Scoring a goal or an own-goal against disease?

A multilevel framework for describing metaphor coherence in health campaigns

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Many contemporary public health campaigns use some form of metaphor. Studies into what makes this strategy effective typically focus on the ability of metaphors to attract attention and trigger conversations. Consequently, the question of how they might enhance or impede people's understanding of the information conveyed is often overlooked. This article brings together key concepts in Conceptual Metaphor Theory with the latest findings in health communication to present a framework for describing metaphors in health promotion on the basis of their experiential, internal, external and narrative coherence. Using the comparative analysis of two children's comics about tuberculosis as a small-scale case study, the paper argues that metaphor coherence is particularly important in health campaigns that aim to convey complex, new information. The paper ends with suggestions for validating the framework more broadly.

Key words: comics, Conceptual Metaphor Theory, health communication, metaphor coherence, tuberculosis

1. Introduction

Metaphors, which encourage people to understand one thing in terms of another, are ubiquitous in public campaigns for health promotion, where they may occur in the form of words, images, or a combination of semiotic modes. For example, a recent anti-smoking poster campaign in the USA used the image of a cigarette in a line of bullets to suggest equivalence between smoking and shooting yourself (Schilperoord et al., 2009), while a French AIDS awareness campaign showed a naked man embracing a giant scorpion to illustrate the dangers of unprotected sex. Other uses of metaphor in health campaigns are more subtle and conventional. South African educational texts on HIV/AIDS, for instance, regularly employ military language to discuss the functioning of the body's immune system (Jansen et al., 2010).

The prevalence of metaphors in such campaigns suggests that there is a wide-spread faith among professional communicators in the effectiveness of this form of rhetoric. However, the available scientific evidence for metaphor's persuasiveness is, in fact, patchy and inconclusive. The authors of a 2002 meta-study of empirical research into this question expressed confidence that metaphors do, indeed, often impact positively on attitudes, particularly "when the audience is familiar with the metaphor target, the metaphor is novel, is used at the start of a message, is single, and nonextended" (Sopory & Dillard, 2002, p. 413), but they also warned "against the conclusion that any metaphor can be used under any condition to create potent suasory impact" (p. 409).

Health campaigns differ from other forms of persuasive communication in that they typically aim not just to raise awareness and influence short-term evaluations, but also to increase knowledge and understanding, and effect long-term shifts in attitude and behavior (Snyder, 2001). As I show in section 2 of this article, many existing studies on how

metaphors achieve their impact in health campaigns focus on how, by deviating from expectation, they are able to engage people's attention and interest, as well as encouraging interpersonal conversations, which, in turn, are thought to play a key role in changing people's views and actions (Hoeken et al., 2009).

What tends to get overlooked in this debate is the important function of metaphors in advancing people's knowledge and comprehension of new, complex health issues. Why do some metaphors — or combinations of metaphors — strike us as apt and illuminating, whereas others just seem confusing and somehow 'wrong?' In section 2, I address this question by developing a framework for describing the coherence of metaphors in public health campaigns. In everyday usage, the notion of 'coherence' refers to a "logical or natural connection or consistency" (Collins English Dictionary, 2005, p. 331), but I will adopt a broader definition that also incorporates the "macrotextual quality that is achieved as individuals draw on their cultural understandings as well as their experience to arrive at the meaning of a text" (Keller-Cohen & Gordon, 2003, p. 3).[1] While aspects of metaphor coherence have been discussed previously by several scholars working within the paradigm of Conceptual Metaphor Theory (CMT) (e.g., Lakoff & Johnson, 1980, 1999; Kimmel, 2010; Kövecses, 2010), my approach is new in that it draws together all their separate insights into one overarching descriptive framework that distinguishes between four separate levels at which coherence may be described.

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[1] This notion of coherence as an interactive process between the text and the reader can also be distinguished from Halliday and Hasan's (1976) 'cohesion' concept, which focuses more narrowly on the lexicogrammatical properties that create relations of meaning between individual sentences and thereby establish a sense of the text as a unified whole.

It is important to remember that metaphor coherence is not necessary or even desirable in every context, genre, or individual text. Indeed, the purpose of many metaphors is not to make an abstract concept easier to grasp, but rather to *defamiliarize* it for poetic or persuasive purposes (Feng & O'Halloran, 2013, p. 323). Some autobiographical comic artists, for example, employ a dizzying array of deliberately incongruous verbal and visual metaphors as an effective way of portraying their perturbed state of mind (El Refaie, 2014b). Similarly, as mentioned above, it is precisely the ability of some creative metaphors to deviate from the ordinary, logical state of affairs that is thought to render them so persuasive in reminding people of the well-known health risks involved in activities such as smoking or unsafe sex.

