

# Finding ways to promote STI testing among the Afro-Caribbean community in the Netherlands

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**Finding ways to promote  
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*Colophon*

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# **Finding ways to promote STI testing among the Afro-Caribbean community in the Netherlands**

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# Chapter 1

## General Introduction

### **Sexually transmitted infections as a worldwide public health issue**

Sexually transmitted infections (STIs), including the Human Immunodeficiency Virus (HIV) and viral hepatitis B, are infections that are spread through sexual contact. The most common infectious diseases spread through this particular route of transmission include syphilis, gonorrhoea, chlamydia, genital herpes, genital warts, HIV, and viral hepatitis B. Worldwide, the incidence of STIs is over 340 million among women and men in the age of 15-49 years. Most new cases are found in South and South-East Asia, Sub-Saharan Africa, Latin America, and the Caribbean (WHO, 2007). Although the burden of disease is highest in developing countries, industrialized countries are also facing high prevalence of STIs due to increased travelling and changing trends in sexual behavior. Firstly, migration is perceived as one of the factors related to the spread of STIs (Decosas & Adrien, 1997; Quinn, 1994), as the majority of the migrants contracted the STI in the country of origin (Boer et al., 2006; Burns, Imrie, Nazroo, Johnson, & Fenton, 2007). A more recent study claims that older male migrants of Non-Western descent were more at risk for STI infections, because of their travelling behavior. These males would travel back and forth to the country of birth while engaging in unprotected sexual intercourse in both countries (Kramer et al., 2008). Secondly, numerous studies have claimed that migrant communities often have frequently changing partners or multiple partners at the same time while using condoms inconsistently (Gras, van Benthem, Coutinho, & van den Hoek, 2001; Wiggers, de Wit, Gras, Coutinho, & van den Hoek, 2003). In combination with these sexual behaviors, disassortative mixing between the migrants and the indigenous population could contribute to the spread of STIs (Hertog, 2007). The groups at-risk range from men having sex with men (MSM) to commercial sex workers to sexually active heterosexual adolescents (ECDC, 2011; WHO, 2007).

In May 2006, the global strategy for STI prevention and control was endorsed by the World Health Assembly; controlling the spread of STIs became a priority of the World Health

Organization (WHO). According to the WHO, the use of a combination of responses can lead to an effective prevention of STIs: prevention services aimed at the promotion of safer sexual behavior, early healthcare seeking behavior, and partner notification. An example is the introduction of prevention activities across primary healthcare programs and providing health education strategies to reduce the risk of sexual infections (WHO, 2007). However, not all strategies are equally effective. For instance, a known reason among adolescents for not getting tested or failing to use a condom is that they underestimate their risk of contracting an STI (R. A. Crosby, Yarber, Sanders, & Graham, 2004). In this example, adolescents must first start to acknowledge that they are susceptible to the health threat in order to reduce their own risk (Conner & Norman, 2005).

## **Sexually transmitted infections in the Netherlands**

As in other industrialized countries, the Netherlands are also facing a high prevalence of STIs. Surveillance data of the National Institute for Public Health and the Environment (RIVM) in the Netherlands has indicated that STIs are more common among certain migrant groups compared to the native Dutch population. Among the heterosexual population, 15% of the observed migrant population had an STI compared to 12% of the native Dutch; this was 24% against 18.5% among the homosexual population (Vriend et al., 2011). Research into condom use among migrant communities living in the capital city of the Netherlands claims that the use of condoms within these communities is inconsistent even though many migrants were found to have multiple partners (Gras et al., 2001). This finding was most noticeable among the Afro-Caribbean community. Van Veen *et al.* (2010) and Vriend *et al.* (2010) report that higher incidence rates of chlamydia, gonorrhoea, and syphilis are found among the Afro-Caribbean community compared to other ethnic communities in the Netherlands. Additionally, van Veen *et al.* (2009) claim that people with an Afro-Caribbean background show substantial sexual mixing with other ethnic communities, which could lead to an increase of STI transmission in the other ethnic communities living in the Netherlands. Unpublished surveillance data of the Municipal Public Health Service (MPHS) Rotterdam STI outpatient clinic indicate that a relatively low portion of the attendees have an Afro-Caribbean background. Although little is known about the test behavior of this community, it is possible that people from this community visit their general practitioner (GP) rather than STI testing facilities. However, the available surveillance tools are believed to be limited in monitoring this hypothesis (Vriend et al., 2011). Given the public health risk related to the sexual behavior of the Afro-Caribbean community and the relatively low attendance rate found at the STI testing facilities, it seems wise to promote STI testing. Thus, the overall aim of this thesis is to study the determinants for the promotion of STI testing among this community.

## STI testing

### *Testing facilities*

In the Netherlands, it is possible to get tested at different testing facilities; general practitioners (GPs), STI outpatient clinics, and the Municipal Public Health Service (MPHS). For this thesis, we will elaborate on the latter as the studies described were conducted at the MPHS in Rotterdam.

The general mission of the MPHS is to protect, guard, and promote the health of the general population in the region. Furthermore, this facility protects the health of the population by informing political decision-making, and contributing to and conducting health promotion (GGD, 2012). Controlling the spread of infectious diseases, including STIs, with special attention to populations at risk is one of main tasks of the MPHS.

A variety of prevention activities in the field of STIs is conducted among, inter alia, men having sex with men (MSM), commercial sex workers, adolescents, and migrants. Primary prevention activities are conducted through sex education at (vocational) schools, and screening and counseling of sex workers by MPHS health educators. Peer health educators visit bars, clubs, saunas, and other meeting places to focus primary prevention strategies on MSM. Peer health educators are also used to provide sex education to migrants. Secondary prevention activities are done by means of STI testing and counseling. The MPHS offers the possibility for youth to get tested for STIs at schools (Wolfers, de Zwart, & Kok, 2011), and for MSM to get tested through an online application called 'Testlab' ("Testlab", 2012).

### *Determinants of STI testing*

Many studies were conducted into the determinants of STI testing, including testing for HIV. The focus of the studies was mostly on MSM, adolescents, and African communities. One may argue that there is a distinction in the determinants of performing a health behavior or not. However, the determinants of STI testing and non-testing are each other opposites; when potential barriers are taken away, people will be more likely to get tested.

Determinants related to STI testing, including testing for HIV, can be found on different ecological levels (Alvarez-del Arco et al., 2012). On the individual level, perceptions of one's susceptibility to STIs and one's awareness of the own risk behavior – like having a high number of sexual partners – were found to be important predictors of one's intention to get tested (Agha, 2012; Alvarez-del Arco et al., 2012). Agha (2012) claimed that individual beliefs towards (social) environmental factors were related to the acceptance of STI testing among African women.

The study argued that one's perceptions related to the quality of health care services were important predictors. Additionally, the acceptance of testing was positively influenced when individuals knew someone who was treated with pharmaceuticals to control the natural course of HIV, or who died from HIV – the Health Belief Model (HBM) defines this as 'cues to action' (Conner & Norman, 2005). These findings were complemented by a study into the factors related to HIV testing and counseling within a migrant population (Alvarez-del Arco et al., 2012). It was claimed that the individuals who had poor knowledge on where to go for testing were less likely to get a test. Additionally, the study found that individuals who were afraid of the consequences of their (potential) infected status, like the fear of social isolation, were less likely to get a test. Flower et al. (2012) found that the lack of confidence in coping with positive test results hindered MSM from testing.

External factors known related to STI testing were related to the possibilities offered by health care settings. For example, the possibility of taking self-swab samples, the possibility of getting tested for diseases other than STIs (Shima et al., 2006), and on-site testing were found to stimulate the uptake of STI screening services. The former was found to contribute significantly to the acceptance of STI testing among young women (Holland-Hall, Wiesenfeld, & Murray, 2002; Rose, Lawton, Bromhead, Macdonald, & Lund, 2007); among MSM the same was found (Flowers, Knussen, Li, & McDaid, 2012). The latter was claimed to be most effective when combined with empowering health education activities. Other factors that were found related to the possibilities of health care settings were – amongst others - waiting time, costs of a test, the possibility of getting tested anonymously, the attitude of the health care provider, and opening times of the testing facilities (Agha & Do, 2009; Brugha & Zwi, 1998). Stigma and discrimination related to STI testing were found to be strong barriers; the attitudes of (potential) partners to have sexual intercourse with infected individuals could hinder (potential) infected persons to get a test, as they are afraid that their status will be disclosed (Flowers et al., 2012). Socio-economic status (SES) was also found to influence testing behavior; individuals with a poor SES were less likely to get tested, as they were hindered by the costs of the test (Alvarez-del Arco et al., 2012).

Many determinants related to STI testing are identified. However, the knowledge regarding these determinants in migrant communities – especially the Afro-Caribbean community – is limited. This thesis will complement the understanding of the determinants of STI testing, and their underlying beliefs.

## The Afro-Caribbean community in the Netherlands

The Afro-Caribbean community in the Netherlands consists of three major ethnic groups; the African community, the Dutch-Antillean community, and the Surinamese community. When addressing the Afro-Caribbean community in this thesis, we only focus on the Dutch-Antillean community and the Surinamese community as they are perceived as the larger ones of the three groups (CBS, 2003).

### *The Dutch-Antilleans*

The Dutch-Antilleans originally have residence on a few islands in the Caribbean; Aruba, Bonaire, Curaçao, Saba, St. Eustatius, and St. Maarten. The original residents of the Dutch-Antilles were the Native Americans, who were captured to work on plantations as slaves by the Spanish at the beginning of the 16<sup>th</sup> century. The islands were used as a transit port for the trade of African slaves after that the Dutch made the Dutch-Antilles their colony in 1634 (Oostindie & Maduro, 1986). Some of these slaves became the new residents of the Dutch-Antilles.

Between 1960 and 1970, the job possibilities on the islands deteriorated. As a result, the Dutch-Antillean government encouraged migration to the Netherlands (CGM, 2005). In 1972, approximately 22.000 Dutch-Antilleans resided in the Netherlands; this was 140.000 in 2011 (CBS, 2003, 2011). People who were born in Aruba, Bonaire, Curaçao, Saba, St. Eustatius, and St. Maarten or from whom at least one parent was born on one of these islands are considered as a Dutch-Antillean. In 2011, the Dutch-Antilles became a special municipality of the Netherlands.

### *The Surinamese*

The Surinamese people are the residents of Surinam. However, the Surinamese population consists of several smaller ethnic communities; the Native Americans (the original residents of Surinam), the Hindustani (descendants of Indian contract workers), the Creoles (descendants of African slaves), the Javanese (descendants of contract workers from North India), the Chinese (descendants of contract workers from Asia), the Caucasians (descendants of colonists), the Jews, the Lebanese, and the Brazilians. The Hindustani and the Creoles are considered to be the biggest groups within the Surinamese population (Oostindie & Maduro, 1986). The great diversity of ethnic communities originates from 1667. In this year, Surinam was made a colony of the Netherlands. For the cultivation of raw materials like coffee and cotton, African slaves were transported to the plantations. After the abolition of slavery, the shortage of employees was solved by contracting employees from Asia.

After Surinam became independent in 1975, a migration movement from Surinam to the Netherlands started, which founds its peak around the 1980s (CBS, 2003). Nowadays, more than one third of the Surinamese population (344.734) is living in the Netherlands (CBS, 2011). All people who were born in Surinam (first generation migrant) or from whom at least one parent was born in Surinam are considered as Surinamese (second generation migrant).

## Cultural sensitivity in health promotion

*Health promotion is the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior towards a wide range of social and environmental interventions.* – Definition of the World Health Organization (WHO) (WHO, 2012).

Numerous studies have claimed that health promotion programs are more likely to be successful in achieving their objectives when these programs meet the specific needs of the target group (Bertens, Krumeich, van den Borne, & Schaalma, 2008; Kreuter, Lukwago, Bucholtz, Clark, & Sanders-Thompson, 2003; K. Resnicow, Baranowski, Ahluwalia, & Braithwaite, 1999). Existing theories are perceived as explanations for processes related to health behavior generalizable over various groups and cultures (L. K. Bartholomew, Parcel, Kok, Gottlieb, & Fernández, 2011). As a result, these theories often lack sufficient specific focus on cultural sensitivity in health promotion. Resnicow *et al.* (2000) stated that when building, delivering, and evaluating culturally sensitive health promotion programs, cultural characteristics and (historical and social) environmental influences should be taken into account. During this process two dimensions can be distinguished: the surface and deep structure. The surface structure addresses the observable characteristics of the target group, as well as the pathways for delivery of the health promotion message. The deep structure considers the perceptions of the target group towards the health promotion behavior in order to establish long-lasting behavioral change (Kohinor, Stronks, Nicolaou, & Haafkens, 2011; Ken Resnicow *et al.*, 2002).

In the Netherlands, only a limited number of culturally sensitive health promotion programs have been developed that can be qualified as theory and evidence-based (Vrolings, Gelissen, Jonkers, & Schaalma, 2007). Known health promotion programs regarding sexual health are, amongst others, [lovensex.kitatin.com](http://lovensex.kitatin.com) and Uma Tori!. The former is an educational website for Dutch-Antilleans addressing sexual health and related behavior (van den Borne & Poelman, 2010), whereas Uma Tori! is a Tupperware-like living room concept in which participating Afro-Caribbean women can share their experiences with and ask questions

about sexuality (Bertens, Eiling, van den Borne, & Schaalma, 2009; Bertens, Krumeich et al., 2008; Bertens, Wolfers, van den Borne, & Schaalma, 2008). However, these health promotion programs do not specifically target the promotion of STI testing itself. The only health promotion program known that specifically addresses testing in the cultural context is an intervention promoting hepatitis-B screening among Turkish migrants in the Netherlands (van der Veen et al., 2011). Due to limited insights in the sexual behavior of the Afro-Caribbean community in the Netherlands, the lack of clear insights in the rationale related to testing behavior within this community, and the absence of interventions targeting testing behavior within this community research into this field is desirable. In the paragraph entitled ‘Methodology’ we will elaborate on how we combined cultural and psychological approaches in the studies described in this thesis.

## **Methodology**

During the project, we used a number of methodological strategies in order to achieve the defined objective: to systematically identify and study the determinants and their underlying beliefs related to STI testing among the Afro-Caribbean community in the Netherlands. Throughout the project, we intended to use the Intervention Mapping approach (L. K. Bartholomew et al., 2011) as a planning model. As the Afro-Caribbean community is considered to be difficult to involve and maintain in research, the project was divided into two parts: a needs assessment and the intervention development. This thesis will mainly focus on the needs assessment phase of Intervention Mapping (IM), as we were not able to obtain grants for the intervention development. To explore the determinants and the related underlying beliefs regarding STI testing among the Afro-Caribbean community, we used the PEN-3 model (C. O. Airhihenbuwa, 1995) and the Health Belief Model (Conner & Norman, 2005). A multi-method approach was used during the project in order to systematically develop a deeper understanding of the determinants of STI testing, and increase the validity of the results found in the project.

## **Intervention Mapping**

The promotion of health can be a complex process due to the different factors influencing the perceptions that people have towards health. Therefore, the development of interventions must be constructed in such a way that they are in line with these factors. A systematical approach like the Intervention Mapping protocol has proven to be an effective tool to achieve this (Wolfers et al., 2011). IM was developed as an intervention planning model

by Bartholomew, Parcel, Kok, and Gottlieb to support developers of health promotion programs. The model aids in the systematic building, implementation, and evaluation of an effective intervention in six cumulative and iterative steps (Figure 1) (L. K. Bartholomew et al., 2011). As stated early in this paragraph, this thesis will focus mainly on the needs assessment phase of IM.

### *Needs Assessment*

The Needs Assessment is considered to be the first step in intervention planning, and therefore the first step of IM. The Needs Assessment is an explorative study into a health behavior or a community aimed at finding and studying discrepancies between the current and the desired situation (Gilmore, 2011). In this phase, the user aims to gain an understanding of the characteristics of the community of interest, the health problem, and possible solutions (L. K. Bartholomew et al., 2011). In order to achieve this goal, IM strongly recommends the use of a participatory planning group consisting of potential users, and the use of the PRECEDE model (L. K. Bartholomew, Parcel, Kok, & Gottlieb, 2006; L. K. Bartholomew et al., 2011).

### *PRECEDE model*

Originally, the Predisposing, Reinforcing and Enabling Causes in Educational Diagnosis and Evaluation (PRECEDE) model was developed by Green and Kreuter to guide the users to a more outcome-based approach in planning (L. K. Bartholomew et al., 2011; R. Crosby & Noar, 2011; Green & Kreuter, 2005). Nowadays, the model is often used as a framework to assist in the analysis of the causations of health-related problems. It does so by assessing multiple levels of health problems, and considering multiple determinants that may contribute to the establishment of related behavior and the environment. The model distinguishes three major groups of factors; *Predisposing* factors, *Reinforcing* factors and *Enabling* factors. *Predisposing factors* are internal factors stimulating the health behavior. These factors include amongst others knowledge, attitude, self efficacy, and skills. The *Reinforcing factors* are those which reinforce health behavior and could include social support and the social norms. Enabling factors are environmental factors that facilitate the health behavior, such as availability and accessibility of services and/or resources (L. K. Bartholomew et al., 2011; Green & Kreuter, 2005). The model is widely used in numerous health promotion programs, and was also used as a basis for the PEN-3 model of Airhihenbuwa (C. O. Airhihenbuwa, 1995; C. O. Airhihenbuwa & Webster, 2004).

### *Health Belief Model*

The Health Belief Model (HBM) is one of the first and well-known social cognitive models in the field of health promotion. The model was developed in 1966 by Irwin Rosenstock in

an attempt to study the decision-making related to and promote the uptake of preventive health care services (Rosenstock, 1966). The HBM was widely used in research into prevention and screening, but also in research into lifestyle related behaviors (Conner & Norman, 2005). The HBM postulates that the odds of individuals taking action towards the health threat depends on their perception related to their vulnerability to the threat, and the perceived advantages of preventing the health threat. The model includes the constructs *perceived severity* and *perceived susceptibility* toward the threat, and *perceived benefits and barriers* in showing the desired health behavior. Other constructs related to the model are *cues to action*, which are defined as triggers that can stimulate the individual to perform the health behavior (Conner & Norman, 2005; Gerend & Shepherd, 2012). Recently, *self efficacy* was added to the core constructs of the HBM (Glanz, Rimer, & Viswanath, 2008), and thereby meeting the approaches of the Theory of Planned Behavior (TPB) and the Social Cognitive Theory (SCT).

The most recent version of the model covers most of the constructs of other well-known theories and is clear on how to measure its constructs. Therefore, we chose to apply the HBM as a basis in our study into the determinants of STI testing, supplemented with the PEN-3 model for a cultural approach.

### *The PEN-3 model*

In the late 1980s, Airhihenbuwa developed the PEN-3 model from the belief that the importance of culture in prevention programs was often underestimated. Based on his research into HIV prevention and health education programs in several African regions, Airhihenbuwa felt that both health promotion and disease prevention programs strongly relied on Western models that often have a bio-medical perspective. This feeling was confirmed by Chow (1991), who observed that psychoanalysis is a practice from the Western society related to the individual. Non-Western cultures were perceived to be more oriented towards the community (family, public life, larger issues of history) rather than towards the private self. To deal with this perceived lack of culture, Airhihenbuwa combined the constructs and approaches of the Health Belief Model (HBM), Theory of Reasoned Action (TRA), and the PRECEDE model toward health promotion. These methodological approaches were defined from a more cultural lens to shift the focus from individual health promotion to a focus in which health problems are explored in their whole context (C.O. Airhihenbuwa, 2010).

PEN-3 is referred to as a model contributing to the process of developing a health promotion program in which cultural aspects have a central position (C. O. Airhihenbuwa, 1995; C. O. Airhihenbuwa et al., 2009). In the model culture is described as a 'non-static phenomenon': a social interaction accepted by specific communities at specific points in time, which

changes over time and is defined by the members who define and live by the ideals of specific practices and values. To explore and affirm the cultural meanings and expressions of these specific practices and values, Airhihenbuwa believes that target group participation is a prerequisite. Besides this, Airhihenbuwa tries to challenge the users of the model to address both the micro (individual, family, and community) and macro levels (policy, government) (C. O. Airhihenbuwa, 1995).

The PEN-3 model has three interrelated and interdependent dimensions, each consisting of three domains following the acronym PEN (Figure 2).

### THE PEN-3 MODEL

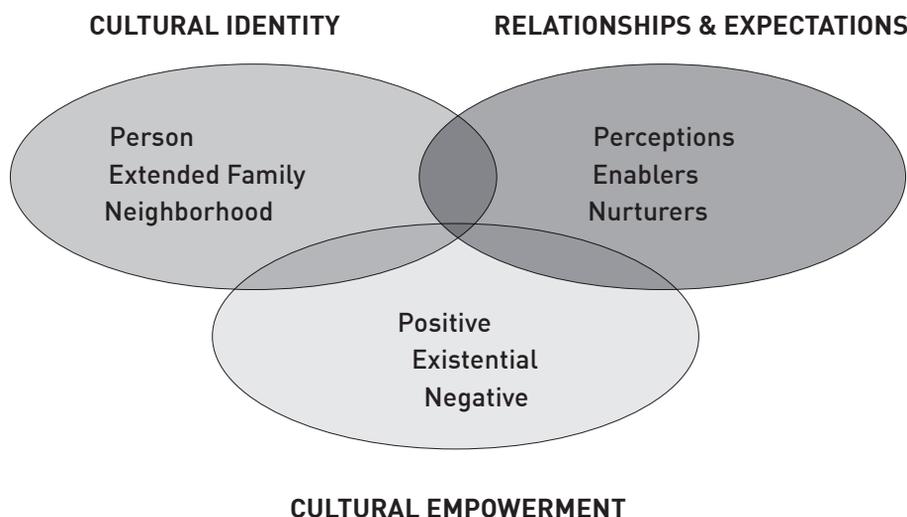


Figure 2: The PEN-3 Model (Airhihenbuwa, 1995)

The first dimension of the model is *Cultural Identity*. This dimension assesses the point of entry for a health promotion program, and consists of the domains *Person*, *Extended family*, and *Neighborhood*. The domain *Person* can be referred to as the individual who should be stimulated to make health decisions based on adequate information. *Extended family* is referred to as not only the core family, but also important others that are perceived as family (which is a common phenomenon in non-Western communities). Lastly, the *Neighborhood* can be referred to as the community in which a health promotion program is implemented.

The second dimension is *Relationships and Expectations*, which assesses the influence of

perceptions, environmental forces, and the social environment in making health-related decisions. In this, the point of view of how cultures define the role of persons and their expectations in family and community relationships are taken into account. The first domain is *Perceptions*, which covers aspects like knowledge, attitudes, values, and beliefs that may promote or hinder behavioral change. The domain of *Enablers* covers environmental influences and resources that could enhance or limit behavioral change. Examples of enablers are the accessibility to health care services, and the availability of resources. The last domain, *Nurturers*, assesses the influence of the (extended) family, peers, and community members on individual perceptions, attitudes and behaviors.

The third dimension *Cultural Empowerment* is perceived as the most critical dimension, because it situates the beliefs, behaviors, and attitudes of the *Person*, *Extended family* and *Neighborhood* in a positive, existential, or negative perspective. *Positive* perceptions or actions should be encouraged in health promotion programs. *Existential* actions are those, which are unique to a community and are neither harmful nor facilitating. These actions do not need any targeting. *Negative* perceptions or actions are those, which are harmful for the health status. These negative perceptions or actions should be explored in order to understand them before trying to change them.

After using PEN-3 in two qualitative studies, we still felt that it was unclear to what extent the model contributed to the findings. To compare our experience with recent publications using the model, we conducted a systematic literature review.

## Multi-method approach

Next to the models used to explore the determinants and related underlying beliefs regarding STI testing, we combined qualitative and quantitative research to systematically get a fuller understanding of the characteristics and beliefs within the Afro-Caribbean community in the Netherlands. There are different ways to combine qualitative and quantitative research (L. K. Bartholomew et al., 2006; L. K. Bartholomew et al., 2011):

1. Starting with qualitative research followed by quantitative research. This combination can serve two goals. With both goals, research methods like in-depth interviews and focus group studies can be used to explore and identify the needs and/or perceptions towards the health behavior of the researchers' interests. However, the quantitative research serves different purposes. In the first goal, the quantitative research is conducted in a linear process to get to the final results, and

is often suggested for researchers to define and test a hypothesis. For the second purpose, the quantitative research is complementary conducted to determine the magnitude of the results found in the qualitative research.

2. Starting with quantitative research leading to results after which qualitative research methods are used to get a better understanding of the underlying beliefs of the findings. This methodology is often used by researchers to explore the reasons why the prevalence of a disease does not decrease after an intervention.
3. Qualitative research used parallel to quantitative research. This iterative process informs each phase of the program development and evaluation. This methodology can be used to validate each step taken in the intervention development.

For this project, we started with a combination of qualitative and quantitative research as described under the first point; a qualitative focus group study to explore the beliefs related to STI testing. The magnitude of the results found in this qualitative study was assessed by conducting a quantitative online survey among 303 Dutch-Antilleans and 450 Surinamese. Also, in this study we identified relevant determinants to target in a (future) intervention. To get a fuller understanding of the underlying mechanisms of the correlations found, we finally conducted a qualitative in-depth interview study among 20 individuals from the target group. By going back and forward between qualitative and quantitative research we applied a spiral approach (de Vries, Weijts, Dijkstra, & Kok, 1992).

## **Objectives and research questions**

The overall aim of this thesis is to study the determinants for the promotion of STI testing among the Afro-Caribbean community in the Netherlands.

The research questions of this thesis are:

1. What are the determinants of STI testing among the Afro-Caribbean community?
2. What determinants of STI testing among the Afro-Caribbean community should be targeted with a future culturally relevant intervention to promote testing behavior?
3. What is the additional value of PEN-3 in the development of a culturally relevant intervention?

