STRATEGIES FOR STABILISING PICTORIAL MEANING IN A LOW-LITERATE TARGET GROUP

Communitas
ISSN 1023-0556
2010 15: 167 - 182

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ABSTRACT

The article discusses the process of developing a nutrition education calendar for an elderly, low-literate target group in Sharpeville. This occurred in three phases: (a) an ex-post evaluation of the existing nutrition education material to identify communicative defects (n=140), (b) pre-testing a sample of semantic units drawn from a draft version of the nutrition education calendar (n=102), and (c) checking whether the target group would like to move away from the adopted illustration approach approximately one year after it was disseminated free of charge in the community (n=106). In all three phases questionnaires, completed by a research assistant in the presence of the respondent, were used as the data collection instrument. The main findings were that (a) several shortcomings relating to object recognition and the logical fit between the caption and the visual image were identified in the first phase, (b) the preferred degree of visual abstraction emerged as the main issue during the pre-testing of the draft nutrition education calendar, and (c) during the third phase the respondents opted to stay with the illustration approach, rejecting the possible introduction of alternative illustration styles. Taken together, the three phases of the study illustrate strategies for stabilising the notoriously unstable visual communication component of nutrition education materials.

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INTRODUCTION

Visual information plays an important role in print media community communication, especially in low-literate target groups. For the purpose of this article, illiteracy is defined as the inability to read and write with understanding a short, simple sentence about everyday life (UNESCO 1995: 4). In this regard, Wagner (1993: 9) notes that "most specialists agree that the term [literacy] connotes aspects of reading and writing, but major debates continue to rage about what specific abilities or knowledge count as literacy and what levels to employ for measurement" (cf. Venezky, Wagner & Ciliberti 1990). Wagner (1993: 260) suggests four levels of literacy:

- non-literate, for an individual who cannot read a text with understanding, write a short text in a significant national language, recognise words on signs and documents in everyday contexts or perform specific tasks such as signing her/his name and recognising the meaning of common public signs;
- low-literate, for an individual who cannot read a text with understanding or write a short text in a significant national language, but who can recognise words on signs and documents in everyday contexts, or perform such specific tasks as signing her/his name or recognising the meaning of common public signs,
- moderate-literate, for an individual who can, with some difficulty (i.e. making numerous errors), read a text with understanding and write a short text in a significant national language, and
- high-literate, for an individual who can, with little difficulty (i.e. making few errors), read a text with understanding and write a short text in a significant national language.

A fast and in most cases sufficiently accurate way of establishing the literacy level of a given community is to use the number of years of formal schooling as the main indicator. The standard approach is that in a low-literate target group, the majority of members received six or less years of formal schooling. This means that the term "low-literate", as used in this article, does not necessarily refer to a homogenous group, where every single individual is either low-literate or non-literate, but only indicates the state of affairs for the group taken as a whole. Further, a positive correlation between verbal and visual literacy levels in a particular community is not a foregone conclusion.

Visual literacy broadly refers to the ability to understand and use images, including the ability to think, learn and express oneself in terms of visual images (Braden 1996: 13). Visual literacy is typically measured using the number of years of training in an image-related discipline as the most important indicator, which may include formal or informal training in areas such as art history, painting, photography, film studies or graphic design, for example.

That is not to say that print media community communication materials which contain a substantial amount of written information should not be utilised in a low-literate target group, nor that material replete with pictorial illustrations is unsuitable for a target group with a low level of visual literacy. This is because community members

seldom live in isolation, and a low-literate individual often has easy access to a high-literate individual, possibly in the same household, who is prepared to read written information out loud and explain the contents. Similarly, an individual with a low level of visual literacy, who is not familiar with the pictorial conventions used in a given visual illustration, may obtain guidance about the intended meaning of the illustration from someone who is visually literate.

