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Version: Version of Record

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<http://dx.doi.org/doi:10.1075/ijcl.20.2.03dem>

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A computer-assisted study of the use of Violence metaphors for cancer and end of life by patients, family carers and health professionals*

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This study combines quantitative semi-automated corpus methods with manual qualitative analysis to investigate the use of Violence metaphors for cancer and end of life in a 1,500,000-word corpus of data from three stakeholder groups in healthcare: patients, family carers and healthcare professionals. Violence metaphors in general, especially military metaphors, are conventionally used to talk about illness, particularly cancer. However, they have also been criticized for their potentially negative implications. The use of innovative methodology enables us to undertake a more rigorous and systematic investigation of Violence metaphors than has previously been possible. Our findings show that patients, carers and professionals use a much wider set of Violence-related metaphors than noted in previous studies, and that metaphor use varies between interview and online forum genres and amongst different stakeholder groups. Our study has implications for the computer-assisted study of metaphor, metaphor theory and analysis more generally, and communication in healthcare settings.

Keywords: cancer, end of life, health communication, metaphor, semantic tagging

* The research presented in this paper was supported by the UK's Economic and Social Research Council (ESRC grant number: ES/J007927/1). We are grateful to Stephen Wattam (Lancaster University, School of Computing and Communications) for developing the bespoke database for this project.

1. Introduction

In this paper we report the methodology and findings of a computer-assisted quantitative and qualitative study of the Violence metaphors¹ used by UK-based cancer patients, family carers and healthcare professionals to talk about cancer and the end of life in a 1.5-million-word corpus of interviews and online forum posts. We use an innovative approach to large-scale metaphor analysis to investigate variation in the frequencies, forms and functions of the Violence metaphors used by the members of each group.

A number of recent studies have shown that metaphor use can vary considerably depending on genre, register and discourse community, and that this variation has both theoretical and practical implications (Deignan et al. 2013). A proper account of such variation is particularly important when (i) communication involves sensitive topics such as cancer and end of life and (ii) the choice of particular metaphors is controversial, as is the case with metaphors drawing from the broad semantic domain of Violence in relation to illness and dying (e.g. *dying after a battle with cancer*). While large-scale comparative studies are needed to fully appreciate variation in metaphor use, automated methods for metaphor identification are not yet fully comprehensive and reliable, in spite of recent progress (e.g. Berber Sardinha 2010). Against this background, this study makes the following contributions:

- i. it demonstrates an approach to the study of metaphor patterns in large datasets that combines manual qualitative analysis with quantitative semi-automated corpus methods;
- ii. it provides a systematic analysis of variation in the frequencies, forms and functions of the Violence metaphors used by the three main stakeholder groups in cancer care and end-of-life care: patients, family carers and health professionals.

Our findings have implications for the computer-assisted study of metaphor, metaphor theory and analysis more generally, and communication in healthcare settings.

In Section 2 we elaborate on the background to the study, and in Section 3 we explain our data and methodology. In Section 4 we present our quantitative results, and in Section 5 we discuss these with reference to additional qualitative

1. In this paper we refer to individual linguistic expressions and verbatim extracts from our data with italics. Groups of metaphorical expressions from a particular semantic area or domain are indicated by an initial capital, e.g. Violence metaphors (cf. ‘vehicle groupings’ in Cameron et al. 2010).

analysis of extracts from the data. In Section 6 we provide some concluding remarks on the importance of our study.

2. Metaphor and the topics of cancer and end of life

Metaphor involves talking and, potentially, thinking about one thing in terms of another on the basis of some perceived similarity between them (Semino 2008: 1). Metaphors are often used to communicate about experiences that are subjective, abstract, complex and/or sensitive, in terms of experiences that are simpler, more concrete and less sensitive. Illness, death and the emotions associated with both are often talked about metaphorically (e.g. Kövecses 2000). Military, War and/or Battle metaphors are conventionally used in relation to illness, and cancer in particular (e.g. the *battle with cancer* mentioned above, or former US President Nixon's *war on cancer* in the 1970s).

Lakoff & Johnson's (1980) influential Conceptual Metaphor Theory (CMT) accounts for the importance of metaphor choice in cognitive terms. Within this theory, conventional uses of metaphor in language are seen as evidence of patterns of metaphorical thought known as 'conceptual metaphors'. For example, the metaphorical use of military vocabulary in relation to illness would be argued to reflect a conceptual metaphor *ILLNESS IS WAR*, where *ILLNESS* is the 'target' conceptual domain and *WAR* is the 'source' conceptual domain. Different metaphors, or source domains, 'frame' a topic, or target domain, in different ways, highlighting some aspects and backgrounding others (Lakoff & Johnson 1980, Ritchie 2013). Examples (1) and (2) below from our data, for instance, involve contrasting 'framings' of cancer in terms of a battle and a journey respectively:

- (1) I have kind of prepared myself for a battle with cancer
- (2) we are on the Bowel cancer journey.

Amongst other things, the use of *battle* places the illness in the role of an opponent, while the use of *journey* potentially constructs it as a path.

The use of what we generally refer to as Violence metaphors in relation to cancer has been widely criticised, primarily because they position patient and illness as opponents, and suggest that not recovering is a personal defeat (e.g. Sontag 1979, Miller 2010, Granger 2014). As a result, metaphorical expressions relating to Violence have been avoided in some recent policy documents in the UK. The *NHS Cancer Reform Strategy* (2007), for example, does not contain any instances of the expressions *war* and *battle*, and talks instead of a cancer *journey*, with clinical *pathways* of care. Similarly, healthcare professionals involved in hospice care in

the UK describe patients experiencing a *good* death as being *at peace/peaceful* and accepting death as the *end* of one's *journey*. In contrast, patients who experience a *bad* death are described as seeing death as an opponent against which to *struggle*, *battle* or *fight* (Semino et al. 2014, see Semino et al. 2015 for further discussion of Violence and Journey metaphors used by patients and healthcare professionals).