## Overview of the thesis

The chapters of this thesis represent the order in which the smaller studies of the project were conducted. **Chapter 2** describes a qualitative focus group discussion study, exploring the determinants and related beliefs of STI testing. This chapter also discusses the first experiences of using PEN-3 in our study in order to ensure that attention would be given to cultural factors, target audience participation, and positive aspects in the culture that could enhance the desired healthy behavior. In **Chapter 3** we describe a quantitative online survey among 303 Dutch-Antilleans and 450 Surinamese into the correlations between the determinants of the intention to get tested for STI/HIV among the Afro-Caribbean community in the Netherlands. The results found in the qualitative focus group study described in Chapter 2 were used to define additional measures for the questionnaire which was primarily based on the Health Belief Model (HBM), and constructs of other social cognitive theories. It also assesses which determinants should be targeted in order to effectively promote STI testing. **Chapter 4** describes a qualitative in-depth interview study, conducted to get a fuller understanding of the determinants and their correlations found in the quantitative online survey. In the study described in this chapter we also used PEN-3. Due to the fact that we were not entirely satisfied with the way PEN-3 contributed to the studies, we conducted a literature review into the theory and application of the PEN-3 theoretical framework in current research. This review is described in **Chapter 5**, and provides suggestions on how to monitor future application of PEN-3 in order to develop clear guideline regarding the use of the model. Finally, **Chapter 6** contains a general discussion of the results presented in this thesis.

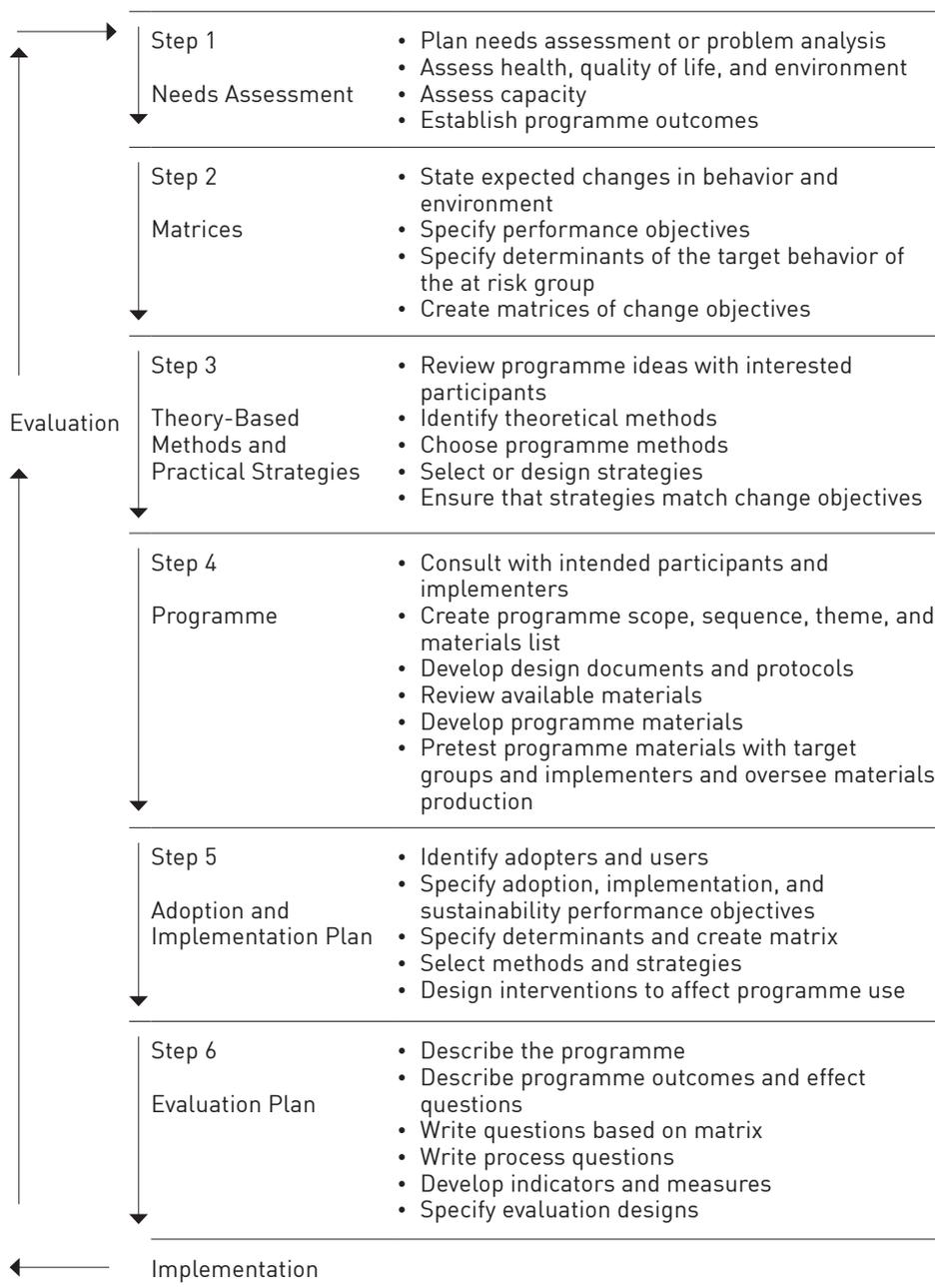


Figure 1: The Intervention Mapping protocol (Bartholomew et al., 2011)





## Chapter 2

# Exploring the reasons of STI testing among the Afro-Caribbean community in the Netherlands: a PEN-3 approach

This chapter was co-authored by Gerjo Kok, Jan Hendrik Richardus, H el ene Voeten

### Background

Worldwide, the incidence of sexual transmitted infections (STIs) among both women and men in the age of 15-49 is over 340 million. The infection rate is highest in developing countries, but industrialized countries also face high prevalence due to changing trends in sexual behavior (WHO, 2007). Recent surveillance data indicate that higher prevalence and incidence rates of STIs are found among migrant communities compared to the Native Dutch (Vriend et al., 2011). Research into migrant communities living in the city of Amsterdam have claimed that these communities often show inconsistent condom use while having multiple partners (Gras et al., 2001), or show a high change of sexual partners (Wiggers et al., 2003). Especially among the Afro-Caribbean community (Dutch-Antilleans and Surinamese) in the Netherlands this behavior is present. Despite these findings, a relatively low portion of STI outpatient clinic attendees is from these communities (Vriend et al., 2011).

Ample knowledge is available regarding the determinants of STI testing among MSM (men having sex with men) (Flowers et al., 2012), adolescents, and African (migrant) women (Flowers et al., 2012; Holland-Hall et al., 2002; Rose et al., 2007). The determinants vary from individual perceptions related to one's susceptibility, one's awareness of the own risk behavior, the knowledge regarding STIs and the testing procedure, and the fear of stigma, to (social) environmental level factors like the testing possibilities of health care services, costs, stigma, and discrimination (Agha, 2012; Alvarez-del Arco et al., 2012; Brughha & Zwi,

1998; Shima et al., 2006). Although these determinants are identified within various target groups, the knowledge regarding these determinants in migrant communities – especially the Afro-Caribbean community – is limited.

The lack of clear insights in the cultural context of determinants makes it difficult to develop an intervention that effectively stimulates this community to get tested, as research claimed that health promotion programs are more likely to be effective when they meet the specific needs of the target group (Bertens, Krumeich et al., 2008; Kreuter et al., 2003; K. Resnicow et al., 1999). Therefore, the Municipal Public Health Service (MPHS) of Rotterdam conducted a study into the determinants of STI testing among the Afro-Caribbean community in the Netherlands. A cultural approach was used by applying the PEN-3 model in our study.

### *PEN-3*

PEN-3 was developed by Airhihenbuwa. The model centralizes culture in the research process and assumes that a positive approach towards the health behavior would lead to a better fit of needs of the target group (C. O. Airhihenbuwa, 1995; C. O. Airhihenbuwa, Kumanyika, Agurs, & Lowe, 1995; C. O. Airhihenbuwa & Webster, 2004). Furthermore, the model suggests an intensive cooperation between health promotion planners and the target group in the search for strengths within the culture. Lastly, it is claimed that the model helps formulating solutions in health-related questions (C. O. Airhihenbuwa et al., 2009).

PEN-3 consists of three interrelated and interdependent dimensions, each built according to the acronym ‘PEN’; *Relationships and expectations*, *Cultural Empowerment*, and *Cultural Identity*. The dimension *Relationships and Expectations* focuses on the beliefs and values (*Perceptions*) held by the target group, the environmental resources (*Enablers*) that may promote or hinder behavioral change, and the influences of the social environment (*Nurturers*) in making the behavioral change. *Cultural Empowerment* focuses on identifying the positive aspects of culture rather than the negative (*Positive*), exploring the features of a culture that makes it unique (*Existential*), and identifying the aspects which contribute to the health problems (*Negative*). Lastly, the dimension *Cultural Identity* focuses on the point-of-entry or the ecological level of the intervention: the individual him/herself, who has the highest influence on the health behavior (*Person*), the influence of close others on the health behavior of the individual (*Extended Family*), and the context and values of the community that influence health behavior (*Neighborhood*) (C. O. Airhihenbuwa, 1995). In the use of the model, it is advised to cooperate with the target group to distinguish which beliefs and/or actions are rooted in the culture and which are recently acquired in the lifestyle. This could help identify which beliefs are easy to change (recently acquired) and which need more attention because they are present in the whole community (deeply rooted) (C. O.

Airhihenbuwa, 1995). PEN-3 was, amongst others, used in studies into dietary intake (James, 2004), diabetes prevention (Goodman, Yoo, & Jack, 2006), hypertension (Walker, 2000), smoking behavior (Beech & Scarinci, 2003), and HIV prevention (C. O. Airhihenbuwa & Webster, 2004). PEN-3 can be used in an assessment phase and an intervention development phase (C. O. Airhihenbuwa et al., 2009). In this study we only focused on the former, and used the dimensions *Relationships and expectations* and *Cultural Empowerment* to explore the beliefs of the participants.

### *Objective*

The objective of the study was to explore the beliefs related to STI testing among the Afro-Caribbean community in the Netherlands. Secondly, it was explored if PEN-3 is a useful tool in identifying the cultural meanings of the beliefs related to STI testing.

## **Methods**

Focus group discussions (FGDs) were held to explore the determinants of STI testing among the target group. Three academic interns were trained to act like facilitators by educating them in understanding the PEN-3 model and providing them with the skills to guide a FGD.

### *Sample*

We tried to cooperate with migrant self organizations (MSOs) for this study. Unfortunately, none of the contacted MSOs was willing to participate in the study. The main reasons given were that they were invited to participate in many studies in a short amount of time, and that the findings of the studies often had a negative impact on how the native Dutch perceived the Afro-Caribbean community. Instead, Afro-Caribbean fulltime students of vocational schools, living in the city of Rotterdam and surrounding areas, were invited for participation. The age varies from 16 to 30 years for fulltime students, and from the 20s up to the mid 40s for parttime students (ROC.nl, 2012). Sex educators of the MPHS were asked to locate informal leaders at the schools where they provided sexual education. These informal leaders were asked to invite as many of their peers as possible, and to contact the researchers when they had recruited at least five participants. Participants were only included if the participant or at least one of both parents was from either Surinam or the Dutch-Antilles.

### *Data collection*

A FGD protocol was developed by the researchers to make sure that each FGD was conducted in a similar way. The FGDs were either conducted by a Dutch, an Asian, or an

Asian-Surinamese female facilitator. One of the researchers was present at each FGD to observe process in the group discussion. Interference of the FGD by the presence of the researchers was reduced to a minimum by isolating themselves from the group in the back of the room.

The participants were asked to write down their reasons for (not) getting an STI test on Post-its. The Post-its with items were organized in 'Perceptions', 'Enablers', or 'Nurturers' following the dimension *Relationships and Expectations* by means of a plenary discussion. In the same discussion the participants were asked to label each item as 'Positive', 'Existential', or 'Negative', and explain why the items were labeled as such. Lastly, the participants were asked to label the items as a 'deeply rooted' or 'recently adapted' belief.

Informed consent was asked of all participants before audio taping the session with a digital voice recorder, and to use the data for research purposes. All digital files, including notes and transcripts of the audio files, were encoded and protectively stored on the computer of the principal researcher. The FGDs lasted between 45 and 120 minutes. All participants received an electronic coupon of €10 to spend at a well-known Dutch online store as an incentive. Ethical approval was obtained from the Ethics Committee of the School of Psychology and Neuroscience, Maastricht University.

### *Data analysis*

The audio files were transcribed verbatim into a Microsoft Word-file. The actual language used by the participants (slang) was translated in plain Dutch (e.g. *tiki* is Surinamese for stick, but is used as a reference to the male penis in slang). In the next step, names and other confidential information were coded. The software package Kwalitan 5.0 was used as a tool to derive and organize the qualitative data. Transcripts were screened by hand to derive relevant information that Kwalitan 5.0 skipped. A mind mapping approach was used to visualize and analyze relationships between the themes and individual items (Ahmad, Mahmood, Pietkiewicz, McDonald, & Ginsburg, 2011; Burgess-Allen & Owen-Smith, 2010).

## **Results**

Twenty-nine vocational students participated in four FGDs with an average of seven participants per group (Table 1). Most participants were second generation migrants. In total, 10 males participated in the FGDs of who one was from Dutch-Antillean descent. The participants brought forth 57 items regarding reasons for (not) getting an STI test. After

deleting the duplicates, 29 items remained of which 18 could be finally defined (Table 2). The 18 items will be discussed following the dimension *Relationships and Expectations*. No major differences were found between the perceptions of the Surinamese and the Dutch-Antillean participants. Therefore, common views will be reported unless stated otherwise.

### *Perceptions*

*Protection of the own health, wanting to drop condom use in a steady relationship, not trusting a steady (male) partner, and protection of one's fertility or a possible future child* were labeled as positive perceptions by the participants.

Our study revealed that the participants were aware of their susceptibility to contract an STI. HIV was perceived as more severe than contracting other STIs, because one could die of the infection. However, the participants stated that they did not want to contract neither of these infections. Therefore, they found it important to get tested and treated as early as possible for the *protection of their own health*:

*'If you wait, things will develop down there that you do not want to develop. You understand?'*

Both male and female participants agreed that it is important to get tested when it is obvious that you have physical complaints suggestive to an STI. They discussed that it is not always possible to make a clear distinction between STI-related complaints and common physical complaints. To be sure it was perceived as important to get tested. It was also perceived as important to get tested when one have had unprotected sexual with someone else than their steady partner. It was believed that an infection could be contracted without knowing it:

*'(...) some things [infections] you will notice in a couple of years or something, but then [if you test early] you know it in advance.'*

The participants felt it was important to get tested when they considered *dropping condom use in a steady relationship*:

*'(...) Are we going to use a condom or not? If not, then we are going to have a nice trip to the Municipal Public Health Service.'*

While the male participants did not elaborate on this item, slightly more than half of the female participants felt that it was necessary to get tested in the beginning of every new relationship:

*'(...) [You should get tested] if you are in the beginning of the relationship anyways. It is usually the guys who, you know, do not take it [the relationship] that seriously. So, anything can happen then.'*

Even after both partners got tested, some females felt it was important to *get tested frequently when not trusting a steady partner*. These participants believed that Afro-Caribbean men often cheat on their partner, and do not take precautionary measures when doing this. The need to get tested frequently was initiated by the believes that men are unreliable and STIs can be contracted by other means than just sexual contact:

*'It not has to be him necessarily when I hear that you can also contract things [infections] from a toilet seat. (...)'*

Also almost half of the male participants believed that an STI could be contracted by other means:

*'(...) you can contract it on the toilet, through this table. You can also contract it from a can. It can appear from anywhere.'*

These beliefs were labeled by the participants as positive, because they were believed to stimulate people to get tested.

Both male and female participants mentioned *protection of fertility or a possible future child* as a reason to get tested. The females stated that they could not afford themselves being infected while being pregnant, as the disease could be transmitted to the unborn child during pregnancy or actual birth. Also, worries were expressed about the possibility of getting infertile when walking around with an untreated STI:

*'(...) what if I got chlamydia. I will not be able to get a child anymore.'*

The male participants seemed concerned about their responsibility to take care of their children after birth:

*'If you bring a child into this world, it is yours. It is your blood right? You need to take care of them [children] or else you should not make them.'*

*Fear of pain* and *fear of consequences* were mentioned as barriers to get an STI test. The *fear of pain* was mentioned most often by the male participants as they believed that the

health care provider would stick a large swab deep into their penis to get the sample during the testing procedure:

*'(...) I heard that it hurts a lot when they put it [the swab] in.'*

*'No one is sticking anything in my penis. Period.'*

The women believed that it is standard procedure to use a speculum to insert and spread the vagina to gather the sample:

*'I saw that they did it with someone. I thought: "I will never go to do this". Are you crazy or something?'*

The female participants also believed that the swab would be taken by the health care provider. Both male and female participants feared pain during drawing blood. The women believed that three to five tubes of blood would be drawn, as the fear of the men was related to the use of needles. This fear was high, but preferred over the swab in their penis:

*'For sure! It is better than something in your penis!'*

The reported *fear of the consequences* was related to the results after testing and the social consequences when one's infected. The participants often lacked the confidence to cope with a positive test result:

*'Do you know what the point is? If you receive a phone call and hear that you are infected, you will think: "Sh\*t, what will I do now?". You will panic.'*

This belief was strongest for contracting HIV. Although the participants knew that they could have a normal life while being infected, they all felt that they would be reminded of their disease due the daily pharmaceutical treatment to keep control over the infection. The fear of the social consequences when infected with an STI was related to the expected reaction of their social environment. The female participants stated that they were afraid of the moment to tell their (new) partner that they were infected:

*'You will not tell to somebody who you just met: "Eh yeah, I have an STI. You should know that". Of course not (...) No, you would not do that. Someone will then think: "No, you are really dirty". That kind of stuff.'*

## *Enablers*

The participants spoke of what environmental factors could hypothetically stimulate or inhibit them to get tested, with the current situation at the testing facilities in the Netherlands in mind. The participants stated they were not pleased by the location of the testing facilities:

*'(...) A lot of trams are passing by just in front of the building. Even in the trams, it [the MPHS] is mentioned.'*

A good hidden location was perceived as a way to stimulate someone to get tested. Additionally, it was suggested that the testing facility was easy to reach:

*'The hospital should work just fine.'*

It was also believed that it could be useful to offer *the possibility to get tested for other diseases* than STIs. The majority of the people link the MPHS to STI testing although it is possible to visit it for all different kind of reasons. Providing the opportunity of other testing possibilities makes it possible for clients to state that they visited the MPHS for a different reason than STI testing.

The current location of the testing facilities was labeled as a negative enabler. Other negative enablers mentioned were *costs of the test* and a large *travel distance*. Especially the male participants would feel themselves hampered to get tested immediately if high *costs of the test* would be involved:

*'(...) If it [the test] costs money, you will think three times before you do it [testing].'*

The women disagreed with the male participants, because they believed that the costs of the test were not that different from those of contraceptives or the morning-after pill. Therefore, they argued that the costs of the test should not be labeled as negative. In the mixed group of male and female participants, the women stated that the men should be able to gather money to get a test as they were able to do so to buy drugs and liquor.

The male participants also often labeled a *large travel distance* to the testing facility as negative, because all of them had to rely on their parents or public transport. Travelling with the latter involved extra money; former was not an option as the parents could find out about the testing.

## *Nurturers*

*Wanting to prove a partner that one can be trusted and mental support of a friend* were labeled as positive nurturers. In response to the statement of the female participants regarding the unreliability of the Afro-Caribbean men in relationships, *wanting to prove a partner that one can be trusted* was mentioned by the men. They felt that they could prove their partner that they can be trusted if they consented to an STI test. They noted that they would only agree with a test when they were sure that they were not infected:

*'If my girlfriend would ask me to get tested, I would do it to prove that I am clean. But I would only do it when I am sure that I have no infections. Else it could cause trouble in the relationship (..).'*

A second positive nurturer was the *mental support of a friend*. Almost all participants agreed they would get tested to stimulate a hesitating friend to get one also:

*'To mentally coach him, so that he dares to go [get tested]. Maybe there is something else going on that he is hesitating. Then I will tell him: "Yes, I will get tested as well". Then he will have some more confidence.'*

In this case, the participants would not mind that the social environment could start gossiping about them, whereas in any other situation they would perceive this as a barrier. It was believed that as a good friend, they should put their own fear aside and focus on supporting their friends. However, the female participants in the mixed group were more aware of the outcome of the test result when supporting a friend:

*'(...) In the end, you go together. Result is that she has nothing and you do. What then? Then it is in your head.'*

The majority of the male participants saw it as an advantage rather than a problem:

*'(...) if I would tell him "I am not going with you", then I would not know that I was infected.'*

The strong *social control by the parents* was labeled as an existential nurturer, something neutral, by the vast majority of the participants. The participants felt that their parents were trying to protect them from harm and that this is the reason for the close involvement. To prevent problems it is therefore necessary to listen to the parents:

*'You just need to listen to your parents. When your parents tell you that you are not supposed to have sex before you are 18 then just do it.'*

On the other side, the participants felt that the behavior of the parents is driven by curiosity and the need to control the lives of the children:

*'(...) those parents will always stand up for their children and everything. They will always get involved with what their children are doing. That will never change if you ask me.'*

The participants stated that this behavior is common and widely accepted in their culture. The high level of social control is not only believed to be an important aspect of their own culture, but also of the culture of other migrants living in the Netherlands.

Although the participants labeled their peers as a positive nurturer and parents as an existential nurturer, both were also labeled as being negative. It was believed that friends and *other peers would disapprove* an STI/HIV test by isolating them from social activities even when it is not clear that one's infected:

*'They [the friends] will not share a can of soda with you anymore. Or share their weed with you'.*

Peers were also perceived as an important factor determining whether or not *parents would find out about the test*:

*'Do you know how severe it is? You are walking down the street with your mother and then: "haha, I saw you at the Municipal Public Health Service. (...)".'*

Many female participants perceived this as a barrier to get tested as they were forbidden to have sexual intercourse before the age of 18 or marriage. In this case, the barrier was not related to getting tested rather than disobeying the parents:

*'(...) You are doing things [having sex] behind your father's back. (...) A fist? It will become a massacre.'*

The male participants believed that their parents would compliment them for taking responsibility for their own health.

Another item that was labeled as negative was *gossiping*. Especially the female participants felt that other women gossip a lot among each other, thereby increasing the chance that someone could find out about them getting tested:

*'Suppose that I leave the building of the MPHS. I know for sure that my phone will ring: "What did you do at the MPHS? I saw you over there". It is somebody in a tram who saw me. It goes all the way to Surinam and back. It is on the Internet before you know it'*

Participants mentioned gossiping in relation to a feeling of *shame*. Almost half of the participants would feel ashamed if they were spotted at a testing facility. The participants believed that the social environment would immediately know that one went for an STI test when they spotted them at the testing facility, resulting in instant gossiping. Therefore, all participants predicted they would lie about the purpose of their visit to the testing facility. They also believed they would feel ashamed, guilty, and stupid when the test result would come back positive. As a result, the participants would not tell anybody about the fact they got tested nor the test result. The participants were afraid that if they would tell, their peers would neglect them or their parents would find out.

A high need of anonymity was reported, because the fear of gossiping. The participants showed little *trust towards the health care providers treating their patient data confidential*, and telling their parents about the test:

*'They would immediately call: "Yes, your daughter came over to get an STI test". Then your parents will know immediately that you are sexually active'*.

It was believed that the parents would be able to find out about the test even if the health care provider would keep the meeting a secret because of the bill that the health insurance sends over to receive the compulsory own contribution for under age children. These beliefs were stronger barriers preventing the participants to get tested.

## Discussion

This study aimed to explore the beliefs related to STI testing among the Afro-Caribbean community in the Netherlands, and explore the usefulness of PEN-3 in identifying the cultural meanings of these beliefs. Strong stimulating factors labeled by the participants were the protection of the own health, wanting to drop condom use in a steady relationship,

not trusting a steady (male) partner, protection of fertility or a possible future child, wanting to prove a (female) partner that one can be trusted, and to mentally support a friend. A good hidden - but easy to reach - test location, and the possibility to get tested for other diseases were mentioned as factors that hypothetically stimulate one to get tested. A factor that was labeled as unique for the migrant cultures (existential) was the social control by the parents. Inhibiting factors related to STI testing were fear of pain during the testing procedure, fear of the social consequences when infected, disapproval of testing by peers, the possibility of the parents finding out, gossiping, shame, and the lack of trust towards health care providers. Costs of a STI test and a larger traveling distance to the testing facility were mentioned as potential barriers.

There are some points of consideration when interpreting the results. First, the participants were recruited by means of snowball sampling, because we faced difficulties in the recruitment. We intended to recruit a sample which represented the Afro-Caribbean as good as possible; we invited both first and second generation while taking a high diversity regarding socio-economical status (SES) into account. However, it is possible that our sample had higher motivation and less barriers to discuss the intimate topic of STI testing. Also, the sample recruited in our study possibly differs from the average Dutch-Antillean or Surinamese regarding age, education, and being first or second generation. As a result, the beliefs found during the study could differ from the average opinion within the community. Another point of consideration is the presence of the researcher during the FGD, and the influence of the ethnic background of the facilitators. Despite the fact that the researcher tried to be in the background as much as possible, the presence could have led to socially desirable answers. There is a lot of discussion whether the ethnic background of an interviewer could either facilitate or inhibit an open discussion about sexuality. Lastly, most of the participants were second-generation migrants. Their perceptions could differ significantly from the perceptions of first-generation migrants, because they are often influenced by the social norms and values of the country of residence. Despite these considerations we believe that our results are still valuable; ample knowledge is available regarding the determinants of STI testing among adolescents and MSM, but little is known about the determinants and underlying beliefs within migrant communities. This study provides a good starting point, and complements the existing knowledge regarding STI testing.

It is noteworthy that the vast majority of the participants remarked that it was important to get a STI test, and were able to mention the environmental risk factors related to contracting STIs as mentioned by STI prevention organizations in the Netherlands. People know that they should get a test before dropping a condom in a relationship or when they suspect their partner of cheating. However, the lack of adequate knowledge regarding the testing

procedure still creates unjustified fear towards the testing procedure; the belief of a cotton swab in the penis (for the males) and the swab taken by the health care provider (for the females) are inaccurate. The testing procedure has changed over the years; male attendees are now tested by means of a urine sample, and the female attendees are tested by means of a self swab. The only exception in the procedure is when physical examination is necessary due to physical complaints of the attendee (“De soa-test,” 2012). A study from 2000 into the psychosocial predictors of HIV testing showed similar findings; their study population showed a considerable range of knowledge, but had considerable misinformation about transmission routes (Stein & Nyamathi, 2000). This indicates that individuals should be provided with accurate knowledge.

