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"It's a war! It's a battle! It's a fight!": Do militaristic metaphors increase people's threat perceptions and support for COVID-19 policies?

Julia Schnepf[1] and Ursula Christmann[2]

[1]Department of Social, Economic, & Environmental Psychology, University of Koblenz-Landau, Landau, Germany
[2]Department of General Psychology, Heidelberg University, Heidelberg, Germany

At the beginning of the COVID-19 pandemic, governments around the world employed militaristic metaphors to draw attention to the dangers of the virus. But, do militaristic metaphors truly affect individuals' perceived threat of the COVID-19 virus and increase their support for corresponding restrictive policies? This study assessed the effects of fictitious newspaper articles that described COVID-19 policies using similarly negatively valenced metaphors but with differing militaristic connotations (e.g., "war" vs. "struggle"). Overall, data from three framing experiments ($N = 1114$) in Germany and the United States indicate limited evidence on the effectiveness of the tested militaristic metaphors. In the U.S. context, the non-militaristic concept of struggle was consistently more strongly associated with the desired outcomes than militaristic metaphors were. In Studies 2 and 3, we also tested whether reporting using a narrative or straightforward facts had additional influence on the framing effect. A congruency effect of the use of a narrative and of warfare metaphors was found in the German sample, but not in that of the United States. Results of post-experimental norming studies ($N = 437$) in both countries revealed that the metaphor of war is associated with people ascribing greater responsibility to their governments, whereas the concept of struggle triggers a sense of individual responsibility. These results are discussed in terms of the usefulness and appropriateness of militaristic metaphors in the context of a pandemic.

Keywords: COVID-19; Metaphor framing; Health communication; Policy support.

Warfare metaphors are abundantly used in public communication and in the media to characterise social crises and challenging circumstances (Flusberg et al., 2018). The goal of this is consistently to illustrate the urgency and seriousness of a situation and to make people aware of the need for special control measures. For example, former U.S. Presidents Lyndon B. Johnson, Richard Nixon and George W. Bush referred to the key challenges they faced while in office as the "war on poverty," the "war on drugs" and the "war on terrorism," respectively. At the onset of the COVID-19 pandemic in March 2020, warfare metaphors were used by governments around the world to make citizens aware of the high risks of the virus. French President Emmanuel Macron was the first to make the bold declaration, "*nous sommes en guerre*," or, in English, "we are at war"). This imagery was then eagerly imbibed by other world leaders, including Italian President Giuseppe Conte, British Prime Minister Boris Johnson and even former U.S. President Donald Trump (Heffernan, 2020; see also Wicke & Bolognesi, 2020 for a Twitter analysis). The aim of this rhetoric was always the same: increase civil support for strict COVID-19 policies and encourage preventive behaviours. But, does the use of militaristic language really achieve the desired results of those who use it? Or would non-militaristic language achieve the same results?

To test the effects of militaristic metaphors on people's perceived threat of the COVID-19 virus and support for

Correspondence should be addressed to Julia Schnepf, Department of Social, Economic, and Environmental Psychology, University of Koblenz-Landau, Fortstraße 7, 76829 Landau, Germany. (E-mail: schnepf@uni-landau.de)

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corresponding policies, three framing experiments were conducted in Germany and the United States. In our studies, a higher effectiveness of warfare metaphors compared to that of non-militaristic metaphors was not identified. The results of post-experimental metaphor norming studies indicate that using militaristic metaphors when talking about the pandemic risks the negative side effect of shifting responsibility from the individual to the governmental level. Even though our research is only one piece of the puzzle that has become a rapidly growing body of studies on various concepts and metaphors used to frame the COVID-19 pandemic (see, e.g., Semino, 2021 for an overview), our reported studies are among the first empirical tests on these metaphors and should be seen as an attempt to expound the possibilities and limitations specifically of warfare metaphors for framing the COVID-19 pandemic. Given that the COVID-19 situation has changed significantly over the last one and a half years, our studies, which were conducted at the very beginning of the pandemic, represent only a small sample of possible methods for framing the pandemic to evoke particular attitudinal and behavioural responses.

WARFARE METAPHORS, REASONING AND BEHAVIOUR

Warfare metaphors pervade how we talk about social crises and disasters, from Hurricane Katrina to COVID-19 (see Flusberg et al., 2018 for an overview; Heffernan, 2020; Tierney et al., 2006). Even health issues are consistently reported using martial language (Nie et al., 2016). People also often use figurative language when they want to illustrate abstract problems in a comprehensive way. In general, metaphors can help to make a problem more understandable (Arroliga et al., 2002; Casarett et al., 2010), draw attention to a subject or problem (Nagels et al., 2013) and increase the willingness to behave in a metaphor-consistent way (Flusberg et al., 2017; Hauser & Schwarz, 2015). According to Lakoff and Johnson's (1980) metaphor conceptualisation theory, the concept of war is often used as a structural metaphor that helps to (re-)frame the characteristic of a completely different concept (e.g., "Argument is war," p. 203). In a similar vein, Robins and Mayer (2000, but see also Verbrugge & McCarrell, 1977) explain metaphor use as the transfer of features, attributes or structures from a source domain (e.g., war) to a target domain (e.g., pandemic). With this, the target domain is enriched with specific associations, evaluative and emotional connotations and behavioural implications. In the current example, knowledge of and familiarity with the concept of the source domain, warfare, is being used to foster a better understanding of the target domain, the pandemic. This metaphor is being used as an emphasis frame (Keren, 2011), meaning it guides our interpretation of the world by augmenting certain aspects and suppressing others (Entman, 1993, p. 52). The phrase "dealing with the pandemic is a war" enhances very different attributes of the situation than, for instance, "dealing with the pandemic is a struggle." Using the context of war makes the threat of the virus salient, makes it clear that the pandemic is a matter of life and death, that there may be allies and enemies and that weapons such as a vaccine can be developed to fight the virus (Vilasanjuan, 2021). Furthermore, war is associated with the threat of invasion, an uncontrollable hostile takeover, which, in the context of the pandemic, is comparable to the exponential and rapid spread of the virus. This makes it understandable how the dominant emotional reaction towards this metaphor would be fear, or even panic (see Flusberg et al., 2018 for a discussion). Moreover, using the metaphor of war ascribes a lot of responsibility to the government (Steinert, 2003, pp. 268–271). Referring to something as a war makes it clear that harsh measures must be allowed in order to control the situation. In contrast, the concept of struggle, for example, deals more with individual efforts, perseverance and the need for adaptation.

The effectiveness and dangers of bellicose metaphors in different contexts have been heavily studied. In the case of climate change, for example, it has been found that participants who read information on mitigation policies as part of the "war on climate change" reported higher urgency and risk perceptions and an increased willingness to develop more environmentally focused behaviours compared to those who read about the same policies described as part of the "race against climate change" (Flusberg et al., 2017). Likewise, participants who read a short text on international trade, in which trade was called a "war" reported higher support for tariffs compared to those who read about trade called a "two-way street" (Robins & Mayer, 2000, Study 1). Similarly, prenuptial agreements are less likely to be agreed upon when described as a "weapon" as opposed to a "safety net" (Robins & Mayer, 2000, Study 4), and individuals are less likely to agree to restrictive preventative behaviours (i.e., giving up smoking) when cancer is described as an "enemy" as opposed to a non-metaphorical neutral frame (Hauser & Schwarz, 2015).

As demonstrated by the latter two examples, the use of militaristic metaphors can sometimes lead to undesired results. Keeping with the theme of illness, Hendricks et al. (2018) have found that framing a person's cancer situation as a "battle," compared to a "journey," leads to higher expectations that the person feels guilty if they do not recover from the disease. In contrast, the journey framing was associated with a higher expectation that the patient was able to make peace with his/her situation. Within the medical community, there is much debate over the effectiveness of militaristic metaphors. On the one hand, there is evidence that the use of metaphors in

discussions between doctors and their patients is associated with a higher degree of comprehensibility and better evaluations of treating physicians (Arroliga et al., 2002; Casarett et al., 2010). On the other hand, this involves the risk of misleading patients into perceiving their own body as an "enemy" (Reisfield & Wilson, 2004). This is why some scholars are calling for an end to the use of warfare metaphors in medical contexts (Hodgkin, 1985; Mitchell et al., 2003; Wiggins, 2012).

Given this mixed evidence on the value of using warfare metaphors in various contexts, the question arises whether militaristic metaphors are an effective and appropriate communication tool within the context of the COVID-19 pandemic. Contrary to other health-related contexts, such as cancer treatment, where the aim is to reduce patients' fears, the use of warfare metaphors within a pandemic context may actually be aimed at *increasing* citizens' fears and perceived threats in order to evoke preventive behaviours. (Whether this is ethically sound is another question altogether.) Our question is whether militaristic metaphors used for dealing with the COVID-19 pandemic are actually serving their intended purpose. As these metaphors have been used by many governments around the world to justify nation-wide lockdowns and curfews, we used this rare opportunity to conduct comparative framing studies in Germany and the United States at different times during the pandemic to test whether militaristic compared to non-militaristic metaphors indeed increase the policy support for counter measures and affect individual perceptions of the pandemic. By doing so, we are contributing to the dynamic perspective of metaphor-framing, focusing namely on "[…] how various cognitive, linguistic, social, and cultural forces simultaneously shape, along different time-scales, people's use and understanding of metaphoric discourse" (Gibbs Jr & Cameron, 2008, p. 74).