However, as I show in the final section of this article through the comparative analysis of two children's comics about tuberculosis (TB), metaphor coherence is very important in the case of public health campaigns that involve new, complex information, since their main aim is to promote sound knowledge and avoid any unnecessary confusion. Although at first glance the two comics appear similar, in that they are both based on a central football metaphor, a detailed study of how this metaphor is elaborated and combined with other metaphors reveals big differences in terms of their respective coherence, with important consequences for the clarity of the health messages being conveyed.

The general assumptions underlying my framework are congruent with the current state of knowledge, but its predictions about the likely effects of using more or less coherent metaphors in health communication have yet to be tested empirically. The article will thus conclude by setting out some of the questions such empirical research would need to address and suggesting some methodologies that might be used to answer them.

2. Advantages and disadvantages of using metaphor in public health campaigns

According to the 'literal-primacy view' of metaphor, it is an exceptional form of language use that requires people to first reject the literal meaning as a violation of semantic rules and then search for an alternative meaning that makes sense in context (e.g., Searle, 1979). Similarly, many rhetoricians are convinced that metaphors work by defying people's expectations and thereby encouraging them to engage both cognitively and emotionally with the intended messages. This, they argue, make metaphors such powerful persuasive tools, particularly if they involving striking and incongruous visual images (e.g., Phillips, 2003; Phillips & McQuarrie, 2004).

However, the effectiveness of metaphors in health campaigns is likely to depend upon many different factors, which makes any generalizations problematic. For instance, campaigns based on fear appeals have been shown to be effective only if they are able to bypass people's tendency to avoid frightening messages, by conveying a clear perception of personal perceptibility to risk, while also emphasizing the efficacy of practical risk control behavior (Stephenson & Witte, 2001). Using shocking metaphors such as giant scorpions and bullets in health promotion materials may thus prove to be counterproductive, if target audiences are alarmed by the underlying concepts, while feeling that the highlighted risks are not relevant to their own lives, or that there is little they can do to avoid them.

Another relevant discovery is that discussions among friends and family members play an essential mediating role in encouraging people to adapt their behavior in line with the aims of a health campaign (Frank et al., 2012). Building on these findings, Hoeken et al. (2009) suggest that incongruous metaphors are most successful in campaigns that are designed to prime information that is already well known to the target audience. The effectiveness of such tropes, the authors believe, is due to the fact that they pose a puzzle requiring additional

cognitive elaboration, which, in turn, stimulates conversations by providing an opportunity for people to show off their interpretative abilities and strengthening group cohesion through shared understandings.

However, such incongruous metaphors are especially liable to be misinterpreted (Basso & Oullier, 2011). Indeed, a recent experimental study by Lubinga et al. (2014) of deliberately puzzling health messages targeted at South African youth found that rhetorical figures not only had a negative effect on both their actual and perceived comprehension, but also decreased rather than enhanced their willingness to discuss the messages with friends. These findings lead the authors to conclude that "the use of puzzling rhetorical figures, as promoted by health promotion organizations such as loveLife and others, may be a risky design strategy" (p. 64).

The hazards of using metaphors in health campaigns are also highlighted by Jansen et al. (2010). They tested three versions of an educational text on HIV/AIDS on adolescent South Africans; text A used no metaphors at all, and texts B and C used war metaphors and metaphors relating to the fire brigade, respectively. The study's troubling finding was that metaphors were identified only slightly more often in texts B and C than in A. This suggests that such rhetorical figures may exceed an audience's interpretative abilities, especially if, as in this case, the information conveyed is complex, and if it is not delivered in their mother tongue.

Yet a lack of awareness on the part of audiences of the presence of metaphorical language does not rule out the possibility that they will nevertheless be influenced by the underlying thought patterns. Indeed, many CMT scholars are convinced that it is precisely the most frequent and entrenched metaphors that have the greatest influence over people's attitudes, because they reflect a basic human tendency to understand an abstract area of experience (the *target*) in more concrete and embodied terms (the *source*) (Lakoff & Johnson, 1980).

