A pilot questionnaire to evaluate functional competencies related to HIV transmission

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ABSTRACT
Epidemiological research has shown that a high percentage of diseases have a psychological origin, and that situational rather than cognitive factors are of importance. The article describes the design and characteristics of a pilot questionnaire aimed at the evaluation of functional competencies related to HIV transmission. The questionnaire is based on an inter-behavioural theoretical approach and has as basis the Psychological Model of Biological Health as well as Contingential Analysis. The questionnaire consists of 107 items, aimed at identifying variables related to risky sexual behaviour in transmitting HIV. The questionnaire assesses three different dimensions, namely knowledge, attitudes, and skills. With this design it is possible to establish the degree of correspondence among what participants know, what they believe and what they do regarding HIV prevention.

Keywords: contingential analysis; evaluation of competencies; functional analysis; HIV/AIDS; psychological model of biological health

The sexual transmission of HIV/AIDS continues to be a serious problem in public health. To date, public health institutions and many different international
organisations have concentrated on the development of programmes focusing on access to information and resources, the right to free choice, and the provision of quality services. Yet, despite the efforts of researchers and activists, the virus continues to spread and the number of people infected with HIV continues to increase (Joint United Nations Programme on HIV/AIDS [UNAIDS], 2010; Santos et al., 2003).

From a psychological perspective, HIV prevention has been addressed by a series of psychological models related to health and health-related behaviour. These models evaluate and describe risk behaviours associated with HIV transmission. Some examples of psychological models with a strong emphasis on HIV prevention include the Health Belief Model (Hochbaum, 1958, cited in Rosenstock, Strecher, & Becker, 1994), the Theory of Reasoned Action (Fishbein, Middlestadt, & Hitchcock, 1994), the Transtheoretical Model/Stages of Change (Prochaska & DiClemente, 1982), the Self-efficacy Model (Bandura, 1977), and the Model of Action Phases (Gollwitzer, 1990).

Assessments and interventions derived from these models have shown that focusing only on personal characteristics—including motivation, attitudes, beliefs, perceptions of the severity of the illness, vulnerability perceptions, access to information about HIV, and ways of transmission, among others—do not encourage or develop behaviours which prevent transmission of HIV.

**EXAMPLES OF THE MENTIONED MODELS**

Latorre and Benert (1992) have found that a high percentage of Spanish people see HIV/AIDS as a serious illness. However, the same people do not consider themselves vulnerable to HIV/AIDS transmission (Ramos, Díaz, Saldivar, & Martínez 1992; Soto, Lacoste, Papenfuss & Gutiérrez, 1997). According to Del Rio and Rico (1996), 61% of men and 58% of women in France feel that they are not at risk of HIV/AIDS infection. This perception is based on correct choice of partner, even though this was done purely by physical preferences or based on the belief that the partner is not part of a high risk group (Del Rio & Rico, 1996). Other studies made it clear that attitudes and beliefs that are in favour of the use of condoms as a prevention method of the HIV transmission, do not necessarily lead to the actual use of condoms (Bowen, Williams, McCoy, & McCoy, 2001; Díaz & Rivera, 1999; Gil Roales-Nieto, 1997, 2004; Ramírez, Lizárraga, Felix, Campas, & Montaño, 1998; Villagran & Díaz1999a, 1999b). Albarracin, Jonson, Fishbein, and Muellerleile (2001) did not find a significant relationship between the use of condoms and the perception of knowing how to use them. However, there is a relationship between the latter and the intention of using condoms. A more detailed review of the mentioned models can be found in Moreno, García, Rodríguez, and Díaz-González (2007).
Recent reports by UNAIDS suggest that prevention initiatives need to be focused in a more strategic manner. The main points of these reports can be summarised as follows: Identify the behaviours and the environment/context resulting in HIV transmission and the populations most exposed to HIV; understand the epidemiological trends; evaluate the reach, scale, quality and orientation of the prevention programmes; approach contextual factors which increase the risk and vulnerability to HIV; and make essential prevention services more accessible (see Joint United Nations Programme on HIV/AIDS [UNAIDS], 2005, 2007, 2010). In this respect, Visser and Smith (2001) found that the best predictions of condom usage were the characteristics of the sexual encounter, especially the process of negotiation around condom usage.

A PSYCHOLOGICAL MODEL OF BIOLOGICAL HEALTH

The current article describes an alternative form of analysis of risk behaviours with regard to HIV transmission by using the so-called Psychological Model of Biological Health (PMBH). This alternative approach is oriented towards evaluating contextual and behavioural factors such as abilities and skills. The model entails the analysis of the functional role of the various elements that frame situations as well as the psychological factors that comprise risky interactions related to HIV transmission (Moreno, García-Vargas et al., 2007; Robles et al., 2006; UNAIDS, 2007).

