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This is the accepted, peer-reviewed manuscript of an article whose final and definitive form has been published in *Southern African Linguistics and Applied Language Studies* 2010, 28(2): 133-139.

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A fire station in your body: Metaphors in educational texts on HIV/AIDS

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Abstract: This study focuses on metaphors used in South African HIV/AIDS education to explain the struggle of the immune system when it becomes infected with HIV. Three versions of an educational text on HIV/AIDS were presented to a total of 543 learners from secondary schools in the Western Cape. Each learner was given either a text version including a deliberate metaphor that had been selected with the purpose of changing the reader's perspective on the immune system (the immune system being presented metaphorically either as an army or as a fire brigade), or a text version without such a deliberate metaphor. The effects of these three text versions on understanding as perceived by the learners themselves, on attractiveness and on persuasiveness were investigated. Distinctions were made between respondents who apparently had recognised a metaphor in the text version with which they were presented and those who had not. No effects of text version on perceived understanding, attractiveness and persuasiveness were found. There were clear effects, however, of metaphor recognition. Readers who appeared to have recognised a metaphor found the text version they had read more understandable, attractive and persuasive than other readers. No interaction effects of text version and metaphor recognition were found.

Introduction¹

According to the most recent large-scale HIV/AIDS research in South Africa (Shisana et al., 2009), in 2008, 10.9% of the population of two years and older was infected with HIV. While the figures for the whole population indicate that the infection rate is stabilising (the infection percentage in 2005 was 10.8%), the figures for South African youth are moving in a positive direction. In 2005, 10.3% of the age group 15 to 24 was infected; in 2008, this had gone down to 8.6%. However, knowledge about HIV/AIDS still leaves much to be desired, even among young people in South Africa. In this respect, a decline instead of a rise is visible: in 2005, 64.6% of the entire population and 66.4% of the age group 15 to 24 passed in a relatively simple knowledge test;² in 2008, these percentages fell back to 44.4% for the entire population and 42.1% for the age group 15 to 24 (Shisana et al., 2009: 52). There is still no cure for HIV/AIDS, and drugs for combating the main symptoms are still unavailable to many South Africans. Preventing infection remains the best if not the only remedy. Effective education, aimed at enhancing knowledge, influencing attitudes and eventually changing behaviour, remains therefore essential.

This study focuses on educational HIV/AIDS texts distributed throughout South Africa. The aim of these texts is to explain as clearly as possible what HIV is and how the process of HIV infection progresses, as well as to persuade the readers that they should take adequate measures to prevent HIV/AIDS. An experiment is discussed that was carried out to investigate whether the use of metaphors leads to better understanding as perceived by the readers themselves, and also to greater attractiveness and persuasiveness of these texts. In their meta-analysis of studies into the persuasive effects of metaphors, Sopory and Dillard (2002: 382) suggest that metaphors may be successful in this respect: 'The overall effect for the metaphor-literal comparison for attitude change [...] supported the claim that metaphors enhance persuasion.'

Metaphors

Following Steen (2008: 213), metaphors are defined here as invitations to understand one thing (the target) in terms of another (the source). Some examples are 'soccer (target) is war (source)', 'he is staying in a room (target) like a pigsty (source)' and 'she overflowed with grief', with the body (target) symbolised as an open container (source). Since the publication of *Metaphors we live by*, the influential book by Lakoff and Johnson (1980), much theoretical work has been done on metaphors, and a wide range of experiments have been carried out to determine possible effects of this classic and still much-

used rhetorical figure. Based on empirical studies on metaphors in persuasive texts, Sopory and Dillard (2002) conclude that a substantial influence from metaphors can be expected in texts that are intended to persuade the reader 'when a single, nonextended metaphor [is] novel, [has] a familiar target, and [is] used early in a message' (Sopory & Dillard, 2002: 382).