At any rate, visual images are rarely employed in community communication in order to convey exactly the same information as the written texts does, in the hope that the moderate- to high-literate individuals read the writing and ignore the images and the non- or low-literate individuals study the images and pay no attention to the caption or any other written text. For example, most instructional materials, such as a pamphlet illustrating how to set up a worm bin for compost, or a health education poster on a clinic wall, contain visual and verbal components that are inextricably linked. In this type of material, the visual images primarily perform a phatic function, i.e. they attract and retain attention and interest (Peters 1978: 58; Watson & Hill 1993: 139), but may also play an important role as mnemonic devices, in addition to other less prominent communicative functions and roles as outlined by Sachs-Hombach (2006: 262).

This article discusses the process of developing a nutrition education calendar illustrated with a substantial amount of visual information meant for an elderly (mean age 71.7 years), pre-dominantly Sesotho-speaking (84.7%) and primarily female (87.1%), low-literate target group in Sharpeville.

The aim is to illustrate strategies for stabilising pictorial meaning, or narrowing the latitude of interpretation, of visual images in this type of community communication setting. The first part of the article deals with the notion of indeterminacy – or vagueness – as applied to pictorial signs. The second part of the article covers (a) an overview of an *ex post* evaluation conducted in order to identify communicative defects, or readability barriers, in the existing nutrition education material that the target group had been exposed to before the commencement of the project, (b) the pre-testing of a sample of semantic units drawn from a draft version of the nutrition education calendar, and (c) a final data collection procedure at the end of the project carried out to check whether the target group would like to move away from the illustration approach used in the calendar approximately one year after it was disseminated free of charge in the community.

THE INDETERMINACY OF PICTORIAL SIGNS

For the purpose of this article, indeterminacy, or vagueness, as applied to the visual component of community communication materials, is defined in a Piercian sense. As pointed out by Brock (1981: 133-134; cf. Bergman 2009: 265):

> It is important to note that Pierce's concepts of indeterminacy were initially defined and interpreted relative to a given universe of discourse and a given state of information. This relativity is presupposed by the later pragmatic analysis of indeterminacy and determinacy. According to this analysis, a term is indeterminate

> if it allows a latitude of interpretation or further determination relative to the purpose(s) of a given discourse or inquiry and is determinate if it does not.

In the case of pictorial signs, the latitude of interpretation which a sign allows for is usually primarily based on the nature of the referent-sign relationship, as discussed in influential and often-cited publications such as Sonesson (1989), Groupe μ (1992) and Saint-Martin (1990). In this regard, Blanke (1998: 229; cf. Halawa 2008) points out that over and above the main limitations of the notion of resemblance as a basis for iconicity, icons in general and pictorial signs in particular ultimately have to be interpreted by someone, implying that an in-depth understanding of how pictorial signs operate involves engaging equally with issues of referent-sign resemblance, or the lack thereof, as well as culture-based contingencies and contextual determinants. A closer examination of the broader context of a particular pictorial signification process may be undertaken with reference to Habermas' work in the area of discourse ethics, where universalisation is a dominant principle. Universalisation requires the acceptance (*Zustimmung*) of the communicative norms at play by all concerned without coercion, implying both agreement (*Einverständnis*) and a contract (*Vereinbarung*). According to Habermas (1998):

> Only those norms can claim validity that could meet with the acceptance of all concerned in a practical discourse. ... [A] norm is valid when the foreseeable consequences and side effects of its general observance for the interests and value-orientations of each individual could be jointly accepted by all concerned without coercion.

This implies that the latitude of interpretation associated with a specific pictorial sign in a particular target group depends on the type of agreement reached, as well as the stability of that agreement, regarding the communicative norms at play. Stated differently, the latitude of interpretation depends on the contract concluded by the parties of the pictorial signification process concerning the properties of the pictorial signs to be included in the discourse, and the manner in which they are employed. It therefore seems fair to assume that the vagueness, or indeterminacy, of a pictorial sign, or an aggregate of pictorial signs for that matter, will decrease as the level of acceptance and/or agreement concerning their use increases, especially in an instructional communication setting, where the aim is to ensure a sufficiently narrow latitude of interpretation in order to prevent the dissemination of unintended, possibly confusing messages.