The participants remarked that they were afraid to panic if would receive a positive test result; for the female participants it was related to the fear of telling a (new) partner that one’s infected. The individuals seemed not convinced that they could cope with the test result, resulting in the avoidance of testing; similar results were found in a study into the determinants of HIV testing among Dutch MSM (Mikolajczak, Van Kesteren, Hospers, & Kok, 2004). Other studies related to testing also found that the fear of coping with a positive test result, and ineffective coping styles could hinder testing (Irwin, Valdiserri, & Holmberg, 1996; Sobo, 1994; Warburton, Fishman, & Perry, 1997).

The fear of the social consequences was related to the fear of disapproval, social isolation, and gossiping by the social environment; in short, fear of stigma. This is in line with other studies that found that the fear of discrimination and stigma could hinder STI/HIV testing (Meiberg, Bos, Onya, & Schaalma, 2008; Nyblade, Singh, Ashburn, Brady, & Olenja, 2011). A study into a HIV vaccine and the relationship with stigma showed that participants were highly concerned that people could start talking about them and label them as HIV positive. For these participants the beliefs created a barrier to participate in the HIV vaccine research (Barrington, Moreno, & Kerrigan, 2007).

The belief of the participants that parents could find out about the test is a plausible belief. The Dutch health care system knows a yearly compulsory own contribution (€220 in 2012). Some health care services, like STI testing, are billed when one’s tested at a GP or at certain hospitals. When one’s under aged the parents are expected to pay this bill. However, no costs are involved when tested at the MPHS.

PEN-3 was used in the study to explore the beliefs related to STI testing, and assess the usefulness of the model in identifying the cultural meaning of these beliefs. During the application of the model we faced two challenges. First, clear guidelines on how to use

this model in the different stages of research are missing; this absence made it difficult to determine if we used the model correctly. Secondly, only a limited number of papers used the model, and the papers found using this model only provided limited information on how it was used. We can therefore only reflect on our own experience with the model. We found that labeling the beliefs together with the participants was a useful feature of the model. Doing this provided us with the chance to discuss and identify the underlying beliefs during the discussion. Also, differences between the perceptions of the participants and the researchers on how to label the beliefs were discussed to clarify the contradictions. However, we did not feel that PEN-3 contributed significantly to the findings of the FGD; for example most of the time the participants were not able to explain if their beliefs were rooted in the culture or adapted from the country of residence.

PEN-3 was used to guide our ideas for implications of the findings. Most of the negative perceptions were based on inadequate or lack of knowledge; therefore, knowledge should be increased. To do this, it could be useful to involve parents in an intervention. The findings of the study show that the existential belief of social control is widely accepted within the community and parents want to be highly involved in the life of their children, making them potential sources of information who can easily reach the target group and can continuously provide them with information. Therefore, the intervention could provide parents and/or other caretakers with skills and proper information on how to educate their children about sexuality and the importance of testing.

To improve the confidence of coping with a positive test result, peer education and peer support could be used (Huang et al., 2012). A study into the influence of peer support on the self-management of diabetes found that this type of intervention could provide the ongoing support that is needed for sustained self-management (Fisher et al., 2012). Although these results were found in relation to a disease, it could be worthwhile to assess whether these results could be transferred to the promotion of test behavior.

Lastly, the fear of gossiping – and stigma - could be partly reduced by providing a good hidden test location as the participants suggested. The fear of gossiping is partly based on the fact that people could see one at or leaving the testing facility. Possibly, the best solution to deal with the fear of gossiping is to offer quick tests for a few common diseases among these communities like diabetes, high blood pressure, and high cholesterol. By offering multiple tests, it will be unclear for the social environment why one was at the testing facility, concealing the real reason of testing for STI/HIV. Research of Galvan *et al.* revealed that offering a health check up could increase the intention to get tested for HIV among Latino men in the US (Galvan, Bluthenthal, Ani, & Bing, 2006).

## Conclusion

The findings of the study indicate that both personal and (social) environmental factors are related to STI testing within the Afro-Caribbean community. On personal level, an intervention should aim on increasing knowledge regarding STIs and the testing procedure. Also, attention should be given to building coping skills. On (social) environmental level, the intervention should be aimed on lowering the perceived stigma. For an intervention to be successful, it should focus on multiple ecological simultaneously. Also, the cultural context of the determinants should be taken into account. PEN-3 could be a useful tool in the process; it helps focusing on positive aspects. However, more studies should be conducted to determine the most effective way to use this model; our study contributes to this understanding. Overall, our study complements the knowledge regarding the determinants of STI testing within the Afro-Caribbean community.

*Table 1: Characteristics of participants in the focus groups discussions*

<b>Male/female</b>	<b>Age range</b>	<b>Dutch-Antillean /Surinamese</b>	<b>First/second generation</b>
0/7	18-26	3 /4	1/6
0/7	16-25	2/ 5	3/4
7/0	16-23	0 / 7	1/6
3/5	18-24	2 / 6	2/6

Table 2: 3x3 matrix concerning topics derived from the FGDs

	Perceptions	Enablers	Nurturers
Positive	Protection of the own health	Location	Wanting to prove a (female) partner that one can be trusted
	Wanting to drop condom use in a steady relationship	The possibility to get tested for other diseases	Mental support of a friend
	Not trusting a steady (male) partner		
	Protection of one's fertility or a possible future child		
Existential			Social control by the parents
Negative	Fear of pain	Costs of the test	Other peers would disapprove
	Fear of consequences	Travel distance	Parents would find out about the test
			Gossiping
			Shame
			Lack of trust in health care providers treating patient data confidential





## Chapter 3

# Determinants of intention to get tested for STI/HIV among the Surinamese and Antilleans in the Netherlands: results of an online survey

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### Background

High infection rates of STIs are found among the different ethnic communities living in the Netherlands. Especially among the Surinamese and the Dutch-Antilleans, higher positivity rates were found for chlamydia and gonorrhoea (van Bergen et al., 2005; Vriend et al., 2010). It is known that early detection and treatment are necessary for effective prevention. However, only limited effective interventions that promote STI/HIV testing among these communities are available in the Netherlands. In order to effectively address the specific needs of these communities, it could be necessary to make health promoting programs either culturally sensitive or culturally-based. Cultural sensitivity could be described as the extent in which the ethnic characteristics, values and beliefs of the target population are incorporated into the design and pathway of delivery of the health promoting program. Culturally-based refers to the extent in which culture and its core values are used as a medium in health promoting programs in order to achieve the desired behavior (K. Resnicow, Soler, Braithwaite, Ahluwalia, & Butler, 2000). For both types of health promoting programs, it is important to have a good understanding of the determinants related to the health behavior.

Research has shown that interventions that used predictors of the desired behavior to select target groups, and to select suitable methods and applications to target these determinants, tend to have the largest effects in changing behavior (L. K. Bartholomew et al., 2011; Webb, Joseph, Yardley, & Michie, 2010).

Due to lack of understanding the determinants related to STI/HIV testing behavior among the Surinamese and Dutch-Antilleans in the Netherlands, the Municipal Public Health Service (MPHS) of Rotterdam started a research project into these determinants. To ensure that the determinants to be found at the end of the research project were the most relevant ones, we decided to divide the research project in three smaller studies. In 2009, we sequentially started with a qualitative focus group study, followed by a quantitative online study, and a qualitative in-depth interview study. The focus group study was conducted to explore the existing perceptions of the communities, whereas the quantitative online study was conducted to quantify the results found in the focus group study. Additionally, we tried to identify the determinants of the intention to get tested for STI/HIV of the Surinamese and Dutch-Antilleans living in the Netherlands by means of social cognitive theories, and assess which determinants need to be addressed when promoting STI/HIV testing. The qualitative in-depth interview study was conducted to get fuller understanding of the underlying beliefs of the results found in the quantitative study. In both of the qualitative studies, which will be presented elsewhere, the PEN-3 model of Airhihenbuwa was used as theoretical base to centralize culture in the research process (C. O. Airhihenbuwa, 1994, 1995; James, 2004). The quantitative online survey, which is presented here, was primarily based on the Health Belief Model (HBM) (Conner & Norman, 2005; Samet, Winter, Grant, & Hingson, 1997) and constructs of other social cognitive theories. In short, the HBM tries to explain health behavior by focusing on the individuals' perception of the threat, and the individuals' perception of neutralizing this threat. The perception of threat is divided in perceived severity of the threat, and the perceived susceptibility to the threat. Furthermore, the HBM distinguishes between one's perception on the benefits of showing health behavior, and one's perception of the barriers in showing the health behavior. Together these are the individuals' perception of neutralizing the threat. Lastly, the model knows cues to actions, which are defined as triggers to stimulate the individual to perform the health behavior.

In the present study, we identified the determinants of the intention to get tested for STI/HIV of the sexually active Surinamese and Antilleans living in the Netherlands. Secondly, this study assesses which determinants should be addressed when promoting STI/HIV testing among these communities.

## Methods

### *Recruitment of participants*

The participants for this study were recruited through an Internet research agency called *FlyCatcher*, an Internet research agency called *PanelClix*, and by group activities at a migrant organization in Rotterdam, the Netherlands. Both research agencies have an online Internet panel that is representative for the population living in the Netherlands with regards to age, gender, socio-economic status (SES), and ethnicity. Ethnicity was determined based on the definition of the CBS Statistics Netherlands which uses country of birth to define a person as a migrant (“Center for Research and Statistics,” 1999). Hereby, the CBS Statistics distinguishes between first generation and second generation migrant: a respondent born in Surinam or the Dutch-Antilles is a first generation Surinamese or Dutch-Antillean. If the respondent was born in the Netherlands and at least one of the parents was born in Surinam or the Dutch-Antilles, the respondent was defined as a second generation Surinamese or Dutch-Antillean. In determining the ethnicity, the country of birth of the mother was leading when it was different from that of the father. This was done because in the Latin American culture, a single mother upbringing is very common.

At first, only the research agency *FlyCatcher* was asked to recruit a random sample of 400 Surinamese and 400 Dutch-Antillean respondents for the online survey. However, the research agency was not able to recruit the desired number of respondents, and therefore cooperated with the partner research agency *PanelClix* to disseminate the questionnaire. Together, the research agencies invited 5267 respondents of which 1160 completed the questionnaire leading to a response rate of 22%. Of this sample, 436 Surinamese and 224 Dutch-Antilleans were included in the survey, after correcting for our definition of ethnicity as the research agencies evidently used another definition of ethnicity that remained unclear. Because of the smaller number of Dutch-Antillean respondents, we organized two sessions of group activities at a migrant organization where most of the Dutch-Antilleans were familiar with. However, this organization stated that the Dutch-Antilleans would be more likely to fill in a pen-and-paper questionnaires (PPQ). Therefore, the online questionnaire was converted to a paper version for the group activities. In total, 99 people participated in the group activities of which 97 completed the questionnaire. The questionnaires were entered into a statistical program by hand; 79 questionnaires were from Dutch-Antillean respondents and 14 from Surinamese (4 were from other ethnic communities and were thus excluded). The respondents that were reached through the Dutch Internet panels, received €1,50 in credits for the completion of the questionnaire. The respondents of the PPQ group received €10 compensation to meet travel expenses.

Ethical approval was obtained from the Ethics Committee of the School of Psychology and Neuroscience, Maastricht University.

### *Measurements*

The questionnaires used in the survey were written in Dutch, and was based on the concepts of the Health Belief Model (HBM) (Conner & Norman, 2005; Kakoko, Astrom, Lugoe, & Lie, 2006; Samet et al., 1997) and other socio-cognitive models. The variables regarding the constructs of the HBM and other socio-cognitive models were all measured on a five-point Likert scale, unless stated otherwise.

#### Constructs of the Health Belief Model

- *Perceived susceptibility* was assessed by one item for both STI and HIV: ‘If I have sex without a condom I have [*very small – very large*] chance to contract (an STI – HIV)’. The two items were combined into one scale ( $r = .87, p < .001$ ).
- *Perceived severity* was measured by the questions: ‘Can you rate how severe you would find it to contract (an STI – HIV)?’ The two questions were combined into one scale ( $r = .55, p < .001$ ).
- *Health motivation* was measured by combining three beliefs regarding the intention to get tested, even when facing barriers ( $\alpha = .86$ ): ‘If people can see me enter the test facility, the chance I would get tested is [*very small-very large*]’, ‘Even if people could start gossiping about me, the chance I would get tested is [*very small-very large*]’, and ‘Even if I am afraid I’m infected, the chance I would get tested is [*very small-very large*]’.
- *Perceived benefits* were measured by two beliefs for both STI and HIV: ‘I would get tested for (STI – HIV), because I could receive better treatment’ and ‘I would get tested for (STI – HIV), because I can prevent infecting someone’. All four questions were combined into one scale ( $\alpha = .93$ ).
- *Perceived barriers* was measured by the six beliefs ( $\alpha = .92$ ): ‘I do not intend to get tested, because (people can start gossiping about me, I am afraid to disgrace my family in the community, people will think I am “dirty”, people could see me enter the test facility, it costs me a lot of money, I am afraid of the consequences if I am infected)’.

- *Cues to action* were constructed by two items regarding the testing history of the social environment: ‘Do you know people in your direct social environment (family, friends) who are tested for (an STI – HIV) in the past 12 months?’ If the respondent knew someone who got tested for either STI or HIV, they were scored as having cues to action.
- *Intention* was used as a predictor of the actual behavior [5] and was measured by the same question for both an STI and HIV: ‘I intend to get tested (again) for (STI – HIV) in the coming six months’. The questions were combined into one scale ( $r = .93, p < .001$ ).

#### Constructs of other psychosocial models

Additional to the constructs of the HBM, the constructs self efficacy and outcome expectancies of the Social Cognitive Theory (Petosa, Hertz, Cardina, & Suminski, 2005; Rogers et al., 2005) were used in the questionnaire.

- *Self efficacy* (Benight & Bandura, 2004) was measured by the four beliefs ( $\alpha = .92$ ): ‘I think I am able to... (find information about how and where I can get tested, visit the testing facility, discuss my sexual behavior with a nurse, make an appointment to get tested)’.
- *Outcome expectancies* regarding the anticipated social responses (Conner & Norman, 2005) after testing was measured by seven beliefs: ‘If I would be infected with an STI and people would know, they (would avoid me, would think I am dirty, would not want to be friends with me anymore, would have less respect for me, would feel uncomfortable around me)’; ‘If I would get tested other people would think I have had (unsafe sex, sex with other persons than my own partner)’. The seven beliefs were combined into one scale ( $\alpha = .92$ ).

Questions regarding normative beliefs and emotional outcomes were used in a similar way as applied by Kakoko *et al* (Kakoko et al., 2006).

- *Subjective norms* were measured by four items: ‘My (parents, family, friends, community) find it important that I have myself tested frequently’. The four items were combined into one scale ( $\alpha = .91$ ).

- *Social support* was measured by four items: ‘My (parents, family, friends, community) would support me when I would get tested’. The four items were combined into one scale (alpha =.85).
- *Emotional outcomes* (van der Pligt & de Vries, 1998) was measured by four items: ‘If I would get tested and I would be infected, I would feel (embarrassed, disappointed, guilty, scared)’. The same set of items was asked for HIV. The eight items were combined into one scale (alpha =.90).

#### Other variables

- *Socio-demographical variables* measured were *gender, age, ethnic background, marital status, relationship status, duration of the relationship, the number of partners, sexual preference, the ethnic background of the partner, type and level of education, religion (phrased as ‘I am....’, with the answers categories ‘Christian’, ‘Protestant’, ‘Catholic’, ‘Muslim’, ‘I have another belief’, and ‘I do not have a belief’), and importance of religion*. Other variables measured were the most important *reasons for (not) getting tested, knowledge, open communication about sexuality, test history for STI and/or HIV, timing of the previous test, and the outcome of the test*.
- *Risk behavior* was not measured directly. As a proxy, it was constructed by using the items regarding reasons for (not) getting tested for STI/HIV. When respondents selected ‘I had unsafe sex’, or ‘I was afraid I was infected’ as reason for having been tested for STI or HIV, or ‘I was afraid of the test result’ as reason for not having been tested for STI or HIV, they were scored as having had risk behavior.
- *Knowledge* was assessed by a set of six statements regarding STI: ‘The contraceptive pill reduces the chance of an STI’, ‘Most STIs disappear by itself’, ‘If you do not have any complaints, you can still have an STI’, ‘There are STIs that can make you infertile’, ‘There are medicines available to cure STIs’, ‘If you wash yourself after having sexual intercourse, you do not have any risk of an STI’. Another set of six statements was asked regarding HIV: ‘You can be completely cured of HIV’, ‘If you have unprotected sex with someone, you can contract HIV’, ‘If you are HIV infected, it is immediately detectable in your blood’, ‘During an HIV test they only draw blood from you’, ‘You cannot contract HIV through anal sex’, ‘If you wash yourself after having sexual intercourse, you do not have any risk of HIV’. Respondents could answer these statements with “right”, “wrong”,

or “don’t know”. The score for each set was determined based on the number of correct answered statements (range: 0-6). The two sets were combined into one scale (alpha = .77).

- *Open communication* was measured by three beliefs: ‘It is normal to talk openly about sexuality with my (family, friends, community)’. The three beliefs were combined into one scale (alpha =.80).

After the development of the questionnaire, it was pretested among seven Surinamese and five Dutch-Antilleans to see if the questions were understandable and valid. After the pre-test, some of the questions in the questionnaire were redefined for better understanding, such as use of language and removal of time frame of coming 6 months (except for the questions on intention to get tested). Thereafter, it was handed over to *FlyCatcher* and its partner for dissemination among their panel of respondents.

### *Analysis*

Data were analyzed using the statistical program SPSS version 18. Given the large number of variables in the analyses, we adjusted for multiple outcome testing by considering a p-value of <.01 as significant for all analyses. Because respondents were recruited in two different ways, we first checked for differences between the respondents who filled in the online survey, versus respondents who filled in the pen-and paper questionnaire (PPQ), by comparing mean scores using the Independent Student T-test. For both the Surinamese and Dutch-Antillean respondents correlations with intention to get tested for STI/HIV in the coming six months were calculated, as well as mean scores and standard deviations of the studied variables. For the multivariate linear regression analysis, variables that were significant were entered into the model block-wise (Cohen, 1992). The first block of variables contained variables that were related to the Health Belief Model. The second block of variables contained constructs of other cognitive behavioral models. The third block consisted of the other variables such as *risk behavior*, *open communication* and *the socio-demographical variables*. For the latter, some of the variables were recoded for easy interpretation of the results. *Marital status* was dichotomized; ‘unmarried’ versus ‘living together’/‘married’/‘divorced’/‘widow(er)’. *Level of education* was recoded into three scores; higher educated (university and HBO), average educated (pre-vocational, vocational, higher general secondary education, and pre-university education) and lower educated (primary school, domestic science and similar education). *Religion* was also dichotomized by scoring all religions as ‘1’ and no religion as ‘0’. All other variables were entered into the model as they were asked. Some of the variables were left out of the equation, because they were answered by an insufficiently large group of participants (i.e.

less than two thirds of the sample). This was the case for the variables *having multiple partners*, *timing of the previous test*, *outcome of STI test*, *outcome of HIV test*, *duration of relationship*, and *importance of religion*. Additionally, the respondents with a low intention to get tested for STI/HIV were compared with the respondents with a high intention, by using the Independent Student T-test. The variable *intention to get tested in the coming six months* was dichotomized by means of a median split, categorizing “certainly not” and “probably not” (scores 1 and 2 on the 1-5 Likert scale) as low intention and all other answers as high intention. For the Surinamese, this resulted in a 59%/41% low/high ratio; for the Dutch-Antilleans this was 51%/49%.

## Results

Table 1 demonstrates that there are differences in means between the online and the pen-and-paper questionnaire (PPQ) group for both the Surinamese and Dutch-Antilleans. We also checked the direction of the correlates between intention and the other variables.

We found that age was the only variable that changed direction between the online and PPQ group for both the Surinamese and Dutch-Antilleans. As the correlates of the online and PPQ group were not that different from each other, the groups were merged together for both the Surinamese and the Dutch-Antilleans. The impact of this decision will be discussed in the Discussion section. Because the ratio of the online and PPQ group were skewed for both ethnic groups, and we are interested in the determinants related to the intention of STI/HIV testing rather than the differences between the ethnic groups, these results will not be discussed in detail in this paper.

The means and standard deviations (SD) of the studied variables of cognitive models are presented in Table 2. Both the Surinamese and Dutch-Antilleans showed average mean intention, perceived themselves as highly susceptible for contracting an STI or HIV, and thought that contracting either of these diseases was very severe. Respondents from both groups scored high health motivation, high perceived benefits, but also high perceived barriers for getting tested. For the Surinamese, slightly more than one third of the respondents (38%) knew people who got tested for an STI or HIV; this was 48% for the Dutch-Antilleans. Both the Surinamese and the Dutch-Antilleans showed high self efficacy, were convinced that their social environment (parents, family, friends and other community members) would support them when they would intend to get tested, and reported high negative emotions when they would get tested and would be infected. As for the correlation with intention to get tested, health motivation, cues to action, and subjective norms were positively correlated

for both the Surinamese and the Dutch-Antilleans; for the Surinamese self-efficacy was negatively correlated with intention. The correlations between the studied variables can be found in Appendix 1.

### *Prediction of intention to get tested for STI/HIV in the coming six months*

The intention to get tested for STI/HIV was first predicted through a regression with the variables of the HBM: health motivation and cues to action. For the Surinamese, these variables explained 5% of the intention to get tested for STI/HIV (Table 3). For the Dutch-Antilleans, the same variables led to an explained variance of 10%. The possible influences of the other variables were explored next. For the Surinamese, both self-efficacy and subjective norms should have been entered into the model. However, self-efficacy was left out of the multivariate analysis, because it behaved in an unexpected direction (people with a high self-efficacy had a low intention to get tested). The explained variance of health motivation, cues to action and subjective norms together was 15%. For the Dutch-Antilleans, only subjective norms were entered in the model, increasing the explained variance to 22%. The last block of variables entered in the model led to an explained variance of 20% for the Surinamese; this was 29% for the Dutch-Antilleans. Although the variable age should have been entered into the models for both the Surinamese and Dutch-Antilleans, it was left out of the equations. The reason for this is related to the different recruitment ways (online survey versus pen-and-paper questionnaire, PPQ). After analyzing the correlation between intention and age for the online versus the PPQ group, we found that the correlation changes direction, for the Surinamese as well as the Dutch-Antilleans. We therefore felt it was inappropriate to include age in the regression analyses, the more because we aimed to identify determinants of STI/HIV testing that can be changed with an intervention.

For both groups, subjective norms were the most salient predictor, and the only variable with a direct positive influence on the intention to get tested for STI/HIV in the coming six months.

### *Differences between low and high intenders*

Differences between the low and high intenders on the underlying scales of the variables in the multivariate regression analysis for both the Surinamese and Dutch-Antillean respondents are showed in Table 4. For the Surinamese, the subjective norms regarding frequent testing differed significantly on item level between the low and high intenders. The high intenders more often had had a previous test for an STI or HIV compared to the low intenders. The former group was also significantly more often able to talk openly about sexuality with their family than the latter.

For the Dutch-Antilleans, the low intenders showed significant lower motivation to get tested if people could see them enter the test facility, people could start gossiping about them, and if they were afraid of being infected. The low intenders also knew fewer people in their social environment who were tested for STIs. Just like the Surinamese high intenders, the Dutch-Antillean high intenders are surrounded with people who find frequent testing important. Compared to the low intenders, the high intenders significant more often reported as reason for STI testing that they were afraid of being infected with an STI. However, they also reported significantly more often as reason for not getting an STI test that they were afraid of the test result. The high intenders more often had had an STI and/or HIV test before, and significantly more often found it normal to openly talk about sexuality with their friends.

## Discussion

In this study, we identified the determinants of the intention to get tested for STI/HIV in the coming six months among the Surinamese and Dutch-Antillean communities in the Netherlands, and assessed which determinants need to be addressed when promoting STI/HIV testing among these communities. Results showed that the variables health motivation, cues to action, subjective norms, risk behavior, test history, open communication, and marital status were important predictors (univariately) of the intention to get tested for STI/HIV for both the Surinamese and Dutch-Antillean respondents. Subjective norms (whether a respondent thinks his social environment finds it important to get tested frequently) was the most salient predictor of the intention to get tested, and explained 10% and 13% of variance for the Surinamese and Dutch-Antilleans respectively. The Surinamese respondents showed higher intention to get tested in the coming six months when they were surrounded with people who find frequent testing important, when they were previously tested for an STI or HIV, and when they found it normal to openly communicate with their family. The Dutch-Antillean respondents showed higher intention to get tested when they felt motivated despite of possible barriers, when they knew people who were tested for an STI, when they were surrounded with people whom find frequent testing important, when they were aware of their risk behavior, when they were previously tested for an STI or HIV, and when they found it normal to openly communicate with their friends about sexuality.

When interpreting the results some limitations must be considered. First of all, the respondents were recruited in two different ways. The majority was recruited through Dutch Internet panels, and a total of 93 Surinamese and Dutch-Antillean respondents were recruited through group activities in which they filled in a paper version of the online

questionnaire. Combining the respondents from the different sampling waves could have influenced the results found in the study (Table 1). For the Surinamese, the pen-and-paper questionnaire (PPQ) group is only 3% of the total, and thus its influence on the analyses can be neglected. For the Dutch-Antilleans, when only looking at the variables of the multivariate model, we find that differences between the online PPQ group were found for all variables in the model except for *health motivation* and *open communication*. It is possible that the higher perceived severity, higher motivation, and lower mean age of the PPQ group led to a higher mean intention of this group as they are more likely to perform sexual health behavior. However, it is also possible that the higher education of the online panel led to a more realistic perception regarding the threat of STIs, resulting in lower intention. Although the underlying mechanism remains unclear, we should take the possibility of bias into account (Dunne et al., 1997). A second limitation is that both the Surinamese and Dutch-Antillean communities consist of multiple smaller ethnic communities. For example, the Surinamese community includes Hindustani, Chinese, Creoles, and many other smaller ethnic communities. During the study, the respondents were asked to fill in the country of birth, which made it impossible to discriminate between the smaller ethnic communities during the research. Therefore, the results of the study may not be applicable to these smaller ethnic communities in the Surinamese and Dutch-Antillean community.