Even these introductory examples show the limitations of the classic version of CMT, which tended to treat a language such as English as an undifferentiated whole, and to make claims about the conceptual metaphors shared by all speakers of that language (Lakoff & Johnson 1980, 1999). More recently, it has been shown that metaphor use varies according to a range of variables, including genre, register and membership of different 'discourse communities' — groups of people who "have texts and practices in common" (Barton 2007: 75; see also Caballero 2006, Steen et al. 2010, Goatly 2011, Deignan et al. 2013). This variation may involve different aspects of metaphor use, including what source domains are exploited and how frequently, and what linguistic expressions realise different source domains. Amongst other things, this may have consequences for the dominant framings of particular topics by members of different discourse communities, and for (mis)communication across discourse community boundaries (e.g. Littlemore 2001, Deignan et al. 2013).

Against the above background, we set out to investigate whether and how the members of the three different discourse communities represented in our data use Violence metaphors for cancer and the end of life in two different genres: semi-structured interviews and online forum contributions. While the use of metaphor in relation to cancer has already received some attention (e.g. Sontag 1979, Gibbs & Frank 2002, Reisfield & Wilson 2004, Williams Camus 2009), this is, to the best of our knowledge, the first systematic corpus-based study of the Violence metaphors used by the three stakeholder groups represented in our data.

3. The corpus and our approach to metaphor identification and analysis

Our research builds on a growing trend towards the use of corpora and corpus linguistic software tools for the investigation and analysis of patterns of metaphor in discourse (e.g. Charteris-Black 2004, Koller 2004, Deignan 2005, Semino 2005, Stefanowitsch & Gries 2006, L'Hôte & Lemmens 2009, Deignan & Semino 2010). Research in this area to date has involved the use of corpus methods mainly (i) to test the claims of CMT by carrying out systematic investigations of metaphorical expressions in general-purpose corpora (e.g. Deignan 2005, Stefanowitsch 2006), or (ii) to carry out specific investigations of patterns of metaphorical expressions in particular genres and discourses (e.g. Charteris-Black 2004, Koller 2004, Nacey

2013). The exploitation of corpora for metaphor research is constrained, however, by the fact that the identification of metaphorical expressions in texts has not yet been fully automated, despite continued progress in this area (e.g. Mason 2004, Berber Sardinha 2010, Assaf et al. 2013, Gargett & Barnden 2014). Hence, existing studies have primarily relied on a combination of traditional “manual” analysis with the concordancing of selected metaphorical expressions (e.g. Skorczynska & Deignan 2006). However, this method only enables researchers to find further instances of previously identified expressions. In order to overcome these limitations, we employ an adapted version of the UCREL² Semantic Analysis System (USAS) tagger (Rayson et al. 2004) in *Wmatrix* (Rayson 2008). The USAS semantic annotations (‘tags’) can be used to search for all expressions belonging to particular semantic fields that are likely to correspond to the source domains of CMT (see also Cameron et al.’s 2010 ‘vehicle domains’). In this way, it is possible to identify open-ended sets of potential metaphorical expressions in large datasets, without being restricted to pre-established lists of selected expressions (Koller et al. 2008).

3.1 The MELC corpus

Our corpus was constructed as part of the project Metaphor in End-of-Life Care, and will be referred to as the MELC corpus. It comprises approximately 300,000 words collected from semi-structured interviews and approximately 1.2 million words sampled from online forum contributions, totalling approximately 1.5 million words. The interviews involved:

- i. sixteen senior healthcare professionals working in hospices or hospital-based palliative care;
- ii. twenty-nine patients with a diagnosis of terminal cancer (Payne et al. 2008);
- iii. seventeen unpaid family carers looking after family members who have a terminal diagnosis (Payne et al. 2009).

Our online data was sourced from publicly-accessible online forum³ discussion threads dated between 2007 and 2012. Although the fora were all UK-based, we cannot be certain that all users were native speakers, and we did not have access

2. UCREL = University Centre for Computer Corpus Research on Language.

3. Data collected from sites that are publicly accessible and not password protected is generally considered to fall outside of the requirement for informed consent. Seale et al. (2010), implicitly supported by editors and reviewers who have published their numerous studies based on such data, argue that such contributions are already within the public sphere and therefore require no informed consent or ethical review. We informed the respective webhosts of our plans to use the anonymized data in our study and met with no objections.

to their demographic details. However, our observations indicated that the vast majority were UK-based and fluent speakers of English. The patient and carer data was mass-downloaded from a publicly-accessible online cancer support forum. We used a bespoke “spidering” programme to retain the conceptual structure of the original online resource, so that a single message-board thread corresponds to a single corpus text, even if that thread was originally spread across multiple separate webpages. Within each thread/text, different posts and the name of the user responsible for each one are identified with annotations. This metadata was then transferred into a relational database in which all threads, users and posts are represented and cross-linked. A web-interface to this database allowed us to annotate user types — identifying users as patients or carers (or some other role) by examining how they identify themselves in their initial posts to the forum. In this way, patient data was collected from posts by forum participants who discussed topics relevant to our project, the majority of whom also self-identified as being terminally ill with cancer (the others may also have been terminally ill but did not state this explicitly). Carer data was collected from posts by participants self-identifying as caring for someone who was currently terminally ill with cancer, or who had recently died following cancer-related terminal illness. A selection of relevant posts concerning end-of-life care was identified and extracted manually for inclusion in the corpus.

Most of our online forum data from healthcare professionals was mass-downloaded from a publicly-accessible online forum for medical professionals. Relevant posts around end-of-life care were extracted manually in the same manner as for patients and carers, but there was much less data available. We therefore supplemented these contributions with relevant posts from UK-based doctors’ blogs, and online comments from medical professionals on *British Medical Journal* articles addressing end-of-life/palliative care issues. The content and structure of the MELC corpus are summarised in Table 1.

Table 1. Data in the MELC corpus

	Patients	Unpaid family carers	Healthcare professionals	Totals
Semi-structured interviews	100,859	81,564	89,943	272,366
Contributions to online fora	500,134	500,256	253,168	1,253,558
Totals	600,993	581,820	343,111	1,525,924

From the whole corpus, a sample of just over 92,000 words (representative of, and quantitatively balanced across, each data type and stakeholder group) was extracted for the preliminary stage of manual analysis, which is explained in the next sub-section.