According to Flusberg et al. (2018, p. 4), a metaphor is especially effective if it contains a salient knowledge structure, if this knowledge is well-known to the population being studied and if the transfer of this knowledge to the target context is appropriate in a given cultural context. All these aspects typically apply to warfare metaphors making them powerful metaphors in many contexts and languages.

In line with previous research on the effects of militaristic metaphors on the endorsement of preventive behaviours (Flusberg et al., 2017; Hauser & Schwarz, 2015; Robins & Mayer, 2000), we want to test whether militaristic metaphors affect emotions, threat perceptions and policy preferences, and whether they shape participants' own thoughts and language choice in the pandemic situation, as shown by previous studies on metaphorical information processing (Christmann & Göhring, 2016; Thibodeau & Boroditsky, 2013).

As with previous studies on the metaphor framing effect, we expect the use of militaristic metaphors, compared to non-militaristic metaphors, in dialogue surrounding the pandemic to increase support for restrictive policies (Hypothesis 1) and increase fears and perceived threats (Hypothesis 2). With regard to personal language choice, compared to those presented with non-militaristic metaphors, we hypothesise people presented with militaristic metaphors will also choose more military terms to describe other people or governments (Hypothesis 3).

TESTING THE EFFECTIVENESS OF METAPHORS IN DIFFERENT TEXTS

Metaphor framing effects are typically studied by presenting participants with information framed in a different context than that of the information itself. Consequently, it is often neglected that metaphor framing is highly sensitive to the environment in which the metaphor is embedded. For instance, Robins and Mayer (2000) found that the effectiveness of metaphor framing was weakened when the metaphor and the content of the text it was being used in were inconsistent. In news media, metaphors are usually embedded within additional information across varying styles of reporting. People use both the image-inducing information of the conceptual metaphor (e.g., war) as well as the additional information given by a text to understand and evaluate the target (e.g., pandemic). Two dominant forms of reporting prevail in the media world: narrative and fact-focused reporting (see Brosius, 2003 for a discussion). According to exemplification theory, reporting through narratives involves telling stories about individual characters (exemplars) having their own experiences, while fact-focused reporting relies on a straightforward, matter-of-fact way of getting information across. In contrast to fact-focused reporting, narrative information is associated with a higher imageability, salience and vividness, and as such is easier to process for most people (Zillmann & Brosius, 2000). In the context of health-related communication, these two reporting styles have been found to garter very differing results. Findings by Cody and Lee (1990), for example, showed that students presented with videos of skin cancer patients telling their own stories reported stronger skin protection intentions and behaviours than those who watched fact-focused videos. Similarly, the intention to go tanning significantly decreased among college students when the risk of skin cancer was reported through a narrative about a young woman suffering from skin cancer after having frequently gone tanning (Greene & Brinn, 2003).

In the context of the COVID-19 pandemic, narrative reporting often includes interviews with doctors and nurses detailing their own experiences with COVID-19 patients. In line with previous findings on the higher effectiveness of narrative versus fact-focused reporting,

we hypothesise that reporting through a narrative is also more persuasive in the context of COVID-19 coverage. More precisely, we expect that narrative reporting on the COVID-19 pandemic makes the risks and dangers of the virus more salient and, thus, generally increases participants' fears of the virus, spread perceptions and increases support for counter policies, compared to fact-focused reporting (Hypothesis 4).

Moreover, we expect that metaphor framing effects become stronger when the reporting style and metaphor framing are consistent (Robins & Mayer, 2000). As narrative reporting is related to higher valence, emotionality and affective reactivity, in this setting, warfare metaphors might work better than non-militaristic metaphors. In contrast, for describing the pandemic, we assume neutral concepts are more suited to fact-focused reporting. As such, we expect the interaction effect between reporting style and metaphor use to be a higher level of agreement with the dependent variables when metaphor and reporting style are consistent (Hypothesis 5).

In addition to these hypotheses, we were also interested in whether narrative compared to fact-based reporting can reduce a participant's want for a relaxation in COVID-19 policies. In the summer of 2020, many people started underestimating the dangers of the virus and advocating for relaxations of the strict measures being imposed across Germany and the United States. This was often reflected in paradoxical attitudes towards COVID-19 measures, such as people citing the fallen incidence rates as a reason for ditching the measures that led to the fallen incidence rates in the first place (i.e., prevention paradox; see Rose, 1981). Given that, more so than fact-based reporting, narrative reporting accentuates the personal fear of getting COVID-19, we wanted to exploratively test whether it also more effectively lowers peoples' paradoxical attitudes towards preventive policies and behaviours (Explorative Question 1).

STUDY 1

Study 1 was planned in April 2020 to test Hypotheses 1, 2 and 3, and was based on the design of a pilot study that was conducted in Germany at the very beginning of the COVID-19 pandemic in March 2020 (see https://osf.io/ns6ga/ for a research note). In the United States, the handling of the COVID-19 pandemic became a polarising issue in the 2020 presidential election (Hart et al., 2020). Due to former U.S. President Donald Trump's hesitancy to adopt mandatory COVID-19 policies and his downplaying of the threat of the virus, infection rates rose sharply in the United States compared to in other countries at the time Study 1 was conducted (John Hopkins University & Medicine, 2020). Given this polarisation, we wanted to use Study 1 to test the differential effects of militaristic versus non-militaristic metaphor framing for supporters of the U.S. Republican and Democratic parties. A Gallup poll from this time period showed that 75% of Democrats reported frequent mask use, compared to less than 50% of Republicans (Ritter & Brenan, 2020). In addition, a Pew Research Center study (Mitchell et al., 2020) indicated that Trump supporters and conservatives were more likely to consider the information on COVID-19 overly dramatised. As previous research has convincingly shown that political affiliation can have a large effect on the processing of various metaphors, which causes framing effects to be stronger or weaker (Diamond, 2020; Thibodeau & Boroditsky, 2013), in Study 1, we aimed to exploratively test the moderating effect of political affiliation on militaristic framing of the COVID-19 pandemic.

Participants

Data from 208 American participants were recruited via Amazon Mechanical Turk (MTurk). After an initial quality check, 34 participants were excluded for having completed the questionnaire in under 2.5 minutes. This exclusion criterion was chosen because it both fell below 2 *SD* of the average processing time and was associated with missing answers on the dependent variables (see recommendations by Leiner, 2019). Most of the 174 remaining participants were male (62.6%) and mean age was 38.63 years ($SD = 12.28$). More than half of the sample were college educated (62.1%) and there was an over-representation of Democrats (66% Democrats, 34% Republicans). The sample was not representative of the U.S. population. However, prior research has shown that MTurk samples do not differ from benchmark population samples in terms of participants' political affiliation and its psychological foundations (Clifford et al., 2015).

Design

As Study 1 was conducted in the United States, we adopted the two salient metaphor framings being used in American media coverage of the pandemic, namely "battle" and "struggle." According to the Merriam-Webster Online Dictionary (2021a), the primary meaning of the noun "battle" is "a general encounter between armies, ships of war, or aircraft." Thus, this term has a clear militaristic connotation. In contrast, the same dictionary (Merriam-Webster Online Dictionary, 2021b) defines the noun "struggle" as "strife/contest," making it a strong choice for a non-militaristic counter framing. One etymological theory connects the English word "struggle" with the Dutch and German words for "stumble." For our study, we chose these two nouns, "battle" and "struggle," specifically because they are linguistically similar, but contextually dissimilar (viz., one is militaristic while

Table 1
Descriptive characteristics of the metaphor framings used in the studies

	Valence		*Arousal*		*Imageability*		*Dominance*		*Concreteness*			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*Frequency*[a]	*Media salience*[b] *(NexisLexis)*
Metaphor												
War[c,d]	1.41[c]	0.88	5.84[c]	3.01	6.15[c]	1.48	3.27[d]	2.66	5.71[c]	1.76	10	24,037 hits
	2.23[d]	1.58	6.27[d]	2.20								
Krieg[e]	−2.90[e]	0.32	4.57[e]	0.60	5.44[e]	1.74	N/A		N/A		9	10,202 hits
Battle[c,d]	2.33[c]	1.49	5.58[c]	2.45	5.69[c]	1.45	5.63[d]	2.83	5.39[c]	1.21	13	338,587 hits
	3.52[d]	2.23	6.25[d]	2.94								
Struggle[c,d]	2.85[c]	1.46	4.58[c]	2.45	4.15[c]	1.67	3.67[d]	2.37	3.73[c]	2.45	19	436,106 hits
	3.00[d]	1.82	5.90[d]	2.20								
Ringen	N/A										12	8908 hits

[a] Word frequency information was obtained from the Leipzig Word Corpora project 2020 (https://corpora.uni-leipzig.de/), lower values indicate higher frequency levels. [b] The data reflect the number of hits within the NexisLexis newspaper corpus for the Germany and the United States, respectively. The search was performed using the keywords FRAME+COVID-19 and was conducted for the period between 1 January and 1 August 2020, as this corresponds to the project period. [c] Norming data for English concepts originate from the Glasgow Norms (Scott et al., 2019). [d] Norming data for English concepts originate from Warriner Norms (Warriner et al., 2013). [e] Norming data for German words originate from the Berlin Affective Word List (BAWL-R, Võ et al., 2009).

the other is not). Table 1 provides an overview of the linguistic dimensions we aimed to control for. Both concepts were evaluated as similarly negatively valenced. However, in the evaluations of their imaginability, concreteness and dominance "battle" scored higher. Even though differences on these dimensions can influence people's conceptual perception, we made this trade-off. For us, it seemed particularly relevant to ensure similar valence and arousal values of the chosen metaphors. In addition, the media salience and frequency were intended not to vary too strongly. Since struggle can be both a verb and a noun, there were however more hits here. In order to comparatively test the effects of using warfare metaphors to frame the COVID-19 pandemic on Democrats versus Republicans, a 2×2 factorial design was conducted with the framing ("battle" vs. "struggle") as an independent factor that was randomly assigned to participants, and with party affiliation (Democrat vs. Republican) as a quasi-experimental variable.