The notion of indeterminacy also features prominently in a framework by Pauwels (2005) which describes the visual representational latitude (VRL) of pictorial information. According to Pauwels (2005: 6), VRL refers to "coping with controlled and uncontrolled variations in the depicted and the depiction". The concept of VRL describes (a) an inability, or difficulty, to express visually the degree of variation of the depicted referent, or the variation of the depicted, and (b) vagueness about the motivation behind, as well as the meaning or status of the chosen forms and visual elements, or variation relating to the process of depiction (*ibid*.).

The concept of VRL primarily plays itself out in two dimensions. In the production dimension, VRL is determined, among others, by the strengths and limitations inherent to the medium used to convey variations in the phenomenon or process depicted, as well as the manner in which the medium is utilised, i.e. the "room to maneuver" (Pauwels 2005:6) that the given medium allows.

One of the examples which Pauwels uses to illustrate the challenge of depicting variations of the referent visually is that it is reasonably uncomplicated to explain verbally that a certain bird species has three to seven spots, presumably of identical size, shape and so on, on each of its wings. A visual representation of that particular bird species would, however, typically not convey that the number of spots varies within the range of three to seven. Five different birds may be drawn, for instance, each with a different number of spots per wing, in the hope, firstly, that the viewer notices that the number of spots varies between birds, and, secondly, that the viewer correctly concludes on seeing the images of five different birds that only three to seven spots are possible, i.e. that a bird of the given species with two and less, or eight and more spots, does not exist.

In the production dimension, VRL thus primarily refers to how variation in the depicted phenomenon was conveyed visually, i.e. whether appropriate levels of iconicity and abstraction were chosen, as well as the manner in which the given medium, or combination of media, was used to achieve this (Pauwels 2005: 6). In the reception dimension, VRL is mainly determined by the extent to which the target group, or aggregate of individuals, considers what is depicted to be "necessarily so" on the one hand or "just one way of putting it" on the other hand (Pauwels 2005: 6). In other words, a visual text with a wide VRL leaves the viewer uncertain about the meaning and status of the visual elements of which it is comprised, and how these visual elements relate to actual variance in the phenomena depicted.

In contrast, a visual text with a narrow VRL conveys the extent and nature of variance in the referent in such a manner that the members of the target group consider the choice of visual elements contained therein as motivated, i.e. as selected with a view to convey variance visually within the capabilities of the chosen medium of dissemination. Pauwels refers to the example of an illustration of a phenomenon from physics, where a core is depicted with 23 identical particles revolving around this core, presumably in a random fashion.

Such an image may give rise to uncertainty as to whether the number of particles is always fixed, or whether the illustration aims to convey nothing more than that a large number of particles revolve around the core. This type of uncertainty is typically dispelled by means of an accompanying verbal code, such as an extended legend or written narrative, or oral clarification in the case of a low-literate target group that defines the "representational claims" (Pauwels 2005: 7) that are being made.

The comprehension of the various representational claims a visual text contains can be assessed on three distinct semiotic levels: the syntactic, semantic and pragmatic levels

of comprehension. These terms derive from a theoretical framework by Goldsmith (1984), based on terminology used in earlier work by Morris (1938). According to Goldsmith's framework, syntactic comprehension involves the ability to perceive depth, figure-ground relationships and colour, but does not include the recognition of objects. It thus refers to a basic perceptual competence on the part of the viewer, as opposed to an interpretational competence, i.e. to recognise and attach significance to the image contents, which is measured on the semantic and pragmatic levels.

The semantic level of comprehension concerns the ability to recognise depicted objects, and to identify what they denote, in contrast to pragmatic comprehension, which may be defined as the ability to interpret a visual message beyond its literal meaning, implying an ability to comprehend figurative meanings and a familiarity with artistic manipulation and/or cultural conventions (Goldsmith 1984: 124). This means that issues and concerns relating to variance in the referent and the manner in which the extent of the variance in the referent is conveyed pictorially primarily belong on the semantic and pragmatic levels of comprehension, bearing in mind that syntactic comprehension based on perceptual competence may be regarded as a pre-requisite or "stepping stone" for semantic and pragmatic comprehension to occur in a meaningful way.