Susan Sontag (1978) was one of the first authors to draw attention to the prevalence of military metaphors in discourses about TB, cancer and AIDS. The association between disease and warfare has been widespread in Western medicine since the discovery of germ theory in the 19th century (Montgomery, 1993), and it now permeates health campaign materials worldwide. Although the war metaphor can give patients and health professionals a sense of solidarity and common purpose, it tends to create "a focus on the biomedical parameters of the disease (e.g., the scans, the counts) to the exclusion of the other aspects — social, psychological, and existential — of the illness experience" (Reisfield & Wilson, 2004, p. 4025). Moreover, talking about an illness in military terms may lead the general population to regard everything related to a disease with a profound sense of suspicion and dread, feelings which are then readily projected onto sufferers as well.

Warfare is only one of many ways of conceptualizing disease. In Republican China of the 1930s, for instance, TB started to be associated closely with the imagined threats posed by the traditional family. Health advocates portrayed the disease not as an "evil caused by modernization, urbanization, and poverty," but rather as "caused by the individual's unhygienic habits that were cultivated within the traditional Chinese family" (Lei, 2010, p. 250). Similar conceptions of TB as a 'dirty' disease have been observed in Vietnam, with "serious consequences for a person suffering from the disease in terms of social isolation" (Johansson & Winkvist, 2002, p. 485). On the other hand, some TB sufferers find analogical reasoning a helpful way to remember to take the correct dose of drugs, for example: "Only if you spend enough time and take full treatment will germs be destroyed. It is like water, it boils at 100°C — it cannot boil at 80–90°" (cited in Johansson et al., 1999, p. 864).

These examples demonstrate that the planners of health campaigns need to be sensitive to the provenance of any metaphorical language or images they wish to use, and never lose sight of the possibility that they may unwittingly be risking misinterpretations or promoting

unhelpful attitudes and behavior. As I will argue in the following discussion, health campaigners are also well advised to consider carefully the coherence of the metaphors they employ, especially if they aim to promote better understanding of new information.

3. A framework for analyzing metaphor coherence in health campaigns

Metaphor coherence is defined here as the degree to which a metaphor makes intuitive sense to an audience within a particular context. In order to be considered coherent, I suggest, a metaphor must allow people to draw on their own embodied experience and broader cultural knowledge to arrive at a meaning that is intuitively plausible to them (experiential coherence), while also being at least reasonably consistent and logical in terms of both its own entailments (internal coherence) and its relationships with other metaphors in the text (external coherence).[2] Moreover, any scenarios evoked by a metaphor should not clash with the overarching story that is being told in the text (narrative coherence). Table 1 provides an overview of the four levels, which are discussed in more detail below.

LEVEL	CRITERIA OF COHERENCE	
Experiential	The metaphor accords with	a) embodied experience.
		b) socio-cultural, lived experience.
Internal	The metaphor's own mappings are logical and do not contradict each other.	
External	The metaphor's own mappings do not contradict the mappings of any other metaphors used for the same target domain.	
Narrative	The narrative scenarios evoked by the metaphor make sense within the overarching story world.	

Table 1: A multilevel framework of metaphor coherence

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[2] The notion of 'externality' is used here to refer to those meanings that lie beyond the boundaries of a particular metaphor, not the text as a whole.

Since many contemporary health campaigns are multimodal, it is important to remember that meanings from one semiotic mode cannot be translated exactly into another. Multimodal metaphors, "whose target and source are each represented exclusively or predominantly in different modes" (Forceville, 2009, p. 24), may thus also be more or less coherent in the way the meanings conveyed by each mode interact on any of these four levels.

Experiential coherence

Within the framework I am proposing, a metaphor is experientially coherent if it is in harmony with bodily experience and makes sense to target audiences in their unique socio-cultural contexts and lived environments (see also El Refaie, 2014a; Kövecses, 2010, p. 298). One of the key ideas in CMT is that all human beings draw on the experience of their own physical sensations and interactions with the world in order to understand more abstract, intangible domains such as mental states, emotions, and social relations (Lakoff & Johnson, 1980; 1999). According to this theory of "embodiment," the experiences of being lifted up and learning to stand upright, for instance, become correlated in infancy with positive emotions, thus forming the metaphorical concept HAPPINESS IS UP (Gibbs, 1994, p. 414). A metaphor that describes depression in terms of being "on top of the world" is thus likely to be experienced by most people as incoherent.

