Translation, adaptation, and validation of an instrument to evaluate HIV/AIDS knowledge and attitudes for use with Salvadorian high school students

Carlos Salvador Zometa
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Translation, Adaptation and Validation of an Instrument to Evaluate HIV/AIDS Knowledge and Attitudes for use with Salvadorian High School Students

by

Carlos Salvador Zometa, III

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy
Department of Interdisciplinary College of Education University of South Florida

Major Professor: Robert Dedrick, Ph.D.

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Keywords: HIV/AIDS Knowledge and attitudes, confirmatory factor analysis, cross-cultural adaptation, validation, El Salvador

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Translation, Adaptation, and Validation of an Instrument to Evaluate HIV/AIDS Knowledge and Attitudes for use with Salvadorian High School Students

Carlos Salvador Zometa, III

ABSTRACT

This study translated, cross-culturally adapted and validated an instrument's scores for use in public high schools in San Salvador, El Salvador. The original instrument consisted of items developed by the Centers for Disease Control and Prevention (CDC) to assess HIV/AIDS knowledge and five dimensions of attitudes (Abstinence, Peer-pressure, Condom use, Drug use, and Threat of HIV) in grades 7 to 12 in the United States. Items were translated into Spanish using the back-translation method. The instrument was cross-culturally adapted using guidelines proposed by Guillemin, Bombardier, and Beaton (1993). A cross-culturally equivalent version of the original instrument was obtained using three different Salvadorian review panels and two pretests with Salvadorian high school students. An expert panel of HIV Salvadorian professionals validated the content and established its cultural acceptability for public school use.

A total of 483 students from 30 randomly selected public high schools in El Salvador participated in a series of validation studies. Confirmatory factor analysis of the translated instrument was used to evaluate the factorial validity of the five-factor attitudinal model. As part of the validation process, the translated Abstinence and Condom use subscales from the CDC were correlated with similar translated subscales from Basen-Engquist et al.'s (1999) published study as a measure of concurrent validity.
Finally, internal consistency reliability (Cronbach's alpha) was determined with 483 students and test-retest reliability was obtained with a subsample of 39 students.

Six major conclusions were: (1) The methodology used was successful in cross-culturally adapting the instrument. (2) HIV/AIDS content was rated as culturally acceptable and valid for use in public high schools of El Salvador. (3) The reliability of the scores from the knowledge section was moderate (test-retest reliability coefficient = .49 and coefficient alpha = .57). (4) Reliability (coefficient alpha) of the five attitudinal subscales was inconsistent: .55 (Peer-pressure), .58 (Abstinence), 0 (Condom use), .24 (Drugs), and .30 (Threat of HIV). (5) Confirmatory factor analysis provided support for a 4-factor attitudinal model (Peer-pressure, Abstinence, Drug use, and Threat of HIV). (6) Concurrent validity of the translated CDC Abstinence subscale was strong.

The results provided support for the methodology to cross-culturally adapt an instrument. The psychometric properties from the knowledge section and the attitudinal component related to abstinence were acceptable but additional research is needed before the Spanish instrument can be used with confidence in El Salvador.
CHAPTER 1
INTRODUCTION

According to the Joint United Nations Program on HIV/AIDS (UNAIDS, 2002), Acquired Immunodeficiency Syndrome (AIDS) has affected more than 40 million people worldwide. Currently, leaders from both the developed and underdeveloped regions of the world are working together to fight the epidemic. Despite these efforts, an estimated 5 million new cases of infection with the Human Immunodeficiency Virus (HIV) occur yearly (UNAIDS, 2004). Of particular relevance to this study is the number of cases of AIDS and HIV in Latin America. These cases have multiplied recently, estimated at 1.2 million and projected to increase (CDC, 2002a; UNAIDS, 2002).

The trend in Latin America foreshadows the epidemic currently ravaging countries in Africa and underscores the urgency to protect the population in Latin America. Since a cure has not been found and vaccines continue to prove to be unsuccessful, expanding health promotion programs and educating people about HIV transmission are the best alternatives. Adolescents and young adults represent a high-risk segment of the population that can greatly benefit from educational programs.

This idea is being promoted by a plan from the United Nations that uses a 10-step strategy to prevent the transmission of HIV among young persons. The plan calls for an increase of school-based HIV prevention programs in areas with a high prevalence of AIDS (United Nations Children Fund [UNICEF], UNAIDS, 2002, & WHO, 2002). The effect of such programs is that youths with a better education “…acquire knowledge,
confidence and social skills to protect themselves against the virus” (UNICEF et al., 2002, p. 27).

A wealth of information from the evaluations of HIV and teen-age pregnancy prevention programs has been generated in the United States (Kirby, 1999, 2001). This information is vital to the development, implementation, and evaluation of new programs. Curriculum planners of school-based programs who need guidance and information can rapidly access valid information from the Centers for Disease Control and Prevention’s report, Programs That Work (CDC, 1999), and the report, Emerging Answers, authored by D. Kirby (2001). Both sources published a list of evaluated programs in the United States that have successfully reduced the risk of HIV infection among adolescents.

The major findings were that the curriculum of the most effective programs contained a knowledge component that included: how HIV is transmitted, abstinence as the best way to avoid pregnancy, the risk associated with having multiple partners for sexual intercourse, and condom efficacy for those who decide to have sexual intercourse (CDC, 1999; Kirby, 2001). The curriculum of successful programs was also complemented with material from behavioral theories that targeted psychosocial factors and skills. Psychosocial factors are norms, attitudes, self-efficacy, and beliefs (Basen-Engquist et al., 1999); these factors can directly affect antecedents of sexual behaviors. As this information is disseminated and integrated into the curriculum of prevention programs in Latin America, it is anticipated that positive results will be achieved.