According to the PMBH, staying healthy or not will depend on the way the individual’s behaviour mediates the environmental effects on the organism (Ribes, 1990). The PMBH focuses its actions on the instrumental behaviours related to health or illness. It is based on J.R. Kantor’s Interbehavioural theory (Kantor, 1959). Kantor’s theory defines the object of its study as “interbehaviour” and refers to the interaction between the organism and certain elements of the environment.

In order to analyse the behaviour, the PMBH uses an ad hoc method, founded on the same principles, which is called Contingential Analysis. The PMBH can therefore be seen as an interface model positioned in the gap between psychological theory and its application (Díaz-González, Landa, & Rodríguez, 2002).

Contingential Analysis allows for the carrying out of a functional analysis using all factors that frame the interaction in a specific situation. This kind of analytic system facilitates the study of the relationships among people, objects in the environment, and the context of the interaction. The analysis identifies which elements structure the interaction and their functional roles (Ribes, Díaz-González, Rodríguez, & Landa, 1986).

The PMBH describes the loss of maintenance of health through “processes and results” (see Figure 1). One important part of the processes is that related to functional competencies, which directly influence behaviours as a part of the “results”. In general terms, it refers to the resources and abilities people possess, that allows
them to effectively cope with situations where the loss of health is highly probable (Ribes, 1990; Ryle, 1967).

In order to identify, analyse, and modify behaviour related to HIV transmission, it is necessary to have evaluation instruments that permit the identification of the factors underlying risk behaviours. These include inconsistent usage of condoms, sexual relations under the influence of drugs, multiple sexual partners, as well as specific types of sexual preferences (UNAIDS, 2007; UNAIDS, 2010).

This approach suggests the need for a questionnaire designed to assess health competencies in HIV/AIDS prevention. The questionnaire should show, from a functional perspective, how an individual responds in diverse situations where the transmission of the AIDS virus is highly probable. Once the functional role of the contributing factors related to the risk of HIV transmission is known, it would be possible to design prevention programmes aimed at developing competencies, providing individuals with the opportunity to establish and develop new abilities and skills to effectively address situations of risk. Such programmes should enable the development of skills to prevent the transmission of HIV and these could then be transferred to real world situations. The ultimate goal is to modify behaviours in a way that result in maintaining good health.
In order to evaluate health competencies in the prevention of HIV transmission using the categories proposed by Contingential Analysis, the questionnaire that was developed contains items relating to the following: The usual manner in which people behave in sexual situations (the morphology of their sexual behaviour); the different situations that frame their sexual practice (situations and requirements that the situation establishes which make it more probable to be involved in risky practices or which interfere with preventive practices); the role of other people during the interaction (relations of mediation); and the effects of sexual practices on the approval or rejection of others either to oneself to the other people in the interaction. In order to evaluate the proposed categories (Morphology, Situations, People and Effects), four specific questions were elaborated, one for each category.

In addition, as part of the evaluation of competencies, it is necessary to identify the competence levels according to which people respond. Each level implies different psychological processes and implicitly indicates how people face these situational requirements. Identifying competence levels will help to develop effective prevention programmes that are specifically directed at each level of competence. Each level of competence represents a qualitatively different way in which the behaviour could take place. These can be ordered by increasing complexity as follows:

- **Non-instrumental** (people behave without altering the interaction, which is regulated by the factors presented in the specific situation, e.g., conditions imposed by the sexual pair).
- **Instrumental competencies** (people’s behaviour change during the interaction with favourable or unfavourable consequences, e.g., someone who takes the initiative to have sexual intercourse, not realising the risk they are in).
- **Extra-situational competencies** (people who respond according to their experience or information, e.g., people notice that they can get HIV before having occasional intercourse and face the situation regulated by this information).
- **Trans-situational competencies** (people who respond according to their beliefs based on meta-theories, e.g., beliefs based on religion or abstract models of information) (Ribes & Lopez, 1985; Rodríguez, Moreno, Robles, & Díaz-González, 2000).

The questionnaire is a variation of the version created by Díaz-González et al. (2005), which in turn is based on a previous questionnaire constructed by Díaz-González, Rodríguez, Robles, Moreno, and Frías (2003). Designing a new version
was proposed by García-Vargas (2004) who recommended focusing on the balance of the items and the modification of the options to answer. These changes allow for the submission of data for statistical testing in order to identify the explanatory weights of the elements that structure the interaction. It is also possible to identify the levels of reliability and the validity of the instrument, which has not been reported in previous studies.

