

The Persuasive Power of Peer Guides in Websites That Promote HIV/AIDS Voluntary Counselling and Testing

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Abstract

This study investigates the persuasive power and cultural appropriateness of a personal agent in websites intended to persuade university students to go for Voluntary Counseling and Testing (VCT). Three versions of the same website were presented to Dutch and South African university students. The results show that visual personalization had more effect than verbal cues and that South African students estimated all versions of the websites as more persuasive than Dutch students. The huge intercultural differences make clear that personalization cues can be effective in sensitive health-related communication. The results stress the importance of cross-cultural research in developing culturally appropriate websites.

Keywords: *personalization, website design, health communication, VCT, AIDS*

South Africa is experiencing an HIV/AIDS epidemic of catastrophic proportions. At an HIV-prevalence rate of 11.4 %, it is one of the countries with the largest number of people living with AIDS in the world (an estimated 5.1 million). The higher education sector is disproportionately affected by the HIV/AIDS epidemic. In a 2003 HEAIDS (Higher Education Against HIV/AIDS) study it is estimated that overall 22.5% of the 680.000 students enrolled at Institutions of Higher Education (IHE) were HIV positive in 2003 and that this figure could be expected to rise by an additional 10% by 2005. [1].

In line with best practices, VCT services are the backbone in redressing the HIV/AIDS epidemic in the student population[2, 3]. VCT services not only link prevention and care interventions, but also support them. A large number of IHE (74%) provide VCT services to staff and students. However, the utilization of these services has been extremely low. According to a recent HEAIDS audit only 0.44% of students and staff (1984 out of 443 100) were tested for HIV during March to May 2003 when HEAIDS ran the audit [1]. One of the factors responsible for the inefficacy of current VCT programmes of IHE is an ineffective communication strategy to market VCT on campus [1].

VCT and the Internet

At first sight, written documentation in general, and digital information distributed through the Internet in particular, is not the most evident communication medium for transferring sensitive personal, AIDS related messages in South Africa. The digital medium is inaccessible to large portions of the populations. The Internet is an impersonal medium, and is therefore not always suited to transfer complex behavioral health messages; "real" interactive communication, such as role play and individual patient consultations seems more suited to fit both the complex nature of AIDS communication. Yet, the Internet seems to have strong advantages to counter these shortcomings. AIDS-related communication still is highly associated with sex, illness and death, and therefore with feelings of shame and guilt which can dramatically obstruct communication in face-to-face settings. These feelings can be decreased