However, the results of state-of-the art programs must be documented with psychometrically sound instruments written in Spanish. Unfortunately, the lack of rigorously validated instruments to assess needs and the effectiveness of HIV education
in Spanish-speaking countries are major obstacles facing evaluators today in Latin America. Researchers in Latin America have two options. The first option is to develop a new instrument, and the second option is to adapt an existing one from another study (Guillemin, Bombardier, & Beaton, 1993). The former option is problematic because the methodology requires lengthy developmental lead time and ample resources (Guillemin et al., 1993). The latter option is the best option for countries with few resources because a cross-cultural adaptation of an instrument written in English is less demanding and rapidly produces an instrument that can be used to conduct needs assessments and program evaluation.

The cross-cultural adaptation of a pre-existing instrument is a process designed to ensure that the same construct is measured in two different populations. An adaptation is necessary to limit the impact of culture and language on the measurement properties of an instrument. Individuals’ culture and language mediate their perception of the construct (Brislin, Lonner, & Thorndike, 1973). When a construct has a different interpretation in two populations, the results from the instrument are not valid. Therefore, methodology to establish a cross-cultural adaptation is needed to minimize the effect of culture and language on the interpretation of an instrument (Brislin et al., 1973; Guillemin et al., 1993).

Several guidelines and methods have been proposed to adapt instruments cross-culturally to different populations (Bullinger et al., 1998; Guillemin et al., 1993; Herdman, Fox-Rushby, & Badia, 1998; Skevington, 2002). Researchers’ philosophical views of how to proceed with the cultural adaptation affect their preferred method and therefore these methods vary (Vijver & Leung, 1997). The effectiveness of different
methods has been supported through a series of validation studies in which instruments written in English have been adapted to other cultures (Bullinger et al., 1998; Skevington, 2002). A comparison of the methods revealed several common strategies that have been applied to different situations. These strategies include three phases. The first phase is the translation; the second is the adaptation of the instrument to a different culture; and the last phase is an examination of the psychometric properties.

The first strategy in the process of cross-culturally adapting an instrument consists of a series of forward-translations and subsequent back-translations to the original language (Brislin et al., 1973). The forward-translation process consists of changing text from one language to another so as to retain the same meaning. A committee and experienced translators work together to review and synthesize the forward-translation. Afterwards, the best translation is examined by individuals unfamiliar with the goals of the project; these individuals back-translate the content to the original language. The original instrument is then compared to the back-translation to confirm the original meaning of the instrument.

The second step is to obtain a linguistic adaptation of the items to meet the cultural characteristics of the target population (Guillemin et al., 1993). Bullinger et al. (1998), Herdman et al. (1998), and Skevington (2002) have offered a range of complex methods to adapt instruments. However, Guillemin et al.’s (1993) guidelines are less complicated, and are easily implemented in an environment with scarce resources. Guillemin et al.'s guidelines consist of a three-step procedure that relies on a panel formed of subject matter experts, bilingual reviewers, and lay persons who compare the original item with its translation to determine the equivalence of the instrument’s
concepts. Semantic equivalence, the first step, involves a review focusing on grammatical structure and equal meaning of the translated items. The second step, idiomatic equivalence, involves translating idioms and colloquialisms into expressions understood by the target culture. Conceptual equivalence, the last step, determines the use of words in the same social setting as the target population (Guillemin et al., 1993).

The third and final stage makes use of statistical procedures to verify and compare the measurement characteristics of the instrument (Bullinger et al., 1998; Gandek & Ware, 1998). Gandek and Ware (1998) state that a cross-cultural adaptation relies on validation strategies to compare the equivalence of a construct in different countries. They also report that determining content and construct validity provides evidence about the instrument’s appropriateness and serves as a measure of equivalence of interpretation across different populations. Additionally, Gall, Borg, and Gall (1996) recommend establishing the reliability and validity of the scores to increase the confidence of judgments derived from instruments. Therefore, the reliability and validity of the instrument’s scores are vital for an instrument that is adapted cross-culturally.

This multi-strategy approach for a cross-cultural adaptation makes use of a step-wise sequence that gradually transforms the instrument for use in another culture. There are several conditions that facilitate the adaptation process. First, if the constructs being measured are well defined and have similar interpretations in the two cultures, the process is facilitated. Another facilitating condition is if the variables have universal recognition (Hui & Triandis, 1985). An example of a universal concept is the knowledge component of HIV in educational programs. The risk factors and behaviors associated with transmission of HIV have been clearly defined. Because they are taught in many
countries, they are also universally recognized, which facilitates adaptation. In contrast, attitudes related to HIV are less universal and, therefore, their definition across cultures has to be analyzed. The analysis of the attitudinal construct involves verification of the importance of the items in the target culture and validation of the scores from the instrument.

When languages and cultures are similar, the adaptation from the original culture to a different culture is straightforward (Hui & Triandis, 1985). Conversely, when language and cultural variations are great, adaptations become increasingly complex. The adaptation of an instrument developed in the United States is expected to progressively increase in difficulty when adapted for use in England, Spain, and China, respectively.

Based on the previous information, an instrument, published by the Centers for Disease Control and Prevention (2002b) and used to evaluate HIV education in grades 7 to 12 in the United States, was adapted for use in El Salvador. The instrument is conveniently available at the CDC’s website (accessed May 2004), and serves as an item bank that can be customized to evaluate HIV curricula. The instrument was developed between 1989 and 1992 by an independent company (IOX Assessment Associates) and was designed to assess constructs in seven broad areas: Knowledge, Beliefs, Attitudes, Student Confidence, Friend’s Views, Intentions, and Behavior.

The validity of the seven constructs was established by a series of reviews by panels of HIV experts in the United States. Further, to ensure that content, vocabulary, and directions were appropriate for students in grades 7 to 12, the instrument was continuously field-tested with small groups of students (CDC, 2002b). After determining
that the instrument was appropriate for use with adolescents, the final version was reviewed, edited, and approved by a national panel of HIV experts.

