Psychology, Community & Health
pch.psychopen.eu | 2182-438X

PsychOpen publishing psychology

Empirical Articles

The Importance of the Instructions in the Use of Draw-and-Write Techniques for Understanding Children's Health and Illness Concepts

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Abstract

Aim: The present study aims to test whether different instructions, when using draw-and-write data collection techniques, can be especially suited for understanding specific aspects of children's conceptions about health and illness.
Method: This is a mixed-method study and participants were 209 schoolchildren, aged 10 to 12 years, who were asked to draw-and-write following one of two different instructions (A or B) that were related to the concepts of health and illness. Texts were examined through content analysis based on a previously validated coding system (inter-rater agreement of 93%).
Results: Findings suggest that the instruction "what does it mean to you to be sick and what does it mean to you to be healthy?" allows a more direct access to experiences and feelings, and that the instruction "draw and write about what a sick person is and what a healthy person is" is more adequate to elicit children's knowledge and perceptions.
Conclusion: The study suggests that to elicit children's concepts of health and illness, relevant for health education and health promotion interventions, the draw-and-write instructions should be phrased in impersonal general terms. In contrast, for clinical interventions, the instruction should be targeted to the child's direct experience of being ill.

Keywords: draw-and-write, concepts of health and illness, children, eliciting instruction, health education, clinical practice

Psychology, Community & Health, 2014, Vol. 3(3), 146–157, doi:10.5964/pch.v3i3.95

Received: 2014-02-17. Accepted: 2014-05-07. Published (VoR): 2014-11-28.

Handling Editor: Marta Marques, Psychology & Health Research Unit (UIPES); ISPA - Instituto Universitário Lisbon, Portugal

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Introduction

The study of children's concepts on health and illness has long been explored due to its importance as a basis for the development of health promotion and health education activities (Chadborn, Gavin, Springett, & Robinson, 2013; Myant & Williams, 2005), as well as for the implementation of interventions with ill children (Gibson, Aldiss, Horstman, Kumpunen, & Richardson, 2010; Piko & Bak, 2006). In the area of health promotion and health education, an important goal has recently been defined in terms of encouraging and enabling children's health literacy, which implies that health professionals should involve children in the control of their own health, beginning at an early age (Borzekowski, 2009). Nevertheless, it is only possible to provide age-appropriate health education by knowing how children conceptualize phenomena related to health and disease.

The common-sense model of illness representation (Diefenbach & Leventhal, 1996) has been used as a model for understanding children's concepts on health and illness. Although initially developed for understanding adults' representations, there is already some evidence that this model is also applicable to children and adolescents (Gaston, Cottrell, & Fullen, 2012; Goldman, Whitney-Saltiel, Granger, & Rodin, 1991; Paterson, Moss-Morris, & Butler, 1999).

According to this approach, illness is mentally represented along five broad dimensions: identity (existence of a label or the presence of symptoms); cause (attributions related to the aetiology of the disease); consequences (immediate and long-term implications); timeline (temporal course of the problem); and cure (existence or not of a cure) (Goldman et al., 1991). This approach represents a comprehensive framework for the understanding of children's concepts of health and illness, since it allows studying this subject beyond the consideration of attribution processes related to causes and contagion, which are usually the focus of the traditional developmental perspective based on the theory by Bibace and Walsh (1980).

Within a similar approach, the model developed by Boruchovitch and Mednick (1997) includes categories which are conceptually identical to three dimensions (identity, cause and consequence) of the Illness Representation Approach. However, this model adds an interesting category related to feelings, which seems to enhance the comprehensive power of the model. Moreover, results from studies using these categories (e.g., Lima & Lemos, 2011, 2013) proved that the model exhaustively and reliably categorised children's concepts of health and illness across different age groups.

Among the methods used to study children's concepts of health and illness, the draw-and-write technique is a qualitative data collection procedure that involves asking a child to draw a picture in response to a theme or research question, and to write down any comments or associated ideas (Bradding & Horstman, 1999).