3.2 Methods used to investigate Violence metaphors in this study

We began with a manual analysis of the sample corpus texts to identify and tag metaphorical expressions and similes relevant to the experience of cancer and end of life. Metaphorical expressions were identified at the level of individual word tokens using the well-established Metaphor Identification Procedure (MIP) (Pragglejaz Group 2007, see also Steen et al. 2010). This process involved three members of the project team and was assisted by the online collaborative annotation tool *eMargin* (Gee & Kehoe 2011–2014), which enables users to highlight, colour-code, assign tags and add notes to words or stretches of text.

Once the metaphorical expressions had been identified in the sample corpus, they were tagged for semantic domains corresponding to their literal meanings in a data-driven fashion, using labels such as Violence, Journey, Machine and Sports/Games. These metaphor groups are similar to Cameron et al.'s (2010) concept of 'vehicle' groupings, and can be related to the 'source domains' of CMT.

The tagged *eMargin* text files in the sample corpus were then exported as XML files and imported into a database specially created for the project. This database also incorporates the USAS tagger output and a flexible web-based search interface, enabling a list of tokens for each *eMargin* metaphor group label to be shown, alongside the USAS semantic domain tags to which the tokens correspond. With the help of that database, seven USAS domains were identified as the most promising sources of further similar metaphorical expressions of Violence. These are listed below with their alphanumeric USAS tag, USAS semantic domain name, and examples of the metaphorical expressions each contains:

- i. G3 Warfare (e.g. *fight* as a verb, *battle*)
- ii. A1.1.1 General actions, making (e.g. *blast*, *confront*)
- iii. A1.1.2 Damaging and destroying (e.g. *destroy*, *shatter*)
- iv. E3– Violent/angry (e.g. *hit*, *attack*)
- v. S8+ Helping (e.g. *defend*, *protect*)
- vi. S8– Hindering (e.g. *fight* as a noun)
- vii. X8+ Trying hard (e.g. *struggle*)

In the next stage of the analysis we extracted concordance data for each of the above semantic domains, using *Wmatrix*, and exported the concordance lines to *Microsoft Excel* spreadsheets, where further manual analysis was carried out to determine which items were used metaphorically in relation to the experience of cancer and end of life.⁴ For the purposes of this study, we regarded as Violence

4. In this stage of the analysis we made decisions about metaphoricity at the level of lexical units in the *Wmatrix* lexicon, which treats some multi-word expressions as single items.

metaphors any metaphorical expressions or similes whose literal meanings suggest scenarios in which, prototypically, a human agent intentionally causes physical harm to another human, with or without weapons. Less prototypical scenarios involve non-human agents, the threat or consequences of violence, or non-physical harm.

To sum up, our two-stage methodology enabled us to identify potential metaphor candidates in a semi-automated manner and subsequently to disambiguate metaphors manually through the examination of concordance lines. Approaching the identification of metaphors via semantic domains thus enabled us to locate a greater diversity of Violence metaphors than would have been possible with simple word type or lemma searches for further cases of those metaphorical items identified in the sample corpus. Patients use a variety of types of metaphor to talk about their experience of illness, as noted above. However, of those we studied in the context of cancer and end of life, Violence metaphors were the most frequent overall in our data, and they are also highly controversial in the area of (terminal) illness (as discussed in Section 2).

4. Quantitative analysis of Violence metaphors

The methodology described in the previous section enabled us to identify 2,268 Violence metaphor tokens relevant to cancer and end of life in the whole corpus: 225 in the interview data and 2,043 in the online data. The frequency of use among each stakeholder group and in each genre is shown in Table 2, including raw frequencies (RF) and frequencies normalised per 1,000 tokens (NF). Because online forum data makes up a large proportion of the corpus, it will strongly influence results where the two genres are combined. Therefore, we break the data down to consider interviews and online forum discussions as separate genres.

Table 2. Distribution of Violence metaphors in the MELC corpus

	Patients		Unpaid family carers		Healthcare professionals		All stakeholder groups combined	
	RF	NF	RF	NF	RF	NF	RF	NF
Interviews	72	0.71	80	0.98	73	0.81	225	0.83
Online forum posts	899	1.80	807	1.61	337	1.33	2,043	1.63
Interviews & online forum posts combined	971	1.62	887	1.52	410	1.19	2,268	1.49

The figures in Table 2 show that members of all three stakeholder groups use Violence metaphors to talk about cancer and end of life in both genres. Overall, the normalised frequencies per 1,000 tokens show that patients and carers use Violence metaphors for these topics with relatively similar frequencies, whereas the frequency for healthcare professionals is somewhat lower. This difference across stakeholder groups was found to be statistically significant using the chi-square test for uniformity ($p < 0.05$, 2df, $\chi^2 = 26.93$).

In interviews, members of all three stakeholder groups used fewer than 1.0 Violence metaphors per 1,000 tokens. Although carers show the greatest use and patients the least use (0.98 and 0.71 per 1,000 tokens, respectively), there was no statistically significant difference in use among the three groups (again using the chi-square test for uniformity: 2df, $\chi^2 = 3.92$). In the online data the use was higher among all three groups (between 1.0 and 2.0 Violence metaphors per 1,000 tokens), with relatively greater frequency of use of Violence metaphors by patients (1.8 per 1,000 tokens) than by carers or professionals (1.61 and 1.33 per 1,000 tokens respectively); this difference across groups was statistically significant (2df, $\chi^2 = 22.57$). So in the online data professionals make less use of Violence metaphors than the other two groups, and there is also a notable difference between the frequency of use by patients and carers. To begin to explain the reasons for these variations in frequency of use, we now consider the variety of different kinds of Violence metaphors used by the three stakeholder groups.