The instrument for this particular study in El Salvador was constructed by combining the CDC's items designed to assess HIV/AIDS knowledge and attitudes of students in high school. To assess HIV/AIDS functional knowledge, 15 knowledge items from the CDC’s item bank were selected. The Attitude section was constructed by selecting 23 items from the CDC’s item bank that represented five different attitudinal dimensions (see Figure 1). An additional six items from Basen-Engquist et al.’s (1999) published study were included to evaluate the concurrent validity of the CDC's Abstinence and Condom use subscales. Demographic information to determine gender, age, grade, and previous HIV education was obtained through additional items. All items were translated into Spanish, adapted for use in El Salvador, and tested with students in public high schools in El Salvador.

The translation and adaptation of an instrument for use in another cultural group poses a number of methodological and measurement challenges. In this study, the methodological challenge was to obtain a cross-cultural equivalent, adjust the instrument’s content to ensure it was relevant to the target population, and ensure that the material was not culturally offensive to Salvadorian students. Further, the instrument’s readability had to be at the appropriate Spanish level to assure the content was understood by the students. The measurement challenges included obtaining acceptable measures of reliability and validity within the target population.
Figure 1. Five-dimensional attitudinal model.
Purpose of the Study

The purpose of this study was to take an instrument developed by the CDC to assess HIV/AIDS knowledge and attitudes of students in grades 7 to 12 in the United States and adapt it for use in El Salvador. The first phase utilized the back-translation method to obtain the first Spanish version of the instrument. In the next phase, an expert panel of reviewers from El Salvador established the conceptual equivalence of the Spanish instrument. The third phase evaluated the instrument’s content validity and cultural acceptability through a panel composed of HIV experts, health professionals, schoolteachers, and students from El Salvador.

The last phase involved collecting evidence of the validity of the scores from the Spanish version of the CDC instrument; 483 public high school students in the metropolitan area of San Salvador participated in the validation phase. Reliability of the scores was measured by the test-retest method and coefficient alpha. Confirmatory factor analysis was used to evaluate if the attitudinal construct had five different dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV). As part of the concurrent validation process, the Condom and Abstinence subscales from the translated CDC instrument were correlated with a set of existing attitudinal items from a published study by Basen-Engquist et al. (1999).

Specific Purposes

1. Determine the success of the cross-cultural adaptation by contrasting the first translated version of the CDC instrument with the final Spanish version of the translated CDC instrument.
2. Determine, using a Salvadorian panel, the level of cultural appropriateness of the Spanish version of the translated CDC HIV/AIDS knowledge and attitudinal items for use in El Salvador.

3. Ascertain the level of readability of the final Spanish version of the translated CDC instrument and evaluate content validity.

4. Evaluate the reliability of the scores from the Spanish version of the translated CDC instrument using a sample of Salvadorian students in grades 10, 11, and 12.

5. Determine if the Spanish version of the translated CDC instrument contains five attitudinal dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV) when analyzed using confirmatory factor analysis.

6. Evaluate the concurrent validity of the Abstinence and Condom use subscales from the Spanish version of the translated CDC instrument.

Limitations

The following limitations were encountered:

1. Self-reported measures have an unknown effect on the validity and reliability of the scores from an instrument.

2. Different response rates among students in different schools may have introduced bias into the study.

3. Reliability and validity data for instruments used in Latin America are not available.

4. Reliability of the scores and construct validity of the CDC’s items for use in the United States have not been determined.
5. The sample of Salvadorian adolescents used in the study (grades 10, 11, and 12) may not be representative of all adolescents in Latin America and thus limits generalizability.

6. The selection of schools in El Salvador was limited to the metropolitan area of the capital San Salvador. This limits the sample to urban students and excludes students from other cities and rural areas of El Salvador.

7. The sample excludes private schools. Private schools have a larger percentage of the population from the higher socio-economic group than students in public schools.

8. The sample consists of adolescents in school and excludes students who dropped out of school or those who did not have the resources to go to school.

Summary of the Introduction

The economic and social structure of many countries in Latin America has been affected by the transmission of HIV/AIDS among their populations. Adolescents are particularly susceptible to infection with HIV. Therefore, to reduce the incidence of HIV in Latin America, officials have relied on school- and community-based educational programs that prevent the transmission of HIV. To create effective programs, tools that provide reliable and valid scores must be used to evaluate these programs.

The availability of research instruments can be increased in Latin America by translating and adapting existing instruments from other cultures. Because language and culture can have various effects on how people interpret an instrument, careful strategies must be followed to ensure an appropriate adaptation. In this study, an existing instrument developed by the CDC to evaluate HIV/AIDS knowledge and attitudes in
grades 7 to 12 was translated into Spanish and cross-culturally adapted; the scores were then validated for use in El Salvador.
CHAPTER 2

LITERATURE REVIEW

Purpose of the Study

The purpose of this multi-phased study was to translate, cross-culturally adapt, and validate the scores from an instrument that assessed the HIV/AIDS knowledge and attitudes of high school students in El Salvador. The first phase utilized the back-translation method to obtain the first Spanish version of the instrument, which was developed by the CDC to evaluate HIV/AIDS knowledge and attitudes of students in grades 7 to 12. In the next phase, an expert panel of reviewers from El Salvador established the conceptual equivalence of the Spanish instrument. The third phase evaluated the instrument’s content validity and cultural acceptability through a panel composed of HIV experts, health professionals, schoolteachers, and students from El Salvador.

The last phase involved collecting evidence of the validity of the scores from the Spanish version of the CDC instrument; 483 public high school students in the metropolitan area of San Salvador participated in the validation phase. Reliability of the scores was measured by the test-retest method and coefficient alpha. Confirmatory factor analysis was used to evaluate if the attitudinal construct had five different dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV). As part of the concurrent validation process, the Condom and Abstinence subscales from the translated CDC instrument were correlated with a set of existing attitudinal items from a published study by Basen-Engquist et al. (1999).
The literature review provides an overview of the epidemiology of HIV in El Salvador and describes specific aspects of the HIV curriculum in the public high schools in San Salvador. As the HIV epidemic spreads around the world, adolescents are at an increased risk of infection due to a variety of risk factors. The review emphasizes that the most sensible way to reach adolescents is by increasing school-based prevention programs. Additionally, the effectiveness of curricula that integrate components of behavioral theories is discussed in view of the fact that these programs are effective in reducing the risks associated with HIV infection. Specifically, the review highlights the role of attitudes and knowledge as mediating variables in behavioral theories.