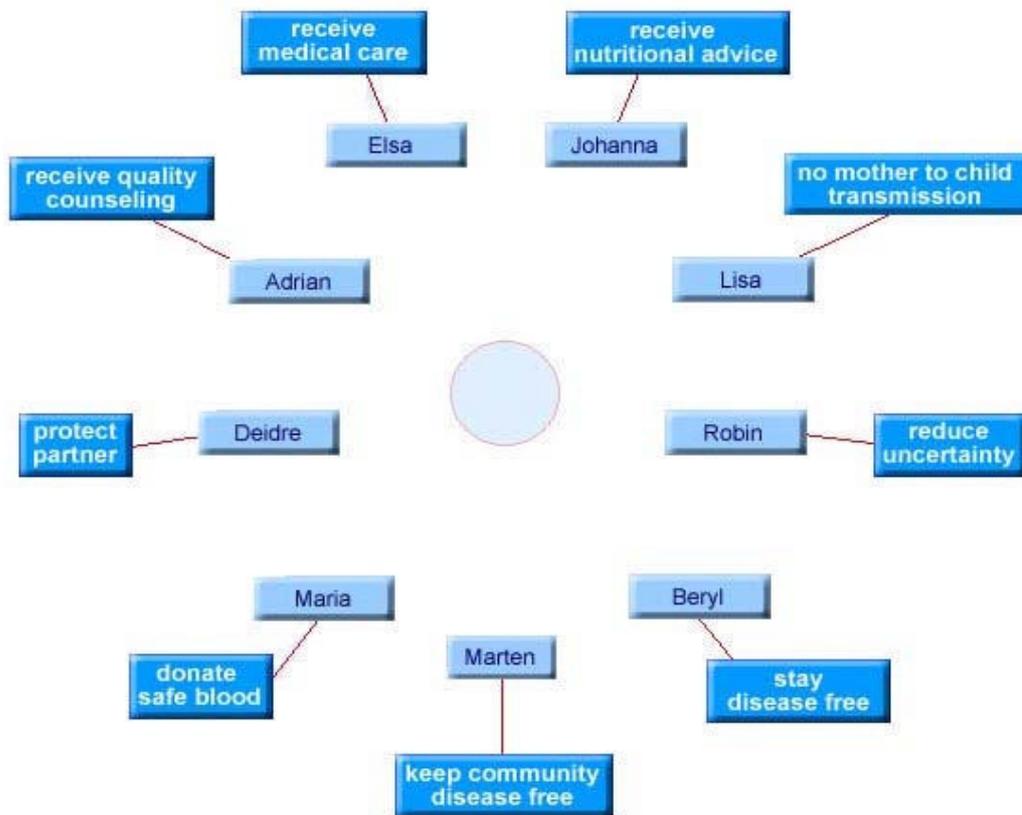


Figure 1. The central webpage with the arguments and testimonials

by the anonymity of the Internet. Furthermore, in South Africa access to the Internet is increasing. According to estimated from the CIA fact sheet¹, about 8% of the South African population (more than 3 million) had Internet access in 2002. Moreover, Institutions of Higher Education as a group are one of the fastest growing users of the Internet, and students' on-campus access to the Internet via university networks is increasing rapidly [4]. This makes the Internet a powerful and more and more accessible medium for informing young adults about AIDS related issues.

Survey

In this study, we start from the context described above and present the set up and the results of an

experiment carried out in the context of Epidasa², an international research project. The goal of the experiment was to determine whether the persuasive power of digital VCT information aimed at students could be improved by the addition of a peer guide presenting the arguments. On the basis of standard pro-VCT arguments, we constructed three versions of a website. The central part of the website consisted of arguments pro-VCT, each accompanied with a positive testimonial (see Figure 1). In two versions we added a verbal or a visual+verbal peer guide, which was intended to create a personal relationship with the user. The guide welcomes the students to the website and explicitly

¹ www.cia.gov

² www.epidasa.org. The project is part of Sanpad (www.sanpad.org.za).

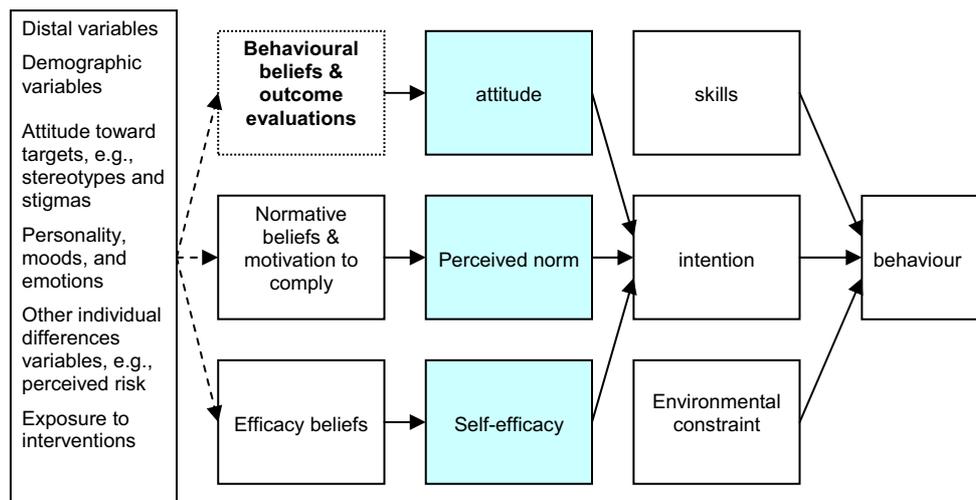


Figure 2. The Integrative Behavior Model (IBM)

introduces the arguments and testimonials of 'her/his friends'.

The three versions were presented to Dutch and (black and white) South African university students. In the next section, we discuss the role of a peer guide in relation to persuasion and persuasive digital VCT information. Next, we describe the set up and results of the experiment. Finally, we discuss a number of results and recommendations for future design.