DESIGN AND METHODS

Some of the above described theoretical concepts guided the three phases of data collection at a care centre for the elderly in Sharpeville. The centre is located in the Vaal region of the Gauteng province, parts of which are characterised by high levels of unemployment, verbal illiteracy (see Slabbert 2004) and low Living Standards Measure (LSM) scores as benchmarked by the South African Advertising Research Foundation (SAARF 2006). The nutrition education programme at the care centre for the elderly is based on the nationally standardised Food Based Dietary Guidelines (FBDG) of South Africa and aims, within the context of sustainable community development, to promote improved food procurement as well as food consumption patterns, and to contribute towards addressing malnutrition and household food insecurity in affected communities.

As 58.2% of the community members who regularly attend activities at the care centre for the elderly reported that they have received seven or less years of formal schooling (18.8% indicated having received no formal schooling at all), one of the components of the nutrition education programme involves communicating nutrition education messages visually, i.e. by means of visual illustrations, where the reliance on the accompanying verbal code or "text anchor" is minimal. The comprehensibility and overall suitability of the pamphlets and posters that the target group had been exposed to before the commencement of the project was, however, not known. In the light thereof, the first step was to conduct an *ex post* evaluation of their readability and overall appropriateness.

The data collection procedure involved a ten to fifteen minute session conducted in the home language of the respondent during which a field worker completed a questionnaire about the visual communication component of the nutrition education materials in the presence of the respondent. By limiting the duration of the session, fatigue–related data collection issues were minimised.

Sampling occurred in two phases. Firstly, a sample of ten semantic units of the existing community communication material was randomly chosen for the purpose of measuring object recognition. Three semantic units were randomly selected in order to assess the comprehension of pictorial conventions. This sample of 13 semantic units represented approximately ten percent of the total number of visual semantic units in the pamphlets and posters. For example, an image of a food plate with a butternut, a drumstick and porridge on it was seen as consisting of several separate semantic units, i.e. the image as a whole was one semantic unit, the image of the butternut was one semantic unit, the image of the porridge was one semantic unit and so on.

Secondly, the total number of community members who regularly attend activities at the care centre for the elderly, and for whom accurate data regarding their nutritional status has been collected, was 170. Of these, a sample of 140 community members (i.e. 82.3%) voluntarily participated in the evaluation of the visual material on a first come first serve and anonymous basis (anonymous in the sense that their name or other personal particulars were not recorded on the questionnaire). In the first part of the questionnaire, the respondent was asked to identify the objects depicted in the ten randomly chosen semantic units. Depending on the answer received, a score of one point (correct or envisaged answer), half a point (borderline answer) or zero points (incorrect answer) was allocated and the ten responses were used to calculate an object recognition score on a scale ranging from zero to ten points. For instance, an image of an orange was pointed out to the respondent by the field worker and the respondent was requested to identify the object depicted.

The respondents were also asked to declare on a three-point scale whether the size of the images made object recognition difficult, in line with the recommendations by Nitzke, Shaw, Pingree and Voichick (1986) and Townsend and Kaiser (2005: 176), among others, that a limited number of response options should be used for low-literacy audiences. Where the respondent reported that object recognition was impeded due to an inappropriate image size, a score of one point was allocated. In cases where a different image size would have made object recognition only slightly or partially easier, a score of two points was awarded, and in instances where the respondent replied that the size of an image made no difference to object recognition at all, this was indicated with a score of three points.