Procedure

Participants were recruited via Amazon Mechanical Turk (https://www.mturk.com) on 27 April 2020 and were compensated USD 0.70 for a maximum of 10 minutes for their time in taking the survey. At the beginning of the survey, participants were informed of the content of the study and agreed to participate via an electronic informed consent form. First, information on sociodemographic variables was collected. Then, respondents were asked to answer questions on the moderators and control variables. Subsequently, each participant was randomly assigned to one of the conditions and presented with a fictitious newspaper clipping on the contemporaneous pandemic situation, which was described as either a "battle" or a "struggle." Within the texts, with the exceptions of the headings and individual mentions of the framing, all other content remained the same (see Figures S1 & S2 of the online supplement). After the evaluation task, questions on the dependent variables were asked. At the end of the survey, participants were thanked and informed of the full aim of the study.

Variables

Dependent variables

To compare the effects of using militaristic and non-militaristic metaphors on peoples' perceived threat and support for restrictive COVID-19 policies, several variables were constructed in the context of the pandemic. The correlations of the variables of all studies are located in Tables S2–S4 of the online supplement.

Fear of the virus and perceived spread. As outlined above, militaristic metaphors are strongly associated with the emotion of fear. To test the effect of militaristic metaphor framing on this emotion, participants were asked to indicate how scared they were of the Corona virus. The concept of a battle also highlights the danger of an "enemy invasion." In the pandemic context, such a threat might be translated to the exponential spread of the virus. We therefore also asked participants to indicate their perceived spread of the virus. Both variables were assessed on a slide bar from 1 to 100 (1 = not at all scared/rather slow; 100 = very scared/very fast).

Support for counter policies. Support for COVID-19 counter measures was assessed using a multiple-choice item asking which policies should be adopted to end the

spread of the virus (1 = "curfews," 2 = "compulsory mask-wearing in public," 3 = "social-distancing"). Alternatively, participants were able to indicate 4 = "other" or 5 = "none,"

Reactions to rule-breakers. We were also interested in whether the metaphor of battle, compared to struggle, promotes more aggressive (envisaged) behavioural responses towards rule-breakers. Participants were instructed to envisage an everyday situation in which they encounter a person not following the hygiene and social-distancing rules. We then asked participants how they would react to a person who comes close enough to easily cough or sneeze on them. Answers were entered in an open text field. Both variables were coded according to whether the reactions were *confrontational* (e.g., "slap them and tell them either stay home or be considerate") or *conflict-avoidant* (e.g., "I would distance myself from the person").

Moderators

Based on the findings of our pilot study, we also assessed additional variables for exploratory moderation analyses. The first moderating variable of interest was risk aversion, which has been found to be highly relevant in the COVID-19 time (see also Nikolov et al., 2020), and which was measured with the risky choice paradigm (Garbarino et al., 2011; $\alpha = .64$, $M = 2.74$, $SD = 1.21$). In addition, we assessed individuals' style of information processing with a COVID-19 related Need for Cognition scale (COVID-19 NFC). Items were adopted from the product specific NFC scale by Pechtl (2009) and applied to the COVID-19 pandemic (e.g., "I find it important to obtain new knowledge of and information on the Corona virus and its spread," $\alpha = .74$, $M = 3.73$, $SD = 0.66$). Since the exploratory moderation analyses did not yield any statistically significant results, these are not reported in the result section below.

Results

Metaphor framing effect

χ^2-tests were conducted to identify differences in policy preferences. Not in line with Hypothesis 1, the battle metaphor did not consistently lead to a higher support for mandatory COVID-19 policies. Results showed there was no significant main effect with regard to support for the implementation of curfews, χ^2 (1, $N = 172$) = 0.17, $p = .398$, or for compulsory mask wearing, χ^2 (1, $N = 172$) = 0.63, $p = .270$. In contrast, participants presented with the struggle metaphor showed a higher tendency to describe mandatory social-distancing rules as an adequate COVID-19 policy, χ^2 (1, $N = 172$) = 7.99, $p < .01$. The latter difference became significant below the Bonferroni-adjusted level of significance, which is $p = .017$. Across all items, there was no significant interaction effect between the metaphor framing and party affiliation, indicating similar patterns of policy support across Democrats and Republicans (p-range = .240–.525).

Table 2
Effect of framing type and party affiliation on dependent variables

	Fear of the virus		*Perceived spread*	
	M	*SD*	*M*	*SD*
Metaphor framing				
Battle	64.23	27.42	84.42	15.55
Struggle	69.39	25.64	87.35	13.36
F_{framing} (1, 140)	1.32		3.97*	
η^2	0.010		0.028	
Party affiliation				
Democrats	65.89	24.84	87.58	11.46
Republicans	69.06	29.67	82.88	18.69
$F_{\text{party affiliation}}$(1, 140)	0.349		4.60*	
η^2	0.003		0.032	
Metaphor framing × Party affiliation				
Battle, Democrats	63.76	26.43	87.98	10.96
Battle, Republicans	65.24	30.09	76.81	20.79
Struggle, Democrats	67.90	23.36	87.21	12.02
Struggle, Republicans	72.04	29.57	87.59	15.70
$F_{\text{framing} \times \text{party affiliation}}$(2, 139)	0.078		5.28*	
η^2	0.001		0.037	

*$p < .05$. **$p < .01$. ***$p < .001$.

A multivariate analysis of variance with framing and party affiliation as independent factors was conducted to predict participants' fear and perceived threat of the virus. As reported in Table 2, Hypothesis 2 was not confirmed by the data. There was no main effect of metaphor framing on participants' fear of the virus. In contrast to our expectation, a reverse framing effect on perceived spread was evident, indicating that participants in the struggle condition perceived the spread of the virus as even faster compared to those in the battle condition. In addition, with this variable, party affiliation also had a main effect. Democrats rated the spread of the virus as faster than Republicans did. With regard to our test of differential metaphor framing effects for Democrats and Republicans, we found a significant interaction effect between framing condition and party affiliation on the perceived spread of the virus. More precisely, Republicans perceived the spread of the virus as slower when the battle framing was used. Results of a *post-hoc* power analysis using G*Power (Faul et al., 2009) suggest that the power of this interaction is sufficient, $1\text{-}\beta = 0.86$.

To test whether militaristic metaphors enhance adopting a strict friend-foe mentality and consequently incite more violent responses against rule-breakers, we tested

whether participants in the battle condition reported more confrontational behaviours towards rule-breakers than those in the struggle condition did. In contrast to Hypothesis 3, results of two χ^2-tests failed the Bonferroni-adjusted level of significance ($p = .025$) and indicate no difference of confrontational behaviour intentions between the framing conditions, $\chi^2_{\text{coughing/sneezing}}$ $(1, N = 173) = 0.55$, $p = .280$, χ^2_{distance} $(1, N = 173) = 1.68$, $p = .129$. Also, there were no interaction effects with participants' political affiliations, $\chi^2_{\text{coughing/sneezing}}$ $(1, N = 140) = 0.04$, $p = .832$, χ^2_{distance} $(1, N = 140) = 1.90$, $p = .276$.

Discussion

In Study 1, we aimed to test the performative effects of a militaristic (battle) against a non-militaristic (struggle) metaphor in the context of the onset of the COVID-19 pandemic situation in the United States. Overall, our main assumption of a superiority effect of militaristic metaphors in the pandemic was not supported by the data. Not in line with Hypothesis 1, we did not find any enhancing effect of the battle metaphor with regard to policy support. Also, there was no evidence that it increased participants' fears or perceived spread of the virus (Hypothesis 2). In further contrast to our hypothesis, we found that participants in the battle condition reported a perceived slower spread of the virus than those presented with the struggle framing reported. With regard to our explorative test of the influence of participants' political affiliation on metaphor framing, we found that the use of militaristic metaphors in discussing the pandemic was especially ineffective for Republicans. In fact, when presented with the battle metaphor, Republicans reported an even slower perceived spread of the virus than they did when presented with the struggle metaphor. In a similar vein, Mitchell et al. (2020) found that Republicans were more likely to consider information on COVID-19 over-dramatised. Thus, our finding might speak for using a metaphor antonymous with battle when framing the pandemic for Republican voters.

