robust against differences in group size (see online Appendix D for a more detailed explanation of the statistical approach). The individual estimates indicate how much each specific factor level differs from that overall average. Full multilevel models are reported in online Appendix E. Means and standard deviations are displayed in Table 1. Online Appendix F presents the correlations between variables.

³See online Appendix B for the operationalization of these control variables.

⁴We also measured participants’ interpretation of the frames by means of an open-ended question. The results hereof are not reported here due to space constraints.

⁵Control analyses (see online Appendix B) revealed that there were differences between the samples in terms of age, education, and newspaper consumption, which is why we controlled for these variables in the analysis. No differences were found between the samples in terms of personal experience with the pandemic.



Table 1. Raw means for the frame perceptions for the total sample and per country sample.

Sample Frame	Liking				Aptness				Complexity			
	Total	German	Italian	Dutch	Total	German	Italian	Dutch	Total	German	Italian	Dutch
Beast	3.42 (1.94)	3.88 (1.96)	3.33 (2.03)	3.24 (1.81)	2.51 (1.46)	1.81 (1.14)	2.61 (1.55)	2.81 (1.40)	3.45 (1.13)	3.49 (1.16)	3.60 (1.09)	3.27 (1.14)
Dance	3.46 (1.97)	3.58 (1.94)	3.47 (2.11)	3.38 (1.83)	4.73 (1.60)	4.86 (1.46)	4.66 (1.75)	4.73 (1.52)	3.21 (1.12)	3.42 (1.07)	3.33 (1.25)	2.96 (0.93)
Flood	3.66 (2.08)	3.79 (1.98)	3.85 (2.10)	3.35 (2.12)	3.03 (1.55)	2.66 (1.30)	3.39 (1.71)	2.87 (1.42)	3.33 (1.18)	3.18 (1.20)	3.57 (1.24)	3.16 (1.05)
Horror movie	3.50 (1.97)	3.94 (2.01)	3.40 (1.95)	3.35 (1.96)	2.82 (1.48)	2.78 (1.44)	2.62 (1.43)	3.06 (1.53)	3.34 (1.06)	3.33 (0.94)	3.55 (1.08)	3.12 (1.09)
Marathon	3.75 (2.07)	3.81 (2.01)	3.88 (2.19)	3.56 (1.97)	3.27 (1.55)	3.89 (1.55)	3.10 (1.69)	3.10 (1.30)	3.37 (1.21)	3.20 (1.07)	3.65 (1.30)	3.16 (1.12)
Roller coaster	3.62 (1.99)	3.75 (2.12)	3.74 (2.05)	3.41 (1.84)	2.97 (1.59)	3.08 (1.47)	2.72 (1.67)	3.18 (1.56)	3.39 (1.17)	3.64 (1.03)	3.53 (1.27)	3.09 (1.08)
Ship	3.31 (1.88)	3.25 (1.64)	3.47 (2.03)	3.15 (1.84)	5.05 (1.49)	5.21 (1.36)	4.89 (1.66)	5.14 (1.35)	3.30 (1.09)	3.33 (0.93)	3.43 (1.13)	3.14 (1.13)
Train	3.50 (2.02)	3.29 (1.89)	3.60 (2.07)	3.51 (2.06)	2.97 (1.64)	2.51 (1.53)	3.24 (1.76)	2.96 (1.52)	3.36 (1.28)	3.36 (0.99)	3.71 (1.43)	2.95 (1.13)
War	3.50 (1.92)	3.85 (1.95)	3.31 (1.90)	3.48 (1.93)	3.37 (1.89)	2.84 (1.77)	3.57 (1.98)	3.47 (1.82)	3.36 (1.17)	3.27 (0.98)	3.50 (1.26)	3.25 (1.17)