Another point of consideration is that we measured a proxy of sexual risk behavior rather than the actual sexual risk behavior, because we felt that questioning the respondents directly on this intimate subject might have led to a dropout of respondents. We believe that the constructed variable is a reasonable proxy for risk behavior, because most respondents would only be afraid of being infected, or afraid of the test results, if they actually had had unsafe sex. However, the constructed variable of sexual risk behavior may have included respondents who perceive themselves as having been at risk while their actual risk was minimal, also known as the ‘worried well’ (Bor, Perry, Miller, & Jackson, 1989). Lastly, social desirability bias should be taken into account. Social desirability bias refers to the tendency of respondents to answer questions with responses they believe are socially desired, rather than answering questions by responses which reflect their actual thoughts or feelings (Grimm, 2010). This phenomenon is not uncommon in social studies regarding widely accepted social norms or attitudes, and often occurs when the respondents feel that their answers could be linked back to them. Within the Afro-Caribbean community, it is still perceived as a taboo to talk about sexuality. Although we used an (internet) survey method, which should increase the perceived feeling of privacy among the respondents and therefore lower the social desirability bias, it is still possible that the respondents answered the questionnaire as they felt it should be answered. Also, the perceived prejudices of this

community about their sexual behavior could have prevented them to truthfully fill in the questionnaire in order to prevent meeting the beliefs of the social environment. Despite these limitations, we feel that our study provides insight into the determinants related to the intention to get tested among the Surinamese and Dutch-Antilleans, and contributes to the identification of determinants that should be targeted in an intervention.

We found that adding subjective norms to the multivariate regression analysis increased the explained variance for the Surinamese and Dutch-Antilleans with respectively 10% and 13%. This indicates that the intention to get tested for STI/HIV is primarily driven by the approval of the social environment regarding frequent testing, making the subjective norms important predictors. These findings are in contradiction with the meta-analysis of Armitage *et al.*, who found that the subjective norms were the weakest predictor of intention to condom use (Armitage & Conner, 2001). However, in the same study it is stated that multiple-item measures of social norms and normative beliefs, like we used in our study, had significant higher correlations with intention than the other measures (Armitage & Conner, 2001).

Our study also shows that for the Surinamese self-efficacy is negatively correlated with the intention to get tested in the coming six months; the more people perceive themselves as being capable to get tested, the less intention these people show; the same was found for perceived severity. We found some evidence in the data that could help explain the negative correlations found. We found that most (63%) of the Surinamese and Dutch-Antillean respondents with a high intention and low self-efficacy, perceived higher barriers regarding testing than their peers with a low intention and high self efficacy. This finding indicates that we are probably dealing with ‘temporal construal’ (Trope & Liberman, 2003); the respondents with a high intention are thinking the behavior through in more detail, because getting tested is relevant for them. However, because these people are analyzing the behavior in detail, they perceive more barriers and show low self efficacy (Bandura, 1997). People who showed high self-efficacy and low intention could be people for whom getting tested is not that relevant. These people could then perceive getting tested as easy, because it does not apply to them. In this case, the negative correlation between self-efficacy and the intention to get tested is caused by the intention, and not by self-efficacy. Therefore, it would be inappropriate to enclose self-efficacy in the model with variables which do predict (i.e. cause) the intention. Secondly, bivariate analysis showed that people with high self-efficacy also perceived higher severity. The people with higher severity perceived higher barriers, and higher emotional outcomes when being infected after testing. These barriers and emotional outcomes could lead to a decrease of their capability to perform the behavior, which could increase denial and defensive reaction towards testing, causing

a low intention (Ruiter, Abraham, & Kok, 2001). The results of the bivariate analysis also indicate that people are afraid of gossiping, and consequently stigmatization, when getting tested. It also indicates that people are afraid of getting a positive test result when getting tested. The consequences of being infected, and therefore stigmatized, could be a reason for a decrease in the intention to get tested. This is similar to the results found in a qualitative study regarding the fear of stigmatization as a barrier to HIV voluntary counseling and testing among South Africans (Meiberg et al., 2008).

For the Dutch-Antillean high intenders, almost twice the number of respondents reported to know someone in their direct social environment who got tested for an STI as compared to the low intenders. The Surinamese and Dutch-Antillean high intenders also found themselves more often in a social environment that perceived it as normal to openly discuss sexuality, and among people who found that frequent testing is important. These findings suggest that it is important to focus on these determinants when stimulating STI/HIV testing among the Surinamese and the Dutch-Antilleans. It is expected that when people would discuss sexuality more openly, more people would know others who got tested, which could increase their own intention to also get a test. However, in order to achieve this, both personal norms and subjective norms should be targeted. A possible solution could be found in interventions based on the social norms approach (SNA) (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). This theory assumes that our behavior is influenced by the perceptions of the social environment on how to behave, and was used in the promotion of safer drinking (Perkins, Meilman, Leichliter, Cashin, & Presley, 1999), the prevention of sexual assault (Fabiano, Perkins, Berkowitz, Linkenbach, & Stark, 2003), safe driving, and smoking behavior (Martino-McAllister & Wessel, 2005). SNA distinguishes three target audiences for an intervention: a whole community including those who are not at-risk (universal), members of a group at-risk (selective), and individuals at-risk. In terms of our study, it could be a good idea to start focusing on the universal audience. By inviting the whole Surinamese and Dutch-Antillean community in the Netherlands to get an STI/HIV test, for example yearly, stigmatization will be lower because no one can see whether or not you have had unprotected sex. People could simply state that they are taking up the invitation that they received from the testing facility. A similar invitation was sent to youngsters for the participation in a chlamydia screening project in the Netherlands regardless whether these youngsters were sexually active or not (Gotz et al., 2005; van Bergen et al., 2005). Over time, testing will become a social norm. Secondly, the individuals at-risk should be targeted by providing them with accurate information on the importance of testing, normative feedback, and coping strategies to promote the desired behavior. By targeting these points-of-entry, targeting both the personal perceptions of individuals and the (social) environmental factors, a future intervention is more likely to effectively promote testing behavior.

## Conclusions

This study provides relevant and important insights for health policy makers who want to improve the STI/HIV testing behavior among the Surinamese and Dutch-Antilleans in the Netherlands. The strong and direct positive association between subjective norms and the intention to get tested for STI/HIV endorses the importance of focusing on community-based intervention rather than focusing on personal determinants to change the present perceptions and attitudes towards testing. Other studies confirm that interventions with multiple points-of-entry can successfully promote healthy behavior. Health promoting programs should help these communities to change the social norms in order to achieve the desired behavior. The key message seems to be open communication about sexuality to make it something normal. Further in-depth research will be initiated to get more insights in how an intervention to promote STI/HIV testing among the Surinamese and Dutch-Antilleans should look like, and whether the findings of the present study are applicable to other migrant communities living in the Netherlands.

Table 1: Mean difference between respondents of the online and pen-and paper questionnaire (PPQ) group

	Surinamese			Dutch-Antilleans		
	Online group (N =436)	PPQ group (N =14)	p-value*	Online group (N =224)	PPQ group (N =79)	p-value*
Intention	2.16	3.96	<.001	2.16	3.68	<.001
Perceived susceptibility	4.45	4.58	.6	4.50	4.53	.8
Perceived severity	4.75	4.89	.4	4.69	4.87	.003
Health Motivation	3.84	4.39	.07	3.83	4.17	.02
Perceived benefits	4.16	4.01	.6	4.22	4.44	.1
Perceived barriers	4.18	3.92	.4	4.08	4.25	.2
Cues to action	36.2%	92.9%	<.001	42.4%	63.6%	.001
Self efficacy	4.50	4.57	0.7	4.52	4.49	.7
Outcome expectancies	3.11	3.43	.3	3.26	3.26	1
Subjective norms*	2.77	3.62	.02	2.63	3.55	<.001
Social support	4.02	4.06	.9	4.06	4.32	.03
Emotional outcomes	2.98	2.97	1	3.09	3.03	.7
Knowledge	4.64	4.79	.7	4.64	4.58	.7
Risk behavior	22.5%	21.4%	.9	18.8%	39.2%	<.001
Open communication	3.05	3.90	.01	3.22	3.56	.03
Test history (yes)	47%	64.3%	.2	45.1%	79.7%	<.001
Gender (female)	64.7%	50%	.3	61.6%	64.6%	.6
Age	32.00	21.64	<.001	32.14	24.04	<.001
Marital status (married)	45.2%	7.1%	.01	46.0%	19.2%	<.001
Relationship status (yes)	58.7%	57.1%	.9	58%	59.5%	.8
Education (high)	26.8%	0%	.02	27.2%	16.5%	.06
Religious	67%	85.7%	.1	63.4%	93.5%	<.001

\* Using the student's t-test.

Table 2: The correlations with intention, means, and standard deviations (SD) of the studied variables (all reported *r*'s are significant at  $p < .01$ )

	Surinamese			Dutch-Antilleans		
	<i>r</i>	Mean	SD	<i>r</i>	Mean	SD
Intention	-	2.2	1.3	-	2.5	1.5
Perceived susceptibility	ns	4.5	0.9	ns	4.5	0.9
Perceived severity	ns	4.8	0.6	ns	4.7	0.5
Health motivation	.15	3.9	1.0	.25	3.9	1.1
Perceived benefits	ns	4.2	1.2	ns	4.3	1.1
Perceived barriers	ns	4.2	1.0	ns	4.1	1.0
Cues to action (yes)	.17	38%	0.5	.24	48%	0.5
Self efficacy	-.14	4.5	0.8	ns	4.5	0.8
Outcome expectancies	ns	3.0	1.0	ns	3.1	1.0
Subjective norms	.34	2.8	1.2	.40	2.9	1.3
Social support	ns	4.0	1.0	ns	4.1	1.0
Emotional outcomes	ns	4.0	1.0	ns	4.1	1.2

Table 3: Prediction of intention to get tested for STI/HIV in the upcoming six months from social cognitive variables and other variables (all reported *r*'s and beta's are significant at  $p < .01$ )

Variable	Surinamese (N =302)				Dutch-Antilleans (N =220)			
	r	Beta	Beta	Beta	r	Beta	Beta	Beta
Health motivation	.15	.16	ns	ns	.25	ns	ns	ns
Cues to action	.17	ns	ns	ns	.24	.24	.21	ns
R <sup>2</sup>		.05				0.10		
Subjective norms	.34		.32	.25	.40		.36	.29
R <sup>2</sup>			.15				.22	
Risk Behavior	.21			ns	.25			ns
Test history (yes)	.22			ns	.28			ns
Open communication	.17			ns	.16			ns
Martital status (married)	-.20			ns	-.25			ns
R <sup>2</sup>				.20				.29

Table 4: Differences between low and high intenders on the underlying scales of the variables in the multivariate regression analysis

Belief	Surinamese			Dutch-Antilleans		
	Low intention	High intention	p-value	Low intention	High intention	p-value
Health motivation – if people can see me enter the test facility	3.7	3.9	.22	3.5	4.0	.003
Health motivation – if people can gossip about me	3.7	3.9	.02	3.6	4.2	<.001
Health motivation – if I am afraid of being infected	4.0	4.0	.50	3.9	4.3	.001
Cues to action – knowing someone tested for a STI	13%	22%	.02	15%	40%	<.001
Cues to action – knowing someone tested for HIV	28%	37%	.05	30%	42%	.05
Subjective norms – parents find frequent testing important	2.4	3.3	<.001	2.3	3.4	<.001
Subjective norms – family find frequent testing important	2.2	3.2	<.001	2.2	3.1	<.001
Subjective norms – friends find frequent testing important	2.3	3.2	<.001	2.2	3.3	<.001
Subjective norms – community find frequent testing important	2.6	3.2	<.001	2.7	3.4	<.001
Risk behavior – got tested for STI because I had unsafe sex	28%	38%	.15	27%	34%	.42
Risk behavior – got tested for STI because I had physical complaints	18%	17%	.82	19%	15%	.60
Risk behavior – got tested for STI because I was afraid of being infected	16%	12%	.38	6%	21%	.01
Risk behavior – not got tested for STI because I was afraid of test result	2%	5%	.26	2%	12%	.005
Risk behavior – got tested for HIV because I had unsafe sex	24%	38%	.07	11%	29%	.02
Risk behavior – got tested for HIV because I had physical complaints	3%	5%	.38	4%	7%	.54

continued

Belief	Surinamese			Dutch-Antilleans		
	Low intention	High intention	p-value	Low intention	High intention	p-value
Risk behavior – got tested for HIV because I was afraid of being infected	19%	11%	.14	6%	14%	.20
Risk behavior – not got tested for HIV because I was afraid of test result	3%	6%	.25	6%	9%	.51
I was test before for a STI or HIV	41%	58%	.001	42%	67%	<.001
Open communication – normal to talk about sexuality with family	2.4	2.9	.002	2.7	3.1	.05
Open communication – normal to talk about sexuality with friends	3.7	3.9	.12	3.6	4.1	.001
Open communication – normal to talk about sexuality within my community	2.7	3.0	.02	3.0	3.3	.03



# Chapter 4

## Understanding barriers to STI testing within the Afro-Caribbean community in the Netherlands

This chapter was co-authored by Gerjo Kok, Juan Walter, Laura Wouter, Pjer Vriens, Jan Hendrik Richardus, H el ene Voeten

### Background

Despite the efforts of health authorities, sexually transmitted infections (STIs) are still prevalent in industrialized countries (WHO, 2007). Recent surveillance data among Municipal Public Health Services in the Netherlands indicate higher STI positivity rates for heterosexual migrants than for the native Dutch (15% against 12%). Also for the migrant MSM (men having sex with men) higher rates were found compared to the Dutch (24% against 18.5%) (*Thermometer soa en hiv, April 2011*, 2011). Migrant communities were found to demonstrate sexual risk behavior; inconsistent condom use while having multiple partners (Gras et al., 2001). Among the different migrant communities in the Netherlands, these findings are more noticeable within the Afro-Caribbean community. Moreover, higher incidence rates of chlamydia, gonorrhoea, and syphilis are found within this community compared to other ethnic communities in the Netherlands (van Veen, Koedijk, & van der Sande, 2010; Vriend et al., 2010). Substantial sexual mixing with other ethnic communities is believed to contribute to the increase of STI transmission in and between ethnic groups (van Veen et al., 2009). To control STI transmission, attention should be given to prevention services in terms of safer sexual behavior, early health care seeking behavior, and partner notification (WHO, 2007).

Numerous studies have claimed that health promotion programs are more likely to be effective when the specific needs of the target group are met (Bertens, Krumeich et al., 2008;

Kreuter et al., 2003; K. Resnicow et al., 1999). As we are dealing with an ethnic community, a culturally sensitive intervention should be developed to meet the needs of this community. A culturally sensitive intervention should address the observable characteristics of the target group, as well as the pathways for the delivery of the message: the surface structure (K. Resnicow et al., 2000). Additionally, the intervention must consider the perceptions of the target group towards the health promotion behavior (deep structure) in order to reach long-lasting behavioral change (Kohinor et al., 2011; Ken Resnicow et al., 2002). However, only a limited number of health promotion programs are developed specifically for ethnic communities in the Netherlands which can be qualified as theory and evidence-based (Vrolings et al., 2007). Examples of health promotion programs regarding sexual health are [lovensex.kitatin.com](http://lovensex.kitatin.com), an educational website for Dutch-Antillean youngsters, and Uma Tori!. The latter is Tupperware-like concept for Afro-Caribbean women, in which the participating women can share their experiences with and ask questions about sexuality (Bertens et al., 2009; Bertens, Krumeich et al., 2008; Bertens, Wolfers et al., 2008). However, these interventions do not focus on the promotion of STI testing itself.

In 2009, the Municipal Public Health Service (MPHS) of Rotterdam started a study into the determinants of STI testing within the Afro-Caribbean in the Netherlands. The study started with qualitative focus group discussions, followed by a quantitative online survey. The purpose of the present study is to complement the understanding of the correlates related to the intention to get tested for STIs found in the quantitative online survey. Secondly, the study will assess the cultural context of the underlying beliefs related to determinants of STI testing within this target group.

### *Theoretical framework*

We used the PEN-3 model as a framework to guide the analysis and interpretation of the results derived from the qualitative data (C. O. Airhihenbuwa, 1995; C. O. Airhihenbuwa & Webster, 2004). PEN-3 centralizes culture in the development, implementation, and evaluation of health promotion. It recognizes negative social-cultural beliefs and behaviors, and emphasizes the search for positive and supportive aspects within the negative belief/behavior to promote the desired behavior (C. O. Airhihenbuwa, 1994; C. O. Airhihenbuwa et al., 1995; C. O. Airhihenbuwa & Webster, 2004; James, 2004). The model consists of three interrelated and interdependent dimensions with three domains build following the acronym PEN (C.O. Airhihenbuwa, 2010). The dimension *Relationships and Expectations* assesses the influence of perceptions (*Perceptions*), resources (*Enablers*), and the social environment (*Nurturers*) in health-related decision-making. This is done from the perspective of the culture: how does the culture define the role of persons and their expectations in family and

community relationships (James, 2004). *Cultural Identity* assesses the point of entry for a health promotion program; the individual, the social environment like friends and relatives, or the community (resp. *Person*, *Extended family*, *Neighborhood*). *Cultural Empowerment* ensures that an intervention is developed to promote ‘the good aspects’ of culture (*Positive*), recognizes the aspects that are not harmful, but unique (*Existential*), and tries to turn negative aspects of culture (*Negative*) into something positive (James, 2004). For this study *Perceptions* were defined as beliefs, attitude, and knowledge that may contribute or hinder one to get tested. *Enablers* were defined as environmental factors (e.g. the availability of resources, accessibility of health care), whereas *Nurturers* were described as influences of the social environment (like parents, friends, and partners) on getting tested. *Positive* was defined as stimulating factors to get tested, *Existential* as factors that are unique to the culture - but need no change because they are not hinder people to get tested -, and *Negative* as inhibiting factors to get tested.

## Methods

The study was part of larger research project to identify the cultural, psychological, and environmental determinants of STI testing within the Afro-Caribbean community in the Netherlands to promote the test behavior. The study was approved by the Ethics Committee of the School of Psychology and Neuroscience, Maastricht University. Data collection took place between March 2010 and May 2010. In-depth interviews were conducted until data saturation was reached (Marshall, 1996); after 20 interviews new information and explanations stopped emerging.

Interviewees were recruited through the quantitative online survey that was conducted between December 2009 and January 2010. The online survey contained the question whether or not individuals were willing to participate in an in-depth interview. Motivated individuals could leave their mobile phone number or e-mail address; 151 individuals left their phone number, and 47 individuals left their e-mail address. To randomly select interviewees, they were stratified by ethnic group (Dutch-Antilleans or Surinamese), gender, and being first or second generation migrant. The individuals in these groups were numbered, after which the samples were drawn. From both the Dutch-Antilleans and Surinamese 20 individuals were randomly selected; five first generation males, five second generation males, five first generation females, and five second generation females. The selected individuals were contacted by telephone to check if they were still willing to participate. From the total sample, only 11 individuals were willing to participate in the study; one first generation Dutch-Antillean male, one first generation Dutch-Antillean female, and one second

generation Dutch-Antillean female. For the Surinamese, two first generation males and one second generation male, and two first and three second generation females were recruited. A confirmation of the appointment was sent to the interviewee by e-mail or post, together with an overview of the aim and process on the day of the appointment. These steps were repeated until data saturation was achieved (Marshall, 1996).

Due to the sensitivity of the subject, the interviewees were given the opportunity to select a location they felt safest to do the interview. Also, the interviewees could state their preference for either a Surinamese male interviewer or a Dutch-Antillean female interviewer. Almost half of the interviews took place at the MPHS of Rotterdam, and one third at the residence of the interviewee. The remaining interviews took place at a public location; the interviewees did not want to be visited at home by someone of a governmental institute. As a reminder, the interviewees were called a few days before the actual appointment. Consent for audio taping the interview was asked before starting the interview.

### *Data collection and analysis*

Based on the determinants found in the quantitative online survey a topic list was constructed to guide the in-depth interviews. The topic *definition of relationship* was asked to clarify the difference between a relationship and having a partner; in the quantitative study some respondents reported they had a partner, but not were in a relationship. The topic *multiple sexual partners* was asked, because previous research showed that having multiple partners is prevalent within the Afro-Caribbean community (Gras et al., 2001). We asked *gender roles*, as it is believed to be taken into account when defining relationships within this target group (Bertens et al., 2009). *Knowledge about STI/HIV* was asked to confirm the result found in the online survey (Westmaas et al., 2012) that both the Surinamese and Dutch-Antillean respondents had high knowledge regarding STIs and HIV. Knowledge is believed to influence one's perception regarding a disease or behavior (Albarracin, Johnson, Fishbein, & Muellerleile, 2001), so *perception of STI/HIV* was also included. To complement our knowledge on the determinants of STI testing within this target group, we used the topic *reasons for (not) getting tested*. This topic also gave us the opportunity to involve the target group in the search of suggestions to stimulate testing, and how to deal with the barriers found in our previous studies. Other topics were asked to understand how these subjects were related to the intention to get tested.

Before analysis, the audio files of the interviews were transcribed verbatim. Thematic analysis was used to search for common themes in the data (Morse & Field, 1995). Beliefs that were mentioned more than once were labeled as one belief if appropriate. For example, a few interviewees mentioned that they were afraid for rumors, whereas others mentioned

that they were afraid of gossiping. The same thing was said using other words, and therefore these beliefs were lumped together under one label. This step was repeated for all beliefs, and the beliefs were checked for relationships with each other by means of a mapping method (Burgess-Allen & Owen-Smith, 2010; Mollberg et al., 2011). Lastly, the discussed beliefs and behaviors were labeled according to the dimension *Cultural Empowerment* as described in the PEN-3 (C. O. Airhihenbuwa, 1985; C. O. Airhihenbuwa et al., 1995; James, 2004).

In between the interviews and analysis of the data, team meetings were organized focusing on the exploration and underlying reasoning of the findings. The team consisted of two experienced migrant prevention workers from the MPHS of Rotterdam and Amsterdam – both from Dutch-Antillean descent -, an intervention developer, researchers, and a medical doctor. Based on the meetings, the topic list was adapted and refined to explore the topics thoroughly.

## Results

Twenty in-depth interviews were held: 9 with Dutch-Antillean and 11 Surinamese interviewees. Six of the Dutch-Antillean interviewees were first generation migrant; for the Surinamese these were five. In both groups it was difficult to include male interviewees: three Dutch-Antilleans and three Surinamese males were willing to be interviewed. The age of the interviewees ranged from 18 to 34 years for the Dutch-Antilleans, and from 16 to 53 years for the Surinamese. Although the sample was selected randomly, the majority of the interviewees came from Amsterdam and Rotterdam. More than half of the interviewees (12) had intermediate or higher education. Hardly any differences were found between the perceptions of the Dutch-Antilleans and the Surinamese. Therefore, we will discuss the results together unless reported differently.

Over 50 items emerged from the interview topics related to the determinants of STI testing. After going through the beliefs and grouping them as mentioned earlier in the Methods, 14 items remained. The mapping method showed that the items *perception of STI/HIV*, *traditional healing procedures*, *knowledge about STI/HIV*, and *knowledge about the testing procedure* could be grouped into one general topic ‘Knowledge and perceptions’. Items regarding *fear*, *the definition of relationship*, *gender*, *multiple partners*, *gossiping*, and *family honor* could be grouped into the general topic ‘Social influences’. Lastly, the items regarding *communication about sexuality*, *upbringing*, *communication skills*, *hierarchy*, and *communication between generations* could be grouped into the general topic

‘Communication (about sexuality)’. Items regarding reasons for (not) getting tested were found in all of the three general topics.

### *Knowledge and perceptions*

Our study revealed that the majority of the interviewees had a positive attitude towards STI testing due to the *perceived severity* of the diseases. Contracting an STI was perceived as severe by the majority, because of the chance of becoming infertile when walking around with an untreated STI. A first generation Dutch-Antillean female expressed another perception related to the severity:

*‘It is very severe, because it can infect other people’.*

All interviewees perceived contracting HIV as more severe than getting infected with another STI, as HIV cannot be cured. The prospect of lifelong dependency of pharmaceuticals was another reason why HIV was perceived as severe. One interviewee expressed the severity of HIV in a social context:

*‘I think it is very severe, because it then is not only my problem but also the problem of my family, and girlfriend. It is ‘not only me anymore’. Everybody will suffer along with you’*

Interviewees labeled these beliefs as positive perceptions: individuals would get tested even less when their peers would perceive STIs and HIV as less severe. Interviewees remarked that even if STIs and HIV are perceived as severe, some people from their community will first try *traditional healing procedures* before contacting a health care provider; it was labeled as both existential and negative by the interviewees. Both the first generation Dutch-Antilleans and Surinamese labeled this behavior as existential (being part of the culture):

*‘It is very common within our culture. We first ask somebody, because we believe in traditional resources. So you can ask: “Hey, I have this problem”, and somebody should come up with a solution for you without you needing to visit a doctor’*

Others labeled the behavior as negative, because it causes inadequate health care seeking behavior:

*‘It is gibberish. It is a medical thing. There is no Winti [traditional religion of the Surinamese] that could cope with that. You need to control it yourself by getting tested.’*

One interviewee remarked that the level of knowledge may play an important role in the intention to get tested:

*‘I think it could also be the knowledge, because I think that if people would have more knowledge they would get tested anyway’.*

The interviews revealed that there was little *knowledge* among the participants: they struggled explaining how to recognize STIs, the natural course of the infections, and the testing procedure. More than half of the interviewees acknowledged their lack of knowledge and felt ashamed. However, they were willing to receive information:

*‘I feel ashamed to say it, but I don’t [know how to recognize an STI]. If you have a flyer I would like to get one afterwards’*

Some interviewees explained that the lack of knowledge was a *reason not to get tested* or postpone testing. Male interviewees believed that they would get tested by means of a swab deep in their urethra, as the female interviewees reported the fear that the health care provider would not treat the client information as confidential.