The demand for novelty deserves special attention here. McGlone (2007), among others, claims that the Theory of Conceptual Metaphor, as formulated by Lakoff and Johnson, does not pay sufficient attention to the differences in the cognitive processing of metaphors. According to McGlone (2007), the processing of metaphors is determined by their conventionality for the recipient. Metaphors already known to a recipient (conventional metaphors such as 'time is money') are processed directly and without the need for mapping between source and target. However, when a metaphor is not known to the recipient, mapping between source and target is necessary before the metaphor can be processed further. According to Bowdle and Gentner (2005), conventional metaphors, such as 'a gene is a blueprint', involve base terms that refer both to a literal concept ('a blue and white photographic print showing an architect's plan') and an associated metaphoric category ('anything that provides a plan'). Novel metaphors, such as 'science is a glacier', involve base terms that also refer to a domain-specific concept ('a large body of ice spreading outward over a land surface'), but are not yet associated with a domain-general category ('those things progressing slowly but steadily') (Bowdle & Gentner, 2005: 199). On the basis of both McGlone (2007) and Bowdle and Gentner (2005), one may assume that, compared to conventional metaphors, novel metaphors require more cognitive effort³ and, as Sopory and Dillard (2002) claim, that such metaphors can have a positive effect on persuasiveness.

Steen (2008) proposes to include not only the linguistic dimension and the conceptual dimension when studying metaphors, but to add to these the communicative dimension. In his vision, in addition to distinctions from a linguistic perspective (simile versus metaphor) and from a conceptual perspective (conventional versus novel), a distinction between metaphors should be made from a communicative perspective: deliberate versus nondeliberate metaphors. Steen explains this distinction as follows:

Deliberate metaphors [...] involve the express use, in production and/or reception, of another domain as a source domain for re-viewing the target domain. Deliberate metaphor [use] is a relatively conscious discourse strategy that aims to elicit particular rhetorical effects. This is what distinguishes deliberate metaphor from all nondeliberate metaphor (Steen, 2008: 223).

In line with this proposal, Steen (2008: 231-232) suggests three different functions of metaphors: the linguistic function (filling lexical and other gaps in the language system: naming), the conceptual function (offering conceptual frameworks for concepts that require at least partial indirect understanding: framing), and the communicative function (producing an alternative perspective on a particular referent or topic in a message: perspective changing).

Steen suggests that future research needs to examine the relations between the three dimensions that he distinguishes. A deliberate metaphor, for instance, may be either conventional or novel and either a simile or a metaphor, and nondeliberate metaphor is not identical to conventional metaphor: 'It is quite possible for people to use conventional metaphors very deliberately, "use" being a cover term for both production and reception.' (Steen, 2008: 223). A complication that, according to Steen, may need further treatment concerns the distinction between production and reception of deliberate versus nondeliberate metaphor. Steen (2008:226) remarks that this may even be an asymmetry 'to the extent that what was deliberately coded as metaphorical in production does not always have to be taken as such in reception, or [...] what is experienced as deliberately metaphorical in reception was not necessarily meant as such [...]'.

This study focuses on the communicative, perspective changing, function of metaphor. More specifically, attention is paid to the possible asymmetry between metaphors that have deliberately been included in the communication by the sender in order to change the perspective of the recipient on the target (from here: explicit metaphors) on the one hand, and expressions that are experienced by the recipient as deliberate metaphors (from here: recognised metaphors) on the other hand. The effects of explicit metaphors and recognised metaphors on perceived understanding, attractiveness and persuasiveness in the context of HIV/AIDS education targeted at South African youth are investigated.

Method

An experiment was carried out to find possible effects of HIV/AIDS educational texts with and without explicit metaphors, that were or were not recognised by South African youth between the ages of 12 and 17. The respondents all came from the Western Cape Province. After two preparatory steps (an analysis of existing HIV/AIDS educational texts and a discussion with HIV/AIDS counsellors), the effects of three text versions were studied, one text version without, and two text versions with an explicit metaphor that was considered suitable for use in South African educational HIV/AIDS material.

Preparations

In order to get a clear picture of the use of various metaphors in South African educational texts, 111 brochures, collected from a number of organisations active in HIV/AIDS prevention in the Western Cape and all distributed between 1992 and 2006, were analysed. Following this, seven counsellors from the HIV Testing Centre in Stellenbosch (four women and three men from various cultural backgrounds) were invited for a discussion. The counsellors were asked how they felt about the persuasiveness of metaphors in HIV/AIDS educational texts aimed at South African youth.

In our experiment it was decided to include, in addition to a text version without an explicit metaphor, two text versions with an explicit metaphor in which the explanation about the target domain of the immune system came from one of the following source domains: the army and the fire brigade. The army metaphor proved to have been the most frequently used in the brochures that were collected; the fire brigade metaphor was suggested by the HIV/AIDS counsellors.