Methodological issues related to an instrument’s translation and adaptation from one language to another are discussed. These issues include obtaining the correct literal translation by the back-translation method and establishing guidelines for cross-cultural adaptation. Next, measurement issues related to the scores from an adapted instrument are discussed. This includes measuring the reliability and validity of the scores in a new population. In particular, the review will discuss several examples of construct validation of an instrument as a method to ascertain a cross-cultural adaptation.

*El Salvador*

El Salvador is the smallest country in Central America with an area of 21,040 square kilometers, but is one of the most populated with 6.4 million people (Central Intelligence Agency, 2004). A birth rate of 28 per 1,000 contributed to an annual population growth of 1.8%. The impact of young persons on the composition of the population is evident by their large demographic distribution of 37% and 58% in the categories of 0 to 14, and 15 to 64 years of age, respectively (Central Intelligence
Agency, 2004). As the younger generation enters the reproductive years and becomes sexually active, it will encounter the HIV epidemic.

*HIV epidemic.* The Health Department of El Salvador estimated a prevalence of 5,876 cases of HIV and 5,793 of AIDS; together they represent an infection rate of 0.6% of the Salvadorian population (Ministerio de Salud Publica y Asistencia Social, 2003). However, the United States Agency for International Development (2004) and UNAIDS (2000) report an underestimation of HIV cases and project the actual number to be in the range of 20,000 to 30,000. The majority of cases in El Salvador was reported in individuals under the age of 39. The characteristics include a disproportionately high concentration in the urban areas of San Salvador and an infection ratio for male-to-female of 3:1 (USAID, 2004). The prevalence of HIV/AIDS in young persons was reported as 2,500 and 4,000 cases in age groups 15 to 24, and 25 to 34, respectively (Ministerio de Salud Publica y Asistencia Social, 2003). Further, heterosexual contact was the most frequently reported risk factor for transmission. The other risks in decreasing frequency were mother-to-child, homosexual and bisexual contact, and drug use (Ministerio de Salud Publica y Asistencia Social, 2003). Some researchers have questioned the accuracy of the reported risk factors and point out that the large number of infected men suggests an under-reporting of homosexual and bisexual behavior (USAID, 2004).

The data indicated that sexual transmission was the most common route of HIV infection, and as such it should be a priority in prevention programs. Another index for sexual activity is the rate of sexually transmitted infections (STI). In El Salvador, the incidence of STIs in 2001 and 2002 was 52,705 and 54,197 cases, respectively (Ministerio de Salud Publica y Asistencia Social, 2003). Since STIs facilitate
transmission of HIV, they are also important to control. The urgency to prevent transmission of HIV is based on the projection of an increase in the prevalence to 1.6% for the year 2010 (World Bank, 2003).

To meet the enormous challenge, the government has therefore taken the leadership role and mobilized non-governmental and international organizations to participate in a national plan (Health Department Official, personal communication, September, 2003). These agencies have adopted a very comprehensive plan described in detail at the Health Department’s website ([www.mspas.gob.sv](http://www.mspas.gob.sv), accessed April 2004). Briefly, the plan includes prevention, capacity building, and expert consultation throughout the country. Other components include monitoring HIV infections by strengthening epidemiological surveillance and conducting research to determine the effectiveness of their programs (Ministerio de Salud Publica y Asistencia Social, 2003).

The Department of Education of El Salvador is also involved, and it has a curriculum that targets the transmission of HIV among adolescents.

**HIV education.** The school system in El Salvador consists of “parvularia” for preschool children, “basica” for students in grades 1 to 9, and “media” for grades 10 to 12 (high school). San Salvador and its surrounding area are in the Department (State) of San Salvador. San Salvador had a total of 58,028 students in high school, with 30,054 in public and 27,974 in private high schools (Departamento de Educacion de El Salvador, 2002). The distribution of students in public high schools in San Salvador according to grade was as follows: 10 (13,776), 11 (9,315), and 12 (6,608); this sample consisted of 54% female (Departamento de Educacion de El Salvador, 2002).
The official curriculum offered in high school is titled “Psicologia de la Adolescencia,” which is translated as “Psychology of Adolescence,” and was written by Lic. Daysi Miriam Figueroa Erazo. The curriculum is spiral and characteristically the concepts are progressively covered during one year and revisited during the latter years of school. The central theme revolved around the mental and physiological changes associated with adolescence. An examination of the curriculum by this researcher determined that students in the 10th grade learn about personal identity, morality, problem resolution, and sexuality (Figueroa Erazo, 2001a). Sexuality included information and activities about sexual relations, HIV/AIDS, and sexually transmitted infections. In particular, the unit on sexuality was comprehensive as it included didactic information and case studies to review the concepts. Specifically, the topics were: the biological aspects of the male and female anatomy; issues regarding masturbation, prostitution, abstinence, and sexual abuse; and the consequences of sexual activity (Figueroa Erazo, 2001a). The latter section, taught in 11th grade, informed students about STIs and HIV/AIDS and then discussed the symptoms and risk factors associated with transmission.

The students were taught about the origin and proliferation of HIV around the world. The main focus of the HIV lessons was on the six risk factors of transmission that are also taught in the United States. The unit emphasized the symptoms associated with AIDS (Figueroa-Erazo, 2001a). Prevention of HIV centered on the avoidance of risky behavior, such as not having sexual relations with unknown persons, avoiding drug needles, not breast-feeding if infected, avoiding body secretions, and the use of condoms.
Condoms were not vigorously promoted in this section; however, they were discussed in other sections of the curriculum.