In the second part of the questionnaire, the respondents were asked to describe the meaning of the pictorial conventions used in three different semantic units. The answers were recorded as a score of one point (correct or envisaged answer), half a point (borderline answer) or zero points (incorrect answer). From the responses to these three questions, a comprehension of pictorial convention score was calculated on a scale

ranging from zero to three points. For example, the respondents were presented with an illustration of a box of matches depicted next to an image of a slice of cheese of exactly the same image size. The respondents were asked what meanings they attach to the illustration in order to measure to what extent their answers conform to the envisaged meaning that one serving of cheese should correspond to the size of a flat box of matches. Further, the respondent was asked to indicate whether the visual-verbal balance in the educational material is appropriate. The answers were recorded in three categories, i.e. (a) more images would have been better, to which a score of 1 was assigned, (b) the balance between images and writing is just right (associated with a score of 2), or (c) more writing would have been better (associated with a score of 3). Each session was preceded by a brief orientation about the nature of the project as well as ethical issues (voluntary participation, anonymity, handling of responses etc.). Each session ended with the field worker giving the respondent the opportunity to explain how the nutrition education pamphlets and posters used at the care centre for the elderly could be improved in general terms and, thereafter, thanking the respondent for participating. The questionnaire was piloted in an initial group of 30 respondents to check that the session duration fell within the envisaged ten to fifteen minutes and to ensure that all the questions were clearly formulated. Only minor adjustments to the questionnaire were needed before the main data collection process commenced.

The second step was to design and then pre-test a draft version of a calendar, which comprised the 12 most important nutrition education guidelines (one guideline per month, written in three languages). Each of these guidelines was accompanied with one pictorial illustration compiled according to the lessons learned during the first step. Similar to the first step, only a sample of the total number of semantic units contained in the draft version of the calendar were presented to the target group for comment, ensuring that the duration of each session did not exceed ten to fifteen minutes.

A total of 102 community members participated on a voluntary basis during the second phase of data collection. Using essentially the same data collection approach as during the first step, the respondents indicated their preferred option among a range of different pictorial signs and illustration approaches, explaining their choice during a voluntary personal discussion conducted in the respondent's home language with a research assistant, who completed the questionnaire in the presence of the participant. For example, three different versions of an illustration depicting two hands being washed under a flowing tap in order to illustrate a personal hygiene-related message were presented to the respondent for comment.

The three versions differed with regard to:

- The level of pictorial abstraction. The respondents were presented with a range, or continuum, of options ranging from a highly abstracted version consisting only of basic pictorial information, i.e. only the outlines of the hands, the tap and the flowing water, to a version where some additional details, such as the outline of

finger nails on the hands, were added, to a version with a considerable amount of pictorial detail, including lines and creases on the surface of the hands and fingernails, details on the handle of the tap, details on the soap between the hands with the word »Soap« written on it etc.;

- The level of colour shading. The respondents were presented with a continuum of options ranging from a black and white line drawing with no colour fill at all, to partial colour fill (for example, only the hands were shaded a light brown colour and some of the water drops were shaded a blue colour), to an illustration were all the pictorial elements had a colour fill;
- The overall illustrative style. The respondents were presented with a variety of options ranging from illustrations that were produced in a pictorial style similar to the clip art found on standard illustration software, to illustrations done in a style associated with children's storybooks, to a pictorial style where the emphasis is on photo-realistic rendering; and
- The visual-verbal relationship. The respondents were asked to comment about the relationship between the pictorial illustration and accompanying written information, which the field worker read out loud to the respondent in the respondent's home language.

The questionnaire for the second phase of data collection also contained several items where a pictorial illustration was presented to the respondent together with the simple question: "What does this image show?" These questions aimed to obtain valuable information about the level of vagueness, or latitude of interpretation, of a particular pictorial sign in the target group. For example, an abstract, clip-art style illustration of a salt cellar was shown to the respondents accompanied by the question: "What does this image show?"

On the strength of these questionnaire responses, an illustrated A1-size nutrition education calendar was produced and disseminated in the target group free of charge. Each regular attendee at the care centre received a calendar for her/his home, and several calendars were displayed at community hall where the activities take place on a weekly basis. The nutrition education messages contained in the calendar were also reinforced verbally throughout the year during the nutrition education programme activities offered at the centre.