A peer guide in a persuasive VCT website

Persuading young adults to go for VCT is a complicated process. Document variables can only play a modest role in changing the psychosocial variables involved in this process. The complexity of these variables is shown in theories that model the relation between attitude and behavior, such as the Integrative Behavior Model (IBM) [5]. Applied to VCT, the IBM embodies the assumption that only a limited number of variables, the so-called proximal variables, will be the most predictive of VCT uptake behavior (see Figure 2). The single best predictor is the intention to present oneself for VCT. This variable is a function of the behavioral, normative, and efficacy beliefs one has about going for VCT. The more one believes that going for VCT will lead to good outcomes and prevent bad outcomes, the more favorable one's attitude should be toward it (behavioral beliefs). Similarly, the more a person believes that others think that he or she should or should not go for VCT, and the more motivated a person is to agree with those

others, the stronger will be the subjective norm to go or not go for VCT (normative beliefs). Finally, the more a person perceives that he or she can (e.g. has skills and abilities to) go for VCT, even in the face of specific barriers or obstacles, the stronger will be the person's self-efficacy with respect to going for VCT (efficacy beliefs)³.

The IBM predicts a large amount of variance in the uptake of VCT depending on the interaction and relative weight of these variables in different populations, which requires different types of messages for different target groups.

This IBM-analysis makes it clear that the persuasion process involved in VCT is complex and variable. IBM does not explicitly address the role of message variables. At best it suggests a role for content variables. Moreover, it suggests a highly custom driven determination of message content, dependent on subjective beliefs.

The complex interaction between content and subjective beliefs, together with the open nature of the Internet, made it less desirable to address these individual content requirements. Therefore we decided not to focus on content variables in

³ The left column in the model represents distal variables, which according to Fishbein & Yzer are used in message design mainly to determine different target groups based on different beliefs.

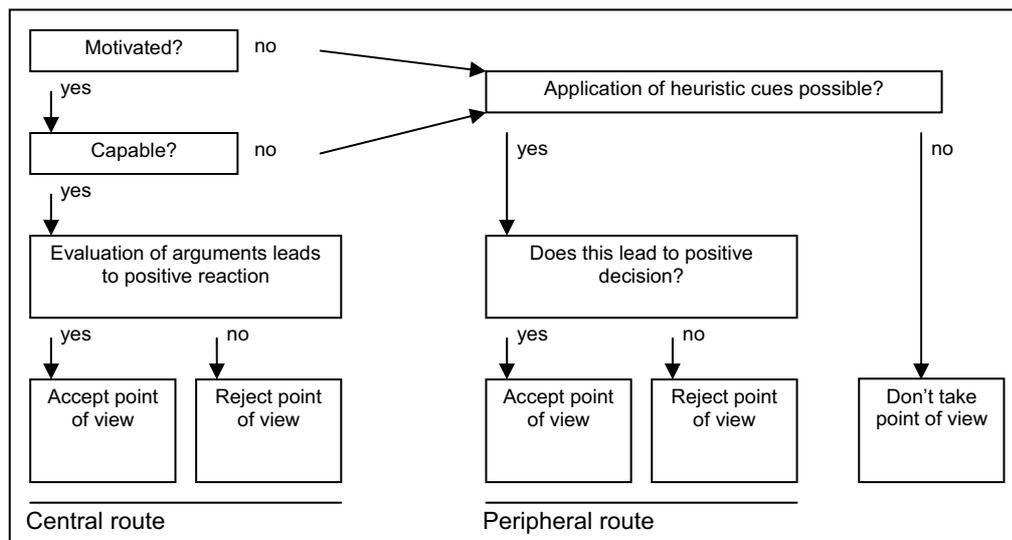


Figure 3. The Elaboration Likelihood Model (ELM)

constructing the VCT website⁴. Instead, we started from a collection of standard uncontroversial pro VCT arguments as invariable baseline content in the VCT website. In the arguments, the individual and social advantages of VCT are stressed and the counterarguments refuted. As an independent variable, we focused on a generic and stable rhetorical variable, i.e. the peer guide, which we expected to be less sensitive to individual differences, and hence more generally applicable in website design.

Peer guides as persuasive cues

The effect of personalization variables like peer guides can be hypothesized on the basis of dual process persuasion models, such as Chaiken's Heuristic Systematic Model and Petty and Cacioppo's Elaboration Likelihood Model (ELM). Unlike content oriented models, such as the IBM, they explicitly address the role of rhetorical

message variables [7, 8]. For example, the ELM assumes two different routes to attitude change (see Figure 3). There is a central route, which focuses on central information like the arguments in the website. It therefore implies a rational process of learning, collecting information, and generating thoughts about the topic. This processing route requires extra effort and is likely to occur in cases of high *involvement* and a high *need for cognition*.