Literal	3.56 (1.92)	3.58 (1.91)	3.80 (1.94)	3.29 (1.88)	5.53 (1.34)	5.64 (1.17)	5.87 (1.33)	5.08 (1.35)	3.33 (1.05)	3.10 (1.01)	3.63 (1.05)	3.14 (1.01)
Sample Frame	Conventionality				Credibility				Dutch			
	Total	German	Italian	Dutch	Total	German	Italian	Dutch	Total	German	Italian	Dutch
Beast	3.73 (1.91)	3.83 (2.00)	4.17 (1.93)	3.16 (1.70)	3.88 (0.92)	3.94 (1.25)	3.93 (0.84)	3.80 (0.77)	3.88 (0.92)	3.94 (1.25)	3.93 (0.84)	3.80 (0.77)
Dance	3.65 (1.88)	3.60 (1.71)	4.16 (2.02)	3.10 (1.66)	3.77 (0.93)	3.85 (0.59)	3.83 (1.13)	3.65 (0.86)	3.77 (0.93)	3.85 (0.59)	3.83 (1.13)	3.65 (0.86)
Flood	3.63 (2.05)	3.19 (1.97)	4.21 (2.15)	3.23 (1.85)	3.89 (0.97)	3.69 (0.99)	4.04 (1.03)	3.83 (0.87)	3.89 (0.97)	3.69 (0.99)	4.04 (1.03)	3.83 (0.87)
Horror movie	3.74 (1.90)	3.75 (1.99)	4.17 (1.93)	3.25 (1.71)	3.87 (0.94)	3.65 (0.81)	3.97 (1.09)	3.89 (0.82)	3.87 (0.94)	3.65 (0.81)	3.97 (1.09)	3.89 (0.82)
Marathon	3.57 (1.98)	3.29 (2.03)	4.17 (2.08)	3.08 (1.66)	3.91 (0.91)	3.74 (0.87)	4.07 (1.03)	3.84 (0.75)	3.91 (0.91)	3.74 (0.87)	4.07 (1.03)	3.84 (0.75)
Roller coaster	3.73 (2.00)	3.77 (2.05)	4.16 (2.12)	3.23 (1.72)	3.91 (0.99)	3.77 (0.99)	4.13 (1.06)	3.74 (0.85)	3.91 (0.99)	3.77 (0.99)	4.13 (1.06)	3.74 (0.85)
Ship	3.64 (1.84)	3.79 (1.57)	4.04 (1.99)	3.09 (1.70)	3.92 (0.93)	3.85 (0.72)	4.08 (1.06)	3.78 (0.87)	3.92 (0.93)	3.85 (0.72)	4.08 (1.06)	3.78 (0.87)
Train	3.55 (2.02)	3.77 (1.78)	4.19 (2.19)	2.68 (1.64)	3.94 (1.03)	3.69 (0.87)	4.01 (1.18)	4.00 (0.92)	3.94 (1.03)	3.69 (0.87)	4.01 (1.18)	4.00 (0.92)
War	3.61 (1.97)	3.69 (1.91)	4.11 (2.09)	2.99 (1.68)	3.93 (0.91)	3.87 (0.96)	4.00 (0.97)	3.89 (0.81)	3.93 (0.91)	3.87 (0.96)	4.00 (0.97)	3.89 (0.81)
Literal	3.63 (1.90)	3.31 (1.75)	4.30 (1.97)	3.08 (1.70)	3.83 (0.93)	3.74 (0.94)	3.98 (0.94)	3.70 (0.90)	3.83 (0.93)	3.74 (0.94)	3.98 (0.94)	3.70 (0.90)

Standard deviations are in parentheses.

Frame liking

Results showed that including type of frame, country context, and the interaction term between these two factors did not significantly contribute to the model fit (type of frame: $F(9,1851) = 1.14, p = .333$; country context: $F(2,197) < 1$; interaction: $F(18,1851) < 1$). However, when looking at individual differences between the frames, the results indicate that the ship frame was liked significantly less than the overall average (see Table 1). In addition, we found a significant interaction between type of frame and country context in that Italian participants liked the war frame less than the overall average.