The third step of data collection involved follow-up questionnaires (n=106) approximately one year after the calendar was disseminated in the target group. This third questionnaire did not deviate from the general data collection approach of the first two steps. It aimed to measure whether the target group wanted to move away from the previously agreed on pictorial signs and consensus-based pictorial illustration approach, by asking the target group to comment on additional pictorial illustration options. The emphasis of the third questionnaire was on illustration preferences, rather than on the basic building blocks of visual communication, which are object recognition and familiarity with the pictorial conventions employed. Specifically, the third questionnaire introduced pictorial illustrations produced in a style associated with

the signs typically used at international airports, or pictograms, primarily based on examples in Abdullah and Hübner (2006).

The third questionnaire covered:

- Placing two versions of a pictorial illustration next to each other and asking the respondent to indicate the preferred option, as well as reasons for the choice. For example, a hand-drawn and sparingly shaded illustration of a lollipop sweet, used in the calendar in order to illustrate the nutrition guideline "Use sugar sparingly" was placed next to a similar pictogram-style version of the same lollipop sweet;
- Showing pictogram-style illustrations both with white lines on a black background and with black lines on a white background and asking the respondent to comment on which of the two is clearer, linking with Boehm's notion of "iconic difference" (Boehm 1994; cf. Halawa 2008: 129); and
- Presenting the respondent, similar to the approach in the second questionnaire, with a range of versions that differ with regard to the level of pictorial abstraction, asking the respondent to indicate the preferred option, as well as reasons for the choice.

As was the case in the second questionnaire, the third questionnaire also contained several items where a pictorial sign was presented to the respondent together with the simple question: "What does this image show?" The answers to these questions pointed towards the level of vagueness, or latitude of interpretation, especially regarding pictograms as a unique type of pictorial sign. For example, a pictogram of tablets, or medication pills, drawn in white lines on a solid black background was shown to the respondent with the question: "What does this image show?"

FINDINGS

The main findings were that (a) several shortcomings relating to object recognition and the logical fit between the caption and the visual image were identified in the first phase, (b) the preferred degree of visual abstraction emerged as the main issue during the pre-testing of the draft nutrition education calendar, and (c) during the third phase the respondents opted to stay with the illustration approach, rejecting the possible introduction of alternative illustration styles. The responses to the first questionnaire suggest that the overall suitability of the pamphlets and posters the target group had been exposed to before the commencement of the project was very low. As Table 1 indicates, the average respondent in the sample of 140 participants was only able to recognise 49% of the subject matter depicted (a mean object recognition score of 4.90 on a scale of zero to ten, i.e. 49%). Further, the average respondent correctly comprehended less than a third of the pictorial conventions used (a mean score of 0.97 on a scale of zero to three, i.e. 29.1%).

TABLE 1: OVERVIEW OF QUESTIONNAIRE RESPONSES FOR THE FIRST PHASE OF DATA COLLECTION

Questionnaire item	N	Mean	SD
Object recognition score, i.e. the sum of ten separate responses; the minimum final score possible is zero, the maximum final score possible is ten.	140	4.90	2.17
Role of image size, i.e. did the size of the images make object recognition difficult? The minimum score possible is one, the maximum score possible is three.	140	1.81	0.75
Comprehension of pictorial convention score, i.e. the sum of three separate responses; the minimum final score possible is zero, the maximum final score possible is three.	140	0.97	1.00
Visual–verbal balance, i.e. is the visual-verbal balance in the illustrations appropriate? The minimum score possible is one, the maximum score possible is three.	139	1.65	0.57

The object recognition scores, which represent the sum of ten separate responses, as described earlier, where the minimum final score possible is zero and the maximum final score possible is ten, ranged from zero to ten points in the sample. This contrasts sharply with the "ideal" range of eight to ten points, i.e. the range visual communicators in the context of nutrition education aim for, where there are no significant impediments or barriers to object recognition the target group.