It was first introduced as a research method in studies about health education in school contexts (Williams, Wetton, & Moon, 1989), but rapidly became popular in different health settings, such as health education, health care, and psychotherapy (Sewell, 2011). More recently the draw-and-write technique has been used to study children's beliefs and knowledge about health (Gabhainn & Kelleher, 2002), smoking (Porcellato, Dugdill, Springett, & Sanderson, 1999), passive smoking (Woods, Springett, Porcellato, & Dugdill, 2005), and views about illness, more precisely about haemophilia (Khair, Collier, Meerabeau, & Gibson, 2013) and cancer (Knighting, Rowa-Dewar, Malcolm, Kearney, & Gibson, 2011; Pion et al., 1997). There is also a considerable number of studies in which the technique was used to gather children's views about health professionals (Krajewska-Kułak et al., 2012) and health care (Horstman, Aldiss, Richardson, & Gibson, 2008), about the quality of postoperative pain management (Twycross & Finley, 2013) and pain relief strategies (Franck, Sheikh, & Oulton, 2008), and information regarding needs of the sick (Gibson et al., 2010; Horstman & Bradding, 2002) or of those about to undergo surgery (Buckley & Savage, 2010; Smith & Callery, 2005).

This qualitative research technique has been considered a participatory method (Carter & Ford, 2013; Horstman et al., 2008), particularly suited to allow children to express their views. In fact, qualitative methods are an especially helpful alternative to quantitative methods, namely in the field of child health care research and intervention.

One potential problem with the use of quantitative approaches, and specifically with self-report measures, is that researchers may overestimate the natural occurrence of some categories within children's concepts of health and

illness. Indeed, asking children to respond to researcher-derived items may induce agreement, even if children would not spontaneously think in such terms.

As Franck et al. (2008) argued, the draw-and-write is a technique that increases response validity since it does not presuppose the children's answers. It has also been argued that quantitative methods limit the amount of information that children can provide about their conceptions of health and illness. Alternatively, the use of less structured, qualitative methods, allow the researcher to examine the entire range of definitions that children offer. Eliciting children's spontaneous definitions also increases the likelihood of obtaining more comprehensive pictures of how they live with health and illness, since natural spontaneous responses integrate cognitive, affective and contextual factors. Consequently, qualitative methods potentially provide a more holistic account of the complexities of children's beliefs and experiences (Woodgate, 2001). Finally, qualitative methods allow rich and "thick" descriptions of children's concepts, which can offer more direct implications to the planning of health-education programs, and to the delivery of health care services to children (Woodgate, 2001).

But the merits of qualitative research largely depend on the use of clear and rigorous criteria, and with regards to this, the draw-and-write technique has raised lively discussion about its strengths and limitations as a research method (Backett-Milburn & McKie, 1999; Pridmore & Lansdown, 1997; Sewell, 2011).

One problem identified in the application of the method concerns the variety of different stimuli that children are offered when asked to draw and write, since the way in which instructions are phrased and prompts are used may greatly influence the data obtained (Angell, 2009; Horstman et al., 2008; Pridmore & Lansdown, 1997). As Backett-Milburn and McKie (1999) argued, "How children define and perceive the research task and what it means to them can have a considerable effect on the substantive material they can portray" (p. 392). Therefore, researchers using different stimuli to measure the same phenomenon may find disparate results, and the absence of clear, unambiguous instructions may lead to inconsistent conclusions across studies. However, this issue has not yet been empirically addressed in relation to the draw-and-write technique. Although designed to apparently assess the same underlying construct (such as children's perceptions of health and illness), even slightly different instructions may be interpreted differently by respondents, and if researchers are not aware that children may interpret the instructions differently from what they intended, misleading conclusions may be derived from the findings, and the comparability of results from different studies will be jeopardized (Backett-Milburn & McKie, 1999).

Reviewing previous research it becomes clear that, generally, studies aiming to evaluate knowledge or beliefs use instructions that are phrased in more general terms, as draw and write a child/person who is ill or doing something. This is the case with Frederick and Barlow's (2006) study on the implementation of the Citizen Safety Project, in which they evaluated children's knowledge about safety asking them to "draw a person doing something dangerous near the water" (p. 90). Many similar studies could also be quoted, such as the study by Starkey and Orme (2001) about the evaluation of a primary school drug drama project, in which they used the draw-and-write technique to appraise children's knowledge about names of illegal drugs, and McWhirter, Collins, Bryant, Wetton, and Newton Bishop's (2000) study on the effects of a curriculum program on children's perceptions of the effects of the sun on their skin.