Design of the experiment

A between-subjects experimental design was used. The respondents were each given one text version to read and were asked to complete a questionnaire with a total of 122 questions.⁴ Three text versions were used to explain how the immune system responds to an HIV infection: one version without an explicit metaphor (text version A), one version with the army metaphor (text version B) and one version with the fire brigade metaphor (text version C).

The text versions and the questionnaire were pre-tested by five learners none of whom participated in the main investigation. All five learners found the content of the text easy to understand; one of them found some of the words a bit difficult. With the exception of a few items, the content of the questionnaire as well as the word choice and syntax were found to be clear and easy to understand. Those items that elicited critical comments were reformulated.

Text versions

The three text versions were written in English, the language used most frequently in most of the South African educational campaigns. The three text versions consisted of four paragraphs totalling 19 lines (text version A), 23 lines (text version B) and 22 lines (text version C). After a first paragraph of three

lines that introduced the HIV/AIDS theme, the following three paragraphs, making use of one of the metaphors (with the exception of text version A, of course), described the relationship between the HI virus and the immune system. Both in text version B and in text version C the metaphors were extended: the metaphors were carried through from the moment they were first introduced to the last sentence. Below fragments can be found from the three text versions, all from the second paragraph.

From text version A: *without explicit metaphor*

Your immune system protects your body so that viruses and bacteria cannot harm you. This prevents you from getting sick. The white blood cells in your immune system take care of your health. Your immune system is active 24 hours a day, seven days a week.

From text version B: *with explicit army metaphor*

Your immune system acts as your body's army that attacks and destroys invaders such as viruses. It prevents you from getting sick. This army in your body has several lines of defence, for instance the white blood cell soldiers who take care of your health. The immune system army is on duty 24 hours a day, seven days a week.

From text version C: *with explicit fire brigade metaphor*

You do not want a fire to ruin your home. To prevent this from happening, there is a fire station nearby. There is also a fire station in your body called the immune system. This system protects your body when viruses want to enter. It prevents you from getting sick. The white blood cell fire fighters work for the fire station and protect you from fires. The fire station is available 24 hours a day, seven days a week.

Respondents

The texts were presented to a total of 543 learners from three schools. A total of 32% (N = 173) of the respondents attended the Kayamandi High School; 29% (N = 155) of the respondents came from the Hoërskool Stellenbosch; 39% (N = 210) of the respondents were educated at the Hoërskool Lückhoff, also in Stellenbosch.⁵ The average age of the respondents was 16.33 years (SD = 1.72); the ratio of males to females was 43%:57%. None of the respondents had English as their home language.

Afrikaans was the home language of 68% of the respondents; for 32% it was isiXhosa. Text version A was read by 209 respondents, text version B by 167 respondents and text version C by 167 respondents. All three text versions were distributed among learners from all three schools. This was done to prevent a systematic advantage of one text version over another, as an effect of possible differences between the average educational level and the average proficiency in English of the learners from the various schools.

Variables

The independent variables were text version (A, B, C) and metaphor recognition (yes, no). Metaphor recognition was measured indirectly. It was expected that direct questioning, with items in which the term 'metaphor' itself had been used, would lead to comprehension problems that would have been difficult to solve in this group of young learners. Therefore the respondents were given three items referring to characteristic features of metaphors.

Questions were asked (i) about the degree to which, according to the respondents, the explanation of the immune system referred to something familiar - from the assumption that in education and counselling the source in a metaphor is supposed to be more familiar to the reader than the target is, (ii) about the degree to which examples were used in the text to make the immune system more concrete - from the assumption that the source in a metaphor in education and counselling usually is more concrete than the target is, and (iii) about the degree to which the text made it easier for the reader to picture the immune system - from the assumption that metaphors in education and counselling are often used with this purpose in mind. The three items were followed by a five-point scale ('totally disagree' to 'totally agree'). The reliability of this set of items proved to be satisfactory: Cronbach's alpha was 0.77. From the average score on these three items (for the whole group: $M = 3.78$; $SD = 0.73$), for each respondent his or her score was determined on a new, dichotomous variable metaphor recognition. When the average score of a respondent on the three items was lower than 4, this was interpreted as 'no metaphor recognised' ($N = 272$); scores of 4 and higher were interpreted as 'metaphor recognised' ($N = 271$).