The lowest number of correct or envisaged responses was recorded for a clip art image which depicted a tennis ball. This semantic unit was recognised by 29 of the 140 respondents, i.e. by 20.7%. The highest number of correct or envisaged responses was received for a semantic unit depicting a partially peeled banana, which 132 of the 140 respondents, or 94.3%, identified correctly. Where a study participant supplied an answer along the lines of "fruit" rather than "banana", this was recorded as a borderline response (scoring half a point). Stated differently, when a respondent was shown a particular semantic unit and asked by the field worker to identify what is depicted, or what the referent is, the correct or envisaged answer was a "necessarily so" type of answer (peeled banana), rather than a "just one way of putting it" type of answer (fruit) (Pauwels 2005: 6). This distinction is also relevant to instances where there is a poor logical fit between the caption and the illustration. For example, an image depicting two bananas with the caption "banana" (singular) is needlessly confusing. The caption "bananas" (plural) is clearer.

Furthermore, according to the data the questionnaire yielded, the size of the images was seen by the respondents as only a minor factor impacting on object recognition. On a scale of one to three points, the mean score in the sample was 1.81. In other words, the majority

of study participants reported that a different image size would have made object recognition only slightly or partially easier. That is not to say that the respondents found the image size acceptable in general terms. When invited at the end of the session to make general comments or observations about how the nutrition education pamphlets and posters used at the care centre for the elderly could be improved, an answer along the lines of "the images should be bigger" was the most frequently recorded reply, possibly due to poor eyesight common in an elderly target group.

As far as the comprehension of pictorial conventions is concerned, the comprehension of pictorial conventions score, which represents the sum of three separate responses, where the minimum final score possible is zero and the maximum final score possible is three, ranged from one point to three points in the sample of respondents, with a mean score of 0.97. The comprehension of pictorial conventions was lowest in a semantic unit which aimed to convey visually that the correct serving size for dry pasta is equivalent to the amount of dry pasta that fits into a cupped hand. Of the 140 respondents, 31 respondents, or 22.1%, correctly indicated the preferred or envisaged meaning of the illustration. The comprehension of pictorial conventions was highest in the case of a semantic unit illustrating that the correct serving size for a portion of red meat, chicken or fish is equivalent to the size of a pack of playing cards, where 62 of the 140 respondents (44.3%) supplied the correct or envisaged answer.

In other words, the VRL as measured in the context of basic pictorial conventions, in this case primarily involving the associational juxtaposing of visual elements (Messaris 1994: 37) was found to be wide. Specifically, the data collected suggests that the average respondent was confused and uncertain about the representational claims made on the semantic level of signification in the visual material.

Lastly, the majority of respondents indicated that the visual-verbal balance of the nutrition education illustrations used during data collection was on the whole appropriate, with a mean score of 1.65 on a scale of one to three points. This score was, however, partially contradicted by the general comments recorded at the end of the session during which some of the respondents stated that there should be "more images" in the nutrition education material used at their centre. Taken together, it is probably safe to conclude that the visual-verbal balance of the material was not regarded as a burning issue in the sample of respondents, but in the event that changes or improvements are made to the existing materials, these should preferably involve a shift towards more images.

Following the outcome of the first questionnaire, a concerted effort was made to avoid similar communicative defects in the draft version of the nutrition education calendar, which was pre-tested in the second phase. It is clear from the results of the second questionnaire that the illustrative style used, which differed strongly from the clip-art type images of the material evaluated during the first phase, was appropriate for the target group. The majority of respondents commented that the images were clear and easy to understand while supplying their preference with regard to levels of abstraction, colour shading and so on. The one outlier was a clip-art style illustration used in the

second questionnaire that depicted a salt cellar accompanied by the question: “What does this image show?” This image was very poorly understood. Only 1% of the respondents supplied the correct, or envisaged, answer. The remainder of the respondents gave a wide range answers along the lines of “It is a hamburger” or “A hat” or “A bangle you but around the upper arm” and so on, indicating a very wide latitude of interpretation. Consequently, this type of illustrative style was edited out of the draft calendar and replaced with a less abstract image. Based on the responses and an analysis of the comments supplied, the questionnaire data further suggest that:

- Decisions surrounding the colour shading of the illustrations are not crucial, but the target group preferred moderate shading in of a line drawing using low colour saturation;
- There was a mild aversion of visual abstraction in the target group;
- The need to see images clearly from a distance was expressed by several respondents, which requires paying attention to image size; and
- Text anchors such as the word »Soap« written on the image of a bar of soap should be integrated throughout. Even though the target group is low-literate, the majority of target group members mentioned that they have access to a literate person who may assist in dispelling any aberrant interpretation of an illustration if needed.