Overall, the results of Study 1 suggest a surprisingly low effectiveness of militaristic metaphor framing within the context of the COVID-19 pandemic. This is an interesting finding, as militaristic metaphors are continually being used by policymakers and the media with the intention of raising threat awareness in the pandemic. However, our studies are subject to several limitations. First, although we aimed to test average citizens' responses to militaristic versus non-militaristic metaphor framing, the study sample was not fully representative for the average U.S. population, as the given sample represented a younger, and higher educated population. Second, the studied metaphors represent only a small selection of possible framings. We decided to conduct a proper experimental test using two salient metaphors to describe the pandemic which differed in their militaristic (vs. non-militaristic) meaning. By doing so, we attempted to ensure that external validity was high. In addition, and in terms of internal validity, we also aimed to control that the chosen metaphors were similar on other linguistic dimensions such as valence and arousal, so that they differed mainly in their militaristic connotation. However, norming data (Table 1) have shown that the metaphors were differently evaluated in their imageability, concreteness and dominance. But, as these evaluative differences were in favour of the battle metaphor, the reverse pattern found in our results does not seem to have been influenced by this. Another point is that such increases in internal validity may result in a relatively low contrast between the concepts, which might limit the external validity of the study to some extent. Third, in Study 1, only the metaphor varied, not the given text in which the metaphor was used. Particularly in the field of metaphor framing, journalists who are more likely to use figurative language are presumably also more likely to use more vivid language and more dramatic/personalised reporting styles compared to journalists who are less likely to use figurative language. It therefore seems like an additional test on the influence of different reporting styles on the metaphor framing effect would be beneficial.

STUDIES 2 AND 3

In Studies 2 and 3, we aimed to replicate the test of the general effectiveness of militaristic versus non-militaristic metaphors. Both studies were also designed to examine the additional effect of reporting style, namely whether narrative, compared to fact-focused, reporting has a higher communicational performativity (Hypothesis 4) and whether there is an interaction between reporting style and metaphor use (Hypothesis 5). In addition, a central goal of these studies was a cross-country comparison of the effectiveness of warfare metaphor usage in the COVID-19 pandemic in Germany and the United States. To allow for a better comparability of framing effects in both countries, we conducted two larger, and thus better powered, experiments with more representative samples using the same design, procedure, materials and metaphor framings. The hypotheses and materials of both studies were registered at the Open Science Framework (OSF, https://osf.io/ujafk). The studies were conducted simultaneously in early July 2020. At that time, the infection rate in Germany was already significantly reduced, while in the United States, the number of infections was rising for the second time (John Hopkins University & Medicine, 2020). Regional hotspots were a serious problem in both countries.

Design

Based on the experience with the materials of the prior studies, we chose two metaphor framings that had a similar meaning and etymology in both languages, did not differ too much on other linguistic dimensions and were similarly salient in the respective country at the time of the study (Table 1). This led to the final selection of the metaphors of "war" ["Krieg"] and "struggle" ["Ringen"]. The war metaphor was less salient in U.S. media than the struggle metaphor was. Moreover, the selected metaphors showed a higher contrast on the controlled linguistic dimensions in English. Nevertheless, we maintained the metaphor selection for reasons of cross-cultural analogy. In both studies, a 2×2 factorial design was conducted, in which metaphor framing (war vs. struggle) and reporting style (narrative vs. fact-focused) were manipulated as independent factors. To guarantee a successful manipulation of reporting style, pre-tests of the fictitious newspaper articles were conducted in both countries with more than 100 participants, respectively. These confirmed that the narrative text was perceived as more emotional and vivid than the fact-focused text (see Table S4 of the online supplement for the results of the pre-tests).

Procedure

A fictitious newspaper scheme similar to that of Study 1 was used. First, participants agreed to participate by signing the informed consent form, after which they answered questions on sociodemographics and control variables. They were then randomly assigned to one of the four conditions. The texts on the contemporaneous Corona pandemic situation were headlined with either "War against Corona" or "Struggle against Corona." The respective framing was also repeated within the text. The article was written in either a straightforward, matter-of-fact way (fact-focused style) or a personal, emotional way (narrative style). In the latter version, the article was about a doctor reporting his own experiences during the COVID-19 pandemic (see Figures S3–S6 of the online supplement). To guarantee sufficient reading time, the newspaper article was visible for a full 45 seconds before the option to continue on to the next screen appeared (the "next" button). Afterwards, participants answered questions on the dependent variables and were informed of the goal of the study.

Dependent variables

Fear of the virus and perceived spread. The same measures for fear of the virus and its perceived spread as in Study 1 were used.

Support for restrictions. Support for restrictive COVID-19 policies was assessed by asking participants what they thought about the implementation of selective curfews. Answers were given on a 9-point semantic differential from 1 (not at all useful) to 9 (very useful). Due to the contemporaneous debate over border restrictions in Germany, in Study 3, we additionally asked whether participants support the introduction of such restrictions. Both items were strongly correlated ($r = .74$, $p < .01$) and summarised to a mean index in the German sample.

Prevention paradox. The prevention paradox is a well-known paradox in the field of epidemiology (Rose, 1981). In the context of the COVID-19 pandemic, the term is often used to describe the assumption that measures taken to prevent high infection rates would not have been necessary since the predicted increase of infections did not occur. We developed a new scale to assess such paradoxical attitudes in COVID-19 times (see Table S1 of the online supplement). Participants rated 12 items (such as, "the rapid success of the initial anti-Corona measures proves they were never so radically necessary") on 6-point Likert scales from 1 (completely disagree) to 6 (completely agree). Internal consistency was high in both samples ($\alpha_{\text{German sample}} = .93$, $M = 2.52$, $SD = 1.12$, $\alpha_{\text{U.S. sample}} = .93$, $M = 3.14$, $SD = 1.24$).

Perception of government. Participants were also asked how they would "describe the government and its crisis management during the Corona crisis." We developed four answers which varied in their militaristic content and perceived government passivity. Participants were able to choose one of the following options that best described their government's activities: 1 = a tower in battle (militaristic, active), 2 = an observer between the fronts (militaristic, passive), 3 = solid as a rock (non-militaristic, active), 4 = a plaything of the events (non-militaristic, passive). They also had the possibility to select "none."

Control variables

As Studies 2 and 3 were conducted at a time when most citizens had already become accustomed to the pandemic and it was no longer a new situation, we decided to additionally collect a number of potential covariates. Research on long-term attitudes and behaviours has frequently shown that personality variables, such as different traits, personal values or convictions often explain substantial variance in the prediction of health-related behaviours (Cockerham et al., 2006; Raynor & Levine, 2009; Vollrath & Torgersen, 2008). With regard to the emotional and behavioural responses to COVID-19, risk aversion (Nikolov et al., 2020), trust in politicians and science (Kreps & Kriner, 2020; Lalot et al., 2021) and collectivism (Huang et al., 2020; Pei et al., 2020) have been identified as relevant predictors. To be able to control for possibly confounding variables, we additionally

Table 3
Effects of framing type and reporting style on dependent variables not controlling for covariates (Study 2)

	Fear of the virus		*Perceived spread*		*Support for restrictions*		*Prevention paradox*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Metaphor framing								
War	46.20	28.01	69.54	22.48	6.85	1.90	2.49	1.05
Struggle	43.62	29.10	66.11	25.73	6.60	2.10	2.55	1.19
$F_{\text{framing}}(1, 474)$	1.02		2.43		2.01		.40	
η^2	0.002		0.005		0.004		0.001	
Reporting style								
Narrative	44.09	28.81	68.74	23.13	6.78	2.06	2.53	1.17
Fact-focused	45.78	28.33	66.97	25.18	6.67	1.94	2.51	1.06
$F_{\text{reporting style}}(1, 474)$	0.46		0.62		0.31		0.04	
η^2	0.001		0.001		0.001		<0.001	
Metaphor framing × reporting style								
War, narrative	45.84	28.45	70.77	21.41	7.10	1.85	2.44	1.06
War, fact-focused	46.56	27.69	68.31	23.52	6.60	1.93	2.53	1.04
Struggle, narrative	42.28	29.19	66.64	24.70	6.46	2.23	2.61	1.28
Struggle, fact-focused	44.97	29.08	65.58	26.83	6.74	1.97	2.49	1.09
$F_{\text{framing} \times \text{reporting style}}(1, 472)$	0.12		0.09		4.46*		0.98	
η^2	<0.001		<0.001		0.009		0.002	

Note: The pattern of effects remained the same when additional covariates were included (see Table S7 of online supplements). $^*p < .05$. $^{**}p < .01$. $^{***}p < .001$.

measured these variables as personality-related covariates (see Table S6 of online supplement for detailed variable information and Tables S3 & S4 for their correlation with the dependent variables).

Study 2

Participants

A G*Power analysis for an a priori prediction of the required sample size recommended a minimum of 327 participants for the identification of small to medium main effects and interactions (MANCOVA with four groups and a maximum of five covariates, $\alpha = .05$, $1\text{-}\beta = 0.95$, $f = 0.20$). From 6 to 10 July 2020, 476 participants ($M_{\text{age}} = 46.11$, $SD = 14.24$, 42.2% female, 57.8% male, 29.2% college-educated) were recruited based on representativeness standards by a German crowd-sourcing platform (www.respondi.de), and compensated with EUR 2.80 for a maximum duration of 15 minutes. Party affiliations of participants were distributed almost representatively: 23% CDU/CSU, 19.7% Bündnis90/Die Grünen, 11.3% SPD, 10.7% Die Linke, 9% AfD and 3.6% FDP. Data from both studies have been made available at the OSF (https://osf.io/tg7k8/).