Dependent variables were perceived understanding (six items, for example 'The text is easy to read'), attractiveness (seven items, for example 'The text is interesting') and persuasiveness (eighteen items, for example 'The writer of this text is convincing').⁶ All items were followed by a five-point scale ('totally disagree' to 'totally agree'). The reliability of the three sets of variables proved to be satisfactory to

good: Cronbach's alpha for perceived understanding was 0.77, for attractiveness 0.86, and for persuasiveness 0.81.

Results

Metaphor recognition

The effect of text version on metaphor recognition was statistically significant, but modest. As expected, readers of text version A (no explicit metaphor) scored more often 'no metaphor recognised' than did readers of text version B (army metaphor) and text version C (fire brigade metaphor), but the differences were relatively small. See Table 1.

Table 1: Metaphor recognition with the three text versions

| | No metaphor recognised | Metaphor recognised |
|---|------------------------|---------------------|
| Text version A (no explicit metaphor) | N=123 (58.3%) | N=88 (41.7%) |
| Text version B (army metaphor) | N=77 (45.8%) | N=91 (54.2%) |
| Text version C (fire brigade metaphor) | N=82 (49.1%) | N=85 (50.9%) |

χ^2 (df=2) = 6.44; p=.04

Perceived understanding, attractiveness and persuasiveness

In a multivariate analysis of variance using text version and metaphor recognition as independent variables and perceived understanding, attractiveness and persuasiveness as dependent variables, statistically significant main effects were found of metaphor recognition ($F(3.458) = 28.02$; $p < 0.001$; $\eta^2 = 0.15$); see Table 2. No significant main effects of text version were found, nor any significant interaction effects of text version and metaphor recognition.⁷

Table 2: Main effects of metaphor recognition on perceived understanding, attractiveness and persuasiveness

| | No metaphor recognised | Metaphor recognised |
|--------------------------------------|------------------------|---------------------|
| Perceived understanding ⁱ | M=3.80 (SD=0.65) | M=4.17 (SD=0.58) |
| Attractiveness ⁱⁱ | M=3.52 (SD=0.58) | M=3.91 (SD=0.55) |
| Persuasiveness ⁱⁱⁱ | M=3.37 (SD=0.45) | M=3.72 (SD=0.45) |

ⁱ F (1,465)=40.89; $p < .001$; $\eta^2 = .08$

ⁱⁱ F (1,465)=53.34 $p < .001$; $\eta^2 = .10$

ⁱⁱⁱ F (1,465)=68.29; $p < .001$; $\eta^2 = .13$

Conclusions and discussion

This experiment shows clear effects of metaphor recognition on understanding as perceived by the reader, attractiveness and persuasiveness of HIV/AIDS educational texts in South African learners. It should be noted, however, that metaphor recognition was measured indirectly.⁸ Asking these young respondents to explicitly indicate whether or not they had recognised a metaphor in the text they read was not considered a realistic option in view of the thorough explanation of the concept 'metaphor' that would have been necessary. The outcomes of the experiment also clearly support the claim by Steen (2008) that what is intended as metaphorical by the writer does not always have to be interpreted as such by the reader, and also the other way around: that what is interpreted by the reader as metaphorical not necessarily has been intended as such by the writer. Furthermore, the outcomes show that the use of metaphors may lead to greater attractiveness and persuasiveness even if, contrary to what Sopory and Dillard (2002) suggest, use is made of an extended metaphor. A determining factor for text effects on attractiveness and persuasiveness turns out to be whether or not the reader did or did not recognise a metaphor, rather than if the writer did or did not deliberately choose to use a metaphor.

It should be noted here that all respondents in this experiment had to deal with a text that was written in their second or maybe even third language. Possibly this led to lower mean scores in the dependent variables, especially perceived understanding. The distribution of the three text versions among all three groups of respondents, however, prevented a systematic advantage of one version over another that could have been caused by differences in the readers' proficiency in English related to the schools at which the learners were educated. Given the situation that English nowadays is the de facto lingua franca used for most health communication in South Africa, it is recommended to investigate in a new study the possible effects of differences in the proficiency in this language on the recognition, understanding, appreciation and persuasiveness of metaphors presented in written English health education texts.