A wide variety of Violence metaphors were present in the data, and for reasons of space we confine our analysis to only those which occurred ten or more times in any one stakeholder group, when the interview and online data were combined. Following this rationale, we analysed 68 per cent of the 2,268 tokens identified as Violence metaphors: 677 in the patient data, 630 in the carer data and 230 in the professional data. Each token is counted separately in our quantitative results, but we group inflectionally and derivationally-related word forms together in our discussions of results in this section. Such groupings are indicated in double quotes. For example, we subsumed *fight* as a noun and as a verb, and the noun *fighter*, under a metaphor group labelled "fight" (although we do not assume that all forms in a particular group are used in the same way). The raw and normalised frequencies of this subset of Violence metaphors used by each stakeholder group (combined interview and online data) are given in Table 3, and then displayed as a graph in Figure 1 to illustrate the relatively higher or lower use.

When just the frequently-used metaphors are included, the normalised total figures at the bottom of Table 3 show that the trend in relative frequency of use remains similar to that for all the Violence metaphors in Table 2 above: the patients use relatively more (1.13 per 1,000 tokens), the carers slightly fewer (1.08) and the professionals considerably fewer (0.67).

Table 3. Most frequently-used Violence metaphors in the corpus, by stakeholder group

Metaphors	Patients		Carers		Professionals	
	RF	NF	RF	NF	RF	NF
“Aggressive”	30	.05	15	.02	8	.02
“Attack”	13	.02	8	.01	2	.01
“Battle”	61	.10	67	.12	11	.03
“Beat_up”	5	.01	20	.03	0	0
“Blow”	16	.03	8	.01	4	.01
“Break”	11	.02	22	.03	24	.07
“Break_down”	6	.01	16	.03	5	.01
“Confront”	4	.01	0	0	22	.06
“Cruel”	9	.01	22	.04	0	0
“Cut”	13	.02	18	.04	13	.04
“Devastate”	18	.03	43	.07	4	.01
“Fall_apart”	5	.01	11	.02	2	.01
“Fight”	204	.34	172	.30	36	.10
“Hit”	53	.09	51	.09	12	.03
“Kick”	58	.10	29	.06	4	.01
“Knock”	11	.02	4	.01	2	.01
“Side” (in <i>on</i> [someone’s] <i>side</i>)	10	.02	1	0*	0	0
“Protect”	19	.03	32	.06	33	.10
“Shatter”	9	.01	13	.02	1	0*
“Shoot”	15	.02	7	.01	1	0*
“Struggle”	69	.11	60	.12	31	.09
“Tackle”	14	.02	6	.01	7	.02
“War”	10	.02	2	0*	4	.01
“Win”	14	.02	4	.02	4	.01
Total	677	1.13	631	1.08	230	0.67

*fewer than 0.01 cases per 1,000 tokens

As with the frequency data above in this section, the overall trends in the kinds of Violence metaphors used are inevitably more strongly influenced by the online data than by the interview data, because of the difference in proportions in the corpus. Calculating the raw and normalised frequencies for each frequently-used metaphor according to genre (see Table 4) enables us to highlight any contrasts in their use between interview and online participants, and we point these out in our

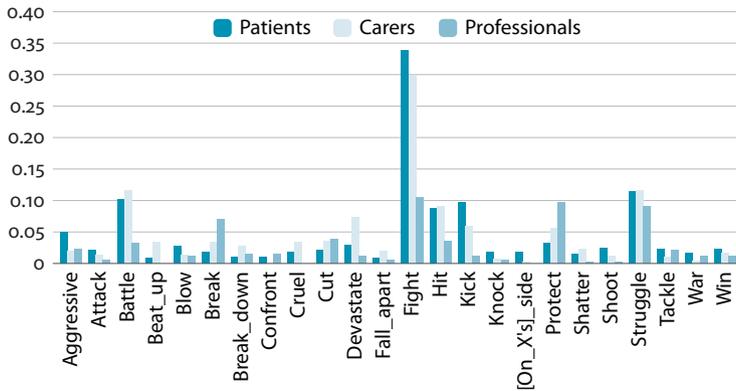


Figure 1. Relative use of most frequent Violence metaphors by each stakeholder group (per 1,000 tokens)

discussions where relevant. The figures from Table 4 are then displayed in graphs in Figure 2 (interviews) and Figure 3 (online).

The combined interview and online results, in Table 3, show that “fight” metaphors (i.e. those involving *fight* as a verb or noun, or *fighter*) are the most frequently used kind of Violence metaphors amongst patients and carers. Amongst professionals, “fight” and “protect” metaphors are most frequently used (to the same extent). Patients use “fight” metaphors somewhat more often than carers, and both patients and carers use these metaphors substantially more often than professionals; this difference is statistically significant (using the chi-square test for uniformity: $p < 0.05$, 2 df, $\chi^2 = 46.94$). Members of all three stakeholder groups talk about cancer and end of life in “fight” terms, therefore, but professionals much less so (in terms of frequency per 1,000 tokens).

When the results are broken down by genre (Table 4), it becomes clear that “fight” metaphors are the most frequently-used Violence metaphor by patient interviewees, but carer and professional interviewees use “struggle” metaphors more than any other (see also Figure 2).⁵ For patients, the second most frequently-used Violence metaphor is “aggressive” (which often functions as a medical technical term for the illness or the treatment in the context of cancer care), and for carers “kick” and “aggressive” are the next most frequently used. Carer interviewees do not use “battle” or “devastate” metaphors at all, in contrast to carers writing online. “Fight” metaphors are the second most frequently-used Violence metaphor by professional interviewees, followed by “confront” and then “break”. “Confront”

5. We did not carry out tests for statistical significance for individual metaphors in each genre because the frequencies were very low, especially in the interview data.