An advantage of a spiral curriculum is that it progressively introduces a deeper understanding of the content at each grade level. Figueroa Erazo’s (2001b) curriculum titled the “Psychology of Adolescence” does not isolate issues of sexuality. Instead its strength was a deeper exploration of sexuality through a social, religious, and personal perspective. Further, the psychology of sexuality was a central theme that included sexual responsibility and consequences of sexual activity. Additionally, schools are allowed to request “charlas” or mini-lessons from outside sources to complement the curriculum or to reinforce concepts (schoolteacher in El Salvador, personal communication, September, 2003).

The non-profit organization Fundasida, an outside source, is very involved throughout the country. They provide educational assistance to public and private schools. An effective way to deliver the curriculum has been through “charlas” or discussion sessions for students. Their presence has gained the respect of many persons throughout the country, and they have established themselves as leaders in HIV/AIDS services. It is anticipated that the continued effort between the government and many other organizations will heighten awareness and stop the transmission of HIV in young persons. In conclusion, the government of El Salvador has a comprehensive plan to prevent the transmission of HIV. The plan has a specific component to target adolescents in school. Therefore, it is anticipated that a valid instrument will be useful to evaluate the effectiveness of their HIV prevention program.
Adolescent Risk Factors

Adolescents in many parts of the world are at increased risk of infection with HIV due to developmental, economic, and social factors. Developmental factors related to emotional, cognitive, and physiological maturity influence adolescents’ decisions about premature sexual relations that put them at risk of HIV infection, as well as other sexually transmitted diseases (Henderson, Champlin, & Evashwick, 1988). Other factors, such as economic reliance on adults for shelter, food, and protection, made adolescents vulnerable to sexual exploitation by others (Stephenson, 2003; UNESCO, 2003). Drug use and drug-related behaviors among adolescents also increase their risk of infection. While the percentage of drug users in this age group is small, transmission is possible from any of the following behaviors: injecting drugs, sharing needles, and having sex with a known drug user (CDC, 1988, 2003c).

The rate of sexual activity among adolescents in the United States and Latin America represented the primary risk of infection with HIV and other sexually transmitted infections (CDC, 2003b, 2003c; Cleland, Ferry, & WHO, 1995). The CDC (1998) and Kann et al. (2000) reported that students in the United States are involved in risky sexual behaviors that include one or more of the following acts: unprotected sexual intercourse (anal and vaginal), contact of the mouth with a sexual organ, a large number of sexual partners, high frequency of sexual acts, and lack of condom usage. Additionally, more students have sexual relations at a younger age. It is estimated that more than half of 17 year olds have had sexual relations (Alan Guttmacher Institute, 1999; CDC, 1998).
Likewise, sexual activity is a concern in Latin America and the Caribbean. The rate varied with some countries reporting much higher rates than others (Cleland et al., 1995). Rodriguez-Kelly (2001) reported that at least 25% of adolescents in Latin America will have sexual intercourse during their high school years, thus increasing their risk of HIV infection. The rate of sexual activity was also a concern in El Salvador, it was reported that 57% of women 15 to 49 years of age reported to be living with a male partner (Asociacion Demographica Salvadorena, 2003). Likewise, men in El Salvador reported their first sexual experience at 16 years of age (Asociacion Demographica Salvadorena, 2003). Regardless of the country, young persons around the world face similar risk factors for HIV. The risks include sexual relations with older partners; power differences that affect condom negotiation, and lack of education (Cleland et al., 1995; UNESCO, 2003).

The negative consequences of sexual activity are evident in the rates of adolescent pregnancy, abortion, infection with HIV, and other STIs (Alan Guttmacher Institute, 1999; CDC 2002a; Choi & Coates, 1994; Cleland et al., 1995). A unique problem in underdeveloped countries is the large number of people between 25 and 30 years of age with AIDS. The epidemiological data support the conclusion that these infections were acquired during adolescence (UNAIDS, 2002). The morbidity associated with sexual activity is disturbing, and the human and monetary costs to society are high. Promoting healthy sexual behavior and educating adolescents are the best methods to prevent sexually transmitted infections and infection with HIV.
In response to these concerns, policymakers have turned to educational programs to mitigate the negative consequences of sexual activity. The CDC (1995, 1999), Kirby (2001), and others (UNAIDS, 1997) have reported that harmful behaviors acquired in adolescence can be changed through educational interventions. In general, these programs have many short- and long-term benefits to society. An immediate effect is the reduction of negative consequences among adolescents who are currently sexually active. The long-term effect will be evident when adolescents enter adulthood and inevitably become sexually active. It is expected that they will then apply the knowledge and skills to prevent diseases.

Adolescents in the United States receive formal HIV education either through school- or community-based programs. The philosophical foundation has become a controversial topic yielding two polar sides. On one side, advocates of abstinence education support the premise that adolescents should wait to have sexual relations until marriage. They prefer knowledge, values, and attitudes that focus on the negative consequences of having sexual relations (Kirby, 2001). The other side favors a comprehensive approach that includes information about abstinence, contraception, and the use of condoms to prevent sexually transmitted diseases. Both sides claim their programs are superior and effective. The effectiveness of abstinence education has not been rigorously tested. But some studies indicate that adolescents did not delay the initiation of intercourse (Kirby, 2001, 2002), and other studies had negative or inconclusive results (Kirby, 2001).
**Effective components.** The components of effective programs in the United States have been identified through rigorous evaluations of comprehensive HIV/AIDS, pregnancy prevention, and sexuality education programs (CDC, 1999; Kirby et al., 1994; Kirby, 2001). Effective programs contain a knowledge component that includes: how HIV is transmitted; abstinence as the best way to avoid pregnancy; the risk associated with having multiple partners; and to a lesser degree condom efficacy (CDC, 1999, 2004; Kirby, 2001). Additional components that strengthen a curriculum are psychosocial factors and skills. Psychosocial factors are norms, attitudes, self-efficacy, and beliefs (Basen-Engquist et al., 1999), and they can directly affect antecedents of sexual behaviors. Kirby (2001) reported that sexual antecedents, such as sexual beliefs, attitudes toward intercourse or condoms, sexual norms, refusal skills, and contraceptive behavior, be addressed in prevention programs. Unlike the reasons given by supporters of abstinence education, these antecedents are known to influence sexual behavior.