Frame aptness

Regarding frame aptness, including type of frame significantly contributed to the model fit ($F(9,1851) = 115.15, p < .001$). We found significant differences between all the frames in terms of their aptness ratings (see Table 1). Specifically, the ship and dance frames, as well as the literal frame, were rated as significantly more apt than the overall average. By contrast, all remaining metaphorical frames were rated as significantly less apt than the overall average.

Including country context did not significantly contribute to the model fit ($F(2,197) < 1$), but including the interaction term between country context and type of frame did ($F(18,1851) = 4.25, p < .001$). Results showed that Dutch participants rated the beast frame as more apt than the overall average, while they rated the marathon frame and the literal frame as less apt than the overall average (see Table 1). Italian participants rated the marathon roller coaster, horror movie, and ship frames as less apt than the overall average, while they rated the literal frame, as well as the flood and train frames as more apt than the overall average. German participants rated the beast, war and train frames as less apt than the overall average, while they rated the marathon frame as more apt than the overall average.

Frame complexity

Regarding frame complexity, including type of frame did not significantly contribute to the model fit (type of frame: $F(9,1851) < 1$). Country context, on the other hand, significantly contributed to the model fit ($F(2,197) = 5.15, p < .01$). Dutch participants rated all the frames as significantly less complex than the overall average (see Table 1), while Italian participants rated all frames as significantly more complex than the overall average. Including the interaction term between country context and type of frame did not significantly contribute to the model fit ($F(18,1851) = 1.23, p = .228$), but when looking at individual differences between the frames, we found two significant interaction effects. Dutch participants rated the train frame as slightly less complex than the overall average and German participants found the roller coaster frame slightly more complex than the overall average.

Frame conventionality

In terms of frame conventionality, our results showed that type of frame also did not significantly contribute to the model fit ($F(9,1851) < 1$). Country context did, however, significantly contribute to the model fit ($F(2,197) = 9.52, p < .001$). Results showed that Dutch participants rated all frames as significantly less conventional than the overall average (see Table 1), while Italian participants rated the frames as significantly more conventional than the overall average. Including the interaction term between country context and type of frame did not significantly contribute to the model fit ($F(18,1851) < 1$), but when looking at individual differences between the frames, we found two significant interaction effects. Dutch participants rated the train frame as less conventional than the overall average, and German participants rated the flood frame as less conventional than the overall average.

Frame credibility

Finally, in terms of frame credibility, including type of frame, country context, and the interaction term between these two factors did not significantly contribute to the model fit (type of frame: $F(9,1851) < 1$; country context: $F(2,197) = 1.22, p = .297$; interaction: $F(18,1851) = 1.06, p = .393$). However, we found two significant interactions between type of frame and country context (see [Table 1](#)). Dutch participants considered the horror movie frame more credible than the overall average and German participants rated the dance frame as more credible than the overall average.

General discussion

Conclusion

The objective of this study was twofold: (1) to examine whether and how perceptions of metaphorical descriptions of the COVID-19 pandemic would differ between source domains, and (2) whether country context would moderate the potential effect of source domain on metaphor perceptions. Based on previous research showing differential effects of different metaphors (e.g., Hauser & Schwarz, 2015, 2020; Hendricks et al., 2018), we asked whether different metaphorical frames would be perceived differently. Findings showed that this was indeed the case for two out of the five perception variables in our study. First, irrespective of country context, the ship frame was the only metaphorical frame liked less than the overall average. No differences in frame liking were found for the other frames. Second, all frames except the ship frame, the dance frame, and the literal frame scored lower in terms of aptness than the overall average. No differences were found between the frames for frame complexity, conventionality, or credibility. [Table 2](#) summarizes the findings.

Inspired by previous research suggesting that experience with the target domain of a metaphor may impact metaphor perceptions (Thibodeau et al., 2017), we also investigated whether participants from different countries would appreciate various metaphorical frames differently. We indeed found country-specific differences for aptness of all frames except for the dance frame. We also found a limited number of country-specific differences for frame liking, complexity, conventionality, and credibility of the metaphorical frames. See [Table 3](#) for a summary of findings.