However, embodiment is "never merely a matter of having a body of a certain sort," since all experience takes place against a backdrop of cultural values and beliefs (Lakoff & Johnson, 1980, p. 57). Moreover, the most deeply embodied "primary" metaphors tend to generate more culturally variable, "complex" metaphors (Grady, 1997), which involve the transfer of multiple meanings between, for example, the source domain of military conflict and the target domain of disease. Metaphors that are used repeatedly in a particular society

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thus tend to be the ones that accord with deeply rooted cultural models and values (Kövecses, 2005), while metaphors that contradict such values will be perceived as less or not at all coherent. War metaphors, for instance, are unlikely to chime with (sub-)cultures that abhor violence and live a life of peaceful cooperation and dialogue.

Internal coherence

In CMT, metaphors involve the transfer of attributes, relational structure and logical entailments ('mappings') between two different conceptual domains. In the case of the conceptual metaphor LOVE IS A JOURNEY, for instance, elements from the journey domain are mapped onto corresponding elements in the domain of human relationships:

> The lovers are travelers on a journey together, with their common life goals seen as destinations to be reached. The relationship is their vehicle, and it allows them to pursue those common goals together [...] The journey isn't easy. There are impediments, and there are places (crossroads) where a decision has to be made about which direction to go in and whether to keep traveling together. (Lakoff, 1993, p. 206)

When people use any of the multiple verbal expressions that are based on this metaphor (e.g., "*We've reached a crossroads*", "*My marriage is stuck in a rut*"), CMT claims, all these mappings are activated in both the speaker's and the listener's minds, even if they are not necessarily consciously aware of this. The criterion for internal coherence is thus the degree to which the various mappings a metaphor engenders are logical and work well together (see also Lakoff & Johnson, 1980, pp. 89–91; Stockwell, 2002, p. 108).

A good example of internal *in*coherence is the use of military language in relation to progressive diseases such as dementia, where there is currently no cure and where the mostly

elderly patients have no realistic chances of 'fighting,' let alone of 'conquering' the disease. Moreover, dementia is caused by complex chemical changes in the brain, not by an active agent that can be isolated and destroyed. Many of the logical entailments of the war metaphor thus contradict both subjective experience and the medical facts of dementia (Lane, McLachlan & Philip, 2013; George & Whitehouse, 2014), which means that it is not suitable as a means of educating people about the disease.[3]

In the case of multimodal metaphors, internal coherence also relates to the meanings conveyed by the different semiotic modes. In the French poster campaign (2004) that shows a naked man in the throes of passion with a giant scorpion, for instance, the slogan, "Without precaution, you're making love with AIDS" (*Sans préservatif, c'est avec le sida que vous faites l'amour*), suggests that the arachnid is meant to represent the disease, but its size and behavior in the image also gives it distinctly human qualities. This might cause some audience members to map properties of a scorpion onto both the disease and individuals who are HIV positive, which not only decreases the metaphor's internal coherence but which may also have the — surely unintended — consequence of reinforcing prejudices against this group of people.

External coherence

When different source domains are used in close proximity to refer to the same target, they are often referred to pejoratively as 'mixed' metaphors. In practice mixing metaphors does

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[3] In contrast, when war is declared on dementia as an epidemiological problem rather than a specific medical condition, this may well be an effective way of raising awareness and persuading people to donate money.

not inevitably have a detrimental impact upon our understanding and, indeed, often goes unnoticed, especially if one or more of the metaphorical expressions used are so conventional that they are no longer processed at a conscious level, or if they occur in separate clauses (Goatly, 1997, p. 270; Kimmel, 2010). Moreover, since metaphors are inherently partial and limited, in the sense that they can never capture a particular area of life in its entirety, it is perfectly normal for complex concepts such as love to be understood through several different metaphors, including a journey, physical force, magic, and madness, for example. These different metaphors may still be compatible if each focuses on a different aspect of the target and serves a distinct communicative purpose: "Though such metaphors do not provide us with a single consistent concrete image, they are nonetheless coherent and do fit together when there are overlapping entailments" (Lakoff & Johnson, 1980, p. 105; see also Semino, 2008, pp. 26–27 and 46–48).

When the entailments of two or more mixed metaphors clash, this can sometimes be used deliberately in order to startle an audience, or to convey a sense of incongruity for poetic or humorous effect. However, when this occurs in educational texts, there is the real danger that it may cause confusion. For instance, if the effects of the HIV virus on the immune system are explained by combining military metaphors and metaphors relating to gardening, understanding is likely to be impeded, as the two source domains imply conflicting ideas about the nature of the disease and the recommended medical interventions.