Skills that help prevent the transmission of HIV, an additional component of the curriculum, have been taught in schools throughout the United States. The CDC (2004) reported that skills to resist peer pressure to engage in sexual behavior, goal setting, and communication skills related to sexual behaviors were taught in 68%, 62%, and 57% of the schools, respectively. Skills are common in the curriculum; however, their effect has not been widely reported, in part because they are difficult to assess. A paper and pencil test, the common method to assess, is not the most appropriate; instead, the correct procedure is to directly observe if the person has mastered the skill. This poses a challenge for those who want to evaluate sexuality-based skills since the behaviors take
place in private. Nevertheless, an educational program that incorporates skills has been associated with effective outcomes (Kirby, 2001).

St. Lawrence et al. (1995) evaluated a program that modified three types of skills related to: (1) discussing condoms before having sex; (2) refusing pressure to have sex; and (3) talking about HIV-risk behavior with peers. They reported a significant increase in condom use and lower frequency of unprotected intercourse (St. Lawrence et al., 1995). A meta-analysis by Johnson et al. (2003) supported the previous findings. Johnson et al. (2003) reported that interventions that reinforced interpersonal skills reduced the risks associated with HIV infection. However, a point that is overlooked is that a knowledge component is a prerequisite to learning a skill. A knowledge component is often complementary in many programs and is therefore a key element in prevention.

Finally, the knowledge and attitudinal components are less difficult to evaluate than a skills component. Knowledge and attitudes are evaluated in less time and with fewer personnel than skills. The works of Basen-Engquist et al. (1999) and DiClemente, Zorn, and Temoshok et al. (1986) established the validity and reliability of the previous components and favored their inclusion in an instrument. Additionally, the role of knowledge and attitudes in behavioral theories—as mediating variables that affect sexual behavior—make them an important component to integrate in a curriculum.

Role of behavioral theories. The nature of adolescent sexual behavior is complex as a vast number of antecedents combine with individual factors to produce a variety of outcomes (Kirby, 2001). The CDC’s (1999) publication “Programs That Work” and Kirby’s (2001) report Emerging Answers summarized the evaluation of pregnancy prevention, sexually transmitted infections, and HIV prevention programs. They
examined the outcomes and confirmed the difficulty of altering sexual behavior in adolescents. They reported that a small percentage of school-based programs had a significant impact in reducing risk factors associated with adolescent activity. A consistent finding among these two studies and others (Basen-Engquist et al., 1999; Fisher & Fisher, 2000; Kirby, 1999, 2001) has been the success of theory-based prevention programs.

Initially, behavior-changing theories were essential in altering and explaining unhealthy behaviors in other areas of public health (Green & Kruter, 1999). Consequently, their usefulness has been transferred to adolescent sexual behavior (Green & Kruter, 1999; Kirby, 2001). The advantage of the theories is the ability to systematically target more than one psychosocial factor at once, inform about disease transmission, and teach skills (Fisher & Fisher, 2000; Kirby, 2001). The social cognitive theory, social influence theory, social inoculation theory, and the theory of reasoned action serve as the foundation of successful prevention curricula with adolescents (Fisher & Fisher, 2000; Kirby et al., 1994). A detailed description of each theory has been provided by Azjen and Fishbein (1980), Bandura (1986), and Fisher and Fisher, (2000).

Kirby et al. (1994) described the advantages of using social learning theories in a curriculum to prevent HIV/AIDS and teen-ageage pregnancy among adolescents. They stated that the inclusion of a cognitive and social component facilitates and increases learning among this population. Protective behaviors are learned through both components, and the theories take advantage of the how learning occurs. For example, “…youths gain [their] understandings and beliefs directly through education and indirectly by observing the behavior of others” (Kirby et al., 1994, pp. 353-354). A
knowledge component may be effective when associated with a theory that presents the information in a didactic manner and is reinforced with interactive strategies. Further, they reported the advantage of social learning was related to an increase in learning that occurred when students observed teachers or by the student's interaction with other students. In addition, they cite the importance of these theories in helping adolescents understand and resist societal pressures that can influence behavior.

Yet, Basen-Engquist and Parcel (1992) caution that theory alone is not sufficient to guarantee behavior changes among adolescents and that other factors related to the school affect the results. These findings support Kirby’s (2002) observation that certain schools have a lower pregnancy rate, and the rate may be influenced by specific characteristics unique to the school. To maximize success, a theory-based program was included with a multi-component program that addressed the many factors that affect sexual behavior (Basen-Engquist et al., 1997). One of the objectives was to influence and thus change mediator variables by engaging students in direct instruction, role playing, or participating in hands-on activities. The other objective was to involve the entire school and thus raise awareness of issues related to sexuality (Basen-Engquist et al., 1997; Coyle et al., 2001). The combination of both objectives had positive results on risk factors.

Regardless of the type of program, behavior theories were found to be successful in changing mediator variables that affect behavior (Basen-Engquist et al., 1997; Kirby, 2001). These variables include intentions, beliefs, attitudes, skills, self-efficacy, and AIDS knowledge (Basen-Engquist & Parcel, 1992; CDC, 1999; Jemmott & Jemmott, 2000; Kirby et al., 1994). The outcome of implementing different strategies has been
positive changes in behaviors related to abstinence and sexual intercourse. Two important mediator variables common in many behavioral change theories are knowledge and attitudes. The discussion of these variables is important, as they are the targets for change by many HIV/AIDS interventions with adolescents.

Knowledge of HIV/AIDS

General knowledge and functional HIV knowledge are two distinct components found in prevention programs. General knowledge includes biological information about the human immune response, characteristics of the virus, and human development. This type of information is ineffective in changing behavior (CDC, 2002b). In contrast, functional knowledge is essential in preventing the transmission of HIV (CDC, 2002b; Main et al., 1994). Functional knowledge informs students about the consequences of touching semen, vaginal fluids or blood (CDC, 1988, 2002b, 2003b; Quackenbush, Clark, & Nelson, 1995). Additionally, functional knowledge includes information about transmission of HIV by a mother to her child, risks associated with drug use, and misconceptions or myths about HIV transmission (CDC, 1988, 2002b).