The other route is the peripheral one, which is associated with low involvement and a low need for cognition. This route focuses on persuasion via heuristic cues and focuses on the impact of non-central informational aspects (heuristics). In the case of the VCT website, the peer guide is most likely active on this second level of attitude formation. The peer's assumed expert status may increase the credibility of the source or the attitude towards the information, and his personal style may increase the appreciation of the information. We confronted not only South African but also Dutch students with the different versions of the website. The ELM predicts substantial differences between these cultural groups. Dutch ELM students know less about VCT and are less involved with HIV/AIDS than South African students. Therefore, it is expected that the peripheral cues may be more persuasive to the Dutch than to the South African students.

⁴ An additional reason was the lack of IBM based scales for the analysis of the determinants of the VCT uptake behavior, as well as the unavailability of research on the determinants of South African students' decisions to present themselves for VCT. One of the few relevant publications is Peltzer and Mpofu (2002), which uses Boshamer and Bruce's HIV Antibody Testing Attitude Scale to determine the determinants of the VCT uptake behavior of 760 first-year students from four African Universities [6] K. Peltzer and E. Mpofu, "The factor structure of the HIV Antibody testing Attitude Scale in Four African Countries," *Eastern Journal of Medicine*, vol. 7, pp. 27-30, 2002.

Digital peer guides as social actors

There is growing evidence about the beneficial nature of personalization cues in digital environments. For example, the use of informal, personal style [9, 10], and expressive visual social actors [11, 12] is known to promote students' learning in multimedia environments. These social agency variables are associated with the activation of a conversational communication scheme and an increase in social presence and self referencing, which makes students more involved and motivated [13, 14]. There is also evidence for the persuasive effect of social agency variables. Lee and Nass demonstrated that the addition of visual animations in digital interaction did not only increase the appreciation of the addressee, but also the extent to which users agreed with the addressee [15]. Likewise, Fogg et al. argue that users respond socially when computers adopt animated characteristics (e.g., physical features, emotions), play animated roles (e.g., coach, assistant), or follow social rules or dynamics (e.g., greetings, turn taking) [16, 17]. Laboratory experiments have also demonstrated how computers can be persuasive social actors. In particular, computers as social actors can persuade people to change their attitudes and behaviors by providing social support, modeling attitudes or behaviors, and leveraging social rules and dynamics.

In most of these cases, social agents are realized by embodied animated cartoons or faces and (human or computer) voices. Given the delicacy of the information, and the variety of the target group to be addressed, we decided again to opt for generic and fairly neutral personalization cues. Instead of cartoon animation and voice, we opted for realistic static visualization (by photographs) and personal written text on the screen. Using animation and voice would have forced us to make decisions on personal styles, accents, etc., the effect of which is not trivial [18].

This makes it plausible to assume that the peer guide and the social function of the computer make a successful persuasive combination. The Internet enables tailoring the information in the experimental website in such a way that the source of the information appears to be a peer guide. Subsequently, this peer guide can be tailored to the *persona* the student prefers to be informed by [19]. As such, the mediated peer may function as a social actor, and persuade the students to change

their attitudes. In this case, we expect the peer to have a positive effect on how students evaluate the source and the information of the website, and on their attitude and involvement.

In sum

By using this type of personalization, we intended to evoke effects of a real peer guide as a rhetorical and culturally appropriate strategy in HIV/AIDS communication [2, 20] without relapsing into the use of (culturally) inappropriate personalization cues. We expected the peer guides to have a positive effect on the persuasive power of the website information. Given the positive effects of social cues, the combination of the verbal and visual peer guide is expected to be more beneficial than the verbal guide only.

Method

Participants and design

The research was conducted in The Netherlands with students from Tilburg University and in South Africa with students from the University of Pretoria (UP) and the University of South Africa (UNISA). The group of Dutch students consisted of 29 male and 27 female students. The age varied from 19 to 28 years.