Narrative coherence

Narrative forms of health education are becoming increasingly popular, because they have the proven ability not just to raise awareness and impart information, but also to "communicate beliefs, model behavior, teach skills, provide behavioral cues, and simulate

consequences of behaviors over time" (Slater, 2002, p. 170). The persuasiveness of stories is typically explained with reference to processes of identification (our human tendency to mimic the behavior we see modeled by characters who appear similar to us or have qualities we admire) and transportation (when we experience such strong emotions about the events in a story that we lose our sense of connection with the real world around us) (Green & Brock, 2000; Murphy et al., 2013).

Many stories, both of the literary and non-literary variety, contain metaphors, which often fulfil the role of providing coherence both within one particular text and across different texts and text types (Kövecses, 2010, p. 303; Keller-Cohen & Gordon, 2003). Conversely, many metaphors are themselves able to evoke what Musolff (2006) calls "metaphor scenarios," little narrative scenes "complete with the presumed 'interests' and 'biases' on the part of the participants and an evaluative interpretation" (p. 27; see also Ritchie, 2010). In relation to the use of metaphor in health campaigns, I suggest, narrative coherence thus depends upon the degree to which the scenarios called up by metaphors fit in with, or clash with, the overarching story told by a particular text.

This does not necessarily depend upon the degree to which a particular metaphor scenario is 'realistic.' As Busselle and Bilandzic (2008) point out, audiences are generally perfectly willing to accept the unrealistic nature of a story "within the confines of a clearly unrealistic genre or story world," as long as this story world is internally coherent and logical (p. 273). Similarly, metaphors and the scenarios they evoke can be entirely fantastical without disrupting the audience's experience of identification and transportation, on condition that they do not contradict the logic of the main story, including its central settings, characters, and plot development.

Another aspect of narrative coherence concerns the links between figurative and non-figurative parts of a text. In some stories, a "re-orientation" (Biebuyck & Martens, 2011, p.

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64) of tropes may take place, whereby what first looks like metaphor can turn out to be a literal reference, or vice versa, for example. As I will show in the discussion of one of the comics below, a re-orientation of central metaphors does not inevitably lead to a sense of incoherence, though it does sometimes introduce an additional layer of complexity.

4. Case study

The example of two comics about TB will be used to illustrate my framework. Both comics are targeted at children in countries where the disease is most prevalent, both rely on an entertainment-educational approach, and both are designed to provide new information and encourage changes in behavior. Yet they differ enormously with regard to the coherence of the metaphors used.

4.1 Metaphor coherence in "Laduma!"

"Laduma! Stick to your TB gameplan!" (henceforth "Laduma") (no date, no pagination) is an A4 booklet consisting of eight full-color pages. Approximately 20.000 copies of "Laduma" were printed and distributed through public health facilities, charities, and national and provincial departments of health in South Africa.[4] Both the title of this comic, which refers to

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[4] "Laduma" was initiated by the U.S. Centers for Disease Control and Prevention, Global AIDS Program, South Africa and the Eastern Cape Department of Health with funding from the U.S. President's Emergency Plan for AIDS Relief. It was produced by Jive Media. Details about its distribution were provided by Helen Savva, Key Populations Lead at the U.S.

a popular cheer celebrating goals at South African football matches, and the setting of the story in a small village, suggest a desire on the part of the campaigners to closely reflect the target audience's own experience and thereby encourage identification with the central characters.

The story starts with a game between two mixed-gender teams of children. The losing team's star player, Themba, has not performed well that day and admits to his friend Thandi that he has been coughing a lot and feeling weak (see figure 1). Thandi, who recently recovered from TB herself, recognizes the symptoms in her friend and persuades him to go to the clinic, where he is given a course of antibiotics and told how to regain his health and avoid passing it on to others. Themba sticks to this advice, and, a few weeks later, manages to score the winning goal for his team.

< FIGURE 1 REMOVED FOR COPYRIGHT REASONS>

Figure 1: *Laduma! Stick to your TB gameplan!*, no date, no pagination. Reproduced by permission of the U.S. Centers for Disease Control and Prevention - South Africa (www.cdc.gov/globalhealth/countries/southafrica/) and Jive Media Africa (www.jivemedia.co.za).

On the face of it, this is a simple story about a boy whose sporting prowess is affected by his illness, but who later recuperates and returns to his former glory on the pitch. However, readers are also invited to interpret these events metaphorically, by understanding the commitment required from someone recovering from TB in terms of a player's dedication to

Centers for Disease Control and Prevention, Global HIV/AIDS Program, South Africa, in a personal communication (20.09.2013).

a training regime. This invitation is proffered explicitly through the exhortation in the comic's subtitle to "Stick to your TB gameplan!" and through the parallel syntactic arrangement of expressions referring to the target and the source in the final panel of the comic ("That is how you win on the soccer field and how you beat TB too!"), which, according to Stockwell (2002, p. 107), represents an effective way of drawing attention to intended metaphorical meaning. This shows that the re-orientation of metaphors does not necessarily create narrative incoherence, provided the transitions are flagged up clearly.