On the other hand, studies more focused on understanding children's personal views and experiences usually use a more personal instruction like "draw and write what you feel when you are ill ...". For example, in the study by Franck et al. (2008) about pain management, children were asked to draw and write with following instruction "when I hurt the things that help are…" (p. 431), and in a study on children's views and experiences on passive

smoking by Woods et al. (2005), children were asked to draw and write about how they felt when they were in a room full of smokers.

Finally there is also a third group of studies that combine both instructions, in most cases involving ill children (Gibson et al., 2010; Horstman & Bradding, 2002; Smith & Callery, 2005). In these studies children are asked to draw and write about a child like them who is unwell (Horstman & Bradding, 2002, p. 77), probably as a strategy for approaching the children more sensitively.

The goal of the present study was to compare the first two types of instructions, and investigate whether these two different instructions stimulate different themes, and if they can be especially suited for understanding specific aspects of children's conceptions about health and illness, which can also have diverse implications for health education or clinical purposes.

Potential results confirming that specific instructions elicit particular types of information (from the child) will entail direct implications for research using this technique and also for the clinical practice in Paediatric Health Psychology. In fact, such results would suggest that specific instructions might intentionally and differently be used for different purposes (e.g., for health education or for disease management purposes).

Methods

Participants

Participants (Table 1) were 209 schoolchildren, from 5th and 6th grades, ranging in age from 10 to 12 years (M = 11.00, SD = 0.795; 93 male and 116 female).

Table 1

Distribution of Participants by Age and Sex

	Age			
Gender	**10**	**11**	**12**	**Total**
Boys	30	37	26	93
Girls	35	41	40	116
Total	65	78	66	209

The decision to select children within a small age range derived from the need to have a homogeneous sample, since the literature usually identifies age differences in children's concepts of health and illness (Myant & Williams, 2005), in part related to cognitive development, and in part related to the experiences and information provided by the school curricula at different grade levels (Boruchovitch & Mednick, 1997). Children were recruited from three different schools in the District of Porto, with a roughly equal number of students from each school.

Ethical Considerations

The study was approved by the school council, and prior to data collection, parents were sent a letter with the request to give consent for their children's participation, as well as a written informed consent form. All children were assured of their right to withdraw from the study at any time after they agreed to participate.

Instruments

The draw-and-write technique (Williams, Wetton, & Moon, 1989) was used and children were given one of the following two instructions:

- Instruction A (more directed at the children's experience): On one half of the page draw what it means to you "To be sick", and on the other half draw what it means to you "To be healthy." Also write a few sentences about what it means to you "To be sick" and what it means to you "To be healthy."
- Instruction B (phrased more impersonally): On one half of the page draw "A sick person", and on the other half draw "A healthy person." Also write a few sentences about what is "A sick person", and what is "A healthy person".

Procedure

Data collection occurred in the classroom and verbal instructions were given to the children by their class teacher. One hundred children were assigned to Instruction A and 109 to Instruction B.

Data Analysis and Coding of Children's Answers

As in the original study in which the technique was first used (Williams et al., 1989) drawings were not analysed and only written statements were coded. All texts were subjected to content analysis deductively using a coding system developed by Lima and Lemos (2011), based on the model of Boruchovitch and Mednick (1997), that includes the following paired categories for screening the data related to children's concepts of health and illness:

1. Engagement in preventive activities/Lack of preventive activities – This category describes health in terms of actions that people carry out to be healthy (e.g. health as eating the proper food), and illness as the lack of the same type of actions (e.g. illness as not doing enough exercise).
2. Lack of curative activities/Engagement in curative activities – This category describes health as the lack of the need to engage in therapeutic activities (e.g. to be healthy is to be out of the hospital), and describes illness as actions that describe curative measures (e.g. to be ill is to take pills or injections).
3. Absence/Presence of health problems and symptoms – This category includes answers that define health as the absence of disease, problems or symptoms (e.g. being healthy is not having measles), and answers that define illness as the lack of health or the presence of health problems, diseases or symptoms (e.g. illness is a virus or a cold).
4. Ability/Inability to do the required and desired activities – This category includes units of meaning that describe health in terms of functional descriptors, i.e. actions that reflect what people can do because they are healthy (e.g. health is to be able to play or go to school), and answers that describe illness as the opposite, that is alterations of the person's functional capacity due to illness (e.g. to be ill is to be in bed all day).
5. Positive/Negative feelings – This category describes health and illness in terms of the way people feel and experience things as a consequence or characteristic of being healthy (e.g. health is to be strong, illness is when you feel sad and horrible).