### *Social influences*

The social environment and its opinion were found to be important nurturers. Especially close relatives were strong positive nurturers:

*‘The family is by your side. They always come in the first place. If something is wrong, the whole family will be there [to support you]’*

The social environment was also labeled as a negative nurturer, and one of the most important barriers to get a test; the fear of how the social environment would react when they found out about the possible infection. The types of *fear* that were mentioned the most were related to discrimination when (HIV) infected, disturbance in the relationship, refusal for a mortgage, meeting an acquaintance when visiting a testing facility, and information not being treated confidential by the health care provider. The fear of disturbing the relationship is related to the mutual trust in the relation. A *relationship* was defined as a situation in which a person only has one exclusive partner with whom he/she shares everything: loyalty and mutual trust are important. Interviewees believed that their partner could perceive a suggestion to get a test as a lack of trust. Getting a test yourself could be perceived as being unfaithful, and therefore was labeled as a negative nurturer. Both situations disturb the relationship and are avoided by not getting tested. The female interviewees remarked that a lot of women within

the Afro-Caribbean community, especially from the first generation, do not want to cause trouble in the relationship as they are afraid that their man will leave them. Some of the interviewees also believed that it was related to the traditional *gender roles*:

*'... the men are the boss to put it in that way. They are going to work and the woman stays home to take care for the children, to keep the house tidy.'*

According to the interviewees, this is also the reason why women accept that Afro-Caribbean males have *multiple partners*. It was remarked that women often know that their partner has multiple partners, and they accept that fact. Some female interviewees, especially from the second generation, stated that they are in an equal relationship. Approximately half of the female participants also found it important that if you know that your partner is unfaithful to you, you must get tested on a regular base to protect your own health (positive nurturer).

The fear of *gossiping* was mentioned as a major barrier to get tested. During the interviews it became clear that gossiping involved different aspects. First, people seemed very aware of the possibility of being convicted by the community for having a disease when visiting a doctor. This was perceived as a barrier, and therefore labeled as a negative nurturer:

*'When you're visiting the doctor, then the gossip starts: 'He went to the doctor. He has this, he has that'. You don't know for what, but just because...'*

Secondly, people seemed scared of getting socially isolated by the social environment when they would find out about the infection:

*'They are afraid that if people find out, that they want nothing to do with you anymore'*

Thirdly, it was reported that gossiping could damage the *family honor* of the infected person, because STI testing is associated with performing negative behavior. In both ethnic communities, the community states that it would not be necessary to get tested if your parents did a good job during upbringing; only 'dirty' people perform such behavior:

*'If you get tested then people will talk like 'you have a so called decent upbringing, but you get tested'. Eventually, it reflects also back on my parents'*

## *Communication*

The interviewees remarked that the *communication* about sexuality is very important. This was based on the own experiences of the interviewees; their own parents avoided the subject during their *upbringing*:

*'(...) it is some kind of taboo. They think that after sex it is AIDS or pregnancy'*

The majority of the interviewees missed the conversations about sexuality during their youth, and this was labeled as negative. To provide themselves with knowledge, they gathered information from their friends and the Internet, resulting in inaccurate and incomplete information. However, the interviewees did not blame their parents for not communicating:

*'(..) It [the problem] was the same with their parents. They also had little knowledge about that, and they didn't know how to approach the children'*

The interviewees remarked that they would have done things differently sexually if they were provided with the right information by their parents. The interviewees remarked that, as a result, they found it important to talk with their own (future) children about sexuality to provide them with adequate information. The lack of communication during upbringing was also believed to be the reason that individuals have trouble communicating about the topic later on in their lives. The majority of the interviewees perceived a barrier communicating about sexuality with the older generation; this was labeled as a negative nurturer. It was remarked that it was related to the respect for the elderly:

*'Those [sex] are things that only adults do. For an adult you will always be a child. Therefore, you don't do it [talk about sexually]'*

However, communication about sexuality does take place within the different generations. The poor communication with the other generation resulted in more peer support seeking behavior. Interviewees reported that sexuality is openly discussed and information is exchanged without hesitation; this was perceived and labeled as positive. None of the interviewees could pinpoint the difficulty in communicating about sexuality with someone of the other generation.

## Discussion

The purpose of this study was to complement the understanding of the correlates related to the intention to get tested for STIs found in the quantitative online survey, and to assess the cultural context of the underlying beliefs related to the determinants of STI testing within the Afro-Caribbean community. The findings indicate that knowledge regarding STIs and the testing procedure could be influencing the health care seeking behavior of individuals: people search medical help in a later stage of the infection, try to get cured by traditional healing procedures, or not search for medical help at all. The social influences within the community appear to be an important determinant for STI testing behavior. The high perceived social control combined with the possibility of gossiping was perceived as a major barrier for STI testing; people are afraid of being stigmatized if they are spotted at the testing facility. Communication about sexuality in general was also found to be related to STI testing. It is not perceived as normal for an adult to talk with a child about sexuality. This was found to be a barrier, as individuals felt that they missed crucial information that could have influenced their sexual behavior positively.

Our study has several limitations. First of all, the interviewees were recruited through an Internet panel used during the quantitative study prior to the present study. As a result, potential selection bias should be taken into account. Furthermore, these participants were possibly higher educated than the persons at-risk, as most of the participants had intermediate or higher education. Secondly, environmental factors could have influenced the answers of the interviewees. We tried to create a safe environment for the interviewees to talk openly about this sensitive subject. However, the ethnic background and gender of the interviewers, and the physical environment could still have hindered this. Despite these limitations, we feel that the results contributed to the understanding of the correlates found in the previous studies, and the cultural context of the determinants of STI testing within this target group.

Within the topic of ‘knowledge and perceptions’, we found that the severity of STIs and HIV is acknowledge. However, inadequate health care seeking behavior is still prevalent within this community; we now understand that traditional healing procedures are used before getting medical help. The traditional healing procedures were stated to be part of the culture. Similar results were found by Van Andel (2010) in a study into the use of medical herbs among the Surinamese and Dutch-Antilleans in the Netherlands (van Andel & Westers, 2009). She found that this was related to the need of maintaining the own cultural identity. Secondly, the lack of knowledge was found to postpone or prevent STI testing. As suggested by PEN-3, strengths and unique features should be used to improve health behavior: the high social influence. Role modeling by peers could be useful to increase knowledge, as people

are more likely to display a certain behavior when they observe the benefits or consequences of similar behavior (Bandura, 1977). We found evidence in the quantitative online survey that more people would be persuaded to get a tested when they would hear the experiences with STI testing from others, and how they dealt with their own barriers. An intervention that successfully used peer education in this way is *Uma Tori!* (Bertens, Krumeich et al., 2008). This intervention uses a Tupperware party-like living room concept in which people from the same ethnic community receive sex education and share their experiences on sexual behavior. Other studies also claimed that online peer-to-peer support by social media could promote behavioral change (DeAndrea, Ellison, LaRose, Steinfield, & Fiore, 2011).

We found that the ‘social influences’ could be labeled as positive, existential, and negative. However, in most cases the social environment and its opinion were perceived as a barrier in STI testing. The fear of stigmatization was also found to be negatively related to testing behavior in other studies. A study into the factors related to the acceptance of HIV testing among pregnant women showed that women were less likely to accept testing when experiencing stigma. This was also the case when prenatal screening for STIs was the norm (Turan et al., 2010). Another study claimed that individuals in South Africa refused voluntary HIV counseling and testing when facing stigmatization (Meiberg et al., 2008). The fear of gossiping and the need to protect the family honor was also related to stigma; the infected individuals can experience stigma themselves by being isolated from social activities, but the family of the potentially infected individual can also be stigmatized – called courtesy stigma – via avoidance of the social environment (Bogart et al., 2008). This is related to the lack of knowledge within the social environment regarding tested, as also found by (Kalichman & Simbayi, 2003). Their study claimed that individuals who were not tested believed that infected people did something wrong. To deal with stigma related to STI testing, knowledge regarding the risk factors and transmission of STIs should be increased (Mall, Middelkoop, Mark, Wood, & Bekker, 2012). Also, Mall *et al.* (2012) claimed that individuals that were tested previously were more likely to have higher knowledge regarding HIV, and showed lower stigma. To stimulate individuals to get tested in the first place, the threshold created by the fear of being seen at a testing facility should be lowered. A suggestion to achieve this is a adjusted version of the intervention *Testlab.nl*: a successful intervention that offers MSM to print out a laboratory form, and visit a laboratory at the time and place that suits them (“Testlab,” 2012). The possibility to pick the time and place could reduce the chance of being spotted by others.

Lastly, ‘communication’ was found to be important; it was not perceived as normal for an adult to talk with a child about sexuality. Out of respect the younger generation does not speak with the elderly about sexuality. The lack of communication about sexuality led to a feeling

of missing out on crucial information regarding sexuality within the younger generation. As a result, the awareness of the younger generation regarding the importance of sex education and open communication about sexuality increased. A high intention to communicate with (future) children is found among this generation. Although this generation is highly motivated to do things differently, it is still important that a health promotion program pays attention to building skills and providing information on communicating about sexuality. In this way it is prevented that communication about sexuality will become a negative aspect that needs special focus.

The findings in this qualitative in-depth study complement the understanding of the previous findings. We now understand that some of the barriers related to STI testing are caused by the lack of adequate knowledge and the fear of stigma. The cultural context of the underlying beliefs related to the knowledge was found in the lack of communication about sexuality during upbringing; in this community it is not the norm to communicate about this intimate topic between generations. However, we also found that this norm is already changing. Secondly, the inadequate health care seeking behavior was related to the lack of adequate knowledge. Also, the need to protect the cultural identity is relevant to take into account when addressing STI testing. Lastly, we understand that the fear of stigma is not only related to the fear of the infected individual to be socially isolated; it also seems related to the fear of close relatives of the (potential) infected individual to be discriminated. As a result, there is a strong feeling to protect the family honor; when infected, it also affects the family.

When developing health promotion programs – not only focused on the Afro-Caribbean community in the Netherlands, but also among other migrant communities – the cultural context of the determinants related to STI testing should be acknowledged. Instead of only looking at the negative beliefs and behaviors, there must be more focus on positive and existential beliefs that could be used in achieving the desired behavior. The PEN-3 model can serve as an useful tool to guide health care providers and program developers in this process. It is also important to determine if the individual, the family, or community should be targeted with an intervention. While doing this, it is important to realize that selecting one does not mean that the other must be excluded. The findings of this study indicate that the personal barriers of the individual towards STI/HIV testing are often influenced by the perceptions/behaviors of the social environment. Therefore, it may be useful to not only target the individual, but also focus on the social environment to find the desired effect for a health promotion program.





# Chapter 5

## The application of PEN-3 model in research – a systematic literature review

This chapter is co-authored by Gerjo Kok, Jan Hendrik Richardus, and H el ene Voeten

### Background

As more people travel around the world and migrate to other countries, health promotion planners face new challenges in the protection of health. Specific needs, and norms and values of the different ethnic communities need to be taken into account when addressing the health challenges. However, it is believed that most of the theories used in the development of health promotion programs do not recognize the influence of cultural aspects sufficiently (C.O. Airhihenbuwa, 2010). Nowadays, the importance of addressing culture in research is increasingly acknowledged. Often, health educators and program developers work with ethnic communities other than their own. In the process, the input of these communities is merely that of the lay expert; they deliver input based on their individual beliefs and experiences rather than as a representative for their ethnic community. To work with and within ethnic communities, health promotion planners should recognize that they will never fully understand the other culture, and need to show communication skills built upon an attitude of openness, flexibility, and self-reflection (C.O. Airhihenbuwa, 2010; L. K. Bartholomew et al., 2011; Hixon, 2003). In 2009, we started a research into the determinants of STI testing among the Afro-Caribbean community in the Netherlands. To ensure that sufficient attention was given to the cultural aspects related to the determinants of STI testing, we intended to use the PEN-3 model of Airhihenbuwa. However, little knowledge was – and still is – available in the Netherlands regarding the application of the model. As a result, we needed to explore the possibilities of the model in research ourselves. After using PEN-3 in two qualitative studies, we felt that the contribution of the model in identifying cultural aspects was limited. We conducted this systematic literature review to assess how other studies used the model during research.

### *PEN-3*

Based on his research into HIV prevention and health education programs in several African regions, Airhihenbuwa felt that both health promotion and disease prevention programs strongly relied on Western models that often have a bio-medical perspective. Although reliance on this perspective has benefits, Airhihenbuwa felt that the importance of culture was often underestimated and neglected. This was confirmed by Chow (1991), observing that psychoanalysis is a practice from the Western society related to the individual, whereas non-Western cultures are more oriented towards the community (family, public life, larger issues of history) rather than towards the private self (Chow, 1991). Airhihenbuwa describes culture as a non-static phenomenon: a social interaction accepted by specific communities at specific points in time, which changes over time and is defined by the members who define and live by the ideals of specific practices and values (C. O. Airhihenbuwa, 1995). Airhihenbuwa also believes that when health programs are more anchored in culturally relevant paradigms, they could enhance the possibilities that are offered by approaches that emphasize dialogic participation. He believes that including the target audience in the process of exploration is the only legitimate way to affirm existing cultural meanings and expressions.

Airhihenbuwa refers to PEN-3 as a model and notes that the intention of PEN-3 is to offer a contribution to the process of the development of a health promotion program in which cultural aspects have a central position. Besides this, Airhihenbuwa tries to challenge its users to address both the micro (individual, family, and community) and macro levels (policy, government) (C. O. Airhihenbuwa, 1995).

#### *The basic principles*

The PEN-3 model has three interrelated and interdependent dimensions, each consisting of three domains following the acronym PEN (figure 1).

The first dimension of the model is *Cultural Identity (CI)*. This dimension assesses the point of entry for a health promotion program, and consists of the domains *Person*, *Extended family*, and *Neighborhood*. The domain *Person* can be referred to as the individual who should be stimulated to make health decisions based on adequate information. *Extended family* is referred to as not only the core family, but also important others that are perceived as family (which is a common phenomenon in non-Western communities). Lastly, the *Neighborhood* can be referred to as the community in which a health promotion program is implemented.

## THE PEN-3 MODEL

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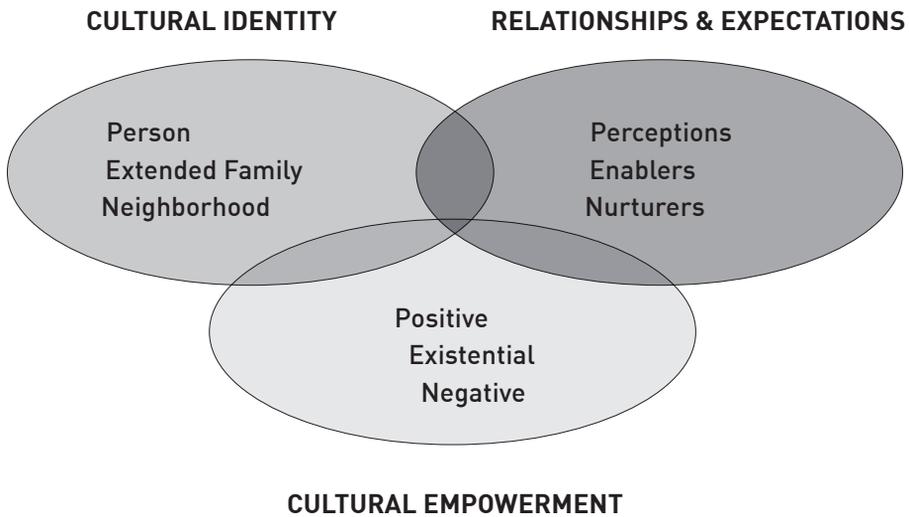


Figure 1

The second dimension is *Relationships and Expectations (RE)*, which assesses the influence of perceptions, environmental forces, and the social environment in making health-related decisions. In this, the point of view of how cultures define the role of persons and their expectations in family and community relationships are taken into account. The first domain is *Perceptions*, which covers aspects like knowledge, attitudes, values, and beliefs that may promote or hinder behavioral change. The domain of *Enablers* covers environmental influences and resources that could enhance or limit behavioral change. Examples of enablers are the accessibility to health care services, and the availability of resources. The last domain, *Nurturers*, assesses the influence of the (extended) family, peers, and community members on individual perceptions, attitudes and behaviors.

The third dimension *Cultural Empowerment (CE)* is perceived as the most critical dimension, because it situates the beliefs, behaviors, and attitudes of the *Person, Extended family* and *Neighborhood* in a positive, existential, or negative perspective. *Positive* perceptions or actions should be encouraged in health promotion programs. *Existential* actions are those, which are unique to a community and are neither harmful nor facilitating. These actions do not need any targeting. *Negative* perceptions or actions are those, which are harmful for the health status. These negative perceptions or actions should be explored in order to understand them before trying to change them. Table 1 gives examples of how *perceptions, enablers* and *nurturers* were labeled as *positive, existential* or *negative*, in

our research into the determinants of STI testing among the Afro-Caribbean community in the Netherlands.

### *Aim of the study*

The aim of this literature review is twofold. Firstly, we want to assess how PEN-3 was generally applied in research. Secondly, we want to identify in what type of research the model can be applied best. With this, we hope to obtain more insight into the usability of PEN-3 for behavioral research in general.

## **Methods**

The search strategy used in this review consisted of three steps. First, the databases PsychINFO and PubMed were searched using the key words 'PEN-3' and 'PEN-3 model'. We included all languages, all years of publication, and all journals (Appendix 2). The results yielded from these searches were first scanned manually for duplicates; the remaining publication titles and abstracts were assessed on relevance. Publications were included in the study when they addressed the PEN-3 model in the context of health promotion interventions (e.g. health promotion programs, prevention programs). Reasons for excluding publications from the review were reported in a separate digital form. Publications selected by this process were examined thoroughly. In the second step, the reference lists of the included publications were studied for relevant publications - the ancestry approach (Cooper, 1982). Lastly, we used a descendancy approach to locate articles using Google Scholar (Polit & Beck, 2010).

The steps described above were used in the searches conducted in January 5<sup>th</sup>, 2009; February 17<sup>th</sup>, 2012; and June 16<sup>th</sup>, 2012. A second researcher conducted the same procedure after which the results of the search were compared by means of peer assessment.

## **Results**

The last search for publications - conducted in June 2012 – yielded a total of 117 publications from the databases PsychINFO and PubMed. Five other publications were found through the ancestry and descendancy approach. Fourty-eight duplicates were removed, and 40 other publications were excluded for describing either microbiological or clinical studies. Five publications were excluded from the study, because only the abstract was available (figure 2). The remaining 28 publications showed that the PEN-3 model was often used in cancer screening-related research (7), for the development of HIV/AIDS prevention

programs in Africa (6), nutrition-related research (4), research for the development of diabetes prevention programs (3), research into smoking behavior (2), and in the development of recruitment strategies for inclusion of participants in epidemiological studies (2). PEN-3 was also used in other studies (4) like child malaria prevention and health care seeking behavior (Appendix 3).

### *Cancer screening-related research*

Paskett et al. (1999) published a study using PEN-3 into the development of an intervention to promote cancer screening among African American women with a low income (Paskett et al., 1999). The authors mention the fact that they used the model in their study, but do not elaborate on how the model was applied. The only information found regarding PEN-3 was that the model was used in the intervention design.

A series of three sequential papers into the cultural aspects of cancer screening among Latinas in the United States for the development of culturally specific cancer education programs were published between 2005 and 2010 (Erwin, Johnson, Feliciano-Libid, Zamora, & Jandorf, 2005; Erwin et al., 2007; Erwin et al., 2010). Erwin et al. (2005) described PEN-3 as a structure to categorize, analyze, and compare data; responses of participants were allocated into the dimension *Relationships and Expectations (RE)*, and define themes. Next, these themes were analyzed by labeling them following the dimension *Cultural Empowerment (CE)*; the findings were used to identify the most important content to discuss with education programs. The authors argued that the use of the model was a strength of the study; it was not clearly explained how the model contributed positively to the study. In the second paper, the model was used to allocate the responses of participants into the dimension *RE*, and define themes. The data was then labeled following the dimension *CE*. In contrast with the study from 2005, no conclusions were stated regarding the usability or value of PEN-3. The third and last paper of the series used PEN-3 as a tool for the interpretation and analysis of qualitative data; the dimensions of the model were used a pre-determined categories to sort the responses of the respondents. Tables were created to assess interactions between themes. The dimension *CE* was used to define health promotion messages and the overall structure of the intervention (Erwin et al., 2010); qualitative content was re-categorized with suggestions to revise and/or reinforce their impact on the intervention. The authors remarked that PEN-3 contributed to the interpretation of data during the analysis process by providing a tool to sort themes into specific domains which can be used in the delivery of health promotion messages.

Kline (2007) used PEN-3 as an analytic framework to assess the ways in which health promotion messages addressed the cultural values and expectations of the African American

women in breast cancer. The dimensions of PEN-3 were used as categories to sort themes. The author remarked that the use of PEN-3 helped to reveal that the messages on educational materials were constituted by rhetorical choices that emphasized racial-ethnic differences. Kline discussed the usability of PEN-3 in research within ethnic populations, but did not elaborate on the use of the model for her own study.

A study into the beliefs and attitudes of older native Hawaiian females in Hawaii towards the use of screening methods used PEN-3 in the development of discussion topics in FGDs and interviews, and data analysis (Ka'opua, 2008). The researchers used the dimension *RE* and *CI* to allocate qualitative data. The authors claimed that the model could be a helpful tool for the systematical assessment of the impact of influences on health behavior.

One of the most recent studies found using PEN-3, described the use of the model complementary to the Health Belief Model (HBM) and Intervention Mapping (Scarinci, Bandura, Hidalgo, & Cherrington, 2011). The authors did not clearly elaborate on how PEN-3 was used during research. However, the tables presented in the paper indicate that the model was used to define change objectives as described in IM. The incorporation of culture in intervention development was argued by the authors, but they did not elaborate on how PEN-3 contributed to this goal.

#### *HIV/AIDS prevention programs*

Airhihenbuwa and Webster (2004) published a paper demonstrating the systematic application of PEN-3 in the implementation and evaluation of HIV/AIDS prevention, care, and support in Africa (C. O. Airhihenbuwa & Webster, 2004). The dimensions *RE* and *CE* were crossed, resulting in a 3x3 matrix; the cultural context related to stigma was allocated into this matrix. The authors remarked that the model was an effective tool in addressing the factors related to AIDS-related stigma.

Airhihenbuwa et al. (2009) published a study into HIV/AIDS-related stigma in South African families and health care settings. The authors described that PEN-3 was used to build a 3x3 matrix; the dimensions *RE* and *CI* were crossed after which the data was allocated to the nine emerging themes. The study concludes with the claim that cultural models like PEN-3 could contribute to a cultural analysis of data for the development of effective interventions.

Brown, Belue & Airhihenbuwa (2010) were one of the few studies found using PEN-3 in quantitative research; the authors stated that the model was used to identify point of entry for an intervention. Although it is not described clearly, it seems like the model was used complementary to the quantitative analysis of the data; the dimensions *RE* and *CE* were

crossed to create a 3x3 table in line with the studies of Airhihenbuwa to assess the levels on which family systems could influence stigmatized individuals. The model was perceived as a proper starting point for exploring the structures of the family support.

The paper of Iwelunmor and Airhihenbuwa (2012), into the cultural perceptions of women regarding death and loss from HIV/AIDS in South Africa, described PEN-3 as an organizing guide; major organizing ideas were identified in each transcript, interpreted and sorted into categories, and finally reduced into themes fitting the dimensions *RE* en *CE*. As one of the few studies in this review, this study describes an example of something that most would perceive as negative (death), but was perceived by the participants as a form of relief (positive/existential). The model was perceived as a tool offering the possibility to examine relevant relationships and expectations as well as the values and practices necessary to understand the perceptions related to the health problem.

The other studies found in the field of HIV/AIDS prevention using PEN-3 applied the model to organize and analyze themes that emerged after analysis of the qualitative data (J. Iwelunmor, Airhihenbuwa, Okoror, Brown, & BeLue, 2006; Juliet Iwelunmor, Zungu, & Airhihenbuwa, 2010; Petros, Airhihenbuwa, Simbayi, Ramlagan, & Brown, 2006).

### *Nutrition-related research*

James et al. (2004) used PEN-3 to establish the factors influencing food choices, dietary intake, and nutrition-related attitudes among African Americans in the United States of America (USA). The authors did not elaborate in detail on how the model was used during research. It was stated that the model was used as a tool to conduct thematic analysis around. However, the results of the study were presented in a way that suggests that all three dimensions were used during the analysis. The paper concluded that PEN-3 helped identifying the cultural factors related to the outcome measures, and provided a good fit for the data.

Kannan *et al.* (2009) used the model as a framework to assess the impact of culture on nutrition-related attitudes; all three dimensions were used to define questions for the focus group discussions. Additionally, the model was used to code the statements of the participants. The authors agreed with James et al. (2004) on the usability of the model in the assessment of the needs of a target group to develop culturally sensitive interventions. In succession to the study of 2009, a study on the development, implementation, and evaluation of a peer-led nutritional program was conducted (Kannan, Sparks, Webster, Krishnakumar, & Lumeng, 2009). In contrast with the majority of the papers found, this paper described the use of PEN-3 and the transtheoretical model (TTM) together. It seemed like PEN-3 was used in labeling learning activities for the curriculum that the researchers developed.

However, information on the underlying process was lacking. The authors claimed that the model helped in the understanding of how guidelines were more likely to be adopted; they did not elaborate on how the model contributed to this understanding.