Functional knowledge is an essential component of many programs (Kirby, 2001; Quackenbush et al., 1995) and has been associated with positive outcomes. A meta-analysis of school-based sexuality programs by Song, Pruitt, McNamara, and Colwell (2000) revealed that the curriculum increased students’ sexual knowledge. They subdivided knowledge into six categories: general sexual knowledge, pregnancy, family life, contraception, HIV/AIDS, and STDs. The HIV/AIDS, pregnancy, and contraception effect sizes were 0.39, 0.26, and 0.18, respectively (Song et al., 2000). The results
suggest that the programs effectively increased functional knowledge and provide support for their inclusion in prevention programs.

Choi and Coates’s (1994) analysis support the inclusion of a knowledge component; they reported that school-based programs increased HIV/AIDS knowledge. Additional support was provided by Kim, Stanton, Li, Dickerson, and Galbraith’s (1997) analysis of 40 AIDS prevention interventions. They reported that 88% of the studies targeting adolescents had a statistically significant change in knowledge. Other studies demonstrated that an increase in knowledge was also associated with unexpected positive effects. For example, an increase in AIDS and condom knowledge among students in the age group 14 to 17 was associated with an increase in discussions of sexual topics between adolescents and their parents (Miller, 2001). Likewise, Siegel, DiClemente, Durbin, Krasnovsky, and Saliba (1995) reported a significant ($p < .0001$) correlation between AIDS knowledge and tolerance of those who have AIDS.

Additionally, the objectives in most programs had to be satisfied through a knowledge component. An objective in some programs has been to clarify misconceptions and myths about HIV transmission. Myths are promoted by friends, which confuse naïve teen-agers and lead to unsafe behavior. Other objectives were to stop teen-age students from having intercourse, to delay sexual activity among virgins, and to use effective contraception if involved in sexual intercourse. A knowledge component served to inform and thus protect students by equipping them with the correct and necessary information.

In summary, increasing functional knowledge related to HIV/AIDS has been an objective in prevention programs, and the evidence indicates a positive association with
successful outcomes. The role of knowledge is important because of its associated benefits. However, since the benefits did not always translate to changes in protective behaviors, other factors were also identified as important mediators (Kirby, Korpi, Adivi, & Weissman, 1997).

Modification of Attitudes

Since the demarcation of the attitude construct in the 1930s, there have been many explanations and experiments testing its psychological properties (Ajzen & Fishbein, 1980; Mueller, 1986). Louis Thurstone defined attitude as “… the affect for or against a psychological object” (cited in Muller, 1986, p. 3). Ever since, investigations to determine the relationship between attitude and behavior have advanced the understanding of the attitude construct. A predominant assumption was that attitude and behavior were directly related. However, an important finding was that changing an attitude was not always associated with a change in behavior, and this highlighted the difficulties inherent in predicting behavior (Greenwald, 1989). But the benefits of modifying attitudes, according to Beckler and Wiggins (1989), were their effect on four basic human functions. Accordingly, these principles can be useful in the prevention of HIV/AIDS.

The first function was to guide behavior toward valued goals and away from aversive events (Beckler & Wiggins, 1989). The disease AIDS is an aversive event whose negative consequences can be the focal point needed to modify attitudes toward the threat of HIV/AIDS. The second function included a cognitive component that allowed an individual to manage and simplify informational processing tasks. This feature allows persons to process relevant HIV/AIDS information in a manner that allows
them to improve a particular attitude. The third function was related to how individuals communicate information about their personality and values. The fourth function protected people from unacceptable or threatening thoughts, urges, and impulses. The previous two functions were seen in many HIV prevention programs. Therefore, based on these four functions, attitudes related to sexuality, abstinence, and HIV infection can be modified and should be the focus of well-designed interventions to alter behavior.

The common denominator of behavioral theories is their attempt to change behaviors by modifying attitudes (Ajzen & Fishbein, 1980; Kirby et al., 1991). As emphasized in the Theory of Reasoned Action, attitudes influence intentions that then affect behavior (Ajzen & Fishbein, 1980). This logic has been applied in studies that modified attitudes to change HIV/AIDS risk behaviors and increase condom use (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Kirby, 2001; Kirby et al., 1991; Main et al., 1994). The behaviors that need to be modified include delaying sexual intercourse, reducing the number of sexual partners, increasing the use of condoms, and eliminating the use of drug needles. These behaviors were commonly addressed by theory-based programs that targeted adolescents’ attitudes toward abstinence, condom use, peers, and HIV infection.

The modification of attitudes has been associated with positive preventive behaviors among adolescents (Kirby, 2001; Main et al., 1994). For example, Main et al. (1994) made use of components of the Theory of Reasoned Action to change the determinants of risky behavior and found significant changes in adolescents’ intentions to engage in safer sexual practices. Attitudes, an important element of the program, were changed in a positive direction. Of particular importance, attitudes about the vulnerability
to HIV infection (p < .04) reached significance. In contrast, attitudes toward condoms and talking to a partner about sex were altered and almost reached significance (Main et al., 1994). Students in the intervention group reported an increased use of condoms and fewer sexual partners than the comparison group (Main et al., 1994). The causality of attitudes was not established, but their role in changing behavior and intentions cannot be ruled out.

Likewise, Jemmott, Jemmott, and Fong’s (1992) study of inner city African-American adolescents utilized videos, games, and exercises to change attitudes about risky sexual behavior. Analyses of covariance determined that attitudes to engage in healthy sexual behaviors were significantly different (p < .007) than the control. They determined that intentions and attitudes (r = .70 and r = .68, respectively) toward risky sexual behaviors may serve as predictors of future behavior in African-American adolescents (Jemmott et al., 1992). Thus, an intervention that changed attitudes and increased knowledge was responsible for the increase in use of condoms and a decrease in the frequency of sexual intercourse.