The central football metaphor is a good example of experiential coherence, because the concrete and culturally meaningful experience of regular training is used to help children understand the more abstract concept of how to recover from TB. It is also internally coherent, with elements from the domain of the game mapping neatly and logically onto the domain of recovering from the disease, e.g., suddenly playing badly → falling ill; physical discipline → mental/moral discipline; training/playing together as a team → preventing the spread of TB; playing well again → recovering from TB.

The comic also contains several easy puzzles, including a word search for the most common symptoms of TB, and a maze with the instruction to readers to "Help Themba find his way to the clinic" (see figure 2). Colorful pictures showing the recommended behavior lie on the way to the clinic, while dead-ends are filled with black-and-white drawings, marked with a red "x", of the things someone suffering from TB should avoid. Because the maze, like all the other puzzles in the comic, is easy to solve, the underlying mapping between the successful completion of a game and the ability to beat TB reinforces the idea that the desired behavior is well within the child's ability to achieve. Embedded, or "compounded" (Goatly, 1997, pp. 271–272), inside the puzzle metaphor is the conventional metaphorical mapping between a journey and life, and, more specifically, between the paths we choose and the decisions we make. When children trace with their finger or pencil the path to the clinic, they

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can be said to be rehearsing the desirable behaviors in an embodied manner. This compound metaphor is thus also experientially and internally consistent.

< FIGURE 2 REMOVED FOR COPYRIGHT REASONS>

Figure 2: *Laduma! Stick to your TB gameplan!*, no date, no pagination (page detail). Reproduced by permission of the U.S. Centers for Disease Control and Prevention - South Africa (www.cdc.gov/globalhealth/countries/southafrica/) and Jive Media Africa (www.jivemedia.co.za).

The penultimate page of "Laduma" introduces another metaphor. Readers are encouraged to grow their own beans, and the need to care for the plants is compared through an explicit verbal simile to the dedication required when recovering from TB: "Getting better from TB takes a long time — like plants which take time to grow but give us food in the end." Four panels represent the activities required at each stage, ending with a picture of Themba watering his plants and the instruction to readers to "[w]ater them every day when you take your TB medication and look forward to a meal of healthy beans." This metaphor is again anchored in the children's embodied experience, with the abstract notion of being patient and regularly taking one's medication being translated into the more tangible notion of a plant that needs to be watered daily in order to flourish. Indeed, if readers follow the instructions and actually grow their own beans, the metaphor is literalized in the sense that the pulses will provide a real contribution to their healthy diet.

All the metaphors used in this comic to describe the attitudes and behaviors the children are encouraged to adopt in relation to TB thus exploit their concrete experiences of engaging in physical activity, solving puzzles, and growing vegetables. Despite drawing on different source domains, these metaphors all belong to the same superordinate category of

pleasurable, playful activities with positive outcomes. Moreover, each focuses on a different aspect of the target: In the case of the football metaphor, the main message is about the need for commitment and responsibility towards others, the puzzle metaphor emphasizes the importance of knowledge and ingenuity, and the plant metaphor encourages children to be patient and take their medication at regular intervals. According to my proposed framework, they are thus externally coherent.

They also show a high degree of narrative coherence, because the source-domain scenarios they evoke are shown to be performed by the characters in the story and are thus part of the main plot. When Themba is too ill to play football, it makes perfect sense for him to turn to the less strenuous activity of tending to his garden, for instance.

As mentioned above, it is common for diseases to be discussed in terms of a battle, and some war metaphors can also be traced in "Laduma," with Thandi explaining that TB is caused by a germ that "attacks the cells in your body," and Themba asking if the pills he is taking can really "destroy TB." This metaphor is less experientially coherent than the others discussed so far, as warfare is not something that most of the South African children targeted will have been involved with directly.[5] However, in "Laduma" this metaphor only occurs in relation to what is happening inside the body of someone who is ill with TB; in other words, it is used when the target is an aspect of the disease that is beyond the child's conscious

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[5] It is sometimes hard to distinguish between war metaphors and more general fight or struggle metaphors, which would arguably be more experientially coherent for the target audience. However, the specific terms used in both "Laduma" and "Figo" (see below) in relation to TB (e.g. "attack," "fight," "strike," "destroy") do have clear military connotations, particularly given the established tradition in Western medicine of talking about infectious diseases in these terms.