**DESCRIPTION OF A QUESTIONNAIRE TO EVALUATE FUNCTIONAL COMPETENCIES RELATED TO HIV TRANSMISSION**

The target group for the questionnaire is people between 15 and 49 years of age, which age range reflects the most affected population (UNAIDS, 2005, 2007, 2008, 2010). In order to ensure complete anonymity, no personal identification is requested. Participation is voluntary. The questionnaire is a multidimensional instrument of weighted items, and the response format is dichotomous, numerical analogical, and verbal analogical, depending on the section of the questionnaire. The instrument has a total of 107 items that are both positively and negatively scored. The total score is 493 points and a high score represents greater risk of HIV transmission.

As a pilot questionnaire, this version is divided into five parts. The first part is aimed at collecting general data. The second part identifies the quantity and quality of information related to HIV and the ways of transmission. The third part evaluates the beliefs and attitudes of sexual behaviour and condom use. The fourth part is designed to evaluate functional competencies and the last part provides participants with the opportunity to comment. Using this design it would be possible to identify the relationship among information, attitudes, beliefs and competencies related to risk behaviours associated with HIV transmission.

**Part I. General Data**

This section of the questionnaire consists of 16 items aimed at obtaining information related to: Demographic data (six items: Age, sex, marital status, profession, highest level of education, country, and city), sexual behaviour (four items: Current sexual life, number of sexual partners, age of first sexual relation, and sexual preference) and sexual health (six items: Test done for venereal diseases, diagnosis of venereal diseases, date of diagnosis, manner of infection, and type of support received).
Part II. General knowledge of HIV/AIDS

This section of the questionnaire is aimed at evaluating the quality and quantity of the information that participants have with regard to HIV/AIDS and how it is transmitted. It consists of 11 open-ended questions together with some dichotomous response options (see Table 1).

The 11 items refer to the concept of AIDS, the transmission of the virus, forms of prevention, clinical symptoms, ways of identifying AIDS and knowledge of other sexually transmitted diseases. The last two items are open-ended and evaluate personal motivations for the use of condoms and the types of sexual infections known to the participant. These items evaluate the perception of participants with regard to knowledge or lack of knowledge of the required information. In the case of a positive reply participants are asked to describe the required information. In cases where the person lacks the knowledge, it is considered as a negative answer and a point is added to the risk level– the risk level ranges between 0 and 9. The answers are used to calculate a risk indicator according to the information that the participants possess.

Table 1. Example of items from part II of the Questionnaire to evaluate functional competencies in the prevention of HIV transmission

<table>
<thead>
<tr>
<th>Items with dichotomous answer options and open-ended questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know what Acquired Immune Deficiency Syndrome (AIDS) consist of?</td>
</tr>
<tr>
<td>□ No □ Yes</td>
</tr>
<tr>
<td>If you answered yes, could you please explain?</td>
</tr>
<tr>
<td>____________________________________________________________________</td>
</tr>
<tr>
<td>____________________________________________________________________</td>
</tr>
<tr>
<td>____________________________________________________________________</td>
</tr>
</tbody>
</table>
Part III. Sexual behaviour and condom use: Beliefs and attitudes

This part of the questionnaire consists of 19 items, which evaluate attitudes related to condom use, different sexual practices, social acceptance (fear of rejection), the seeking of sexual sensation, and preventive behaviours.

There are two types of response option: The first 13 items have numerical analogical answer choices (ranging from 10 – completely agree with the situation to 0 – completely disagree) in conjunction with open-ended answer options (see Table 2, example 1). In addition there are six items with verbal analogical answer options (Likert, 1932) (see Table 2, example 2). The evaluation of the attitudes consists of the identification of preferences for condom usage and for the four main sexual practices (oral, vaginal, anal, and group). At the same time, the role of the partner in relation to condom use is evaluated. After selecting the level of agreement or disagreement, the participant is asked to explain the reason for his or her answers. In this way it is possible to identify whether the reply has a reasoned explanation or is provided in an ‘automatic’ manner. The risk level of the participant in this part of the questionnaire depends on the type of the question and the level of agreement.