Results

A MANOVA was conducted to test the effects of framing and reporting style on participants' fear and perceived spread of the virus, support for restrictions and the prevention paradox scale. As presented in Table 3, neither framing nor reporting style had a significant main effect, contradicting Hypotheses 1, 2 and 4. In line with Hypothesis 5, a significant interaction effect appeared on support for restrictive policies. As expected, policy support in the fact-focused style condition was higher when the struggle framing was used, whereas the war framing worked better when the article was written in a narrative style. With regard to Explorative Question 1, results do not indicate any influence of metaphor framing and reporting style on the prevention paradox scale (Table 3). The pattern of main effects and interactions remained the same when the additional covariates were included in the model (see Table S7 of the online supplements).

A χ^2-test was conducted to test whether the use of warfare metaphors influenced participants' selection of government description (Hypothesis 3). Results showed no effect of framing on government perceptions, χ^2 (3, $N = 428$) = 4.03, $p = .258$.

Study 3

Participants

Participants were invited via Amazon Mechanical Turk from 1 to 4 July 2020 to "read a newspaper article and answer a few questions." The maximum duration of the study was 15 minutes which was compensated with USD 2.00. Overall, 430 American respondents participated in the study (37.7% female, 62.3% male, $M_{\text{age}} = 37.49$, $SD = 11.35$). More than half of the sample was college-educated (60.7%). Democrats were

Table 4
Effects of framing type and reporting style on dependent variables not controlling for covariates (Study 3)

	Fear of the virus		*Perceived spread*		*Support for restrictions*		*Prevention paradox*	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Metaphor framing								
War	73.05	24.36	80.58	18.66	6.85	1.81	3.30	1.28
Struggle	73.01	26.87	85.07	15.76	7.43	1.56	3.16	1.20
$F_{\text{framing}}(1, 363)$	0.001		4.45*		9.16**		2.29	
η^2	<0.001		0.011		0.021		0.005	
Reporting style								
Narrative	71.99	27.56	81.91	18.23	7.16	1.60	3.14	1.23
Fact-focused	73.86	24.11	83.83	16.50	7.16	1.79	3.30	1.25
$F_{\text{reporting style}}(1, 363)$	0.05		0.91		1.69		1.30	
η^2	0.001		0.002		0.004		0.003	
Metaphor framing × reporting style								
War, narrative	72.50	26.58	78.37	20.27	6.87	1.73	3.31	1.16
War, fact-focused	73.41	22.91	82.05	17.46	6.83	1.87	3.30	1.28
Struggle, narrative	71.63	28.37	84.44	16.26	7.37	1.47	3.03	1.27
Struggle, fact-focused	74.33	25.42	85.68	15.31	7.49	1.65	3.29	1.27
$F_{\text{framing} \times \text{reporting style}}(1, 361)$	0.001		1.61		0.09		2.22	
η^2	<0.001		0.004		<0.001		0.005	

Note: The pattern of effects remained the same when additional covariates were included (see Table S8 of online supplements). $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

overrepresented (53.5% Democrats, 32.8% Republicans, 11.6% no party).

Results

The same analyses as in Study 2 were conducted for the U.S. sample. As shown by Table 4, there was a strong main effect of framing on participants' perceived spread of the virus and support for restrictive policies. Surprisingly, and in contrast to Hypothesis 1, participants presented with the struggle condition reported significantly higher values on these variables compared to those reported by people in the war condition. Not confirming Hypothesis 5, interaction effects between framing and reporting style missed statistical significance. With regard to Explorative Question 1, there were no effects of framing or reporting style on participants' agreement on the prevention paradox scale. Again, the pattern of main effects and interactions remained the same when the additional covariates were included (see Table S8 of the online supplements).

Results of the χ^2-test indicate that participants presented with the war framing described the government as a "tower in battle" more often than participants in the struggle condition did, χ^2 $(3, N = 400) = 6.17$, $p = .10$. However, this effect reached only marginal significance. Results are displayed in Figure 1.

Discussion of Studies 2 and 3

Data from two sufficiently powered experiments were used to re-test the effectiveness of militaristic versus non-militaristic framing of the COVID-19 pandemic with additional variation in reporting style. There was no main effect of metaphor framing on the studied variables in the German sample. Similar to Study 1, and again in contrast to our hypotheses, a persistent superiority of the concept of struggle was identified in the U.S. sample. Participants in the struggle condition reported a faster perceived spread of the virus and stronger support for strict COVID-19 policies compared to participants in the war condition.

With regard to government descriptions (Hypothesis 3), results of both studies show the same trend. In both country samples, the probability of choosing warfare-related terms to describe the government within the Corona crisis was not significantly influenced by the framing.

In contrast to Hypothesis 4, in both studies a main effect of reporting style was missing. We found no evidence for an exemplification effect of narrative compared to fact-focused reporting about the COVID-19 pandemic. This may be explained by the high salience and increased awareness of the topic at the time the studies were conducted, independent of reporting style. An alternative explanation of the missing main effect could be that narrative reporting is more effective when patients themselves (not medical professionals) share their experiences with disease or illness (Cody & Lee, 1990; Greene & Brinn, 2003).

Partly supporting Hypothesis 5 in the German sample, the results of Study 2 show a significant interaction between framing and reporting style on support for restrictions, with higher values indicated on this

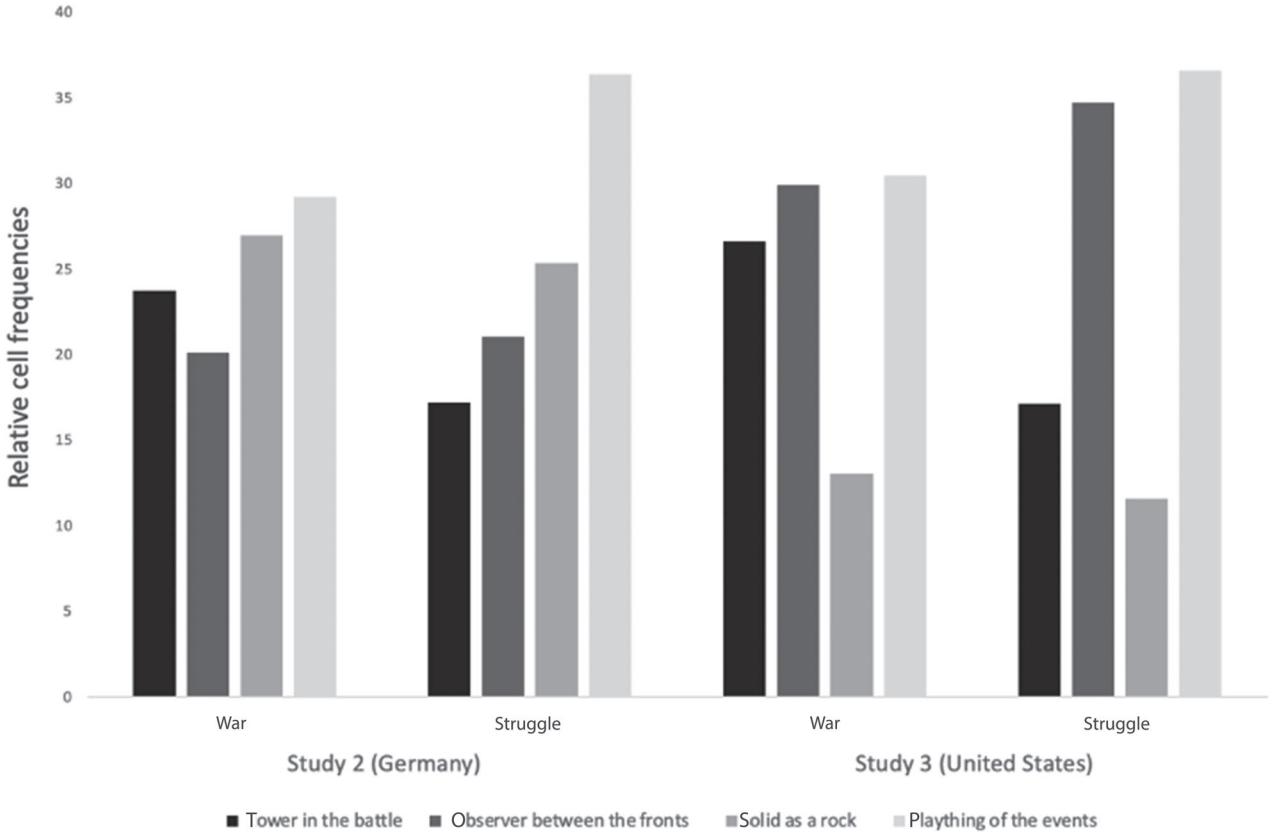

Figure 1. Relative cell frequencies of government description.

variable when framing and reporting style were consistent. However, there was no interaction effect in the U.S. sample.

Taken together, the results of both studies again suggest a limited effectiveness when it comes to using militaristic metaphors to frame the pandemic compared to using non-militaristic metaphors. Together with the results of Study 1, we actually find consistent evidence for a superiority effect of non-militaristic compared to militaristic metaphors in the U.S. sample. The use of the concept of struggle consistently increased participants' perceived threat compared to the use of the militaristic metaphors of battle and war, even when controlling for additional variables. A central mechanism of this effect might be that the use of militaristic metaphors leads people to ascribe more responsibility to the government, whereas the use of the struggle metaphor enhances individual responsibility. However, empirical testing is needed to substantiate this relationship.