Table 4. Most frequently-used Violence metaphors in the corpus: Interviews and online forum posts

Metaphors	Patients				Carers				Professionals			
	Interviews		Online		Interviews		Online		Interviews		Online	
	RF	NF	RF	NF	RF	NF	RF	NF	RF	NF	RF	NF
“Aggressive”	8	.08	22	.04	4	.05	11	.02	0	0	8	.03
“Attack”	2	.02	11	.02	1	.01	7	.01	0	0	2	.01
“Battle”	4	.04	57	.11	0	0	67	.10	5	.06	6	.02
“Beat_up”	0	0	5	.01	0	0	20	.04	0	0	0	0
“Blow”	5	.06	11	.02	0	0	8	.02	0	0	4	.02
“Break”	1	.01	10	.02	2	.02	20	.04	7	.08	17	.07
“Break_down”	1	.01	5	.01	0	0	16	.03	1	.01	4	.02
“Confront”	0	.00	4	.01	0	0	0	0	8	.09	14	.06
“Cruel”	2	.02	7	.01	0	0	22	.04	0	0	0	0
“Cut”	0	0	13	.03	3	.01	15	.03	0	0	13	.05
“Devastate”	2	.02	16	.03	0	0	43	.09	1	.01	3	.01
“Fall_apart”	1	.01	4	.01	0	0	11	.02	0	0	2	.01
“Fight”	13	.13	191	.38	2	.02	170	.34	12	.13	24	.09
“Hit”	5	.05	48	.10	2	.02	49	.10	4	.04	8	.03
“Kick”	2	.2	56	.11	5	.06	24	.05	0	0	4	.02
“Knock”	1	.01	10	.02	0	0	4	.01	0	0	2	.01
“Side”(in <i>on</i> [someone’s] <i>side</i>)	2	.02	8	.02	0	0	1	0	0	0	0	0
“Protect”	1	.01	18	.04	1	.01	31	.06	3	.03	30	.12
“Shatter”	1	.01	8	.02	0	0	13	.03	0	0	1	0
“Shoot”	0	.00	15	.03	0	0	7	.01	0	0	1	0
“Struggle”	2	.02	67	.13	8	.10	52	.10	16	.18	15	.06
“Tackle”	1	.01	13	.03	0	0	6	.01	2	.02	5	.02
“War”	0	.00	10	.02	0	0	2	0	0	0	4	.02
“Win”	0	.00	14	.03	0	0	4	.01	0	0	4	.02
Total	54	.54	623	1.25	28	.34	603	1.21	59	.66	171	.68

is particular to health professionals and not used by carers in interview or online data, nor by patient interviewees, and only minimally by patients online.

For the online patients and carers, “fight” is the most frequently-used Violence metaphor (as for the patient interviewees, but not the carer interviewees). For

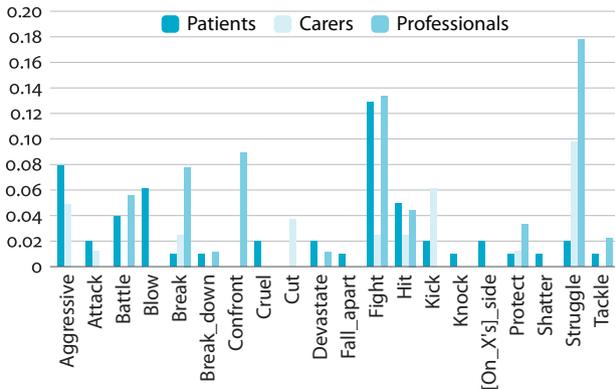


Figure 2. Relative use of most frequent Violence metaphors by each stakeholder group (per 1,000 tokens): Interviews

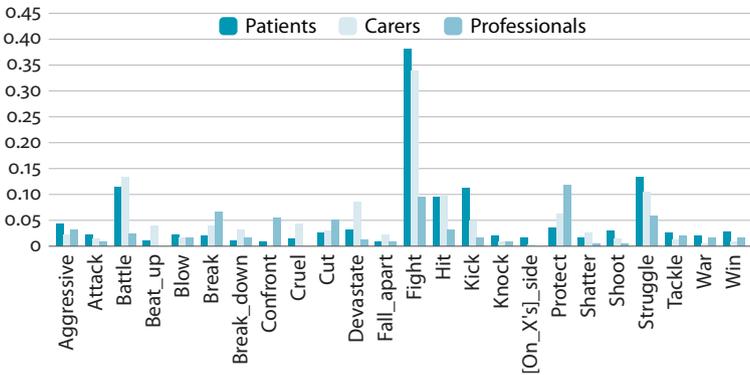


Figure 3. Relative use of most frequent Violence metaphors by each stakeholder group (per 1,000 tokens): Online forum posts

online patients, “struggle” and “battle” are the next most frequently-used, followed by “kick”, while for carers it is “battle”, “struggle” and “hit” (all used to the same extent), and then “devastate”. In the online professionals’ data, “protect” is the most frequently-used Violence metaphor, followed by “fight”, and then “break” and “confront”. However, a more detailed, qualitative analysis of the use and function of different metaphorical expressions is required to make sense of our quantitative results. This will be presented in the next section.

5. Qualitative analysis of frequently-used Violence metaphors

In this section we turn from frequencies of metaphor use to form and function, and investigate more deeply how members of the three stakeholder groups use Violence metaphors in our data. We consider each of the three stakeholder groups in turn, and focus on what aspects of the speakers'/writers' experiences are expressed by means of Violence metaphors, and what framings the various uses of these metaphors suggest. Examples from the interview data and the online data are indicated by [I] and [O] respectively, and spelling, punctuation and grammar in quotations from the online data are reproduced exactly as in the original forum posts.

5.1 Violence metaphors used by patients

Patients use “fight” and “battle” metaphors to express their perception of their relationship with their disease. More specifically, these metaphors often express the desire and effort to get better, and present the patient him/herself as active and determined, as in Examples (3) to (7):

- (3) I don't intend to give up; I don't intend to give in. No I want to fight it. I don't want it to beat me, I want to beat it. [I]
- (4) you keep going, and fight it, fight it, and that's all you can do really. [I]
- (5) I have not hunkered down in my trench to just merely defend myself against the demon but have picked up my sword and taken the fight to the demon [O]
- (6) my Consultants recognised that I was a born fighter [O]
- (7) You battle on. [I]

When treatment fails, however, “fight” and “battle” metaphors express a particularly negative perception of lack of recovery; cf. Examples (8) to (10):

- (8) we become ill to a point where we cannot fight any more, then we die. [O]
- (9) I feel such a failure that I am not winning this battle [O]
- (10) Do I wither or retreat from this weary battle? [O]

The Violence metaphors in Examples such as (3) to (6) appear to function in ways which are arguably positive for the patients, through reinforcing a sense of agency and control over what is happening to them. However, Example (7) suggests difficulty rather than agency and control, while in Examples such as (8) to (10) patients

position themselves in the role of unsuccessful fighters. Example (9) is particularly negative, as the patient sees the illness as winning and expresses feelings of personal failure (although being unable to get well is obviously not the patient's fault).