Since children were allowed to give multiple definitions, all definitions for each instruction were recorded as valid answers (units). For example, if one child defined being healthy as being able to run, dance and sing, three units were recorded in the category "Ability to do the required and desired activities".

The coding system was previously validated and two trained independent researchers participated in the coding of units. Inter-rater agreement was calculated using the formula (n agreements + n disagreements/n agreements), and was 93%. In case of disagreement a third trained rater participated in the final decision.

Quantitative data for the number of indicators in each category and type of instruction given were entered into a database and percentages were calculated for each category.

Statistical analyses were performed with the SPSS 21.0 for Windows software package. A *t*-test (Student) was used to examine any differences in relation to the instructions given ($p < .05$ was considered statistically significant). Since children were allowed to give multiple answers to the same instruction, before calculating the mean differences between the two groups for each category, data was transformed into proportions (using the ratio *n* indicators in each category/total indicators in all categories used by the child for the definition of health or illness).

Results

Based on content analysis, a total of 1705 descriptive units were derived and coded (854 for Instruction A and 851 for Instruction B).

To define health (Table 2), children assigned to Instruction A (to be healthy and to be ill) used the following two categories more frequently: "Positive feelings" and "The ability to do the required activities." As examples of positive feelings children mentioned happiness (e.g., "to be healthy is to feel happy"), well-being (e.g., "to be healthy is to enjoy your life"), and self-worth (e.g., "to be healthy is to love ourselves"). As actions that reflected what they could do because they were healthy, children typically mentioned the following: "to be healthy is to be able to attend school", or "to be healthy allows you to be with friends and relatives", and "when you are healthy you can go outside".

Table 2

Percentage of Units Coded in Each Category of the Definition of Health and Illness in Each Instruction

	Instruction A: To be healthy/to be sick		Instruction B: A healthy person/a sick person	
Category	***N***	**%**	***N***	**%**
Definition of Health				
Engage in preventive activities	15	4.0	219	51.0
Absence of symptoms	48	12.0	59	13.8
Lack of curative activities	46	11.5	9	2.0
Ability to do required activities	117	29.0	39	9.0
Positive feelings	173	43.5	104	24.2
Total of units	399	100.0	430	100.0
Definition of Illness				
Lack of preventive activities	18	4.0	111	26.4
Presence of symptoms	152	33.4	169	40.1
Engage in curative activities	42	9.2	31	7.4
Inability to do required activities	131	28.8	39	9.3
Negative feelings	112	24.6	71	16.8
Total of units	455	100.0	421	100.0

Children in the group with Instruction B defined a "healthy person" using predominantly the category of "Engagement in preventive activities", and various types of prevention actions were described, but typical indicators were related to healthy eating (e.g., "a healthy person is someone who eats proper food", "…eats fruit", "…eats healthy food", "…doesn't eat too many sweets"), and to exercising (e.g., "a healthy person does lots of exercise", "…exercises

daily or frequently"). The second category more frequently used was "Positive feelings" (e.g., "a healthy person is someone who is happy and appreciates her/his life").

In relation to the definition of illness, the most frequently used categories (Table 2) in group A were: "Presence of health problems and symptoms," and "Inability to do the desired and required activities". Children mentioned symptoms of common paediatric illnesses and ailments such as fever, stomach-aches and cough (e.g., "When I'm sick I have fever and I cough a lot"). In relation to the category "Inability to do the desired and required activities," examples that can be quoted are "being sick is staying at home", "…lying in bed", and "…not attending school." Feelings mentioned included sadness, loneliness and weakness (e.g., "when I'm sick I feel sad and lonely", "being sick means feeling weak and without energy").