The last paper in this field using PEN-3 described a study into the role of culture in school-based BMI screening for minority populations in the USA (Fitzgibbon & Beech, 2009). PEN-3 was used to understand the cultural context in which the information regarding BMI should be reported to and is received by the parents. The paper lacks information regarding the process of applying PEN-3, but do present an interpretation of findings in the context of PEN-3. Contrary to the other studies found in this field, no clear conclusions were drawn by the authors on the usability of PEN-3 in their research.

### *Diabetes prevention programs*

PEN-3 was also used in a study into the attitudes of migrants without diabetes from Bangladesh in the United Kingdom regarding the chance of contracting the disease and the possibility of preventing it (Grace, Begum, Subhani, Kopelman, & Greenhalgh, 2008). However, this paper lacked information regarding the application and usability of the model. Cowderly, Parker, & Thompson (2010) did provide detailed information on the use of PEN-3 in their paper into the development of a diabetes prevention intervention; the dimensions *RE* and *CE* were crossed to make a 3x3 table to frame the qualitative data. Melancon, Oomen-Early, & Del Rincon (2009) used PEN-3 in a similar way as Cowderly *et al.* in their study into the level of knowledge regarding diabetes, attitudes, disease management, and self efficacy among adult Mexican Americans and Mexican Natives. Although this study focused on another target audience than the other studies in this field, the model still perceived as an appropriate foundation for this type of research.

### *Smoking behavior-related research*

We found two studies regarding smoking behavior that used PEN-3; both studies provided information on how the model was used. The study which qualitatively assessed the cultural factors related to smoking attitudes and practices among African Americans with a low SES (socio-economical status) used the model like the vast majority of the other studies presented in this review did; the dimensions *RE* and *CE* were crossed to create a matrix. The data gathered from the FGDs were categorized into the appropriate components (Beech & Scarinci, 2003). The second study, into the factors of smoking initiation and cessation among women on Brazilian worksites (Scarinci *et al.*, 2007), used PEN-3 in the exact same way as described by Beech *et al.* (2003). Both studies failed to explain to surplus value of PEN-3 in research.

### *PEN-3 in participant recruitment strategies*

Two studies described the application of PEN-3 in determining the willingness of people to participate in their studies. Abernethy *et al.* (2005) studied the psychosocial and cultural factors related to prostate cancer screening among African American men. Although they intended to recruit only 450 participants, they succeeded to recruit over 655. This success was facilitated by evaluating the steps during the study by means of PEN-3. Their paper does not clarify the process, but they concluded that PEN-3 contributed to the recruitment by incorporating cultural values at a deep structural level, allowing cultural tailoring in the efforts of recruitment. Ochs-Balcom, Rodriguez, & Erwin (2011) used the model in the data analysis to categorize responses given during focus group discussions regarding the influence of perceptions, beliefs, and knowledge within the African American community on the willingness to participate in a genetic epidemiology study; the dimensions *RE* and *CE* were crossed, resulting in a 3x3 matrix serving as a guide to address program-related factors. They found the model a useful tool for identifying and classifying themes to design a tailored recruitment protocol with focus on the positive aspects that could reinforce participation and negative aspects that should be targeted.

### *PEN-3 in other research topics*

Finally, we found three other studies using PEN-3; two studies into health care seeking behavior, and one into the prevention of domestic violence. The study of Garcés, Scarinci, & Harrison (2006) about health care seeking behavior considered determinants of this behavior among Latina immigrants and stated that PEN-3 was used only to summarize the data within and across groups. From a brief explanation in the introduction of the result section, it can be concluded that the researchers used the dimensions *RE* and *CE* to categorize data. It is worth mentioning that this was the only paper which argued that the reliability and validity of the model should be addressed in future research.

The second study, into the decision making for seeking medical help in child malaria, used the dimension *CE* as a guide to organize themes (J. Iwelunmor, Idris, Adelokun, & Airhihenbuwa, 2010); relationships within and between aspects that representing the response to treatment-seeking behavior. The authors argued that PEN-3 changed the focus of the researchers; instead of disapproving the existing maternal values and behaviors, the positive and unique values were acknowledged.

Lastly, Yick and Oomen-Early (2009) used PEN-3 in their literature review into the factors of domestic violence among Chinese Americans and Chinese immigrant communities in the USA; the model was used to organize data from other studies into the

three dimensions of PEN-3. The authors perceived the model as a possibility to validate the importance of socio-cultural factors within behavior in the context of culture.

## Discussion

With this literature review, we assessed how PEN-3 can be generally applied in research. Additionally, we identified in what type of research the model can be applied best. Based on the 28 publications in our literature review, we found that PEN-3 was generally applied in four different ways: 1) to prepare questions for qualitative information gathering; 2) to organize qualitative data after thematic or content analysis; 3) to organize data in a literature study; and 4) during the intervention development. We only found one study using PEN-3 during quantitative research; the way the model was used was not clear, but it seemed it was used for interpreting the implications of the quantitative data. All other studies used PEN-3 as a framework during focus group discussions (FGDs) and in-depth interviews. Only a few studies in the review elaborated on the application of PEN-3; the dimensions *RE* and *CE* in order to create a 3x3 matrix (Table 1). Emerging themes found in the qualitative research were allocated to one of the nine fields of the matrix after content analysis. In most studies it was claimed that PEN-3 was useful in identifying (socio-) cultural factors for the development of culturally relevant health promotion programs. However, none of the studies elaborate in what way the model added value in the research process.

As the majority of the studies provided only limited or no information on how PEN-3 was used, it was difficult to determine why the model was used in a particular way. We hypothesize that it is related to the structure of the model; it seems to be built like a planning model, guiding the user through a series of steps. First, the user is advised to explore the beliefs, perceptions, and attitudes related to health behavior together with (social) environmental factors that might influence these beliefs (*RE*). Secondly, the user should assess whether these beliefs correlate in a positive, existential (unique), and/or negative way with the health behavior (*CE*). However, these steps can be merged together by crossing the dimensions *RE* and *CE* into a 3x3 matrix to which data can be allocated; this results in an overview of themes in which relationships can be found easily.

The findings of the literature review led us to the conclusion that more information on the application of the model is needed; this should lead to a better validation of the effectiveness. The first step to achieve this is to make sure that the application of the model and the findings of future studies can be compared with each other. We suggest that all papers should at least report at which point in the study the model was used (determinant analysis or intervention

development), for which purposes the model was used (organization of data, defining questions for qualitative research, defining change objectives, interpretation of qualitative/quantitative data), which dimensions were used (*RE*, *CE*, *CI*), and how the dimensions were used.

Additionally, we suggest that each study should report if and how the use of PEN-3 contributed to the findings in the study.

Based on the methodologies from the literature study, we suggest that for the determinant analysis the data should be accumulated into concise workable information through thematic analysis. The results can then be organized in the matrix that is created by crossing the PEN-3 dimensions *RE* and *CE*. The matrix will provide the user with an overview that makes it easier to search for relationships between the emerging themes.

PEN-3 emphasizes the importance of target group participation throughout the project (C. O. Airhihenbuwa, 1995). Because the vast majority of the studies did not provide any suggestion of when to include the target group in the study, it is difficult to determine the most appropriate moment to start target group participation. Based on our own experience with PEN-3, and the findings of the literature review, we suggest introducing a clear point in which the target group can contribute significantly to the study; a ‘transition phase’. Originally, PEN-3 has two phases: the determinant analysis and the intervention development phase. In existing research, the target group is often only involved in the study as a study population; the transition phase can be used to discuss the results of the 3x3 matrix in the needs assessment with the representatives of the target group. By providing representatives with the opportunity to label the themes, derived from the qualitative data, from their own point of view; the discrepancies between the labeling of the researchers and the target group will lead to different approaches for interpreting themes. Beliefs that are considered negative at first glance can be turned in a positive way and put to use to define appropriate change objectives to be accomplished through the intervention.

We conclude that there is lack of clarity regarding the most effective way to use PEN-3 in research; most of the studies failed in providing detailed information on how the model was used during research, and in intervention development. As a result, solid evidence regarding its actual functioning and effectiveness is missing; more studies should systematically provide insight in the application of PEN-3 to validate the effectiveness of the model in centralizing culture. PEN-3 is perceived as a useful tool in organizing and interpreting themes for qualitative data analysis; it support searching for strengths and unique features of a culture which can promote the desired behavior.

Table 1. Example of 3x3 matrix crossing Relationships and Expectations and Cultural Empowerment

	Positive	Existential	Negative
Perceptions	Frequent STI testing is taking care after the own health	Importance of family support	HIV-infected people are punished for doing bad
Enablers	The possibility of free and anonymous STI testing	Different languages and cultures within a community	High costs for the use of contraceptives
Nurturers	Parents stimulating their offspring to openly talk about sexually	Social control by parents	Religious leaders disapproving condom use during sexual intercourse

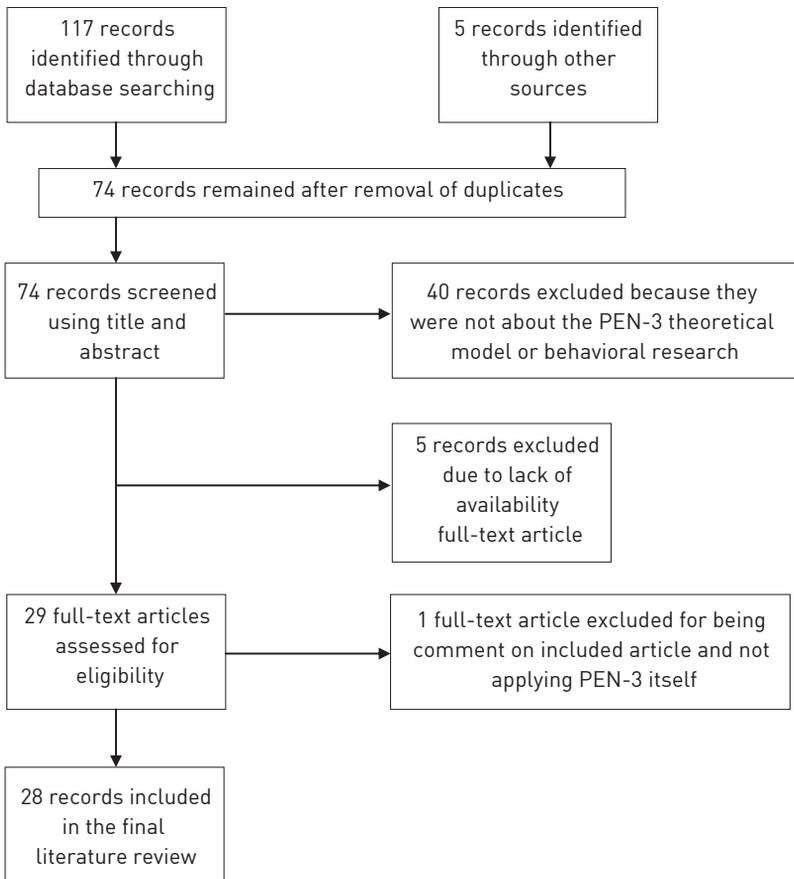


Figure 2: Flow diagram with the results of each step in the literature search





# Chapter 6

## General Discussion

The aim of this thesis was to study the determinants for the promotion of STI testing among the Afro-Caribbean community in the Netherlands. This chapter summarizes the main findings of the studies in this thesis, and discusses their implications for future practice and health promotion activities among this target group. The studies described in this thesis were initiated, because previous research claimed that the Afro-Caribbean community in the Netherlands showed a relatively low attendance rate at the STI outpatient clinics despite their high-risk sexual behavior (Vriend et al., 2010, 2011) and the higher incidence rates of STIs found. Sexual mixing between the Afro-Caribbean community and other ethnic communities in the Netherlands could lead to an increase of STI transmission (van Veen et al., 2010; van Veen et al., 2009). The research questions of this thesis are:

1. What are the determinants of STI testing among the Afro-Caribbean community?
2. What determinants of STI testing among the Afro-Caribbean community should be targeted with a future culturally relevant intervention to promote testing behavior?
3. What is the additional value of PEN-3 in the development of a culturally relevant intervention?

During the project, we combined both qualitative and quantitative research methods using different theoretical approaches. For both of the qualitative studies we used the PEN-3 model to incorporate a cultural approach in the studies. For the quantitative study, we used the HBM as a starting point to identify the determinants related to STI testing for the Afro-Caribbean community in the Netherlands.

## Beliefs and determinants of STI testing among the Afro-Caribbean community

### *A qualitative focus group study*

At the beginning of the project we had ample knowledge regarding the determinants related to STI testing; however, most studies into the determinants were conducted among adolescents and men who have sex with men (MSM). Little knowledge was available regarding the determinants of STI testing among the Afro-Caribbean community in the Netherlands. Therefore, the project started with a qualitative focus group study to explore the beliefs of STI testing among the target group; 29 vocational students, spread over four focus group discussions, participated. The findings of this study indicated that both personal and social factors could either stimulate or inhibit STI testing.

The participants believed that early testing and treatment is important *to protect the own health*, due the fact that it is possible to contract an infection without knowing it. The female participants were stimulated to get a test by the belief they *did not trust a (male) partner when they were in a steady relationship*. This belief was initiated by the idea that Afro-Caribbean men are often unreliable in relationship, resulting in a higher intention to get tested frequently. Also, female participants would be more likely to get a test when they were thinking about *dropping condom use in a steady relationship*. These findings show some similarities with a study into the behavioral risk factors of women related to HIV test decision making (Miller, Hennessy, Wendell, Webber, & Schoenbaum, 1996). The study found that risk factors like having more than one sexual partner and never using a condom in the past were strong predictors of taking a test. In case of our study the female participants were indirectly exposed to the risk factors found by Miller et al. (1996) through the sexual risk behavior of their male partners. In another study into the correlates of the intention to get tested for HIV among college students that were never been tested, it was reported that respondents with higher perceived susceptibility also showed higher intention to get tested (Hou & Wisenbaker, 2005).

The *importance of being fertile and protecting the health a future unborn child* was mentioned by female participants, while the male participants were more concerned about their responsibility to take care of their future children after birth. The Afro-Caribbean men were stimulated to get an STI test by the women their statement that the men were unreliable in relationships. In a response on this belief, the men wanted *to prove their (female) partner that they are monogamous*. Lastly, the participants believed that they would get stimulated to get a test to *support a friend* who is hesitating to get tested.

Environmental stimulating factors of STI testing mentioned were a *hidden – but easy to reach – location*, and the *possibility of getting tested for other diseases*.

Inhibiting beliefs related to STI testing were *fear of pain during the testing procedure*, and *fear of the (social) consequences of an STI (test)*. The fear of pain was mainly based on misinformation on the testing procedure; the male participants believed that the samples needed for the test were gathered through a swab deep in the penis. The female participants believed that the sample was gathered by the health care provider using a metal speculum in the vagina. Back in the days these beliefs would be accurate, because these procedures were actually conducted. However, over the years the testing procedure has changed. Male attendees are tested by means of a urine sample. The cotton swab is only used when attendees suffer from physical complaints, and even then the sample is taken from the upper part of the urinary tract. The sample of the female attendees is taken by means of a self swab (“De soa-test,” 2012). Stein et al. (2000) reported similar findings in their study into the psychosocial predictors of HIV testing. They found that their study population showed a considerable range of knowledge, but also had considerable misinformation about transmission routes (Stein & Nyamathi, 2000).

The fear of consequences was mentioned in relation to the fear of the test results, and the fear of the social consequences of being infected. Both the male and female participants were afraid to panic *if they would receive a positive test result* or afraid to *tell their (new) partner that they were infected* with an STI. The participants also stated that they were afraid that their *peers would disapprove STI testing*, were afraid that their *parents would find out* as many of the participants were not supposed to have sex before the age of 18, and were afraid that people would start *gossiping* about them when they were seen at the testing facility. *Shame* was mentioned in relationship to the fear of gossiping. The fear of not being able to cope with the test result seems to overshadow the perceived benefits of getting tested, resulting in avoidance of testing behavior, which was also found in a study of Mikolajczak et al. (2004) into the determinants of HIV testing among Dutch MSM. The systematic review of Irwin et al. (1996) also claims that the fear of coping with a positive test result could inhibit one to get tested. Another study claimed that ineffective coping styles were associated with more emotions around HIV testing (Warburton et al., 1997). Fear was also claimed to be an important barrier to testing in a study into the reasons of HIV-infected women to get tested (Siegel, Raveis, & Gorey, 1998).

The fear of the social consequences seemed closely related to the fear of disapproval, social isolation, and gossiping by the social environment. In line with the research of Nyblade *et al.* (2011) and Meiberg *et al.* (2008), the fear of discrimination and stigma hinders STI/HIV

testing. Other studies also showed similarities with our findings. A study into a HIV vaccine and the relationship with stigma showed that participants were highly concerned that people could start talking about them and label them as HIV positive. For these participants the beliefs created a barrier to participate in the HIV vaccine research (Barrington et al., 2007). Similar fear led to a barrier for getting tested for STIs. Sobo (1994) claimed that participating African-American women were afraid of stigma related to a positive test result.

Lastly, the participants stated that they had *lack of trust towards health care providers treating patient data confidential*. The high perceived *social control by the parents* was also mentioned as a factor of STI testing, but was believed to cause no harm in the intention of STI testing.

The findings of the qualitative focus group study confirmed some of the knowledge already available regarding the beliefs related to STI testing, and complemented the existing knowledge with a basic understanding of these beliefs within the Afro-Caribbean community. To get a better understanding of the magnitude of the beliefs found, we conducted a quantitative online survey. Additionally, we assessed which determinants could be targeted best with an intervention.

### *A quantitative online survey*

The survey was conducted among 450 Surinamese and 303 Dutch-Antillean participants who were recruited through a Dutch Internet panel and group activities. The (univariate) predictors of the intention to get tested for STI/HIV in the coming six months were *health motivation, cues to action, subjective norms, risk behavior, test history, open communication, and marital status*. *Subjective norms* were found to be the most salient predictor of intention to get tested in both univariate and multivariate analyses. Analyses between low and high intenders showed that respondents had higher intention when they were still motivated to get tested despite the perceived barriers (health motivation), knew people from their social environment who were also tested for STIs and/or HIV (cues to action), were surrounded by people who found frequent testing important (subjective norms), and were able to openly communicate with their social environment about sexuality.

This study complemented and confirmed some of the findings of the qualitative focus group study. The qualitative focus group study showed that individuals who were afraid of gossiping and could not cope with a positive test result were less likely to get a test. Also, a good hidden test location was suggested to prevent that people could see one enter the testing facility. The present study indicate that the individuals who were able to cope with these barriers (*health motivation*) showed higher intention than the individuals who

could not. This study also confirmed the previous findings that individuals who are aware of their sexual risk behavior have higher intention to get tested (*risk behavior*). In a study into the circumstances in which individuals diagnosed with AIDS were tested for HIV it was suggested that early testing and higher awareness about testing were positively related (Wortley et al., 1995).

The findings regarding the fear of disapproval by peers, the fear of social isolation, and fear of gossiping was complemented by the quantitative study. The subjective norms were the most salient predictor of the intention to get tested, and contributed 10% and 13% to the explained variance for the Surinamese and Dutch-Antilleans respectively. Also, subjective norms were the only determinant that showed a direct positive relationship with the intention to get tested, multivariately; the intention to get tested increased as the social environment (parents, family, friends, and community) found that frequent testing was important. These findings suggest that increasing the positive perception of the social environment could possibly decrease the fear of individuals to get a test.

#### *A qualitative in-depth interview study*

Because we felt that specific information was missing, necessary to understand the correlates found in the online survey, we conducted an in-depth interview study. With this study we also tried to assess the cultural context of the previously found results.

This study confirmed the findings of the online survey, suggesting that the social environment (and its subjective norms) and communication about sexuality are important factors in the promotion of STI testing among the Afro-Caribbean. The subjective norm of the social environment regarding family honor seemed to be an important factor. The findings indicate that protecting the family honor stimulate family members to help each other out when they have trouble with sexuality to prevent that others could find out about sexual risk behavior. On the other side, protecting the family honor could be a barrier. In this case, family honor is related to the fear of gossiping as testing is linked to having done something bad. If the parents did a good job raising their children, the individual should not have participated in this behavior. Getting an STI test results in instant gossiping of the social environment about the bad behavior of the individual. As testing is linked to a bad upbringing by the parents, it also damages the family honor.

The relationship between open communication about sexuality and the intention to get tested found in the online survey was also confirmed in this study. The participants reported that they were not able to openly communicate with their parents about sexuality. They believed that it was not the parents to blame, as their parents were raised in the same way. As a result,

they lacked the knowledge and skills to communicate with their children about sexuality in a proper way. Also, participants reported that the lack of communication between the different generations was related to respect towards the elderly; it is not perceived as normal for children to talk with elderly about sexuality. Although there is only limited communication between generations, within the same generation there is a lot of communication. It is reported that sexuality is openly discussed and information is exchanged without hesitation. Additionally, this study found that the younger generation showed higher intention to talk with their children about sexuality, because they felt they missed out on important information.

Lastly, the study complemented the findings by providing insights in a third determinant related to beliefs around fear found in the first qualitative study; knowledge. We found that individuals lacked accurate and sufficient knowledge regarding recognizing STIs, the natural course of STIs, and the testing procedure. As a result, individuals were less likely to get tested. It was also reported that the lack of knowledge was linked to inadequate curative health care seeking behavior. First generation migrants were believed to visit traditional healers more often rather than visiting medical health care professionals, resulting in pharmaceutical treatment in a late and advanced stage of the infection.

## **Beliefs and determinants of STI testing to target with an (future) intervention**

All three studies contributed to the understanding necessary to select the most relevant beliefs and determinants to target with an intervention. However, the quantitative online survey was used to select the most relevant determinants. The predictors of intention to get tested found in this study were analyzed for both the low and high intenders. The analysis indicated that respondents showed higher intention to get tested when they felt motivated, despite the possibility that people could gossip about them (Surinamese), people could see them enter the test facility, or they were afraid of being infected (Dutch-Antilleans); when they knew people that were tested for an STI or HIV; when they were surrounded by people who find frequent testing important; when they were tested previously for an STI or HIV; and when they perceived it as normal to openly communicate with their family and community about sexuality. These findings indicate that the determinants *health motivation*, *cues to action*, *subjective norms*, *risk behavior*, *test history*, and *open communication* are the most important factors to target. The other studies showed that *knowledge* is also an important determinant to target, as this determinant was related to inadequate health care

seeking behavior, lower communication skills, and lower awareness of the own sexual risk behavior.

Our findings are supported by, amongst others, the studies of Stein and Nyamathi (2000), and Hou and Wisenbaker (2005). Stein and Nyamathi (2000) suggest an intervention should focus on increasing social support, increasing knowledge, improving coping skills, and increasing the perception of sexual risk. Hou and Wisenbaker (2005) complement these suggestions by claiming that interventions should also increase awareness and point out the benefits of early testing on a regular base in order to stimulate testing.

## Systematic literature review into PEN-3

We applied the PEN-3 model in our research into the determinants of STI testing to ensure that sufficient attention was given to the cultural context of these determinants. After applying the model in both of our qualitative studies, we felt that the contribution of the model – in identifying cultural aspects – was limited. We conducted a systematic literature review to assess how other studies used the model.

The review yielded 28 papers using PEN-3 in research. The findings indicated that PEN-3 is used in cancer screening-related research, for the development of HIV/AIDS prevention programs in Africa, nutrition-related research, research for the development of diabetes prevention programs, research into smoking behavior, and in the development of recruitment strategies for inclusion of participants in epidemiological studies. The model was also used in studies into child malaria prevention and health care seeking behavior. We found that PEN-3 was used to prepare questions for qualitative data gathering (FDGs, interviews), to organize data (from qualitative data, and literature studies), and during the intervention development. The majority of the studies in the review did not elaborate on how the model was used during their study. The studies that provided information reported that qualitative data were allocated in a 3x3 matrix that was built by crossing the dimensions *Relationships and Expectations* and *Cultural Empowerment*.

We found it was difficult to determine which way of applying the model is best. More studies should systematically provide information on the application of the model to validate the effectiveness of the model.

## The additional value of PEN-3 to include a cultural approach in research

In our research we used PEN-3 to incorporate a cultural approach in the research. In this paragraph we want to elaborate on the additional value of PEN-3 compared to the Western approaches used in health promotion.

### *PEN-3 in practice*

In the qualitative focus group study we tried to explore the beliefs of STI testing among the Afro-Caribbean community in the Netherlands while incorporating the cultural context of these beliefs. One of the assumptions in PEN-3 is that it is important to distinguish, together with the target community, which beliefs and/or actions are rooted in the original culture and which are recently acquired in the country of residence. This distinction could assist in deciding which beliefs are easy to change (recently acquired), or need more attention as they are present in the whole community (deeply rooted) (C. O. Airhihenbuwa, 1995). While doing this, we experienced that participants had difficulties with understanding their perceptions were passed on by their parents (deeply rooted) or were copied values of their Dutch peers (recently adopted). PEN-3 suggests as much target group participation as possible, but it is difficult to identify relevant factors together with the target group if they are not able to make these distinctions themselves. Because the participants were mostly second or even third generation migrants, it is plausible that PEN-3 is not suitable for these second or third generation migrants, as they are often unconsciously influenced by cultural values of their country of residence. The lack of suggestions on how to deal with this was perceived as one of the challenges for working with the model.

Also, we faced some challenges while including the opinion of the target group during the labeling of the beliefs. As the labels of the researchers differed from the labeling of the target group, these discrepancies led to even more questions than before. Identifying can be perceived as a strength, but with the limited time available in many projects this could lead to major delays if this fact is not taken into account at the start of the project. We encountered this problem in our project, causing some delay and a number of questions based on the discrepancies that remained unanswered.

A third challenge that we faced laid in the different interpretations of the domains possible. This was particularly the case for the domains *Extended Family* and *Neighborhood* from the dimension *Cultural Identity*. The advantage of the possibility for the different interpretations is that PEN-3 can be used for different target groups. Besides ethnic communities it is also

possible to target subgroups within a community. For example, the extended family of an individual can be defined as the relatives and the core family, and neighborhood as the community of the individual. However, extended family can also be defined as peers with a same religion and the church as neighborhood. The disadvantage of free interpretation however, is that the lack of clear guidelines can lead to confusion when organizing the data. In some cases an item can be allocated to either the extended family or neighborhood, depending on the interpretation of the researcher. When using peer-assessment a large number of errors in allocating will occur between the researchers, decreasing the reliability of the results.