Table 2. Example of items from part III of the Questionnaire to evaluate functional competencies in the prevention of HIV transmission

Example 1. Items with numerical analogical answer choices

1. Condom use could be erotic and fun.

<table>
<thead>
<tr>
<th>Completely agree with</th>
<th>10</th>
<th>9</th>
<th>8</th>
<th>7</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>Completely disagree with</th>
</tr>
</thead>
</table>

Why? ___________________________________________________________

Example 2. Verbal analogical answer choices

2. I plan my sexual encounters.

<table>
<thead>
<tr>
<th>Always</th>
<th>Most of the time</th>
<th>Occasionally</th>
<th>Never</th>
</tr>
</thead>
</table>
Part IV. Evaluation of competencies

This part of the questionnaire is orientated towards the evaluation of competencies related to the transmission of HIV/AIDS. In this section there are 60 items, divided in four sub-groups. Each sub-group evaluates one of the four levels of competence. Table 3 shows the organization of these items by category (Morphology, Situations, People and Effects) and indicators (See Table 4 for an example of evaluation of different levels of competence in an item from the category situations). All the items in this section are based on the four categories proposed by the Contingential Analysis (Ribes et al., 1986). In addition, nine items were added to evaluate instrumental behaviour related to condom use.

Table 3. Organisations of items according to the Contingential Analysis categories and indicators of levels of competence

<table>
<thead>
<tr>
<th>Categories of analysis</th>
<th>Indicators of levels of competence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extrasisituational &amp; Transisituational (Beliefs, knowledge and information, subgroup 1)</td>
</tr>
<tr>
<td>Morphology</td>
<td>items 1-4</td>
</tr>
<tr>
<td>People</td>
<td>items 5-8</td>
</tr>
<tr>
<td>Situations</td>
<td>items 9-12</td>
</tr>
<tr>
<td>Consequences</td>
<td>items 13-16</td>
</tr>
</tbody>
</table>
Table 4. Examples of the levels of competence evaluated by the questionnaire to evaluate functional competencies in the prevention of HIV transmission, in one item of the situations category

<table>
<thead>
<tr>
<th>Extra – Transituational level of competence - Indicator of competencies related to experience, information or beliefs (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>* I think that having sexual intercourse (including caresses, masturbation and/or penetration of any kind), when I have been drinking or am under the influence of any drug, is a behaviour with:</td>
</tr>
<tr>
<td>**</td>
</tr>
<tr>
<td>Maximum risk</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrumental level of competence– Indicator of competencies related to execution of instrumental behaviour (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>** I suggest alternative sexual behaviours when I have been drinking or am under the influence of any drug and I have the opportunity for sexual intercourse (penetration of any kind):</td>
</tr>
<tr>
<td>Always</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-instrumental level of competence- Indicator of competencies related to the ability of proposing preventive measures or social competencies (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*** When I have been drinking or am under the influence of any drug and I have the opportunity for sexual intercourse (masturbation and/or penetration of any kind) I wait for my sexual partner to suggest the use of preventive measures:</td>
</tr>
<tr>
<td>Always</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instrumental level of competence/Condom use- Indicator of competence related to the use of condom (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>**** I use a condom when I have been drinking or am under the influence of any drug and I have the opportunity to have sexual intercourse (including penetration of any kind):</td>
</tr>
<tr>
<td>Always</td>
</tr>
</tbody>
</table>
All items describe situations and then evaluate the participant’s behaviour in these situations. Items evaluating the morphology of behaviour describe different types of sexual practices. The items in the ‘situations’ category emphasize different dispositional factors which, according to García-Vargas (2004), are highly related to risky behaviours. The items of the ‘people’ category allow for the identification of the significant role of other people in the sexual interaction. Finally, the items in the ‘effect’ category evaluate the consequences of the relation between the participant’s behaviour and other people.

The first 16 items evaluate the beliefs of the participant in relation to 16 situations representing health risks. Subsequent items evaluate the responses by the choice or lack of choice of risky situations. The answer options make it possible to identify the frequency with which the participants find themselves in the risky situation described in each question. There is also the option of “I did not experience this situation” for those who have not engaged in the particular type of behaviour. The items deal with the participant’s behaviour, the negotiation of condom usage, and the behaviour which is delegated to the sexual partner.

The scale of risk in this part of the questionnaire relates to all the situations that give a high probability of HIV infection. The choice of experiencing the given situations always represents higher health risks.

**Part V. Opinion survey**

This part of the questionnaire canvasses participants’ opinions about the questionnaire. It consists of three open-ended questions in which participants are requested to comment, to mention doubts, and to make suggestions for improvement of the questionnaire. Participants also have the option of suggesting what should be removed from or added to the questionnaire.

**DATA ANALYSIS**

The instrument was designed for both qualitative and quantitative analysis. On the one hand, it allows for the identification of the type and the quality of the participant’s information by means of open-ended questions. On the other hand, the quantitative data allows for the measurement of participants’ levels of risk. The use of both types of measurement facilitates analysis of the tension between individual’s perception of knowledge and their behaviour.