The results of the second questionnaire guided the re-working of the draft calendar, and the refined and adjusted version thereof was distributed in the target community a few weeks after the second phase ended. The outcome of the third questionnaire, which was completed roughly one year later, indicate unambiguously that the target group strongly disagreed with the introduction of new pictorial signs and illustration approaches and opted not to deviate from the approach used in “their” nutrition education calendar.

Even though the focus of the third questionnaire was on illustration preferences, rather than on object recognition and familiarity with the pictorial conventions employed, the result for this phase does contain instances where the visual representational latitude was unacceptably wide. For example, as part of the third questionnaire a pictogram of tablets, or medication pills, drawn in white lines on a solid black background was shown to the respondent with the question: “What does this image show?” All of the respondents were unable to identify correctly what was depicted, giving answers such as “Footprints in the sand”, or “The top part of a woodscrew”, or simply “I do not know”. The majority of the respondents indicated that pictograms with black lines on a white background were clearer than pictograms with white lines on a black background, but the usefulness of this information is in question as the respondents strongly disapproved of pictogram-type illustrations to begin with.

Seen as a whole, the outcome of the third questionnaire was that the target group expressed displeasure with the possible introduction of the new pictorial signs and illustration approaches shown to them for comment. When invited to give general comments about how nutrition education material such as the calendar can be improved, the majority of respondents indicated that the pictograms, or pictorial illustrations produced in a style associated with the public signs used at international

airports, were less preferable than hand-drawn, sparingly shaded or filled in, photo-realistic line drawings.

CONCLUSION

The sociologist Max Weber (1854-1920) advocated a clear distinction between facts and values, arguing that values (Werte) are associated with prescriptive statements, whereas facts (Tatsachen) are associated with descriptive statements (Hepfer 2006: 28). As debatable as Weber's thesis is, it would be fair to say that the information which emerged in the course of the above described three phases of data collection deals equally with facts and values. Taken together, the three phases of the study illustrate specific strategies for stabilising the notoriously unstable visual communication component of nutrition education materials. These are:

- To collect facts about the target group's ability to identify correctly the referent of a pictorial illustration, and to re-work those images which have an unacceptably wide visual representational latitude;
- To establish whether the target group is conversant with the pictorial conventions used in the illustrations and to revise these if needed;
- To check that there is a logical fit between images and the captions and/or verbal labels, and to re-work these if needed, either separately or simultaneously, in order to ensure that any vagueness is reduced to a minimum; and
- To encourage a dialogue, even if it is a highly structured dialogue, between the producer of the instructional material and the target community, informed by the values that underpin participative inquiry approaches. The aim of the dialog is to stabilise the meaning of the visual component of the instructional material by reaching agreement without coercion about the properties of the pictorial signs to be included, and the manner in which they are employed.

The above listed strategies highlight that narrowing the visual representational latitude, or reducing the vagueness, of pictorial signs and illustration approaches in a particular target community is not necessarily primarily a question of understanding the complex and tenuous relationship between the referent and the pictorial sign, but also about how pictorial meaning may be stabilised, or de-stabilised as a result of a shifting and evolving relationship between the semiotic other and the semiotic self, to use terms from Johansen's semiotic pyramid model (Johansen 1993; Johansen & Larsen 2002). As the above discussed process of developing a nutrition education calendar for an elderly, low-literate target group in Sharpeville shows, this constantly evolving relationship invariably involves an equal mix of facts and values.

ACKNOWLEDGEMENTS

The project was SANPAD funded.

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