METAPHOR NORMING STUDIES

To test our assumption that the war metaphor evokes a diffusion of responsibility to the government, we conducted two additional norming studies for the concepts of war and struggle. The design of the norming studies followed the first review stage of this paper. In an ideal research process, the norming of the used concepts would have taken place before the experimental studies, but in order to examine the actual effects of militaristic versus non-militaristic metaphors, the norming studies had to be conducted afterwards here. Data were collected in Germany and the United States using the same crowd sourcing platforms as in Studies 2 and 3. Overall, data from 237 German participants were collected between 30 November and 1 December 2020 (M_{age} = 47.61, SD = 13.49, 43.9% female, 56.1% male, 34.2% college-educated) and from 200 American participants between 23 and 24 November 2020 (M_{age} = 37.67, SD = 10.62, 33.0% female, 65.5% male, 1.5 other gender, 61.5% college-educated). Study participation was compensated with EUR 0.30 (USD 0.50) for a maximum of 5 minutes.

Design and procedure

The within-subjects design of the norming study followed the rationale of classical word evaluation tasks (Scott et al., 2019; Võ et al., 2009) and previous studies on metaphor rating (Thibodeau et al., 2016; Thibodeau & Gehring, 2015). At the beginning of the questionnaire,

Table 5
Factor loadings of forced-choice items (German sample)

	Factor loading		
Item	*1*	*2*	*3*
Factor 1: Individual measures (Cronbach's $\alpha = .89$, $M = 6.17$, $SD = 1.49$, $Md = 6.28$, skewness: −1.00, $SE = 0.16$)			
Acting out of a sense of personal responsibility to protect others	**0.853**	0.073	0.051
Individual concern for elderly and more fragile people	**0.832**	0.014	0.169
Social-distancing rules as a safety mechanism when things return to normal	**0.818**	0.140	0.229
Mask-wearing as a precautionary measure	**0.743**	0.163	0.139
Introduction of individual measures	**0.637**	0.313	0.236
Personal cancellation of social engagements	**0.631**	0.456	−0.112
Increased testing to control the infection rate	**0.590**	0.339	0.181
Factor 2: Nation-wide measures (Cronbach's $\alpha = .83$, $M = 4.81$, $SD = 1.86$, $Md = 4.80$, skewness: −0.023, $SE = 0.16$)			
High penalties for breaking the rules during a pandemic	0.085	**0.814**	0.162
Extensive restrictions and bans	0.259	**0.764**	0.209
Restrictions of public life	0.364	**0.624**	0.241
Use of the military (e.g., Bundeswehr) for pandemic control	−0.015	**0.607**	0.439
Introduction of nation-wide measures	0.392	**0.551**	0.336
Factor 3: Situational uncontrollability (Cronbach's $\alpha = .79$, $M = 4.70$, $SD = 2.09$, $Md = 5.00$, skewness: 0.005, $SE = 0.16$)			
Exponential increase of infections	0.238	0.112	**0.787**
Global occurrence of a disease/pandemic	0.154	0.250	**0.764**
Dealing with a deadly threat	0.119	0.362	**0.754**

Note: Loadings greater than 0.50 are noted in bold.

participants agreed to participate in the study by signing the informed consent form and answered questions on sociodemographics. Participants were first presented with a forced-choice task in which they were asked to assign certain aspects of the pandemic to one of the two terms. Then, they were introduced to the evaluative dimensions on which they were subsequently asked to rate the presented concepts of interest. These additional evaluations were measured separately for the concepts of war and struggle. At the end, participants were thanked for their participation. We used block randomisation for both concepts to avoid sequence effects.

Forced-choice task

In the forced-choice task, participants were asked to assign a certain situation either to the concept of war or struggle. This task was introduced with the below text.

> The COVID-19 pandemic is putting an extreme strain on the health care systems of many nations. Worldwide, both national and regional concepts have been developed to handle the number of infections. Governments in many countries have put a lot of effort into keeping their economies running while protecting the elderly and more fragile members of society.
>
> In media coverage, this effort has often been reported in differing ways.
>
> In recent months, some newspapers have reported about the 'war against the corona virus', while others have spoken of the 'struggle against the Corona virus'.

Participants were then asked, which of the provided 15 situations best fits with "war" or "struggle." Answers were given on an 8-point differential reaching from 1 = "war … " to 8 = "struggle . . . ." The situations covered by the items were created bottom-up and were based on newspaper and internet research followed by an expert evaluation within a team of language researchers (see De Geest et al., 1994 for the use of qualitative content for item development). Items were presented in a randomised order and are displayed in Table 5.

Concept evaluations

In addition to the forced-choice task, participants rated both concepts on two additional evaluation tasks. These items were based on typical procedures used for the construction of word norms (Scott et al., 2019; Võ et al., 2009). The first scale contained seven items that were presented on 7-point differentials (1 = negative to 7 = positive). In the second evaluation task, participants were asked to indicate the degree to which 15 different characteristics fit the terms "war" or "struggle" (e.g., "the expression the 'war [struggle] against … ' expresses a threat," see also items reported in Figures 2 and 3). Answers were assessed on 7-point Likert scales (1 = completely disagree to 7 = completely agree). Both concepts were evaluated after each other. To avoid sequence effects, the evaluation tasks were presented in a randomised item and page order.

Results

A principal component analysis across the 15 situations of the forced-choice task was conducted using SPSS 25

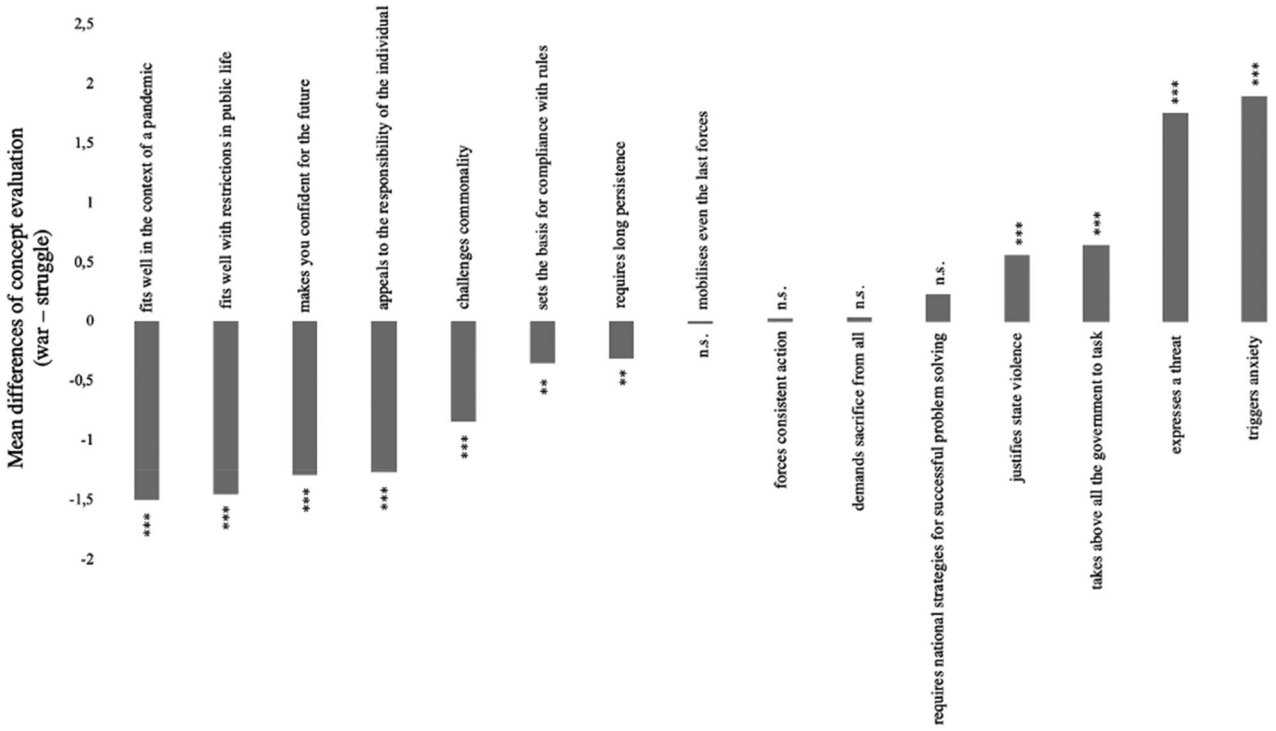

Figure 2. Mean differences of concept evaluations in the second evaluation task (German sample). Asterisks represent statistical significance at the Bonferroni-adjusted significance level ($p = .003$).

(Varimax rotation). In the German sample, three principal components with Eigenvalues greater than 1 were identified. Factor loadings are displayed in Table 5. Factor 1 was comprised of seven items and explains 43.5% of the variance. This factor includes mostly *individual measures* and reactions towards COVID-19, such as "acting out of a sense of personal responsibility to protect others."

Factor 2 consists of five items, which, unlike those of Factor 1, consist mainly of *governmental measures* (e.g., "extensive restrictions and bans"). This factor explains 13.66% of the variance. Factor 3 includes three items expressing facets of *situational uncontrollability* (e.g., "exponential increase of infections") and explains 7.13% of the variance. As the situations presented in the forced-choice task were assigned to either the "war" or "struggle" end of the pole, mean values and skewness of factors provide information on which end of the pole the factor relates to most. As anticipated, individual measures were more often associated with the concept of struggle, whereas, governmental measures and situational uncontrollability were more closely related to the concept of war.