The quantitative data provide the possibility of working with descriptive and inferential statistical analysis. The statistical analysis should be aimed at comparing and identifying the relationship among information, attitudes and sexual competence.

In order to evaluate competence, it is possible to make use of the risk level calculated using the 60 items from section IV only. It is possible to do an analysis
by categories and by level of competence or by a combination of the two. A specific analysis comparing the indicators of level of competence (Indicator 1 versus 2, 1 versus 3 and 1 versus 4) allows for the identification of the correspondence between the participants’ information and their behaviour.

Inferential analysis can also be done to determine the relationship between the sexual competence index and variables highly related to HIV transmission such as age, sex, highest level of education, number of sexual partners, age of first sexual experience, sexual preference, and so on.

Regarding the methods which are generally used to obtain reliability and validity, inferential statistical analyses can be applied in this questionnaire, unlike in the previous questionnaires aimed at evaluating competencies— for example, exploratory factorial analysis, confirmatory factorial analysis or internal consistency analysis using Cronbach’s alpha (American Educational Research Association, American Psychological Association and National Council on Measurement in Education [AERA, APA, & NCME], 1999; Carretero-Dios & Perez, 2007).

**CONCLUSION**

The focus of this article was on describing the properties of a pilot questionnaire aimed at the evaluation of competencies related to HIV transmission. The questionnaire is presented as a pilot instrument, suitable for approaching the prevention of HIV transmission from an alternative point of view. From a functional perspective, the questionnaire allows for the analysis of factors related to risk situations based on a behavioural theoretical framework.

Questionnaires are among the most popular evaluation tools used in psychological research, owing to their low cost, the number of participants that can be accessed, and the relative ease of data analysis. Questionnaires enable the effective collection of quantitative data, and the use of that data in comparative analyses.

Considering that sexual behaviour continues to be a taboo subject with associated difficulties of access to participants, the use of a questionnaire represents a great advantage owing to the anonymity of the participants. A questionnaire allows participants to express their real behaviours and thus potentially provides reliable data that can be used to clarify the factors that relate to certain types of sexual behaviour.

It is important to note that psychological research not only attempts to identify attitudes or beliefs, but also places special emphasis on the elements that structure interactions. These elements can facilitate or inhibit either risky or preventative sexual behaviour. It is necessary to identify the psychological processes that underlie risky behaviours and to analyse the functional role of the elements that structure sexual interactions. An understanding of the functional role of these factors will
make it possible to develop psychology programmes aimed at prevention of HIV/AIDS transmission. Such programmes will be designed to take individual differences into consideration.

International surveys on youth sexual behaviour have consistently shown that sexual partners have a key influence on the sexual practices of young people (Marston & King, 2006). HIV prevention initiatives therefore typically attempt to motivate men and women to be more open to discussing sex, sexuality, use of drugs, and HIV. HIV prevention and investigation programmes that are specifically adapted to reach people with different types of partners can have a bigger impact than those dealing only with the behaviour of the individual.

The questionnaire described above allows for the identification of the role that the significant participants in interactions have (e.g., sexual partners), the morphology of the behaviour or the types of sexual practices, the situational factors, and the effects or negative consequences. These factors are related to a low level of sexual competence and therefore to risky behaviours (Díaz et al., 1999; Ehrhardt et al., 2002; Nelly, Lawrence, Hood, & Brasfield, 1989; Piña, 2004; Piña & Corral, 2001; Piña & Werner, 2004; Qu et al., 2002; Robles & Moreno, 2000; Rodríguez, 2002; Robles et al., 2006; Sieving et al., 1997; UNAIDS, 2008).

The study of competencies is a new approach, not only in relation to health problems, but also in relation to all the areas in which humans develop. Based on the results deriving from the application of tools such as the one described above, it would be possible to develop tools for detecting sexual competencies and more importantly creating primary, secondary and tertiary prevention programmes (Ribes, 1990). These programmes would train the relevant competencies to take into consideration those elements which can be critical for each individual in presenting risky behaviours or in developing preventive behaviours (Rodríguez et al., 2008).

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BIOGRAPHICAL NOTES

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Nikolett Eisenbeck is a Ph.D. student at the University of Almeria, Spain. She graduated at the Eötvös Loránd University in Budapest, Hungary. Her work focuses on the Acceptance and Commitment Therapy and the Relational Frame Theory. She has participated in various studies, such as experiments related to the IRAP, thought suppression, HIV/AIDS attitudes and sexual behaviour. Currently she is working on her doctoral thesis.

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REFERENCES


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