In South Africa, two groups participated in the experiment. There were 30 white South African students, 16 male and 14 female students. The age varied from 18 to 24 years. And there were 33 black South African participants, 16 male and 17 female students; the youngest was 17 and the oldest 26 years old.⁵

The experiment used a between subject design: participants were exposed to one of three website versions only (objective, verbal peer or verbal+visual peer version).

Materials and instrumentation

The objective website consisted of 22 pages on two information levels.

⁵ Non-white South Africans, even after 10 years, are still behind their white South African counterparts regarding health care. Therefore epidemiological studies in South Africa still use ethnicity as a variable in the analysis of health behavior. Thus, for comparability reasons only, it is appropriate to make this distinction [2] HSRC, "Household survey 2002," Nelson Mandela/HSRC Study of HIV/Aids 2002.

The verbal and verbal+visual peer versions contained the same basic information, but the introductory information was rewritten from the viewpoint of a narrating peer.

In the visual version, photographs of the peer were added to these verbal peer introductions.

In both peer versions an introductory and closing page was added. In addition, in the visual version, a starting page was added in which the student was asked to choose one of four visually presented peer guides (2 male vs. 2 female, 2 black vs. 2 white peers)⁶.

The questionnaire contained evaluative statements pertaining to the following dependent variables and sub-variables:

- Evaluation of the source
 - credibility, appeal, expertise, empathy, informality
- Evaluation of the information on the website
 - appeal, comprehensibility, appropriateness, persuasiveness
- Attitude
 - beliefs, attitudes and intentions with regard to VCT
- Involvement with HIV

Each of the sub-variables was operationalized in four or five propositions, which resulted in a total of 67 propositions. Half of the propositions were formulated in a positive way, and half of them in a negative way. Two types of propositions were used: 22 seven point semantic differentials (about the source and information of the website) and 45 seven point Likert scales.

Apart from these evaluative propositions, there were two additional questions: an open question measuring recall of the arguments (*which of the reasons - pro VCT - presented on the website can you recall? Please write them down*). Finally, the questionnaire asked to rate (on a 10-point scale) the quality of the testimonials, the arguments, and the rest of the information.

⁶ The relevance of this facility is demonstrated in the results. South African students chose significantly more often a guide of their own ethnical background than Dutch students ($\chi^2(2) = 6.40, p < .05$).

Procedure

The students were tested individually, except for one group of nine black students who were tested together in a computer laboratory. Students were invited by e-mail or personally on the campus to participate in the experiment. At the beginning of the experiment, they received an introductory text, in which they were explained the content and intention of the VCT website. They were asked to read the website carefully at their own pace and to take the perspective of someone who is considering to go for VCT. Participants were asked to read everything in the order they preferred. After reading the website, they were asked to fill in the questionnaire.

Results

The low homogeneity of the questions in some of the clusters required a higher order clustering of variables: Credibility of the source (i.e. credibility and expertise, Cronbach's $\alpha = .71$), appeal of the source ($\alpha = .71$), commitment of the source (i.e. empathy and informality, $\alpha = .68$), information ($\alpha = .83$), and attitude (i.e. attitude, beliefs and intentions, $\alpha = .74$). With regard to the variable involvement, one question was left out ($\alpha = .65$).

The effect of peers on persuasive power

Websites overall Table 1 shows the mean scores for the dependent variables in the three website conditions. A multivariate analysis of variance, with involvement as covariant did not show an overall effect of website version on persuasive power ($F(10,208) = 1.12, p = .348$)⁷. A uni-variate analysis of variance showed that website version resulted in significant differences on the variables commitment ($F(2,108) = 3.47, p < .05$) and appeal ($F(2,108) = 3.71, p < .05$). Post hoc analyses showed that these variables were evaluated significantly higher in the visual+verbal version than in the objective version. There is no significant effect of the visual+verbal website on the other variables,

⁷ For practical reasons, the four involvement questions were part of the post test questionnaire, which is unusual and methodologically not standard. However, the danger that the experimental material may differentially affect the involvement scores is minimized because involvement was measured with factual statements, questioning personal experiences of students with AIDS (e.g. AIDS has nothing to do with my personal situation).

nor is there an effect for the addition of a verbal guide to the objective website. There was an effect of the covariant involvement ($F(5,104) = 4.80$, $p < .001$), which is expressed in the evaluation of the information ($F(1, 108) = 10.44$, $p < .005$) and attitude ($F(1,108) = 8.27$, $p < .005$).