To test whether participants evaluated the concepts of war and struggle differently on the classical word evaluation tasks, paired sample tests were conducted to compare the values on the respective evaluation dimensions. With regard to the first evaluation task, results indicate significant differences between the concepts (Table 6). Overall, the concept of war was rated as more negative, threatening, militaristic, inanimate, difficult to imagine and incomprehensible than the concept of struggle was.

The same analysis was conducted to test whether there were significant differences in the evaluation of the 15 characteristics of the second evaluation. Again, most of the differences in evaluation reached statistical significance. Results are summarised in Figure 2. Similar to the findings from the forced-choice task, participants associated the concept of struggle more strongly with individual responsibility whereas they associated the concept of war more with governmental responsibility. Moreover, participants showed a clear tendency in attributing the justification of violence and the concepts of threat and anxiety more strongly to the metaphor of war.

To test whether similar conceptual understandings and evaluations of the metaphors were present in the U.S. sample, the exact same analyses as in the previous norming study were conducted. Results of the principal component analysis are reported in Table 7. A slightly different factor structure than in the German sample was identified. Based on Eigenvalues greater than 1 and the scree plot, a 4-factor solution was proposed. Factor 1 is similar to Factor 2 of the German sample and contains items mainly on *governmental measures* for handling the pandemic (e.g., "the use of the military for pandemic control"). This factor explains 40.59% of the variance.

In contrast to the findings in the German sample, most individual reactions to the COVID-19 situation are

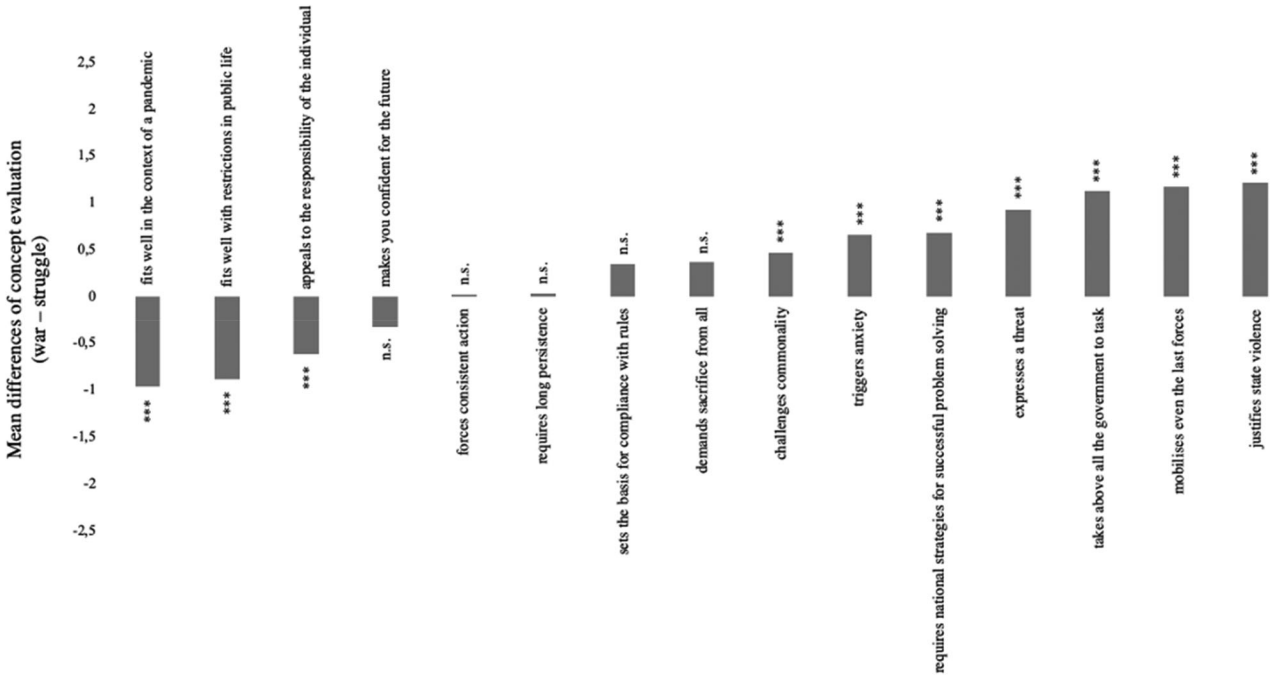

Figure 3. Mean differences of concept evaluations in the second evaluation task (U.S. sample). Asterisks represent statistical significance at the Bonferroni-adjusted significance level ($p = .003$).

Table 6
Results of the paired samples tests for concept evaluations (German sample)

	$M_{war} - M_{struggle}$	*SD*	$\|t\|$	*p*
Negative – positive	−2.11	2.17	14.98	<.001
Threatening – harmless	−1.77	1.92	14.19	<.001
Militaristic – peaceful	−2.80	2.11	20.43	<.001
Inanimate – animate	−0.79	2.33	5.23	<.001
Difficult to imagine – easy to imagine	−1.40	2.62	8.20	<.001
Abstract – concrete	−0.56	2.73	3.14	<.01
Incomprehensible – comprehensible	−0.89	2.53	5.42	<.001

Note: Bonferroni-adjusted level of significance is $p = .006$.

divided into two factors. Factor 2 contains *preventive individual behaviours* in the pandemic (e.g., "mask-wearing as a precautionary measure") and explains 11.39% of the variance. Factor 3 includes *reactive individual behaviours* such as "personal cancellation of social engagements" and explains 9.29% of the variance. Similar to the German sample, the fourth identified factor relates to aspects of *situational uncontrollability* (e.g., "exponential increase of infections"). With regard to mean values and skewness, in the U.S. sample, governmental measures were most strongly associated with the metaphor of war, whereas both preventive and reactive measures were more strongly associated with the metaphor of struggle. In contrast to the associations made in the German sample, American participants associated the factor of situational uncontrollability more strongly with the concept of struggle.

Regarding the results of the paired sample tests for the first evaluation task, American participants rated the concept of war as significantly more negative, threatening and militaristic than they rated the concept of struggle (Table 8). There were no statistically significant differences on the animacy, imaginability, abstractness or comprehensibility ratings.

Results of the second evaluation task reveal a slightly different pattern of concept evaluation compared to the German sample. However, with regard to the extreme poles of evaluations, the mean differences presented in Figure 3 indicate similarities of evaluations in both samples. American participants also viewed the concept of struggle as "fitting well in the context of a pandemic" and "fitting well with restrictions of public life" and linked it more strongly with "individual responsibility." In contrast, the concept of war was more strongly related to "threat," "anxiety" and "governmental

Table 7
Factor loadings of forced-choice items (U.S. sample)

	Factor loading			
Item	*1*	*2*	*3*	*4*
Factor 1: Governmental-level measures (Cronbach's $\alpha = .86$, $M = 4.26$, $SD = 1.99$, $Md = 4.00$, skewness: 0.135, $SE = 0.17$)				
Use of the military (e.g., the U.S. National Guard) for pandemic control	**0.859**	0.105	0.001	0.135
High penalties for breaking the rules during a pandemic	**0.736**	0.049	0.396	0.177
Introduction of nation-wide measures	**0.729**	0.335	0.179	0.155
Extensive restrictions and bans	**0.687**	0.201	0.416	0.123
Dealing with a deadly threat	**0.573**	0.131	−0.055	0.518
Factor 2: Preventive individual measures (Cronbach's $\alpha = .80$, $M = 5.67$, $SD = 1.55$, $Md = 5.80$, skewness: −0.574, $SE = 0.17$)				
Acting out of a sense of personal responsibility to protect others	0.083	**0.768**	0.263	0.010
Mask-wearing as a precautionary measure	0.396	**0.696**	0.199	−0.088
Increased testing to control the infection rate	0.468	**0.690**	0.008	0.122
Individual concern for elderly and more fragile people	−0.099	**0.639**	0.086	0.358
Introduction of individual measures	0.212	**0.573**	0.469	0.039
Factor 3: Reactive individual measures (Cronbach's $\alpha = .71$, $M = 5.49$, $SD = 1.69$, $Md = 5.67$, skewness: −0.551, $SE = 0.17$)				
Personal cancellation of social engagements	−0.033	0.262	**0.789**	0.186
Restrictions of public life	0.500	0.089	**0.646**	0.020
Social-distancing rules when things return to normal	0.437	0.311	**0.576**	0.013
Factor 4: Situational uncontrollability (Cronbach's $\alpha = .70$, $M = 5.34$, $SD = 2.02$, $Md = 5.50$, skewness: −0.560, $SE = 0.17$)				
Exponential increase of infections	0.084	0.045	0.150	**0.846**
Global occurrence of a disease	0.245	0.088	0.058	**0.798**

Note: Loadings greater than 0.50 are noted in bold.

Table 8
Results of the paired samples tests for concept evaluations (U.S. sample)

	$M_{war} - M_{struggle}$	*SD*	$\lvert t \rvert$	*p*
Negative – positive	−0.460	1.85	3.52	.001
Threatening – harmless	−1.15	1.81	8.99	<.001
Militaristic – peaceful	−1.88	2.15	2.18	<.001
Inanimate – animate	−0.05	2.04	0.35	.729
Difficult to imagine – easy to imagine	−0.17	1.99	1.24	.216
Abstract – concrete	0.39	2.37	2.32	.021
Incomprehensible – comprehensible	−0.19	1.82	1.52	.131

Note: Bonferroni-adjusted level of significance is $p = .006$.

responsibility." Participants attributed the "justification of state violence" most strongly to the concept of war.