Related to the stance taken by patients towards the disease is the use by online forum contributors of *fighting spirit* as the mental attitude which underlies the *fight*; see Examples (11) to (14):

- (11) Your words though have given me a bit more of my fighting spirit back. [O]
- (12) I am not really too down, I am still in positive fighting spirit mode [O]
- (13) Keep up your fighting spirit. [O]
- (14) You can't waste energy fighting things that are beyond your control, instead you can use that fighting spirit to get yourself back to full health [O]

This expression generally appears to function as a means of self-motivation and self-comfort (as in Examples (11) and (12)), or as a way of encouraging others (Examples (13) and (14)). The concept of 'fighting spirit' has been noted in other studies with regard to the feelings and emotions of patients with cancer. Seale (2002: 110, 125), who compares and contrasts newspaper reports of the emotions expressed by men and women with cancer, finds that both sexes are portrayed as using 'fighting spirit' to express positive feelings. Seale (2002) does not focus specifically on Violence metaphors, but nevertheless concludes that through news media "men and women alike are encouraged to participate in an heroic resistance" (Seale 2002: 125) to cancer, and this accords with the implications of many of the "fight" metaphors in our study. Salmon & Hall (2003: 1975) argue that the concept of the 'fighting spirit' of cancer patients has become culturally popular because it underlies an idea that fighting can improve the chances for survival. They argue, however, that the fighting process does not reflect the same attitude or emotions for every patient, and can be focused not only towards the disease (potentially empowering) but also against the emotions of the patient (potentially disempowering) (see Semino et al. 2015 for further discussion of Violence metaphors used in empowering or disempowering ways by patients and healthcare professionals).

To a lesser extent, patients also use Violence metaphors to frame their relationship and interactions with healthcare professionals. The "fight" metaphors in Examples (15) to (17) all concern the varying availability of drugs to treat cancer. Here patients describe as a *fight* their own or others' efforts to get the treatment they need:

- (15) that first lady that was well publicised about fighting and getting the Herceptin; [I]

- (16) I will fight for Avastin. [O]
- (17) it must be dispiriting when you are battling as hard as you can, not to be given the armour to fight in, [O]

Examples such as these suggest a negative perception of patients' relationships with healthcare professionals, and imply a suspicion that doctors (or the healthcare system within which doctors and other professionals operate) do not always act in the patients' interests.

As shown in Table 3, patients use a specific subset of Violence metaphors to express the emotional consequences of being ill with cancer. In the Examples (18) to (20) below, the patient is *hit* by the illness itself and by its emotional effects:

- (18) it hits people in so many different ways. [I]
- (19) emotional things can take a long time to hit home. [O]
- (20) The emotional side of it has hit me far harder than I ever imagined, [O]

Similar metaphors are also used in the online data to convey the patients' perception of the effects of cancer treatment, as in Examples (21) and (22):

- (21) Deep breath, before the big wave hits you! [chemotherapy] [O]
- (22) They hit me with radiation for 10 days. [O]

Metaphors involving "hit" and "kick" are also used by online forum contributors to express their efforts and determination to get better; cf. Examples (23) to (25):

- (23) Colorectal tumours are treatable and survivable, but the earlier and the harder you hit them, the better your chances. [O]
- (24) I am just doing what I have to do to try and kick this disease's ass. [O]
- (25) Don't let the Demon get you down, spit it in its eye and give it a swift kick up the wahoola. [O]

In contrast with similar uses of "fight" and "battle" metaphors in Examples (3) to (7) above, the use of colloquial terms for body parts such as *ass* (Example (24)) and *wahoola* (Example (25)) typifies a frankness and strength of feeling that is more apparent in the online data than in the interview data, which does not feature similar language. The candid and occasionally intimate language of the interactions between some of the patients in the forum data can to some extent be attributed to the 'online disinhibition effect', described by Suler (2004: 321) as the way in which "[w]hile online, some people self-disclose or act out more frequently or intensely than they would in person." The disinhibition manifested by patients in our online data is 'benign' (as opposed to 'toxic', a distinction noted by Suler 2004: 321), as

the informal expressions and frankness about aspects of the illness serve to add humour and strengthen intimacy in the online forum discussions, where relationships between participants build up over many months. This contrasts with the interview situation, which inevitably involves a brief and more formal one-off relationship between interviewee and interviewer.

Finally, we noted an interesting use of metaphors involving self-inflicted violence to express self-motivation, as in Examples (26) and (27):

(26) So I woke up this morning and gave a very large kick to myself! [O]

(27) What I needed was a very large kick up the backside. [O]

As with Examples (23) to (25), the expression *give oneself a kick* is relatively informal and potentially humorous, and is only found in our online patient data.

In this subsection we have noted Violence metaphors with a variety of forms and functions in the patient data. Functionally, Violence metaphors are used to express different topics, especially the patients' relationships with their illness and other people, and processes of coping with the illness and with the treatment. On the one hand, patients use Violence metaphors to emphasise their determination to get better and/or cope with cancer, to get the treatment they feel they need, and to remain self-motivated, and on the other, they use them to express feelings of personal failure and negative perceptions of the illness, the treatment and health-care professionals. The choices of Violence metaphor suggest different attitudes and evaluations, and all are central to the patients' illness experience.

5.2 Violence metaphors used by carers

As the results in Table 4 show, family carer interviewees use comparatively few "fight" metaphors (0.02 per 1,000 tokens, compared to 0.13 for the patient interviewees) and no "battle" metaphors at all. One of the few carer interviewees who does use a "fight" metaphor does so not in the sense of a warlike battle but in the sense of a violent sport (which is semantically related), suggesting a sense of opposition between himself and the patient he cares for in a boxing ring:

(28) I realised that I had to fight my corner, because if I relied on [initial] she would just retain me as a personal servant. [I]

In Example (28) the "fight" metaphor is used to describe the carer's perception of how he has to argue for the right to go out to a social event on his own and have a personal life. The boxing ring scenario also conveys the notion of a contained space in which the carer perceives the fight to take place.