Discussion

Our findings provide evidence for the idea that different metaphors for the COVID-19 pandemic are perceived differently in general, as well as by people from different country contexts. These findings may be taken to suggest that, although metaphors can be a useful cognitive and linguistic tool to talk about unfamiliar and complex situations, the choice of source domain can influence whether metaphors are taken up successfully by different audiences, since each source domain highlights different aspects of a topic. As such, there is a risk in using metaphors. Previous research has shown that metaphors can influence citizens' attitudes toward public policies (Brugman et al., 2019). Consequently, when politicians, policy-makers, and journalists use metaphor to describe and explain an issue, they may first need to ensure that the target audience considers the proposed metaphorical frame apt for describing the target domain, or otherwise resistance to it may impede communicative goals.

The attested diverging perception scores do not imply, however, that metaphor is best avoided. Our study showed that the literal description of the COVID-19 pandemic was rated as more apt than average, but not liked more, not considered easier to understand, not found to be more conventional, nor considered more credible than the overall average. Appreciation of the non-metaphorical frame is thus not necessarily more positive. At the same time, metaphorical frames carry more conceptual content in the cross-domain mapping than literal frames can (Lakoff & Johnson, 1980). Therefore, an advantage of using metaphorical frames over describing issues such as the COVID-19 pandemic literally is that they can help change people's perspectives of these issues (Brugman et al., 2019).

Table 2. Summary of overall differences in audience perceptions per frame.

Frame	Liking	Aptness	Complexity	Conventionality	Credibility
Beast	.	-	.	.	.
Dance	.	+	.	.	.
Flood	.	-	.	.	.
Horror movie	.	-	.	.	.
Marathon	.	-	.	.	.
Roller coaster	.	-	.	.	.
Ship	-	+	.	.	.
Train	.	-	.	.	.
War	.	-	.	.	.
Literal	.	+	.	.	.

A plus (+) means a higher score than the overall average of all ten frames, the minus (-) indicates a lower score than the overall average, and the dot (.) refers to no significant difference.

Table 3. Summary of country-specific differences in audience perceptions per frame.

Country Frame	Liking			Aptness			Complexity			Conventionality			Credibility		
	G	I	D	G	I	D	G	I	D	G	I	D	G	I	D
Beast	.	.	.	-	.	+
Dance	+	.	.
Flood	+	-
Horror movie	-	+
Marathon	.	.	.	+	-	-
Roller coaster	-	.	+
Ship	-
Train	.	.	.	-	+	.	.	.	-	.	.	-	.	.	.
War	.	-	.	-
Literal	+	-

A plus (+) means a higher score than the overall average of all ten frames, the minus (-) indicates a lower score than the overall average, and the dot (.) refers to no significant difference; G = German sample; I = Italian sample; D = Dutch sample.

Another important finding of this study is thus that we observed unsystematic differences in perceptions between the metaphorical frames. More specifically, higher or lower scores for aptness of a specific frame were not associated with higher or lower scores for liking and credibility. The ship frame, for instance, was disliked more than average, while at the same time it was also one of the frames that was considered more apt than average. Also, the war frame was perceived as less apt than average, but it did not elicit different liking, complexity, conventionality or credibility ratings than other metaphorical frames. In contrast to previous research (e.g., Jones & Estes, 2006; Littlemore et al., 2018), our results highlight how metaphor appreciation may be a multifaceted phenomenon. To further improve our understanding of how metaphor perceptions may play a role in the potential communicative effects of using metaphorical frames, we recommend that future studies focus on more than one dimension of metaphor appreciation.

Most metaphorical frames in our study were perceived as less apt than average. A closer examination of potential associations with these source domains may help explain these results. For instance, participants may have felt that the war, flood and beast frames, which emphasized the deadliness of the pandemic, implied too much fear and despair (cf. Hulscher, 2020). Furthermore, the horror movie, roller coaster, and train frames could have painted a too passive picture of the pandemic for our participants, who may not have appreciated the idea of having to wait until it is over (cf. Brandt & Botelho, 2020). Finally, the marathon frame may instead have painted a too *active* picture of people’s experience with the pandemic, since people without essential jobs were “stuck” at home as a result of government-imposed lockdown measures.