Children assigned to Instruction B (a healthy person and a sick person) also used more frequently the "Presence of health problems and symptoms" to define "a sick person". Typical indicators included symptoms of common paediatric illnesses and ailments, but identified a greater diversity of illnesses in comparison with group A, also including mental health diseases (e.g., depression and anxiety disorders), and pathologies more common in adulthood, like cancer or hypertension (e.g., "a sick person suffers from cancer or diabetes"). The second more frequently used category was "Lack of preventive actions", and typical indicators were related to the consumption of fast food and sweets (e.g., "a sick person eats lots of burgers, pizzas and gums"), lack of exercise (e.g., "a sick person does not practice sports"), and drinking alcohol (e.g., "a sick person drinks wine and spirits") or drug addiction.

As stated before, the main goal was to study whether different instructions consistently stimulated different themes and, accordingly, the results obtained by the two groups (the groups assigned to Instructions A and B) were compared using a *t*-test (Table 3).

Table 3

Comparison of Scores of the two Instruction Groups

	Instruction A: To be healthy/to be sick		Instruction B: A healthy person/a sick person			
Category	***M***	***SD***	***M***	***SD***	***F***	***p***
Health						
Engage in preventive activities	.1128	.2739	.5012	.4004	-7.840	.000
Absence of symptoms	.1310	.2199	.1527	.2763	-0.622	.535
Lack of curative activities	.0347	.1173	.0210	.0923	0.935	.351
Ability to do required activities	.2224	.3019	.0824	.2123	3.880	.000
Positive feelings	.4892	.3819	.2426	.3065	5.140	.000
Illness						
Lack of preventive activities	.0342	.1399	.2468	.3750	-5.330	.000
Presence of symptoms	.3772	.3732	.4175	.3861	-0.765	.445
Engage in curative activities	.0771	.1724	.0643	.1578	0.559	.577
Inability to do required activities	.2506	.2951	.0938	.1973	4.530	.000
Negative feelings	.2609	.3191	.1776	.2706	2.035	.043

Differences emerged between groups in three categories for the definition of health, and in another three categories, for the definition of illness. For the definition of health, the *t*-test showed that the use of the category "Engagement in preventive activities" was significantly higher ($t(1, 205) = -7.84$, $p < 0.001$) in the "healthy person" group ($M = 0.51$) compared to the "being healthy" group ($M = 0.11$). Differences were also found in the category "Ability to do the required and desired activities" ($t(1, 205) = 3.88$, $p < 0.001$), since the "being healthy" group used it more frequently ($M = 0.22$) than the "healthy person" group ($M = 0.08$), and in the category "Positive feelings" ($t(1, 205) = 5.14$, $p < 0.001$), again with the "being healthy" group using it more frequently ($M = 0.49$) than the "healthy person" group ($M = 0.31$).

For the definition of illness, similar differences were also found in the category "Lack of engagement in preventive activities" ($t(1, 206) = -5.33$, $p < 0.001$), since the use of this category was significantly higher in the "sick person" group ($M = 0.25$) when compared to the "being sick" group ($M = 0.03$). The t-tests also revealed statistically significant differences concerning the category "Inability to do the required and desired activities" ($t(1, 206) = 4.53$, $p < 0.001$), since the "being sick" group used it more frequently ($M = 0.251$) than the "sick person" group ($M = 0.09$), and the category "Negative feelings" ($t(1, 206) = 2.04$, $p = 0.04$, again with the "being sick" group using it more frequently ($M = 0.26$) than the "sick person" group ($M = 0.18$).

Discussion

Results of this study support the usefulness of draw-and-write as a technique to access children's conceptions of health and illness. In fact, both instructions (A and B) stimulated a rich set of children's conceptions of health and illness. The same amount of information was obtained with each specific instruction, since the quantity of indicators was very similar for both groups.