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control. As we have seen, all the other metaphors in this comic emphasize the efficacy of practical risk control behavior, which may help overcome any fear-avoidant responses triggered by the war analogy.

4.2 Metaphor coherence in "Figo"

"Luís Figo and the World Tuberculosis Cup" (henceforth "Figo") (WHO, 2008) consists of a 19-page comic story, plus four pages summarizing key information at the back. It is in A5 format and printed in full color on glossy paper.[6] The comic starts with the Portuguese former international football player Luís Figo inviting boys and girls to "read how you can help beat tuberculosis and join my team" (p. 3). Figo is presented as a role model, and his team members, whose appearance and names have clearly been chosen to represent one of the regions of the world where TB is most prevalent, provide additional figures of identification based on similarity.

< FIGURE 3 REMOVED FOR COPYRIGHT REASONS>

Figure 3: *Luís Figo and the World Tuberculosis Cup* (2008), scenario: Vittorio Cammarota; drawings: Rod Espinosa; layout: Mirko Neri, p. 4. © World Health Organisation 2008. Reproduced by permission of the World Health Organisation.

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[6] "Figo" (2008) was produced by the WHO and Stop TB Partnership, with support from the Luís Figo Foundation, the South African Department of Health, and several NGOs.

The central metaphor in this comic is one that represents the struggle to contain the spread of TB through the fictional scenario of a football match between Figo's team and a team of giant monsters in the "World Tuberculosis Cup" (see figure 3). This is developed into an extended allegory, where every success or failure of the two teams is interpreted in terms of a particular health message. For example, the goalkeeper of Figo's team attributes her ability to make great saves to the fact that in the apartment she shares with four friends "each of us has enough room, there is no damp and we air the rooms often" (p. 7).

Despite the explicit encouragement to readers to imagine they are playing on Figo's team, the framing narrative of an international game may instead trigger associations of the more passive act of watching professional football on television, which makes this central metaphor potentially less experientially coherent than the same metaphor used in "Laduma." Moreover, many of the solutions advocated by the characters (such as having plenty of room and fresh air) are likely to be unavailable to a significant proportion of readers, who may thus feel a sense of helplessness rather than increased confidence and self-efficacy.

The central mapping in "Figo" between TB and giant humanoid monsters also lacks internal coherence. Each of the monsters carries a unique label, including "tuberculosis super resistant," "tuberculosis fever," "tuberculosis cough," "tuberculosis sputum," "tuberculosis ignorance," "tuberculosis everywhere," "tuberculosis bad air," and "tuberculosis HIV" (pp. 4; 7–9). It is thus not clear whether the monsters stand for the pathogens of TB, the symptoms it causes (cough, fever), or a vague category of all the attitudes and physical or mental conditions that encourage the spread of the disease (sputum, ignorance, hunger, everywhere, bad air, HIV).

Another example of internal incoherence relates to the metaphorical mapping throughout the story between the TB monsters' size and their respective power or danger. Thus, for example, the two monsters ('Tuberculosis HIV" and "Tuberculosis Super Resistant") that are

successful in scoring goals against Figo's team are represented as huge compared with the human players (pp. 9 & 12). However, in another scene a thin monster, labeled "Hunger," is being tackled by one of Figo's team mates, who comments: "Every day I eat enough food so that I am in good shape and strong enough to prevent tuberculosis germs from hurting me!" While the slight frame of the "Hunger" monster is thus consistent with our experience that people who are hungry tend to be thin, it conflicts with the previously established metaphorical association between the TB monsters' size and the threat they pose to human health.

From the start, the football metaphor is closely intertwined with the source domain of warfare. For example, one of Figo's team mates explains that TB "mostly affects the lungs, although it can also attack other parts of the body" (p. 5), and concludes that "we can all fight tuberculosis germs." Another player remarks that TB germs "are tough and can attack us all, especially our friends living with HIV/AIDS!" (p. 10), while super-resistant strains of TB are described as "highly dangerous" because "they can strike all of us in one go!" (p. 13). Of course, it is very common for professional sport to be discussed in terms of warfare (Jansen & Sabo, 1994), which makes the combination of these two metaphors appear compatible. Even so, this may further reduce the experiential coherence of the central football metaphor, by making the sport seem more remote from the children's own lives.