It must also be noted the experimental design in this study does not allow for definitive conclusions about a cause-effect-relationship between metaphor recognition and positive text effects. It may be that it was not metaphor recognition as defined here that led to positive overall judgments about the texts, but that the cause-effect-relationship was in effect reversed. Perhaps a halo-effect occurred; overall positive judgments on the text may have led respondents to assign positive scores to a number of items

in the questionnaire, including possibly the three items taken under metaphor recognition. A follow up study may bring clarity in this respect.

A practical conclusion from this study may be that it is effective to use metaphors in HIV/AIDS texts to explain concepts that the target group has to get familiar with, and to be quite explicit to the readers about this approach. This way the possibility is enhanced that the metaphors will be recognised and that they will have a positive effect on appreciation and persuasiveness. This conclusion can be no more than a preliminary one, though. More empirical studies are needed into the communicative effects of explicit and recognised metaphors in health education, in South Africa and elsewhere.

Notes

- ¹ In Jansen et al. (2009) this study is reported on in Dutch.
- ² The knowledge test consisted of two parts. In part A, the respondents were asked two yes-no questions about HIV prevention: 'To prevent HIV infection, a condom must be used for every round of sex' and 'One can reduce the risk of HIV by having fewer sexual partners'. In part B, the respondents were presented with four yes-no questions about myths and misconceptions related to AIDS: 'There is a cure for AIDS', 'AIDS is caused by witchcraft', 'HIV causes AIDS' and 'AIDS is cured by sex with a virgin'. Respondents were considered to have passed the test if they had correctly answered either the two questions in part A, or the four questions in part B, or both (Shisana et al., 2009: 51).
- ³ About this distinction see also Indurkha (1992) and Gibbs (1994).
- ⁴ To investigate whether the reading of the texts would influence the tendency of respondents towards adopting HIV/AIDS-related stigmatising behaviour, 196 other respondents were also approached. One of the counsellors participating in the preliminary discussion felt that the tendency towards stigmatising behaviour might be affected by HIV/AIDS educational texts including metaphors. According to this counsellor, whenever people in South Africa talk about HIV/AIDS in a stigmatising manner, this is never done directly, but always using metaphors.
- ⁵ Information on the three schools can be found on the following websites (consulted on 21 March 2010): Kayamandi High School and Hoërskool Lⁿckhoff <www.khanya.co.za>; Hoërskool Stellenbosch <www.stellies.com>.
- ⁶ All respondents who were presented with a text were asked to respond to six items about stigma, followed by a five-point scale (from 'totally disagree' to 'totally agree'), for example: 'People who are infected with HIV have done something wrong', and: 'I shouldn't hug an HIV-

infected person'. The same items, but preceded by 'The text makes me think that [...]' were also included in the questionnaire for the respondents who were presented with text version A, B or C. The six items were combined into a dependent variable tendency towards stigmatising behaviour (Cronbach's alpha: 0.75).

⁷ Whether or not the reading of a text had any influence on tendency towards stigmatising behaviour was tested in an analysis of variance with text version (A, B, C, or no text) as independent variable. No significant effect was found (score for the group as a whole: $M = 2.45$; $SD = 0.86$).

⁸ In a separate set of analyses, the definition of the variable metaphor recognition was based only on the score on the item 'In the text, the immune system is explained in terms of something familiar', the item that perhaps most evidently showed whether or not a respondent apparently had recognised a metaphor (score transformation: < 4 no metaphor recognised; $= 4$ metaphor recognised). Defined this way, a metaphor proved to be more readily recognised in the army text (73.7%) and in the fire brigade text (63.9%) than in the neutral text (58.7%). In the multivariate analysis of variance with perceived understanding, attractiveness and persuasiveness as dependent variables, similar results to those reported in the Results section were found. Metaphor recognition still produced significant main effects on perceived understanding, attractiveness and persuasiveness, and no significant interaction effects were found of metaphor recognition and text version.

Acknowledgements - We thank Prof. Dr Margot van Mulken (Radboud University Nijmegen, The Netherlands) and the anonymous reviewers who commented on earlier versions of this article for their valuable remarks and suggestions.

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