Online carers use “fight” metaphors nearly as much as online patients, and employ them to describe the patient’s attempt to get better. In some cases, they are united with the patient in fighting a metaphorical battle, as in Example (29):

(29) he’s vowed to fight, I’ve vowed to back him no matter what. [O]

In other cases, the carers represent the patients as battling on their own; cf. Examples (30) and (31):

(30) It is his battle and I have to respect his wishes how he wants to fight it. [O]

(31) My husband lost his battle after 10 ½ months. [O]

Carers, like patients, also use “fight” metaphors for their interactions with health-care professionals, sometimes on behalf of the patient, as in Examples (32) and (33):

(32) It seems to me that while my husband fights cancer, I am fighting the system.
[O]

(33) wondering why everything is a battle with the NHS. [O]

Carers, like patients, use “hit” metaphors to represent themselves as the victims of metaphorical violence, particularly in the online data. However, carers are potentially *hit* twice. First they are *hit* by the illness, alongside the person they care for; see Examples (34) and (35) below:

(34) It hits indiscriminately and without remorse. [O]

(35) This disease is awful and often hits the ones that deserve it the least. [O]

Later, carers are *hit* by bereavement and grief as the sole victims of violence, as in the case of Examples (36) and (37):

(36) it does get easier. Not better, but definitely easier. But it still hits like a sledgehammer sometimes. [O]

(37) Now grief is hitting me every day. [O]

Importantly, for the carers the fights and battles with terminal illness are inevitably lost when the patient dies (as in Example (31) above). Online carers frequently use metaphors that suggest the effects of violence, particularly “devastate”, which is rather more frequent in the carers’ data than the patients’ or professionals’ data (shown in Tables 3 and 4). See Examples (38) to (40) below:

(38) You must be absolutely devastated. [O]

(39) I know the devastation and sadness you feel. [O]

(40) how can you heal such a devastating rift in your life? [O]

The “devastate” metaphors used by carers are often oriented towards other carers (as in Examples (38) and (39)), rather than self-oriented: their function seems to be to provide comfort and solidarity amongst people who have had similarly unhappy experiences. “Devastate” metaphors are not used at all by carer interviewees. This is likely to reflect, at least in part, the fact that all the carer interviewees were still caring for a terminally ill person, whereas some of the online carers were bereaved and discussing their feelings of grief, although “devastate” was sometimes used in the context of the diagnosis of cancer as well as with regard to bereavement. Also, the interview setting is relatively more formal in contrast to the perceived informality and intimacy of the online forum environment, where carers feel able to express their deepest emotions freely.

As with the patient data, Violence metaphors used by carers have a variety of forms and functions. Functionally, they are used to express relationships (as with the patient data), and the process of grief and/or state of bereavement (in contrast with the processes of coping and managing the illness, which were prevalent in the patient data). Violence metaphors shape the position and perspective of the carers, in their experience of the disease through the one they care for, and highlight the particular difficulties which carers experience, notably bereavement, grief, and the need to subordinate their own needs and wants to the terminally ill person.

5.3 Violence metaphors used by health professionals

In common with patients and carers, health professionals also use “fight” and “battle” metaphors to express their perception of their relationship with illness, particularly in online discussions, as in Examples (41) and (42):

(41) You are now the general and you see your troops killed in battle. [O]

(42) sometimes one is fighting for patient survival against the odds. [O]

However, the relationship between the professionals and illness is of course different to that between patients or carers and the illness. The professionals choose to engage in the relationship, and it is part of their professional role, whereas the patients do not have a choice. In Example (41) doctors in particular are described as being in a leadership position in a war, with responsibility for the patients, or *troops*, who may be killed in battle (against illness); Example (42), too, positions the professional as fighting on behalf of the patient. “Fight” and “battle” metaphors are relatively less frequent in the professionals’ interview data, however, where “struggle” metaphors predominate (shown in Table 4). Professional interviewees use “struggle” metaphors to express the problems they face in the process of caring

for and communicating with people who are dying; see Examples (43) and (44) below:

- (43) we're all human and we're all struggling and trying our best. [I]
- (44) as healthcare professional we really struggled with that because we would always be honest with patients. [I]

Professional interviewees also perceive conflicted feelings in the dying patients who are in their care, which they express in terms of an internal *struggle* for the patients (Example (45)):

- (45) I think these patients really struggle deeply because they are ready to die, they've given up and they want to die and they find it very difficult to live in those last few days or weeks. [I]

The difficulties of the families of dying patients, too, are sometimes described as involving a *struggle* with the end-of-life situation (Example (44)):

- (46) the family are struggling with them being at home. [I]

Whereas patients and carers both construct scenarios in which they are fighting against the healthcare professionals, the professionals present themselves as fighting with a higher authority, i.e. the government administrative body which provides the funding for treatment of patients, as in Examples (47) and (48):

- (47) fighting with health authorities and PCTs for [...] funding. [O]
- (48) it's a constant battle to get the funding. [I]

The quantitative results in Table 3 showed that “protect” metaphors are used relatively more by professionals than by patients and carers, corresponding with the positions of leadership and authority held by the professionals and a sense of the fight being on behalf of others in a vulnerable position (i.e. the patients and carers, as in Examples (41) and (42) above). Professionals use “protect” metaphors to describe their perception of acting in the interest of patients and their families (Examples (49) and (50) below):

- (49) I think we want to protect families from the reality. [I]
- (50) we (doctors) must focus on the protection of our patients and on advancing palliative care. [O]

Related to “protect” metaphors are “confront” metaphors, which spell out the ultimate adversary or fate which doctors are protecting patients and families from: death. Particularly in the online data, professionals use “confront” metaphors in

describing their professional role, casting themselves in opposition to death; cf. Examples (51) and (52):

- (51) What do you think about being confronted to repetitive situations of death
[O]
- (52) we don't confront death head on, don't plan for it, and don't talk about it
enough. [O]

In our data, the professionals' use of "protect" and "confront" metaphors casts them as agents in saving their patients in an almost heroic way. Sleeman (2013) claims that many healthcare professionals are reluctant to talk about death with patients (which is reflected particularly in our Example (52) above). She argues that this is because there exists a problematic view that patient death represents failure on the part of the professional, a view which needs to be adjusted if communication about death and dying is to be improved.