The application of PEN-3 also has advantages as it provides researchers and program developers with the tools to use the possibilities of culture. Crossing the dimensions *Relationships and Expectations* and *Cultural Empowerment* results in a matrix to which the user can allocate emerging themes from the qualitative data. With this, the model provides a handy overview in which relationships can be found easily. In particular, we perceived the possibility to find positive aspects in negative beliefs as valuable. Ethnic communities often need to deal with prejudices of the local population, possibly resulting in feelings of inferiority and oppositional behavior when the negative aspects of their culture are emphasized. By addressing the positive aspects, we feel that PEN-3 can support in preventing unwanted behavior.

The application of PEN-3 also provides the researcher and/or program developer with the possibility to identify discrepancies between the perceptions of the target audience and the researcher by discussing the results of data allocation into the matrix. This process of building a matrix, allocating themes from the data, and discussing discrepancies will result in a better understanding of the different ways the themes can be interpreted.

### *PEN-3 versus Intervention Mapping*

The PEN-3 model shows similarities with other intervention planning models like the Intervention Mapping protocol (IM). Both PEN-3 and IM use the PRECEDE model as a starting point to assess the needs of the target group, and encourage community-based participatory research. Although the designations used in PEN-3 are different, the principles are similar to those of the PRECEDE model used in IM. The dimension *Relationships and Expectations* of the PEN-3 model is closely related to the PRECEDE model, both exploring the attitudes, beliefs, values, and perceptions that facilitate or inhibit change. The PRECEDE model helps identifying the factors related to the health problem at multiple levels, and contributes to the assessment of the determinants related to the health behavior and the environment. The dimension *Relationships and Expectations* does something

similar by using the domains *perceptions*, *enablers*, and *nurturers*. Both models highlight the importance of both the social and physical environment in causing and/or maintaining health problems, only using different terms. In the intervention development phase, both frameworks decide on the point-of-entry for the intervention. In PEN-3 this is done by using the dimension *Cultural Identity* with the domains *person*, *extended family*, and *neighborhood*. IM has individual level, interpersonal level, organizational level, community level, and societal level. In this comparison the domain *person* is similar to what IM labels as individual level, *extended family* is similar to IM's interpersonal level, and *neighborhood* is comparable to the remaining levels of IM.

Although the two models have many similarities, there are also some differences. Firstly, IM systematically guides the user through the adaptation, implementation, and evaluation of the health promotion program by offering objectives for each step. PEN-3 lacks these steps because of its approach of the target group being involved in such a way that it should be able to develop an intervention by itself. The remaining dimension of PEN-3, *Cultural Empowerment*, is different from IM. Although this dimension shows some similarity with the constructs *perceived benefits* and *perceived barriers* of HBM (Conner & Norman, 2005; Scarinci et al., 2011), *Cultural Empowerment* focuses not only on the negative (barriers), but almost forces the user to search for positive aspects (strengths) and existential aspects (unique aspects of the culture) that could be used in the health promotion program to counter the negative aspects (C. O. Airhihenbuwa, 1995).

### *Additional value*

We did not experience great additional value using PEN-3 to centralize culture compared to Western approaches. The determinants and beliefs found in our studies were not that different from the existing knowledge regarding STI testing that was obtained by means of Western models. We found that the model did have some advantages over existing Western models: it was helpful in allocating qualitative data. Despite this advantage, we believe that we have had more benefits from the application of the HBM and IM rather than the PEN-3 model. However, we do believe that PEN-3 can be a useful tool for health promotion planners using theories that lack specific focus on culture. PEN-3 could be helpful in organizing themes for qualitative data analysis, and stimulates users to think in a non-Western way. Based on the literature review we conclude that the model lacks solid evidence regarding its actual functioning. More studies using PEN-3 should be conducted to systematically provide information on the application in research; clear guidelines for application can be developed, and its effectiveness can be validated.

## Methodological issues

### *Selection bias*

During the studies, we faced some challenges resulting in selection bias, and therefore findings may not be applicable for the total Afro-Caribbean community in the Netherlands. First, we had some difficulties in the willingness of migrant self organizations (MSOs) to participate in the different studies. We therefore recruited a convenience sample at vocational schools for the qualitative focus group study. This sample may not display the same socio-demographical characteristics as would be found in a random sample from the target group. However, hardly any knowledge was available regarding the determinants and the underlying beliefs of STI testing among this target group. We believe that the explorative findings of this qualitative study provided us valuable basic knowledge.

Secondly, similar problems with the willingness of MSOs in the recruitment were faced during the quantitative online survey. We therefore used online panels from Dutch Internet research agencies to recruit a sample that was large enough. People from these panels could be higher educated, or use computer-based media more often than the average Afro-Caribbean individual living in the Netherlands. Additionally, the recruited sample is self-selected; only people who were motivated and had little barriers filling in a questionnaire about an intimate topic were included. It is possible that the mean scores found for health motivation and intention are an overestimation.

Lastly, double selection bias should be considered for the qualitative in-depth interview study; the interviewees were randomly selected from the sample used in the quantitative online survey, but were able to refuse participation in the interview study. As a result, only the motivated participants from an (already) self-selected sample were included. However, as the in-depth interview study was conducted complementary to the other studies to get a fuller understanding of the results, we believe that this bias is not a major limitation.

### *Social desirability*

As the project was about an intimate topic, it is possible that the participants gave social desirable answers for fear of being judged. Although we tried to avoid personal questions as much as possible, we still must consider bias of the results. Especially the answers from the two qualitative studies could be influenced by factors like the ethnic background and gender of the interviewers, and the physical environment. However, we tried to anticipate these factors during the in-depth interviews by providing the participants with the possibility to either talk with a male from Surinamese descent or an Dutch-Antillean female, and select the setting in which the interview would take place. There is, however, an ongoing

discussion whether or not socio-demographical factors like gender and ethnic background of the interviewers influence the outcome of qualitative research. On the one hand, members of ethnic communities state that they feel restricted to talk openly about intimate subjects when interviewed by a Dutch interviewer out of fear of prejudice. On the other hand however, in some studies from the Netherlands, the presence of a Dutch interviewer did not seem to hinder the process of qualitative studies such as FGDs (Bertens, Krumeich et al., 2008). Yet there are members from ethnic communities stating that they would feel restricted talking to someone from the own community because of possible condemnation and gossiping. Nevertheless, the MPHS of Rotterdam successfully used peer health educators with the same ethnic background as the target group to promote the level of knowledge on sexual health among migrants. It is difficult to validate if and to which extent the ethnic background of a researcher or health educator can influence the outcome of qualitative research due to the great diversity of the ethnic communities in the Netherlands and the different perceptions of each community.

## Reliability and validity of the results

A combination of qualitative and quantitative studies was used in this project to get a fuller understanding of the determinants of STI testing among the Afro-Caribbean community in the Netherlands. By going back and forward between these methodological research approaches, we were constantly forced to evaluate the results found: were the results found previously confirmed by the next study; was the theory inadequately used when findings differed; did we miss crucial information to understand the beliefs and determinants? Each study provided essential information to the understanding of the determinants of STI testing. The qualitative focus group study helped us to explore the beliefs related to STI testing, whereas the quantitative online survey assessed the magnitude of these beliefs. With this, we were able to identify determinants that should be targeted in an intervention. Going back to the target group by means of a qualitative in-depth interview study complemented the understanding of the correlations found, and allowed us to discuss possible strategies to promote STI testing.

The reliability of the results of both qualitative studies could be put up for discussion, because of the small sample sizes: 29 participants over four focus groups and 20 in-depth interviews. A number of arguments can be given to support the sample size. First, the focus group study had an exploratory nature into a poorly discussed topic in a difficult to reach target group. It is not necessary to recruit larger groups of participants, but more FGDs could have led to a more extensive exploration of the beliefs and behaviors.

The difficulties faced during the recruitment reflect the unwillingness within the target group to talk about this intimate topic, and indicate the difficulties that could arise during the implementation of a future intervention. Secondly, by means of interviews we attempted to complement the understanding of the results found during the online survey. Due to time constraints not all salient variables were discussed in the interviews. For the variables that were discussed, data saturation was reached after 20 interviews. Considering the aim of the in-depth interviews, each of the interviews contributed to a fuller understanding of the results.

We believe that the reliability and validity of the studies were increased by applying a spiral approach (de Vries et al., 1992). This type of research approaches challenges the paradigm of single-method researchers who use either a qualitative or a quantitative research method, with preference for the latter (Driscoll, Appiah, Salib, & Rupert, 2007). However, in line with other studies we found that neither qualitative nor quantitative research can explain behavior thoroughly by itself. A combination of both research methods would be best, as the strengths of each method is reinforced when joined together (L. K. Bartholomew et al., 2006).

## Implications and recommendations for future research and practice

We found that the determinants *health motivation, cues to action, subjective norms, risk behavior, test history, open communication, and knowledge* should be targeted with an intervention as they seems to be related to inadequate health care seeking behavior, lower communication skills, and lower awareness of the own sexual risk behavior. Despite some of the methodological issues mentioned earlier, a number of implications and recommendations can be given for future research and practice based on these findings.

Our findings indicate that STIs are perceived as severe among the Afro-Caribbean community in the Netherlands. As a result, these individuals report a high intention to get tested. Despite the reported perceived severity, inadequate health care seeking behavior is shown. Based on the principles of PEN-3, we found that this is due the need to protect the own culture identity and a negative attitude due to inadequate knowledge. Although we believe that the health care seeking behavior should be changed, PEN-3 suggests that we should respect the fact that people seek help in their own way and like to be their own cultural self.

The negative attitude due to inadequate knowledge should and can be changed. Although the delivery of education regarding STIs and the testing procedure is obvious, literature claims that education on itself is unlikely to research the desired profound and consistent effect (Wells, Hepworth, Murphy, Wujcik, & Johnson, 2003). Instead, as the influence of the social environment is high within this community, we recommend that this strength should be put to use: peer education. The use of peer education in continuously delivering sex education has successfully been applied by the MPHS Rotterdam for a long time among ethnic communities in the region. Attention should be given to the skills of peer educators in delivering sex education in such a way that the communication around sexual health can be broken, while respecting the cultural norms and values.

The determinants *health motivation*, *open communication*, and *knowledge* seemed related to skills and self efficacy to deal with barriers. Role modeling by peers could be useful in promoting STI testing, as people are more likely to display a certain behavior when they observe the benefits or consequences of similar behavior (Bandura, 1977). We found evidence in the quantitative online survey that more people would be persuaded to get a tested when they would hear the experiences with STI testing from others, and how they dealt with their own barriers. Peers could also be of influence in changing these determinants and related beliefs. With role modeling it is important that the representatives of the community can identify themselves with the role model. An intervention that has successfully used peer education in this way is *Uma Tori!* (Bertens, Krumeich et al., 2008). This intervention uses a Tupperware party-like living room concept in which people from the same ethnic community receive sex education and share their experiences on sexual behavior. Although this intervention focuses on multiple facets of sexual behavior, a future intervention could use the basic principles of the concept. Modules regarding communication about sexuality, knowledge about STIs, and knowledge regarding the testing procedure should then be integrated.

The strong influence of the social environment could also be used in other ways to promote testing. Important figures like friends can persuade someone to get tested when hesitating (Huang et al., 2012). The findings of the qualitative focus group study show that individuals have the intention to help others out. The qualitative in-depth interview study also showed that individuals from the same generation have less barriers talking to each about sexuality. Ongoing support of the social environment could support the sustainability of the desired behavior (Fisher et al., 2012). However, norms should be changed to promote the open communication between generations. These norms could also be influenced by using social media: quantitative findings indicate that individuals showed higher intention to get a test when they knew others who were tested.

Similar as with the intervention *Uma Tori!*, people can share their experiences with STI testing and how to deal with gossiping. Previous research claimed that online peer-to-peer support provided by social media, and the exchange of information on what to expect could promote behavioral change (DeAndrea et al., 2011).

Before the *subjective norms* can be changed, more research is needed to understand the complex relationships within the target group. Many of the subjective norms are deeply rooted in the culture, and some may be ingrained in such a way that one is not aware of its negative consequences (Mollen, Ruiters, & Kok, 2010). A deeper understanding of the correlates within the social norms should lead to an increased effectiveness of the (future) intervention. Also, we hypothesize that the subjective norms will change by itself over time. The qualitative findings of this study indicate that the younger generation is becoming increasingly influenced by the values and norms in the Netherlands. Also, this generation seems to be more aware of the consequences of the traditional norms and beliefs for their sexual health. Instead of emphasize on change, it appears more preferable to reinforce the existing belief that frequent testing is important; this belief should be introduced to those not familiar with it.

Finally, the belief of a secluded – but easy accessible – test location should be addressed with a future intervention. Representatives from the Afro-Caribbean community stated that this would help them to avoid gossiping as others could not see them entering the testing facility. An example provided by the participants of the studies was an outpatient clinic in a hospital: people could see them enter the hospital, but the main reason for visiting the hospital remains unclear for people outside. Although this suggestion came from the target group itself, we believe that it is not the solution. The underlying belief of the suggestion is that people do not want to be seen at the testing facility. Therefore, it may be an idea to adapt the concept of an existing intervention called Testlab, and apply it on our target group. Testlab is a website where MSM can download a laboratory form for a STI test, with which they can go to any laboratory connected with the intervention to anonymously get tested at the moment that suits them best (“Testlab,” 2012). Adapting and introducing this intervention for the Afro-Caribbean community in the Netherlands will lower the threshold to get a test; individuals can visit the laboratory at time that suits them best, and the reason for visiting the laboratory is unclear for others at the facility. Also, individuals will not need to visit a testing facility unless they are tested positive.

### *Stigma*

Throughout almost all barriers for STI testing, we found signs of fear related to stigma. HIV-related stigma challenges health promotion planners in getting people tested

(Florom-Smith & De Santis, 2012). Different types of stigma can be distinguished: anticipated stigma, perceived community stigma, enacted stigma, self stigma, and courtesy stigma (Bogart et al., 2008; Earnshaw & Chaudoir, 2009; Holzemer et al., 2009; Steward et al., 2008; Turan et al., 2010). In literature, anticipated beliefs regarding stigma were claimed to be a barrier in the acceptance of HIV testing among pregnant women, even when prenatal screening for STIs is the norm (Turan et al., 2010). Stigma related to significant others and family were also believed to be influential on disclosure of HIV status, and the acceptance of HIV testing (Brickley et al., 2009). In this case, the stigma has two sides. On the one side, the infected individuals can experience stigma from the family by isolating them from social activities. On the other side, family of the infected individual can be stigmatized – called courtesy stigma – through avoidance by friends and other family members (Bogart et al., 2008).

In our research, we also face challenges regarding stigma. Especially anticipated stigma, perceived community stigma, and the fear of courtesy stigma seem to be present among our target group. For example, in our qualitative studies we found that the social environment relates STI testing to have done something wrong. The findings of Kalichman & Simbayi (2003) indicate that individuals who were not tested also believed that infected people must have done something wrong. Turan et al. (2010) demonstrated that women had higher intention to get a test when they knew someone who was HIV positive. These findings are in line with our findings in the quantitative online survey, indicating that cues to action are predictors of the intention to get tested.

In order to deal with stigma related to STI testing, knowledge regarding STI transmission routes and the benefits of testing should be increased as this could prevent unfounded fears of infection by the social environment. Also, peer education could increase the acceptance of STI testing. These suggestions are supported by the study of Mall et al. (2012), claiming that their findings indicate a correlation between knowledge and stigma; the higher the knowledge regarding HIV transmission, the lower the stigma. The correlates showed that people who were tested previously were more likely to have higher knowledge regarding HIV, and showed lower stigma. Similar findings were reported by Kalichman and Simbayi (2003) claiming that individuals who had not been tested for HIV held greater HIV-related stigma than individuals who had been tested.

### *PEN-3*

PEN-3 was used to incorporate a cultural approach in our study. We experienced only limited value in identifying determinants of STI testing using this model in addition to well-known Western models. In line with the vast majority of the studies found in the literature

review, we perceived the model as a useful tool for allocating qualitative data. However, we believe that we could have extracted more results from the data when clear guidelines were available on how to incorporate the dimensions of the model, and target group participation in the different stages of research. The perceived pros and cons in the existing application of the model should be monitored and evaluated before clear guidelines can be developed. Our literature review showed that only a few papers reported valuable information in the methodology of applying PEN-3, making it difficult to evaluate the studies. We offer a few suggestions to ensure that the application of PEN-3 is reported in a uniform systematical way to standardize the evaluation of application. We suggest that each study at least reports:

- The part of the research in which the model was used (determinant analysis/needs assessment or intervention development)
- The reason for using the model (e.g. data organization, defining questions, defining change objectives)
- The dimensions that were used (*Relationships and Expectations, Cultural Empowerment, Cultural Identity*)
- The way the dimensions were used (e.g. sequentially, in a matrix)

Additionally, information about the perceived benefits and barriers of using the model could be provided as well as points for improvement of the model.

During the process of linking beliefs and determinants to each other, after allocating them in relevant categories of PEN-3, it became clear that many of the determinants on individual level were influenced by external factors. For example, the intention to get tested was inhibited by the subjective norms that testing is related to having performed bad behavior. Also, knowing someone who got tested for an STI, and open communication about sexuality were correlated to the intention to get tested. Thus, we suggest that a future intervention should target multiple ecological levels (intra-personal, inter-personal, organizational, community, society) in order to promote STI testing.

### *Recommendations*

- Research should be conducted into the underlying beliefs of the determinants *self efficacy* and *severity* to understand why both determinants were negatively correlated with a high intention found in the quantitative online survey.

- In research into ethnic communities, representatives of the target group should be involved in the research as early as possible, preferably while writing the research proposal to create a feeling of ownership and increase the support and participation from the community in the research.
- An intervention or health promotion program should target both personal determinants and external determinants, as most of the personal determinants are influenced by the norms of the social environment. When selecting the appropriate ecological levels, it must be kept in mind that selecting one ecological level does not exclude addressing other levels.
- Peer education should be used to influence determinants and beliefs related to *health motivation, open communication, and knowledge*. Proven intervention strategies like *Uma Tori!* and the use of social media should be a starting point for the intervention, using the principles of exchanging experience on sexual health and testing.
- The belief of frequent testing should be reinforced or introduced to those not familiar with the beliefs, as the younger generation seems aware of the consequences of the traditional norms and beliefs for their sexual health.
- To lower the threshold for testing, the principles of ‘Testlab’ can be applied for the Afro-Caribbean community. The chance of being seen at the laboratory is close to zero, and the reasons for visiting the laboratory are unclear for others at the facility.
- Knowledge regarding STI transmission routes should be increased to reduce stigma related to STI testing.

## Conclusion

The studies described in this thesis provide insight into the determinants and the underlying (cultural) beliefs related to STI testing among the Afro-Caribbean community in the Netherlands. The determinants identified in the studies were *health motivation, cues to action, subjective norms, risk behavior, test history, open communication* and *knowledge*. The studies showed that these determinants were related to inadequate health care seeking behavior, lower communication skills, and lower awareness of the own sexual risk behavior. Triangulation of qualitative and quantitative research methods was used in a spiral approach

to explore, identify, and understand the determinants and beliefs related to STI testing. Additionally, this thesis describes the application of PEN-3 to incorporate a cultural approach in the project. We experienced limited value of the model in identifying cultural aspects during the research. We did find that PEN-3 was a useful tool for allocating data. For improved added value, clear guidelines on how to use the model in the different stages of research are necessary. The knowledge obtained in our research is a valuable start for the development of future programs for the promotion of STI testing among the Afro-Caribbean community in the Netherlands.



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# Appendix

Correlations between study variables; means, and SDs, for the Surinamese (N=450; \*p<.05, \*\*p<.01

	Int	Perc. sus	Perc. sev	HeMo	ben	Perc. barr	CTA	SE	OE	SN	SS	EO	Know	RB	OC	TH	Gen	Age	MS	RS	Edu	Rel	
Intention	X																						
Perceived susceptibility	ns	X																					
Perceived severity	-.1*	.21**	X																				
Health Motivation	.15**	.15**	ns	X																			
Perceived benefits	ns	.12*	ns	.34**	X																		
Perceived barriers	ns	.12*	.13**	.26**	ns	X																	
Cues to action	.17**	ns	-.13**	.16**	.13**	ns	X																
Self efficacy	-.14**	.17**	.11*	.23**	.24**	.33**	.14**	X															
Outcome expectancies	ns	ns	ns	.11**	-.39**	ns	ns	X															
Subjective norms (N=307)	.34**	ns	ns	.17**	.17**	ns	.13*	ns	X														
Social support	ns	.13*	.15**	.27**	ns	.16**	-.14**	.33**	X														
Emotional outcomes	ns	.13**	.17**	.10*	-.12*	ns	.21**	.41**	ns	X													
Knowledge	ns	.16**	ns	.29**	.23**	.28**	.21**	.46**	ns	ns	ns	.13**	X										
Risk behavior	.21**	.11*	-.11*	.17*	ns	.28**	ns	.13*	ns	ns	.19**	X											
Open communication	.17**	ns	ns	.11*	ns	.2**	.11*	.17**	-.24**	.39**	.29**	ns	.13**	X									
Test history (yes)	.22**	.13**	ns	.23**	.14**	.19**	.30**	.17**	ns	.29**	.11*	.1*	.28**	.48*	-.16**	X							
Gender (female)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	X						
Age	-.22**	ns	ns	ns	-.17**	.23**	-.16**	ns	ns	ns	ns	-.14**	ns	ns	ns	ns	ns	X					
Marital status (married)	-.20**	ns	ns	-.12*	-.1*	.11*	-.13*	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	.47**	X				
Relationship status (yes)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	.12*	ns	ns	.39**	X			
Education (low=0, high=1)	ns	ns	ns	ns	ns	ns	.12*	ns	ns	ns	ns	ns	.18**	ns	-.1*	ns	ns	.2**	.17**	ns	X		
Religious (yes)	ns	ns	ns	ns	ns	ns	ns	.10*	ns	ns	ns	ns	-.1*	ns	-.1*	ns	.13**	ns	ns	ns	ns	X	
Mean	2.2	4.5	4.8	3.9	4.2	38%	4.5	3.0	2.8	4.0	4.0	4.6	22%	3.1	48%	64%	64%	31.7	44%	59%	26%	68%	
Range	1-5	1-5	1-5	1-5	0-1	1-5	0-1	1-5	1-5	1-5	1-5	0-6	0-1	1-5	0-1	0-1	0-1	13-73	0-1	0-1	0-1	0-1	
SD	1.3	0.9	0.6	1.0	1.2	1.0	0.5	0.8	1.0	1.2	1.0	1.4	0.4	1.1	0.5	0.5	0.5	11.8	0.5	0.5	0.4	0.5	

Means, SDs, and correlations between study variables for the Antilleans (N=303; \*p<.05, \*\*p<.01

	Int	Perc. sus	Perc. sev	HeMo	Perc. ben	Perc. barr	CTA	SE	OE	SN	SS	EO	Know	RB	OC	TH	Gen	Age	MS	RS	Edu	Rel	
Intention	X																						
Perceived susceptibility	ns	X																					
Perceived severity	ns	.28**	X																				
Health Motivation	.25**	.19**	.17**	X																			
Perceived benefits	ns	ns	.15**	.30**	X																		
Perceived barriers	ns	ns	ns	.30**	.12*	X																	
Cues to action	.24**	ns	ns	.18**	ns	.13*	X																
Self efficacy	ns	ns	ns	.22**	.46**	.31**	.16**	X															
Outcome expectancies	ns	ns	.12*	-.20**	ns	-.34**	ns	ns	X														
Subjective norms(N=234)	.40**	ns	ns	.19**	.13*	ns	ns	.13*	.17**	X													
Social support	ns	ns	ns	.18**	.15*	.21**	ns	.26**	-.20**	.27**	X												
Emotional outcomes	ns	ns	.23**	ns	.23**	ns	.23**	.35**	.23**	ns	ns	X											
Knowledge	ns	ns	ns	.28**	.36**	.23**	.22**	.43**	-.15**	-.13*	ns	ns	X										
Risk behavior	.25**	ns	ns	ns	.12*	.22**	ns	ns	.13*	ns	ns	ns	.11*	X									
Open communication	.16**	ns	ns	ns	ns	ns	ns	.24**	ns	.24**	.18**	ns	ns	ns	X								
Test history (yes)	.28**	ns	ns	.31**	.13*	.26**	.48**	.20**	ns	.18**	ns	ns	.21**	.40**	.16**	X							
Gender (female)	ns	.12**	ns	.25**	.18**	ns	ns	.24**	ns	.24**	.18**	ns	ns	ns	ns	.12*	X						
Age	-.26**	.12*	ns	ns	ns	ns	ns	ns	ns	ns	ns	.16**	.12*	ns	ns	ns	ns	X					
Marital status [married]	-.25**	.12*	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	.42**	X				
Relationship status (yes)	ns	ns	ns	ns	ns	ns	ns	-.18**	ns	ns	ns	ns	ns	-.17**	ns	.15*	ns	ns	.32**	X			
Education (low=0, high=1)	ns	-.12*	-.17**	ns	ns	ns	ns	ns	ns	ns	ns	ns	-.19**	ns	ns	ns	ns	.18**	.16**	ns	X		
Religious (yes)	.13*	.13*	.22**	.14*	ns	ns	ns	ns	.12*	ns	ns	ns	.19**	ns	ns	ns	ns	ns	ns	ns	ns	X	
Mean	2.5	4.5	4.7	3.9	4.3	4.1	48%	4.5	3.1	2.9	4.1	3.0	4.6	24%	3.3	54%	62%	30.11	39%	59%	24%	71%	
Range	1-5	1-5	1-5	1-5	1-5	1-5	0-1	1-5	1-5	1-5	1-5	1-5	0-6	0-1	1-5	0-1	0-1	15-77	0-1	0-1	0-1	0-1	
SD	1.5	0.9	0.5	1.1	1.1	1.0	0.5	0.8	1.0	1.3	1.0	1.2	1.3	0.4	1.1	0.5	0.5	10.5	0.5	0.5	0.4	0.5	