The results above indicate that only the visual guide had a significant effect on the evaluation of the variables *commitment* and *appeal of the source*. There was no significant difference between the evaluation of the objective and the textual website.

Websites two by two When comparing the websites two by two a multivariate analysis of variance with involvement as covariant showed that the addition of a visual+verbal guide resulted in an overall significant effect ($F(5,64) = 2.41$, $p < .05$). A uni-variate analysis shows significant differences on commitment ($F(1,68) = 7.19$, $p < .01$), appeal ($F(1,68) = 8.82$, $p < .005$) and information ($F(1,68) = 4.10$, $p < .05$), but not on credibility and attitude. There is also a significant effect of the covariant involvement ($F(5,64) = 4.49$, $p < .001$), which again means that involvement influences the evaluation of the variables. This effect expresses itself in the variables appeal ($F(1, 68) = 6.84$, $p < .025$), information ($F(1,68) = 14.08$, $p < .001$) and attitude ($F(1,68) = 12.16$, $p < .001$).

This means that the students who visited the website with the visual guide gave significant higher evaluations of the commitment and appeal of the source and of the information of the website than the students who visited the objective version. There was no difference in the evaluation of the credibility of the source or in persuasive power.

The addition of a visual guide to a verbal guide, or the addition of a verbal guide to an objective version, did not result in any significant difference.

Table 1. Mean scores of the evaluation of the source (commitment, appeal, credibility), information and attitude (min. 1- max. 7) as a function of website version (objective vs. verbal vs. verbal+visual). (SD between brackets)

	Objective	Verbal	Verbal+Visual
Commitment	5.56 (.62)	5.65 (.65)	5.91 (.49)
Appeal	5.51 (.81)	5.69 (.79)	5.98 (.57)
Credibility	5.67 (.63)	5.68 (.55)	5.75 (.41)
Information	5.40 (.66)	5.47 (.57)	5.64 (.47)
Attitude	5.71 (.85)	5.67 (.65)	5.84 (.51)

The effect of peers on nationality

Websites overall Table 2 shows the mean scores for the dependent variables of the three website conditions in relation to nationality. A multivariate analysis of variance showed that Dutch students do not evaluate the three websites differently ($F(10,98) = 1.34$, $p = .222$). However, uni-variate analyses of variance showed significant differences on the variables commitment ($F(2,53) = 3.60$, $p < .05$), appeal ($F(2,53) = 4.97$, $p < .025$) and information ($F(2,53) = 5.32$, $p < .01$). A post hoc analysis revealed that the effect on the variables commitment, appeal and information concerns the comparison of the objective and verbal+visual website, and the effect on appeal the comparison of the verbal and verbal+visual website.

There is no significant effect of version on the South African students' evaluation of source, information and attitude ($F(10,98) = .58$, $p = .825$).

Websites two by two The same trends show up in comparing the versions two by two. The addition of a verbal+visual guide to the objective website caused a significant effect within the Dutch group ($F(5,30) = 2.64$, $p < .05$). Uni-variate analyses show an effect on the variables commitment, ($F(1,34) = 8.25$, $p < .01$), appeal ($F(1,34) = 8.75$, $p < .01$) and information ($F(1,34) = 10.75$, $p < .005$). The version has no effect on the South African students' evaluation of the variables ($F < 1$).

The addition of a visual guide to the verbal guide version caused no overall effect of version for the Dutch students. However, uni-variate analyses show an effect on the variables appeal ($F(1,34) = 8.75$, $p < .01$) and information ($F(1,34) = 10.75$, $p < .005$). The addition of a

verbal+visual peer again had no effect on South African students ($F < 1$). The addition of a verbal guide to the objective version did not result in any significant differences.

This means that for the *Dutch* students, the visual guide has a positive effect in terms of a higher evaluation of the source (commitment and appeal) and the information, whereas adding only a textual guide has no effect.

For *South African* students, the guide, no matter in what appearance, has no influence on the evaluation of the source, the information and the persuasive power.