Discussion of the metaphor norming studies

The results of the norming studies in both country samples strongly support our assumption that the concept of war might lead to a diffusion of responsibility as it is associated with stronger responsibility attributions to the government and the state as a whole. In contrast, respondents related individual behaviours to dealing with the pandemic, and consequently, individual responsibility, more strongly to the concept of struggle than to the war metaphor. These differences in concept associations may lead to a higher effectiveness of the struggle framing in the pandemic situation, especially with regard to the compliance with individual behaviours such as mask-wearing, social-distancing or self-isolation. The results of the classical word evaluation dimensions also revealed that the semantic contrast of both concepts was higher in the German than in the U.S. sample. This was surprising as we expected the concepts to be similarly rated in valence, abstractness, complexity, and imaginability. The differences on these dimensions may also be influential for metaphor framing effects. However, since superiority effects of militaristic metaphors have not been identified in either the German or the American framing experiments, we assume that the evaluative differences identified in the German norming sample did not affect the outcome of the previous experiments. Moreover, as expected and as intended, the chosen metaphors were shown to differ most strongly in their militaristic connotations. This indicates that the studied

metaphors stand prototypically for two similarly negatively valenced concepts, which, however, differ significantly from each other in terms of their militaristic content. In order to get a better understanding of the perceived meaning of metaphors, it is indicated to conduct norming studies beforehand as part of an ideal-typical research process.

GENERAL DISCUSSION

As COVID-19 began to spread, politicians and media around the world started using warfare metaphors to describe the pandemic (Heffernan, 2020; Wicke & Bolognesi, 2020). The performative goal of these metaphors was always to draw attention to the high risks of the virus and its rapid spread and to prompt preventive behaviours. Our studies were conducted at the relative beginning of the COVID-19 pandemic in Germany and the United States and aimed to test the actual effectiveness of militaristic versus non-militaristic metaphors on peoples' threat perceptions, policy support and behavioural intentions. Contrary to what we expected, the results of three framing experiments indicate limited effectiveness of a warfare framing of the pandemic situation in both countries. We found that, especially in the U.S. samples, the non-militaristic, but equally negative, concept of struggle had a more powerful impact on the tested variables than the militaristic concepts of battle and war had.

In Study 1, we also found that the use of militaristic compared to non-militaristic metaphors reduced threat perceptions of the virus, especially among Republicans. This relationship makes it especially clear that metaphor framings by no means encounter a "tabula rasa" of participants' mind, but can under certain circumstances be processed quite consciously and, as in this case, may even generate reactance. This finding is also in line with the heuristic-systematic model (Chaiken, 1980), as it supports the assumption that heuristic information processing can be suppressed when individual involvement is high. Republicans in particular considered information on COVID-19 over-dramatised (Mitchell et al., 2020). This may lead to a higher attention to ideologically conflicting linguistic cues. In a similar vein, Benjamin et al. (2017) found that Independents and Republicans reported fewer pro-environmental action intentions when climate change was labelled as "global warming" compared to "climate change." When people with strong political attitudes encounter a frame that they consider linguistically exaggerated, this may lead to psychological reactance. This frame-reactance hypothesis appears to be very plausible to us, but needs to be further explored across different political contexts (e.g., climate change, immigration, affirmative action).

One explanation for the general lack of superiority effects of militaristic metaphors in the COVID-19 context is that they convey, above all, that the pandemic is an issue to be handled by governments rather than individuals. We have tested this preliminary explanation by using norming studies for the concepts of war and struggle in both country contexts. The results clearly support a potential effect of responsibility diffusion by the use of warfare metaphors in the COVID-19 context. In both country samples, the metaphor of war was more strongly related to governmental responsibility, whereas the concept of struggle was associated with higher individual responsibility (e.g., taking care of elderly and more fragile members of society). A war can be easily understood as a business of nations and governments, not of individuals. As a consequence, the martial metaphor of war may imply helplessness and have the unintended, paradoxical effect of diminishing personal involvement rather than enhancing it. The findings of our studies consequently join the critique of using militaristic metaphors in the medical field (Hauser & Schwarz, 2015; Nie et al., 2016), or at least make a strong argument for a reflective use of such metaphors. As the current pandemic requires, above all, empathy, solidarity and responsibility for others, it is possible that metaphors that make social cohesion and solidarity salient (e.g., "pull together") are more effective than warfare metaphors.

LIMITATIONS

Another explanation of the limited effectiveness of militaristic versus non-militaristic framing of the pandemic might be related to our experimental approach. Across all experiments, we chose an experimental design in which the studied metaphors varied primarily in their militaristic connotation but less in their other linguistic dimensions (e.g., valence or arousal). This approach was chosen to isolate the militaristic meaning from other word characteristics. Moreover, we controlled for a similar media salience of the studied concepts. However, this has necessarily led to a relatively low contrast between the metaphor framings. Although this methodological approach was intended as a particularly strict test of the competing metaphors, the results cover only a limited range of possible framings of the pandemic. Nevertheless, there is also experimental research on the differential impact of pandemic metaphors that shows, even at higher semantic contrast (e.g., "war" vs. "change"), that militaristic metaphors still perform worse in achieving pragmatic goals (see Burnette et al., 2021).

Also with regard to the evaluation of the chosen metaphors, a valid criticism is that the norming studies were conducted in a post-experimental manner. In an ideal research process, it is indicated to get a deeper insight into

the subjective evaluations of the metaphors by conducting norming studies beforehand.

In addition, today, as the pandemic has progressed, the number of framings for the pandemic has massively increased (see, e.g., Semino, 2021). For instance, the spread of the virus is sometimes described as a "wildfire," and more neutral metaphors, such as a "journey," have emerged for describing the course of the pandemic. All of this gives rise to further empirical testing of current metaphors for describing the pandemic and their performative effects.

Another limitation is that our research has mostly focused on behavioural compliance with and support for COVID-19 measures. Such variables are often very difficult to influence through subtle linguistic framing or are mediated by softer variables such as the mindset activated by a framing or participants' emotional responses (Burnette et al., 2021).

Taking this legitimate criticism into account, our studies can be seen as a small piece of the big puzzle that is COVID-19 framing. A central strength of our studies is that they allow comparisons across time and location. Our studies aimed to test popular framings in natural text environments at specific times of the pandemic to increase external validity. Nevertheless, this should also be considered as an influencing contextual factor on the general effectiveness of framing. Study 1 was conducted at a time when the infection rate was increasing exponentially in the United States, while the latter studies were performed at a time when the infection rate was low in Germany, but relatively high in the United States In Studies 2 and 3, we also aimed to test the additional effects of the specific text environment. In accordance with the exemplification theory (Zillmann & Brosius, 2000), we expected that the use of vivid, emotional, narrative reporting would serve as a supportive text environment for effective militaristic metaphors. The hypothesis that a congruency between reporting style and metaphor use leads to a higher effectiveness of framing was partly confirmed in the German sample, but not in the U.S. sample. However, this could have been due to the selection of the portrayed actors. Further research should investigate whether the style of reporting has greater effects when reports show affected patients rather than healthcare professionals.

In short, the findings of all experiments show a low to non-existent effectiveness of militaristic compared to non-militaristic metaphors in the COVID-19 context. This main finding echoes other research in various countries in which limited effectiveness of military metaphors in the COVID-19 context was found, even when contrasted with other, more vivid counter framings (Burnette et al., 2021) or a non-figurative control condition (Panzeri et al., 2021). Results of metaphor norming studies indicate that the use of militaristic compared to non-militaristic metaphors shifts perceived responsibility in the pandemic situation away from the individual and over to the government. Further research is needed to experimentally cross-validate this finding of responsibility diffusion with different metaphor framings of the pandemic. We do not question that militaristic metaphors might be useful in other societal crises, but we assume that more research is needed to get a clearer picture of *when which metaphors* work, in *which contexts*, and for *whom*. Our studies strongly suggest that accounting for a wide range of constraints and contexts is important to avoid systematically overestimating framing effects.

DESIDERATA

In a long-lasting pandemic situation such as that of COVID-19, it is particularly interesting to conduct longitudinal framing analyses to examine how the pragmatic effects of different framings change over different phases of the pandemic. This may include comparing framing effects at times of high and low incidence rates. Another goal of framing research could be to compare different cultural contexts. In this study, as well as in the study by Panzeri et al. (2021), it was found that militaristic metaphors had differing effects on individuals with left or right-wing ideology. Thus, another question might be whether framing effects of militaristic versus non-militaristic metaphors differ across political beliefs.

Ideal-typical framing research on societal crises would therefore (a) include a comprehensive pre-experimental evaluation of metaphors in the contexts under study, (b) cover different temporal as well as cultural contexts, (c) capture individual moderators such as political affiliation, (d) cover a wide range of dependent variables and (e) include diverse experimental designs to investigate framing effects at different semantic contrasts (e.g., testing figurative frames vs. neutral or non-figurative ones). All of this would help to better understand the contextuality of the effectiveness of different framings of societal crises.

ETHICAL COMPLIANCE STANDARDS

The authors declare that there is no conflict of interest and that all procedures performed in the studies were in accordance with the ethical standards of the German Association of Psychology (DGPS) and with the 1964 Helsinki Declaration and its later amendments. The study was approved by the local ethics committee (application number LEK-233). Informed consent was obtained from all participants.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix S1. Supporting Information.

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