Appendix 2: Search terms used in PubMed and PsychINFO

Concept	Operationalization	Fields
Language	(No limitations)	Language
Publication type	(All journals)	Publication type
Publication date	>1980	Publication date
PEN-3		Title, abstract, Keywords
PEN-3 model		Title, abstract, Keywords

Appendix 3: Overview of included studies using PEN-3 in research

Study	Country	Population	Health topic	PEN-3 dimensions used	Information on using PEN-3	Conclusion on usability
James et al. (2004)	United States	African-Americans	Factors influencing food choices, dietary intake, and nutritional-related attitudes	-	+	PEN-3 provided a good fit for the data and helped identifying the cultural factors related to the outcome measures.
Kannan et al. (2009)	United States	African American women	influence of nutrition on birth outcomes	-	+	PEN-3 provide possibilities for interested health care providers to assess needs and develop culturally sensitive interventions
Kannan et al. (2009)	United States	African American women	Development, implementation, and evaluation of a peer-led nutritional program	-	-	PEN-3 helped understanding that the guidelines were adopted more easily when the target audience experienced these as achievable
Fitzgibbon et al. (2009)	United States	Parents of overweight and obese migrant children	role of culture in school-based BMI screening	-	+	-
Grace et al. (2008)	United Kingdom	Bangladeshis	Chance of preventing diabetest	-	-	-

Study	Country	Population	Health topic	PEN-3 dimensions used	Information on using PEN-3	Conclusion on usability
Melancon et al. (2009)	United States	Adult Mexican Americans and Mexican Natives	Level of knowledge regarding diabetes, attitudes, disease management, and self efficacy	-	+	PEN-3 is an appropriate foundation for this type of research
Cowdery et al. (2010)	United States	African American	Diabetes prevention	Relationships and Expectations, Cultural Empowerment	+	PEN-3 was helpful in developing a culturally relevant intervention
Airhihenbuwa and Webster (2004)	Aimed at Africa	Africans	HIV/AIDS prevention	Relationships and Expectations, Cultural Empowerment	+	PEN-3 was effective in addressing AIDS-related stigma and related factors
Petros et al. (2006)	South Africa	South Africans	Risk of HIV	-	-	-
Iwelunmor et al. (2006)	South Africa	South African communities	Impact of AIDS on family systems	-	+	-
Iwelunmor et al. (2010)	South Africa	South African women	Disclosure of seropositive status	Cultural Empowerment	-	-
Airhihenbuwa (2009)	South Africa	South African families and health care settings	HIV/AIDS-related stigma	Relationships and Expectations, Cultural Empowerment	+	PEN-3 can contribute to an effective cultural analysis to develop an effective intervention
Brown et al. (2010)	South Africa		HIV-related stigma	Relationships and Expectations, Cultural Empowerment, Cultural Identity	+	PEN-3 is a proper starting point for exploring the structures related to the family support, and determining suitable points-of-entry for intervention development.
Iwelunmor and Airhihenbuwa	South Africa	South African women	Death and Loss from AIDS	Relationship and Expectations, Cultural Empowerment	+	PEN-3 offers an opportunity to examine the range of relevant expectations, and values an practices to understand perceptions

Study	Country	Population	Health topic	PEN-3 dimensions used	Information on using PEN-3	Conclusion on usability
Paskett <i>et al.</i> (1999)	United States	African American women	Cancer screening	-	-	-
Erwin <i>et al.</i> (2005)	United States	Latina women	Cancer screening	Relationships and Expectations, Cultural Empowerment	+	Use of PEN-3 as a structure for analyzing qualitative findings was one of the strengths of the study
Erwin <i>et al.</i> (2007)	United States	African American women and Latina women	Cancer education interventions	-	+	-
Erwin <i>et al.</i> (2010)	United States	Latina immigrants	Perceptions, knowledge, and experiences on cancer control interventions	-	+	PEN-3 was helpful in sorting beliefs in facilitating and inhibiting domains
Kline (2007)	United States	African American communities	Influence of the implicit values of thought-out choices on the implications for cultural sensitivity of rhetorical choices in breast cancer education materials	-	+	-
Ka'opua <i>et al.</i> (2008)	Hawaii	Hawaiian females	Cancer screening methods	Relationships and Expectations, Cultural Empowerment, Cultural Identity	+	PEN-3 was a helpful tool in systematically assess the impact of the influences on health behavior
Scarinci <i>et al.</i> (2012)	United States	Latina immigrants	Cervical cancer prevention	-	-	-
Beech <i>et al.</i> (2003)	United States	African Americans with a low socio-economical status	Smoking attitudes and practices	Relationships and Expectations, Cultural Empowerment	+	PEN-3 was an appropriate model to provide insight in perceptions to develop a culturally relevant program
Scarinci <i>et al.</i> (2007)	Brazil	women in Brazilian worksites	Factors related to smoking initiation and cessation	<i>Relationships and Expectations, Cultural Empowerment</i>	+	-

Study	Country	Population	Health topic	PEN-3 dimensions used	Information on using PEN-3	Conclusion on usability
Abernethy <i>et al.</i> (2005)	United States	African American men	Recruitment strategies in a study to prostate cancer screening	-	+	PEN-3 contributed to the recruitment by incorporating cultural values at a deep structural level
Ochs-Balcom <i>et al.</i> (2011)	United States	African American community	Willingness to participate in a genetic epidemiology study	-	+	PEN-3 was an useful tool in identifying and classifying themes participation
Garcés <i>et al.</i> (2006)	United States	Latina immigrants	Health care seeking behavior	-	-/+	-
Yick and Oomen-Early (2008)	US	Chinese Americans and Chinese immigrant communities	Domestic violence	-	+	PEN-3 offers the possibility to identify the importance of socio-cultural factors within the context of culture
Iwelunmor <i>et al.</i>	South-west Nigeria	mothers of children less than five years	Decision making for searching medical in child malaria	Cultural Empowerment	+	PEN-3 offers the opportunity to explore all aspects of the outcome measure during re-search

# English summary

The overall aim of this thesis is to study determinants for the promotion of STI testing among the Afro-Caribbean community in the Netherlands.

Sexual transmitted infections (STIs), including HIV and viral hepatitis B, still require attention. Yearly, more than 340 million new cases of STIs are found worldwide among men and women between 15 and 50 years of age. In 2006, the prevention and control of STIs became a priority of the World Health Organization (WHO). Although most STIs are found in developing countries, surveillance data of the National Institute for Public Health and the Environment (RIVM) showed that STIs are also prevalent among the Dutch-Antilleans and Surinamese in the Netherlands. Although there are many interventions for controlling STIs, only few have succeeded in stimulating STI testing among the Afro-Caribbean community in the Netherlands.

This thesis describes four studies into the beliefs and determinants for STI testing for the development of a culturally relevant intervention. We address the following research questions:

What are the determinants of STI testing among the Afro-Caribbean community?

What determinants of STI testing among the Afro-Caribbean community should be targeted with a future culturally relevant intervention to promote testing behavior?

What is the additional value of PEN-3 in the development of a culturally relevant intervention?

**Chapter 1** introduces the thesis by describing the burden of STI disease, defining the target population, providing an overview of the methodology and cognitive models used in the studies, and formulating the research questions.

**Chapter 2** describes the first study of the project into the factors related to beliefs regarding STI testing among the Afro-Caribbean community in the Netherlands, using the PEN-3 model as a theoretical framework. Four focus group discussions indicated that stimulating factors to get tested were *protection of the own health, wanting to drop condom use in a steady relationship, not trusting a steady (male) partner, protection of fertility or a possible future child, wanting to prove a (female) partner that one can be trusted, and mental*

*support of a friend. A good hidden test location that is easy to reach and the possibility to get tested for other diseases* were mentioned as factors that could possibly stimulate a person to get tested. Perceived barriers related to STI testing were *fear of pain during the testing procedure, fear of the social consequences of an STI, peers disapproving testing, the possibility of parents finding out about the test, gossiping, shame, and the lack of trust towards health care providers* treating patient data confidential. Possible *costs of a test and a large travel distance* were also mentioned as possible barriers. We found that labeling the beliefs together with the participants was a useful feature of PEN-3; it provided us with the chance to discuss and identify the underlying beliefs during the group discussion. However, we did not feel that PEN-3 contributed significantly to the findings of the FGDs.

**Chapter 3** describes a quantitative online survey into the determinants of the intention for STI/HIV testing among the Afro-Caribbean community in the Netherlands. In total, 303 Dutch-Antilleans and 450 Surinamese respondents were recruited through Dutch Internet panels and group activities. We used the Health Belief Model and constructs of the Social Cognitive Theory and the Reasoned Action Approach to develop the questionnaire. Both univariate and multivariate linear regression analysis showed that subjective norms were the most salient predictor of the intention to get tested. Analysis between low and high intenders showed that respondents had higher intention when they were still motivated to get tested despite the perceived barriers (health motivation), knew people from their social environment who were also tested for STIs and/or HIV (cues to action), were surrounded by people who found frequent testing important (subjective norms), and were able to openly communicate with their social environment about sexuality. The strong predictive power of the subjective norms suggests that attention should be given to a community-based intervention in order to change the present perceptions and attitudes towards STI testing.

**Chapter 4** describes a qualitative in-depth interview study into the underlying beliefs of STI testing based on the results of the quantitative online survey described in Chapter 3. We used the PEN-3 model as a framework to identify and guide the interpretation of the results found in the qualitative data of 20 in-depth interviews. After correction, 14 items related to barriers of STI testing remained in the qualitative data, which were grouped into three major topics: *knowledge and perceptions, social influences, and communication*. The study showed that there is both insufficient and inadequate *knowledge* on how to recognize STIs and the STI testing procedure. This is possibly the reason why some people search for medical help only at an advanced stage of the infection or refrain from looking for help altogether. The *social influences* were mentioned as a major barrier as the high perceived social control and gossiping could lead to stigmatization. *Communication* was mentioned as a barrier, because it was not perceived as normal for an adult to talk with a child about sexuality. The results

confirm the findings from the quantitative online survey that subjective norms and open communication are important determinants to focus on in an intervention. Additionally, the study shows that knowledge on STIs and the testing procedure should be increased. The findings indicate that personal barriers toward STI testing are often influenced by the perceptions/behaviors of the social environment. Therefore, it may be useful to not only target the individual, but also focus on the social environment to find the desired effect for a health promotion program. The PEN-3 model can serve as a useful tool to guide health care providers and program developers in focusing on positive and existential beliefs that could be used in achieving the desired behavior.

**Chapter 5** provides a systematic literature review of the PEN-3 model, a theoretical framework that centralizes culture in research into health promotion programs. The aim of the review was twofold: firstly, we assessed how PEN-3 can be applied in research in general and secondly, we identified the type of research in which the model can be best applied. We found that PEN-3 can be applied in preparing questions for qualitative information gathering, to organize qualitative data after thematic or content analysis, to organize data in a literature study, and during intervention development. In literature PEN-3 was used only in qualitative research such as focus group discussions and in-depth interviews. Therefore, it is difficult to establish whether this is the only type of research suitable for PEN-3 or that it could also be applied to quantitative research. Most studies considered PEN-3 useful for identifying social-cultural factors for developing culturally relevant interventions. Our systematic literature review shows that more information on how to apply the model should become available in order to validate the effectiveness and define guidelines for application. We provide suggestions to improve reporting on the application of the model in order to develop clear guidelines.

Finally, **Chapter 6** summarizes the main results of the studies and answers the research questions. We conclude that the determinants *health motivation, cues to action, subjective norms, risk behavior, test history, open communication, and knowledge* should be targeted in a future intervention. The strong influence of the social environment found throughout all studies in the project indicates that both external factors and personal determinants should be targeted to effectively improve STI testing within the Afro-Caribbean community in the Netherlands. PEN-3 could be a useful tool for health promotion planners using theories that lack specific focus on culture; it is helpful in organizing themes for qualitative data analysis, and stimulates users to think in a non-Western way. However, we feel that the model did not add significant value to the other models used.

For future research and intervention development we present the following recommendations:

- Research should be conducted into the underlying beliefs of the determinants *self efficacy* and *severity* to understand why both determinants were negatively correlated with a high intention found in the quantitative online survey.
- In research into ethnic communities, representatives of the target group should be involved in the research as early as possible, preferably while writing the research proposal to create a feeling of ownership and increase the support and participation from the community in the research.
- An intervention or health promotion program should target both personal determinants and external determinants, as most of the personal determinants are influenced by the norms of the social environment. When selecting the appropriate ecological levels, it must be kept in mind that selecting one ecological level does not exclude addressing other levels.
- Peer education should be used to influence determinants and beliefs related to *health motivation*, *open communication*, and *knowledge*. Proven intervention strategies like *Uma Tori!* and the use of social media should be a starting point for the intervention, using the principles of exchanging experience on sexual health and testing.
- The belief of frequent testing should be reinforced or introduced to those not familiar with the beliefs, as the younger generation seems aware of the consequences of the traditional norms and beliefs for their sexual health.
- To lower the threshold for testing, the principles of ‘Testlab’ can be applied for the Afro-Caribbean community. The chance of being seen at the laboratory is close to zero, and the reasons for visiting the laboratory are unclear for others at the facility.
- Knowledge regarding STI transmission routes should be increased to reduce stigma related to STI testing.

# Nederlandse samenvatting

Het algemene doel van dit proefschrift is het bestuderen van de determinanten voor het stimuleren van soa-testen onder de Afro-Caribische gemeenschap in Nederland.

Seksueel overdraagbare aandoeningen (soa's), inclusief hiv en virale hepatitis B, behoeven nog altijd aandacht. Jaarlijks worden er ruim 340 miljoen nieuwe gevallen van soa's gevonden onder mannen en vrouwen tussen de 15 en 50 jaar oud. In 2006 werden de preventie en het onder controle houden van soa een prioriteit van de World Health Organization (WHO). Hoewel de meeste soa's worden gevonden in ontwikkelingslanden tonen observatiedata van het Rijksinstituut voor Volksgezondheid en Milieu dat soa's ook nog aanwezig zijn onder de Antillianen en Surinamers in Nederland. Hoewel er veel interventies beschikbaar zijn voor het onder controle houden van soa's zijn er maar enkelen die succesvol waren in het stimuleren van soa-testen onder de Afro-Caribische gemeenschap in Nederland.

Dit proefschrift beschrijft vier studies naar de overtuigingen en determinanten voor soa-testen om een cultureel relevante interventie te ontwikkelen. Wij bespreken de volgende onderzoeksvragen:

1. Wat zijn de determinanten van soa-testen onder de Afro-Caribische gemeenschap?
2. Wat zijn de determinanten van soa-testen onder de Afro-Caribische gemeenschap waar een toekomstige cultureel relevante interventie zich op moet richten om het testgedrag te stimuleren?
3. Wat is de toegevoegde waarde van PEN-3 in de ontwikkeling van een cultureel relevante interventie?

**Hoofdstuk 1** start het proefschrift met het beschrijven van de ziektelast van soa's, het definiëren van de doelgroep, het beschrijven van een overzicht van de toegepaste methodologie en cognitieve modellen in de studies en het formuleren van onderzoeksvragen.

**Hoofdstuk 2** beschrijft de eerste studie van het project naar de factoren gerelateerd aan overtuigingen van soa-testen onder de Afro-Caribische gemeenschap in Nederland, waarbij gebruikt gemaakt werd van het PEN-3 model. Vier focusgroepen lieten zien dat *het beschermen van de eigen gezondheid, de besluitvorming om geen condoom meer te gebruiken in een vaste relatie, het niet vertrouwen van een vaste (mannelijke) partner, het*

*beschermen van de vruchtbaarheid en de gezondheid van een mogelijk toekomstig kind, het bewijzen van monogamie aan een (vrouwelijke) partner en het mentaal ondersteunen van een vriend* stimulerende factoren waren om te gaan testen. Een *goed verstopte testlocatie* die gemakkelijk te bereiken is en *de mogelijkheid om getest te worden op andere ziektes* werden genoemd als factoren die mogelijk een persoon zouden kunnen stimuleren om zich te laten testen. Ervaren barrières gerelateerd aan soa-testen waren *angst voor pijn tijdens de testprocedure, angst voor de sociale consequenties van een soa, peers die testen afkeuren, de mogelijkheid dat ouders achter het testen komen, roddelen, schaamte en het gebrek aan vertrouwen in zorgverleners* dat zij de patiëntendata vertrouwelijk behandelen. Mogelijke kosten voor een test en een grote reisafstand werden ook genoemd als mogelijke barrières. Het labelen van de overtuigingen, samen met de deelnemers, vonden wij een nuttig kenmerk van PEN-3; het gaf ons de kans om de onderliggende ideeën te bediscussiëren en te identificeren tijdens de groepsdiscussie. Echter, wij vonden niet dat PEN-3 significant heeft bijgedragen aan de resultaten van de focusgroepsdiscussies.

**Hoofdstuk 3** beschrijft een kwantitatieve online studie naar de determinanten van de intentie onder de Afro-Caribische gemeenschap in Nederland om zich te laten testen op soa's/hiv. In totaal werden er 303 Antilliaanse en 450 Surinaamse respondenten geworven via Nederlandse Internetpanels en groepsactiviteiten. Wij gebruikten het Health Belief Model (HBM) en constructen van de Social Cognitive Theory en de Reasoned Action Approach om de vragenlijst te ontwikkelen. Zowel univariate als multivariate lineaire regressie analyse lieten zien dat de subjectieve normen de meest uitspringende voorspeller van de intentie tot testen was. Analyse tussen mensen met een lage- en hoge intentie liet zien dat respondenten een hogere intentie lieten zien wanneer zij ondanks ervaren barrières nog steeds gemotiveerd waren om zich te laten testen (health motivation), mensen in hun sociale netwerk kenden die ook waren getest op soa's en hiv (cues to action), waren omringd door personen die frequent testen belangrijk vonden (subjective norms) en openlijk met hun sociale omgeving konden praten over seksualiteit. De sterke voorspellende kracht van de subjectieve normen suggereren dat er aandacht moet worden geschonken aan een 'community-based' interventie om de bestaande percepties en attitudes richting soa-testen te veranderen.

**Hoofdstuk 4** beschrijft een kwalitatieve diepte-interviewstudie naar de onderliggende overtuigingen van soa-testen, gebaseerd op de resultaten van de kwantitatieve online studie zoals beschreven in hoofdstuk 3. We gebruikten het PEN-3 model als een raamwerk om de identificatie en interpretatie van de resultaten te sturen. Na correctie bleven er nog 14 items in de kwalitatieve data over welke gerelateerd waren aan soa-testen. Deze items werden gegroepeerd in drie grote topics: *kennis en percepties, sociale invloeden en communicatie*. De studie liet zien dat er zowel onvoldoende als inadequate kennis aanwezig

is met betrekking tot het herkennen van soa's en de testprocedure. Dit is mogelijk de reden waarom mensen enkel medische hulp zoeken in een gevorderd stadium van de infectie of weerhouden worden om überhaupt hulp te zoeken. De sociale invloeden werden genoemd als een grote barrière, doordat de hoge sociale controle die ervaren wordt en het roddelen kunnen leiden tot stigmatisering. Communicatie werd genoemd als barrière, omdat het niet als normaal werd ervaren om als volwassene met een kind over seksualiteit te praten. De resultaten bevestigen de bevindingen van de kwantitatieve online studie dat de subjectieve normen en open communicatie belangrijke determinanten zijn om een interventie op te richten. Tevens laat de studie zien dat kennis over soa's en de testprocedure verbeterd moet worden. De resultaten tonen dat persoonlijke barrieres op het gebied van soa-testen vaak beïnvloed worden door de percepties/gedragingen van de sociale omgeving. Om deze reden is het mogelijk nuttig om niet enkel te richten op de individu, maar ook te focussen op de sociale omgeving om het gewenste effect van een gezondheidsbevorderende programma's te vinden. Het PEN-3 model kan dienen als een bruikbaar hulpmiddel om hulpverleners en interventieontwikkelaars te sturen in het focussen op positieve en unieke overtuigingen die kunnen worden gebruikt in het behalen van het gewenste gedrag.

**Hoofdstuk 5** geeft een systematische literatuurstudie over het PEN-3 model weer, een theoretisch raamwerk dat cultuur centraal stelt in onderzoek naar gezondheidbevorderende programma's. Het doel van de studie was tweevoudig: allereerst hebben wij onderzocht hoe PEN-3 in het algemeen toegepast kan worden in onderzoek en daarnaast hebben wij in kaart gebracht in wat voor soort onderzoek het model het best toegepast kan worden. Wij vonden dat PEN-3 het best toegepast kan worden om vragen te formuleren voor kwalitatieve informatieverzameling; om kwalitatieve data te ordenen na thematische of content analyse; om data in een literatuurstudie te ordenen en tijdens de ontwikkeling van de interventie. In de literatuur werd PEN-3 alleen gebruikt in kwalitatief onderzoek, zoals focusgroepsdiscussies en diepte-interviews. Om deze reden is het moeilijk om te bepalen of dit het enige type onderzoek is waar PEN-3 voor geschikt is of dat het ook toegepast zou kunnen worden in kwantitatief onderzoek. De meeste studies beschouwden PEN-3 als nuttig bij het identificeren van sociaal-culturele factoren om cultureel relevante interventies te ontwikkelen. Onze systematische literatuurstudie laat zien dat er meer informatie noodzakelijk is over het toepassen van het model om de effectiviteit te valideren en richtlijnen voor toepassing te definiëren. Wij bieden suggesties voor het verbeteren van de rapportage over de toepassing van het model om duidelijke richtlijnen te formuleren.

Tot slot vat **hoofdstuk 6** de belangrijkste resultaten van de studies samen en worden de onderzoeksvragen beantwoord. We concluderen dat een toekomstige interventie gericht moet zijn op de determinanten gezondheidsmotivatie, cues to action, subjectieve (sociale)

normen, risico gedrag, testhistorie, open communicatie en kennis. De sterke invloed van de sociale omgeving wordt door alle studies van het project heen gevonden en geeft aan dat zowel externe factoren als persoonlijke factoren beïnvloed moeten worden om op effectieve wijze het testen op soa's onder de Afro-Caribische gemeenschap in Nederland te verbeteren. PEN-3 zou een bruikbaar hulpmiddel kunnen zijn voor gezondheidsbevorderaars die werken met theorieën die geen specifieke focus op cultuur hebben; het is nuttig in het organiseren van thema's in kwalitatieve data-analyse, en het stimuleert de gebruikers om in een niet-Westerse manier te denken. Echter, wij vinden niet dat het model een toegevoegde waarde had in vergelijking met de andere modellen die wij gebruikt hebben.

Voor toekomstig onderzoek en de interventieontwikkeling bieden wij de volgende suggesties:

- Er moet onderzoek gedaan worden naar de onderliggende overtuigingen van de determinanten *self efficacy* en *ernst* om te begrijpen waarom beide determinanten, in de kwantitatieve online vragenlijst, negatief geassocieerd waren met een hoge intentie.
- In onderzoek onder etnische groepen zouden vertegenwoordigers uit de doelgroep zo vroeg mogelijk in het onderzoek betrokken moeten worden. Idealiter wordt de doelgroep betrokken bij het schrijven het onderzoeksvoorstel om een gevoel van 'ownership' te creëren, en de steun en participatie van de gemeenschap in het onderzoek te stimuleren.
- Een interventie of gezondheidsbevorderend programma zou gericht moeten zijn op zowel persoonlijke determinanten als externe determinanten, omdat de meeste persoonlijke determinanten worden beïnvloed door de normen van de sociale omgeving. Bij het selecteren van de best passende ecologische niveaus moet er in gedachten gehouden worden dat het selecteren van het ene ecologische niveau het aanspreken van andere niveaus niet uitsluit.
- Peer educatie zou gebruikt moeten worden om determinanten en overtuigingen gerelateerd aan gezondheidsmotivatie, open communicatie en kennis te beïnvloeden. Bewezen interventies als *Uma Tori!* en het gebruik van sociale media zouden een basis moeten zijn voor de interventie, gebruikmakend van het concept van het uitwisselen van ervaringen op het gebied van seksuele gezondheid en testen.
- De overtuiging van frequent testen zou moeten worden versterkt of moet worden geïntroduceerd aan de personen die niet bekend zijn met deze overtuiging.

De jongere generatie lijkt zich bewust van de gevolgen die de traditionele normen en overtuigingen hebben op hun seksuele gezondheid.

- Om de drempel tot testen te verlagen kunnen de principes van 'Testlab' toegepast worden op de Afro-Caribische gemeenschap. De kans om gezien te worden bij een testlocatie is zo goed als niet aanwezig en de redenen om het laboratorium te bezoeken zijn onduidelijk voor de anderen.
- Kennis op het gebied van de overdracht van soa's moet verhoogd worden om het stigma gerelateerd aan soa-testen te verlagen.

# Curriculum Vitae

Alvin Henry Westmaas was born on the 7th of October 1984 in Amsterdam, the Netherlands. He started his secondary education at the VWO, but switched schools during his 4<sup>th</sup> year. Despite the complication during switching schools, he obtained his HAVO in 2001 at the “Bredero Lyceum” in Amsterdam. Due to his high interest in the human anatomy, he initially decided to get his propedeuse in Nursing and switch to studying medicines. However, after the first year of Nursing, the Dutch government changed the rules for getting into the medicine study with a propedeuse. Therefore, he decided to obtain his bachelor of Nursing-degree; in 2005 he graduated in Nursing. In September 2006, he started the study Health Sciences at the Free University in Amsterdam. He graduated and received his Master of Science-degree in Infectious Diseases and Public Health Care in 2008. In January 2009, he started working as a researcher at the Municipal Public Health Service of Rotterdam on a research project into the promotion of STI/HIV testing among the Afro-Caribbean communities in the Netherlands. After finishing this research, he decided to get his doctoral degree on this topic. In February 2011, he was contracted as an external PhD Student by the Department of Work and Social Psychology at the university of Maastricht. Alvin has a special interest in promoting health behavior, migrants, cultural approaches, infectious diseases, and intervention development.

At the moment, Alvin is contracted by Radboud University Nijmegen Medical Centre and is working on an implementation project.

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