Another metaphor introduced in "Figo" is one which compares the spread of TB to a sinister form of tourism. Thus, on page 11, one of the human characters declares that: "Tuberculosis germs can travel everywhere; they have a global passport that allows them throughout all borders. They can really harm our global village!" (see figure 4).

< FIGURE 4 REMOVED FOR COPYRIGHT REASONS>

Figure 4: *Luís Figo and the World Tuberculosis Cup* (2008), scenario: Vittorio Cammarota;

drawings: Rod Espinosa; layout: Mirko Neri, p. 11 (page detail). © World Health

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Embedded within the analogy of TB germs as tourists is the notion of the world as a 'global

village.' While this term, which is closely associated with Marshall McLuhan's (1962) media

theory, is likely to be highly familiar to professional campaigners, it is probably not nearly as

transparent, and thus experientially coherent, to the children targeted by this comic, many of

whom are likely to live in developing countries and have limited access to higher education.

Besides, the visual depiction of the globe hovering above the pitch conflicts with the central

"World Tuberculosis Cup" scenario, in which the stadium maps onto the world. It is also

misleading because the similar shape and adjacent placement of the ball and the globe

suggest some kind of additional conceptual link between these two entities (Schilperoord &

Ferdinandusse, 2009), although this makes no logical sense in context.

Another experientially and narratively incoherent metaphor in "Figo" is one that uses the

notion of filling a piggy bank to stand for raising funds for TB prevention activities. This

metaphor is first introduced on page 16, where one of the players is shown carrying a large

piggy bank under his arm, while explaining to his team mates that "more money is needed to

beat tuberculosis. We have to fill up our piggy bank!" The piggy bank then reappears in a

panel on page 18, which shows Figo's team celebrating its victory, with bank notes of various

denominations fluttering around the players' heads. Apart from the fact that piggy banks are

culturally specific to certain areas of the world and are thus unlikely to be meaningful to

many readers of this comic, the idea of players intermittently carrying a piggy bank around

with them on the pitch is so contradictory to the central plot that it may detract from the drama of the narrated events.

5. Conclusion

My main argument in this paper has been that metaphor coherence is crucial in health campaigns that aim to convey new, complex information in a way that makes sense to target audiences. Metaphor coherence, I suggest, should be considered at four distinct levels, and, in the case of multimodal metaphors, it also needs to take the potentially divergent meanings conveyed by words and images into account.

By applying this framework to the analysis of two children's comics about TB, I have been able to distinguish between these apparently similar texts on the basis of how successfully they draw on the readers' own experience, and how logical and clear the metaphorical mappings are, both within the central football scenario and in relation to other metaphors used in the stories. The analysis revealed that metaphors are employed in a more coherent manner in "Laduma" than in "Figo," which is likely to make the key health messages in the former more easily comprehensible to its audiences than in the latter. Clearly, this does not rule out the possibility that "Figo" is more persuasive than "Laduma" in other respects; the use of a celebrity character and the more exciting and engaging story may well encourage a greater degree of identification and transportation, for instance, which, in turn, might increase the likelihood of positive behavior change.

The central hypothesis put forward in this paper is still highly speculative and the next step is to conduct rigorous empirical testing on a larger and more varied data set. In particular, the following research questions need to be addressed:

1) Does the four-level framework described in this paper accurately capture the different types of metaphor (in-)coherence that may occur across different types of health education materials?

2) Is it possible to detect a stable relation between metaphor incoherence at one or more of the four levels as defined by my framework, and the likelihood of increased incomprehension and/or misinterpretations on the part of audiences?

3) Are any effects of metaphor (in)coherence on comprehension influenced by the degree to which the communication involves new, abstract information?

4) To what extent do particular characteristics of individual audience members (e.g., cultural, social, or educational background) impact upon their tolerance of metaphor incoherence in health communication?

While question 1 can be answered by studying the phenomenon of metaphor coherence in a large corpus of health education materials, questions 2–4 would require some form of audience research, including experiments, tests, surveys, interviews and/or focus groups. In order to address the second question, for example, one each of the comics compared in this paper could be given to two comparable groups of children, who would then be interviewed about their detailed interpretations of the story and its central metaphors, and tested on their understanding of TB and how to prevent its spread.

This article has focused on health messages targeted at children in the developing world, but I would argue that metaphor coherence is likely to be relevant to any form of educational or persuasive communication that involves complex new information, whatever the age, gender, or socio-cultural profile of the audience, including public discourses on political institutions and important scientific debates, for instance.

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