Although the two instructions produced definitions focused on different categories, the themes employed by the children from the two groups were very similar to results from other studies. In the present study, children's definitions of health concentrated on adherence to healthy practices (e.g., hygiene and doing sports), positive feelings (e.g., a sense of well-being), and functionality (e.g., going to school), and these results are consistent with previous research (Daigle, Hebert, & Humphries, 2007; Lima & Lemos, 2011; Normandeau, Kalnins, Jutras, & Hanigan, 1998). Children's definitions of illness focused on the presence of health problems or symptoms, compromise of functionality, and negative feelings, and these results also support previous findings (Lima & Lemos, 2011; Schmidt & Fröhling, 2000). These outcomes support the relevance and validity of the technique and of the results, offering a solid framework to the subsequent analysis of more specific goals of the study.

The present study was designed to examine whether and how the specific instructions, used to stimulate children's conceptions of health and illness determined the information the child offers. The analysis of the differences between the two conditions demonstrated that the instructions given are in fact determinant of the specific type of data produced by the child, as some authors have suggested before (Angell, 2009; Backett-Milburn & McKie, 1999; Horstman et al., 2008; Pridmore & Lansdown, 1997).

The second goal of the study was to understand in what ways each instruction determined the information given by the child, in order to be able to suggest to researchers and to professionals the use of specific instructions according to their specific purposes. Results revealed that when asked to draw and write about being healthy or sick (Instruction A), children used the following two categories more frequently when compared with children

asked the alternative Instruction (B): "ability/inability to do the required and desired activities" and "positive/negative feelings." These results suggest that when confronted with the instruction to draw and write about being healthy or ill, children seem to recall their own experiences by focusing on the two categories that are more closely related to the emotional experiences of health and illness: the possibility or impossibility of doing desired activities and the feelings associated with being healthy or ill.

On the other hand, children instructed to draw and write about a healthy or sick person (the more impersonal Instruction B), focused on the determinants of a healthy or ill condition, expressed in the significantly more frequent use of the category "Engagement/ lack of engagement in preventive behaviours" when compared with children asked the alternative Instruction (A). This latter category refers to a more cognitive, knowledge-based dimension of health and illness conceptualizations, probably in part influenced by information conveyed in social and school contexts.

It should be noted that the differences found between Instructions A and B, were consistent across the concepts of health and illness, reinforcing a reliable effect of the instructions given. That is, differences between Instruction A and B for concepts of health/ illness concentrated, respectively, on engagement/ lack of engagement in preventive activities, ability/ lack of ability to do the required and desired activities, and positive/ negative feelings. Such findings offer further consistency to the conclusion that the two instructions seem to stimulate different specific focuses (one more experience-based and the other more knowledge-based) shared by health and illness conceptualizations.

These results have some implications in relation to the use of the draw-and-write technique as a research method and as a clinical tool for communicating with children. Traditionally, this method has been considered as a non-threatening means of asking children about sensitive topics, and as discussed before, usually not much attention is given to the manner in which researchers or clinicians structure the instructions, or to their implications in terms of the type of data obtained (Angell, 2009). Nevertheless, some authors have already argued that the draw-and-write technique is more useful for studies that focus on children's perceptions of domains like public health (Russell, Richards, Jones, & Hoddinott, 2004), and therefore is more valuable for the evaluation of health-education activities and less helpful when the emphasis is on personal aspects that are more relevant for clinical purposes. The fact that this technique was recently used in research with ill children, for example Gibson et al. (2010), Soanes, Hargrave, Smith, and Gibson (2009), again raised interest in this discussion, and the purpose of the present study was to clarify whether different ways of asking children to draw and write about health and illness produced different kinds of information, and if different instructions could be more suitable for different interventions or purposes.

The findings demonstrated that the instructions given when using the draw-and-write techniques are not negligible details. Therefore, the instructions used in research studies must be carefully defined and considered when comparing results from different studies.

Moreover, findings suggest that if the goal is to understand children's experience of illness or of health care, the instruction "what does it mean to you to be sick and what does it mean to you to be healthy" will allow a more direct access to rich and valuable data. Therefore, this instruction could be especially suited for use in clinical and health care settings. For the purpose of health education and health promotion, the instruction "draw and write about 'what a sick person is' and 'what a healthy person is'" seems more adequate, since it elicits children's knowledge and perceptions, which could be used as a basis for program planning and evaluation.

Funding

The authors have no funding to report.

Competing Interests

The authors have declared that no competing interests exist.

Acknowledgments

The authors have no support to report.

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