Compared to the other frames, the dance and ship frames stood out as being rated particularly apt, similar to the literal frame. A possible reason could be that these frames had in common that they emphasized that people had to learn something new, which could have resonated well with our

participants who were, at the time of data collection, still adjusting to the ever-changing COVID-19 situation (cf. Oswick et al., 2020). While more research is needed to confirm whether our proposed explanations for the aptness results are correct, our results seem to illustrate the importance of people's source-domain associations for metaphor reception (see also Pérez Sobrino et al., 2022 - this volume).

Many country-specific differences also require more investigation. For instance, the war frame was overall perceived as less apt than average, which is in line with the amount of criticism it has received in public and academic debates (e.g., Semino, 2021; Serhan, 2020). However, when taking country context into account, we found that only our German participants considered the frame less apt than average and that this pattern was not present in our Italian and Dutch samples.

While this paper used differential experience with the target domain as a rationale for comparing metaphor perceptions between countries, various researchers have suggested that differential experience with the source domain may also be an important factor in two ways. First, metaphor perceptions may differ due to cultural reasons, such as that resistance against the war metaphor among our German participants may be the result of historical events (e.g., Jaworska, 2020; Paulus, 2020). Second, metaphor perceptions may differ given differences in their prevalence in the news and in political discourse, where mere exposure leads to more positive perceptions (cf. Zajonc, 1968). The opposite may be true when certain frames receive little media attention, or are perhaps even avoided, which also seems to be true for the war frame in Germany (Jaworska, 2020). To improve our understanding of frame appreciation dynamics, future research could examine the relative influence of both types of source domain-related experiences on metaphor perceptions.

A first potential limitation of this study to consider is that the metaphorical frames that participants were exposed to only framed the COVID-19 pandemic in terms of a general description of the situation, problem, and possible solution per frame. Instead of using different source domains, we could have also provided a number of versions of the same frame that for instance differed in terms of valence (e.g., fighting an enemy vs. winning a war) or metaphor-driven implications (e.g., bolster our defenses vs. go on the offensive). Such differences in wordings could impact metaphor perceptions by emphasizing different aspects of the cross-domain mapping, which is why in future metaphor research more attention could be paid to the potential impact of wording on metaphor perceptions.

Secondly, from a methodological perspective, the use of a within-subjects design could have caused range effects (Poulton, 1973). Because multiple messages on the same topic allow for contextual comparison between the messages, participants' judgments may have been influenced by the order in which they were exposed to the descriptions (cf. Poulton, 1973). Even though we randomized the order of descriptions to prevent range effects, it is impossible in within-subjects designs to eliminate range effects altogether.

Finally, data were only collected in three European countries. Given that people in countries around the world have different experiences of the pandemic, it is uncertain to what extent results are generalizable to other European and non-European country contexts. Future research could extend this study to other parts of the world.

In sum, we have shown in this study that audience perceptions of metaphorical descriptions of the COVID-19 pandemic differ between source domains and country contexts. In doing so, this study answered calls to more closely investigate the conditions under which audiences perceive metaphors as well-chosen to explain unfamiliar, complex, and/or abstract issues (e.g., Littlemore et al., 2018; Thibodeau, Matlock, & Flusberg, 2019). Findings also have practical implications for communication about the pandemic to members of the public across countries. Governments and journalists are especially advised to think about whether the COVID-19 metaphors they use resonate with people's experience.

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Data availability statement

The data that support the findings of this study have been made openly available at the Open Science Framework (OSF): <https://osf.io/9k6qt/>.

Contribution statement

BB conceived the idea for the study. All authors were involved in extensive discussions about the theoretical embedding and design of the study. All authors were involved in data collection. SL analyzed the results. BB, ED and GR wrote the draft of the manuscript. All authors provided feedback on subsequent manuscript versions.

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