Overall, in our analysis of the healthcare professional data we have found a variety of functions of Violence metaphors: the professionals cast themselves as being in a relationship with the disease, and indeed with death, on behalf of the patient (and the patient's family). Whilst the death of the patient as failure is not expressed explicitly in our data, this is arguably implicit in scenarios in which professionals and disease/death are constructed as adversaries. The metaphorical fight for treatment is present in the professionals' data as it is in the patient and carer data, but there is a difference that reflects different positions in a hierarchy of control over resources: patients and carers perceive themselves as fighting the professionals for the needed treatment, and professionals in turn perceive themselves as fighting the funding bodies to get the resources to provide treatment.

In this section overall, we have shown that patients, carers and professionals choose Violence metaphors to perform particular functions, which differ from one group to another. Carers employ particular Violence metaphors (notably "devastate") to express emotions and solidarity in their situation of bereavement. For patients, Violence metaphors add value to the expression of personal determination (in coping with and managing the illness), and mutual solidarity (the encouragement of others in the same situation), particularly through "fight" and "battle" metaphors. These findings explain the greater motivation for (and frequency of) their use by patients, particularly, when compared to professionals. The professionals' role in relation to the illness is very different: they use Violence metaphors to construct a professional identity which frames them as acting in a protective, defensive and almost heroic manner on behalf of the patients for whom they care. Furthermore, professionals may well be aware that the use of Violence metaphors is discouraged in UK policy documents, as mentioned above (in Section 2).

6. Conclusions

Our paper has implications for: the computer-assisted study of metaphor in large data sets; metaphor theory and analysis more generally; and communication in healthcare settings. As noted in Section 3.2, patients, carers and healthcare professionals use a variety of metaphors to talk about the experience of illness, but of the broad metaphor patterns we studied in detail that were relevant to our topic of cancer and end of life, Violence metaphors were the most frequent. They were selected as the focus of this paper as they are the most controversial (as argued in Section 2).

We have demonstrated the value of combining semi-automated quantitative analysis with detailed qualitative analysis to arrive at a more comprehensive account of Violence metaphors than would have been possible otherwise. The initial manual analysis of a sample of data from the whole corpus led us to an informed application of semi-automated quantitative corpus linguistic methods (using the USAS semantic annotation tool in *Wmatrix*) to search for open-ended sets of violence-related linguistic expressions in our data. We were thereby able to locate a wider range of Violence metaphors than would have been possible either purely manually, or by using corpus techniques limited to searching for prototypical metaphorical expressions such as “battle” and “fight” which are known to be used in relation to cancer and end of life. As our results bear out, these are by no means the only kinds of Violence metaphors used frequently in this context. For example, we found that “fight” and “battle” were part of a larger pattern of metaphors with a common adversarial theme (including “struggle”, “protect”, “confront”, “hit” and “kick”), which we were able to unpack in terms of the different ways they are used by different stakeholder groups.

We have shown that corpus-assisted methods have facilitated a more detailed and nuanced assessment of Violence metaphors used around cancer and the end of life than has been achieved to date. Our findings reveal that there is no single “war” or “military” metaphor used to describe being ill with cancer, but rather that patients, carers and healthcare professionals use a much wider set of violence-related metaphors than have been noted in previous studies (e.g. Reisfield & Wilson 2004, Miller 2010). We have also noted both quantitative and qualitative differences in metaphor use depending on both genre (interviews vs. online forum posts) and membership of different stakeholder groups. We have shown in detail how differences in frequency and type of metaphors used can only be properly accounted for by detailed attention to the functions that metaphors perform in context. Our study therefore supports a growing line of research on metaphor that takes a range of contextual variables into account in studying patterns and making generalisations, whether at the level of discourse or cognition.

We have explained the differences in the use of Violence metaphors across stakeholder groups in terms of the different topics they tend to focus on, the mental states they need to express, and their different roles and perspectives in relation to illness and care. We have explained the differences in the use of Violence metaphors across genres in terms of the contrast in formality and anonymity between interviews and online fora. The online forum setting fosters a sense of being able to express views and emotions more freely, including by means of Violence metaphors, than is the case in one-to-one face-to-face interactions with a relative stranger. This can be accounted for to some extent by the online disinhibition effect, as well as individual personalities (Suler 2004, as noted in Section 5.1). In the case of healthcare professionals, online candour is also no doubt constrained by their professional role, although some professionals in our data did discuss their emotions and share personal feelings (e.g. about the experience of patient death). Interestingly, the relative frankness and openness of discussions online belies the fact that the forum is open to all public observers, whilst the interview is private.

Our study also has implications for research and practice in communication in healthcare settings. On the one hand, we have provided additional evidence in support of criticisms of an unthinking and uncritical use of Violence metaphors in relation to cancer and end of life. On the other hand, we have also shown that some Violence metaphors appear to be used in positive ways, especially by patients, such as to express personal determination, mutual solidarity and encouragement. This suggests that these metaphors should not be censored, but rather be acknowledged and accepted as one of the many different ways in which patients and carers may make sense of their experiences of (terminal) illness. We have also found that both patients and carers use Violence metaphors to express a negative, adversarial perception of treatment and of healthcare professionals. These perceptions ideally need to be addressed in the provision of healthcare generally, and cancer care and end-of-life care in particular. More generally, the contrasts we have noted between interviews and online fora confirm the value of studying online interactions when researching views and needs in healthcare, especially when patients and carers are concerned (see also Seale et al. 2010). To conclude, we hope to have shown what can be achieved by combining manual and corpus-based methods in the study of metaphor, and particularly its role in communication around sensitive topics such as illness and end of life.

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