Table 2. Mean scores of the Dutch and South African students' evaluation of the source (commitment, appeal, credibility), information and attitude (min. 1- max. 7) as a function of website version (objective vs. verbal vs. verbal+visual). (SD between brackets)

	Objective	Verbal	Verbal+Visual
Dutch			
Commitment	5.31 (.64)	5.51 (.63)	5.81 (.39)
Appeal	5.16 (.77)	5.29 (.65)	5.78 (.47)
Credibility	5.44 (.59)	5.38 (.44)	5.59 (.33)
Information	5.05 (.57)	5.19 (.51)	5.54 (.33)
Attitude	5.40 (.86)	5.50 (.61)	5.73 (.44)
South African			
Commitment	5.80 (.52)	5.78 (.65)	6.03 (.57)
Appeal	5.85 (.71)	6.07 (.73)	6.21 (.60)
Credibility	5.88 (.60)	5.96 (.50)	5.92 (.44)
Information	5.73 (.57)	5.73 (.50)	5.76 (.59)
Attitude	6.00 (.76)	5.85 (.65)	5.97 (.56)

Discussion

We can conclude that the addition of a verbal guide has no effect on the evaluation of the source of the information and on the attitude (being the conglomerate of attitude, beliefs, and intentions). However, the addition of a visual+verbal guide had a significant effect on the evaluation of the commitment and appeal of the source, and on the evaluation of the information, but not on the evaluation of the credibility of the source and on the attitude.

Furthermore, the addition of a verbal+visual guide is beneficial for Dutch students. They evaluate the commitment and appeal of the source as well as the information higher in the verbal+visual version. This effect is absent in the South African student condition. This means that the effect of the verbal+visual guide is to be attributed mainly to

the Dutch students, and that the manipulations do not have an effect on South African students.

Verbal guides no effect Why did the verbal guide have no effect? One reason may be that the differences between the objective and verbal versions were too small. Even though there was no guide to introduce the information, the objective version had the same testimonials as the other two versions, which may have a similar effect on the students. Apparently the conversational *I-you*, which was the central variable in the verbal version, had too marginal an effect.

Differential effects The verbal+visual peer had differential effects on Dutch and South African participants. A possible explanation can be found in the Elaboration Likelihood Model of persuasion. The verbal+visual peer guide may have acted as a peripheral cue for Dutch students, an effect which fits in with the low degree of involvement associated with this group of participants, as they are less personally and directly involved in VCT/HIV than South African students.

This explanation however runs counter to the differences observed within the group of South African participants. It was expected that South African students would be more involved with HIV than Dutch students. However, Table 3 shows that there is no significant difference in involvement between the Dutch and the South African students ($F(1,117)=1.24, p=.268$), but, curiously enough, there is a significant difference between black and white South African participants ($F(2,116)=11.40, p<.001$). In terms of the ELM there is a discrepancy between the low scores on involvement of the white students and the fact that the peripheral cues had no influence on them (Source: $F(2,27)= 1.32, p=.285$; Information: $F(2,27)= .10, p=.909$).

Table 3. Mean scores of involvement (min. 1-max. 7) as a function of nationality (Dutch vs. South African) and ethnic group (black South African vs. white South African). (SD between brackets)

	involvement
Dutch	4.13 (1.30)
South African	4.44 (1.68)
Black	5.21 (1.18)
White	3.59 (1.74)

These involvement differences may be due to delicate differences in attitude towards AIDS between black and white South African students. White South Africans may overstress the fact that they (personally) are not involved with AIDS, as opposed to black South Africans. And this may explain the low involvement scores.

Source Unlike commitment and appeal, none of the versions had an effect on the credibility of the source. Perhaps commitment and appeal depend more on the effect of visualization to evoke feelings of empathy and liking, whereas credibility is more dependent on the content of the message, which was the same in the three website conditions.

Attitude The independent variables had no effect on attitude. When we look at the Dutch scores, there is a non significant ascending line from objective over verbal to verbal+visual. The South African scores are overall extremely high.

Conclusion

The addition of a digital peer guide does not, at least, have a detrimental effect on the persuasive power of the information of a website. Apparently, participants regarded the clearly fictitious, completely unfamiliar, digital photograph of a peer as an acceptable way of being guided through delicate health-related digital information. This is not trivial. It shows that it is promising to introduce social agents not only in relatively neutral learning or persuasive environments, but also in more delicate digital environments as the one we used in this experiment.

Second, there were considerable differences between the responses of white South Africans, black South Africans, and Dutch participants, which will certainly not be controlled sufficiently in this experiment. Different cultural and ethnic backgrounds, levels of language or computer proficiency or in experience with questionnaires may have been relevant.

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