Kirby’s (1991) research with adolescents provided evidence of the role of attitudes and norms in their decision to delay intercourse. He found a significant difference in the intervention group with regard to teen-agers’ perceptions of their peers’ involvement in intercourse and norms about unprotected sex (p < .001 and p < .05, respectively). Although the findings were not statistically significant, the advantage of changing the previously mentioned attitudes was important because their protective effect was evident after 18 months. But initiation of sexual intercourse, one of the primary objectives of the program, was statistically significant after the 18-month follow-up.
Kirby’s (1991) findings support the contention that adolescents are inclined to engage in sexual relations when they perceive their peers to be sexually active. O’Donnell, Myint-U, O’Donnell, and Stueve (2003) provided evidence to support Kirby’s (1991) observations about the effect of peer-pressure. They reported that higher scores on peer norms and outcomes about sexual relations were associated with a delay of sexual intercourse among students that were between 12 and 16 years of age.

Basen-Engquist et al. (2001) examined the effect of a multi-component HIV, STD and pregnancy prevention program on attitudinal and psychosocial variables in high school students. They reported that the program decreased the frequency of sexual intercourse without a condom and affected psychosocial variables in a positive direction. Specifically, attitudes toward condoms changed and were nearly statistically significant (p = .09). The attitudinal changes were associated with more condom use and a reduction in the number of sexual partners. However, a notable finding was that the number of students having sexual intercourse was not affected by the intervention. This highlights the challenges faced by all program planners and underscores the need to delay sexual involvement among younger adolescents.

In the present study, attitudes and knowledge about HIV/AIDS were included in the instrument because of their role in the prevention of HIV among adolescents. These variables were viewed as important elements that mediated behaviors (CDC, 1988; Jemmott & Jemmott, 2000). The objectives of the Knowledge component included information about the behaviors that place students at risk for HIV, the importance of blood and body fluids as infection sources, the correct preventive behaviors, and the identification of misconceptions about risks. The objectives of the attitudinal component
included attitudes toward peers, abstinence, drug use, threat of infection, and condom use.

The information derived from the evaluation of educational programs can be useful to program planners and has implications for educational programs. The results can be used to write specific objectives, select the correct pedagogical strategies, and establish the outcomes for an evaluation. More importantly, the results of an evaluation can determine if the HIV/AIDS content has to be adjusted to the target population. Implications for educational programs include selecting personnel, preparing teaching materials, ordering classroom supplies, and training teachers. Additionally, the information was also essential to a process evaluation that determines how the program is being implemented.

In summary, the inclusion of knowledge and attitudes into behavioral change theories has been shown to increase the effectiveness of interventions that attempt to reduce risky behaviors. Because of the potential benefits, the transfer of this information to other countries is appropriate and should be integrated into the curriculum of schools. Therefore, the design of state-of-the-art programs with ambitious objectives must be followed by an evaluation. Unfortunately, the lack of rigorously validated instruments to assess HIV education in Spanish-speaking countries is a major obstacle facing evaluators today in Latin America.

**Development of the CDC HIV/AIDS Instrument**

The CDC’s leadership role in preventing the transmission of HIV is evident by the quality of programs, research, and publications that are disseminated to the American public. They have published guidelines for HIV school-based education (CDC, 1988,
2003b), compiled a list of effective programs for adolescents (CDC, 1999), and
developed an instrument to evaluate HIV education for all grade levels (CDC, 2002b).

The instrument to evaluate school-based programs can be obtained through a published handbook (CDC, 2002b), as well as from the CDC’s website. The developers of the instrument, IOX Assessment Associates and personnel from the CDC, designed it to assess seven different constructs related to HIV/AIDS education in schools. The constructs included: Knowledge, Beliefs, Attitudes, Student Confidence, Friends’ Views, Intentions, and Behavior (CDC, 2002b). These areas are common in most curricula taught in middle and high schools, and they are theoretically important in preventing the transmission of HIV.

Additionally, the instrument is designed to assess HIV education for students in grades 7 to 12. They report that content validity was established with panels of experts and by personnel in the CDC’s Division of Adolescent and School Health (CDC, 2002b). A national developmental review panel and a national advisory panel of experts, who advise the CDC on matters related to AIDS, were responsible for the appraisal and revision of the content. The methodology is not uncommon. Aday (1996) reports that such a review by an expert panel is a valid method to ascertain the content of an instrument. Basen-Engquist et al. (1999) and Kirby et al. (1994) developed an instrument to evaluate an HIV intervention by relying on qualitative reviews by a panel of HIV professionals and reported the method yielded valid and reliable results.

The CDC (2002b) reported that adjustments in the HIV/AIDS instrument were made for reading level, understanding of items, and directions until they were appropriate for adolescents in the United States. The instrument was field-tested with students from
the target population and subsequently edited. This process was repeated until the content was found to be adequate for adolescents. Next, a panel of HIV/AIDS experts conducted a series of reviews and revised the instrument to ensure that the content was valid.

The CDC’s instrument is a useful resource for evaluators as it serves as an item bank. The item bank provided the flexibility to design an evaluation to meet the specific objectives of a particular curriculum. Selecting appropriate questions to meet school board approval is another advantage, especially in light of frequent refusals to approve questions about sexual behaviors. While the instrument created for this study is derived from the CDC’s items, it is considered a new instrument because the items will be translated and cross-culturally adapted for use in El Salvador. Therefore, the reliability and validity of the scores are important psychometric measures to be evaluated for this population in El Salvador.

**Content and Construct Validity**

If the interpretation of the scores from the Salvadorian high school students is to be made with confidence, it is necessary to establish the content validity of the items and the construct validity of the attitudinal subscales. Validity is defined by Gall et al. (1996) as “… the appropriateness, meaningfulness, and usefulness made from test scores” (p. 773). The intent of the HIV/AIDS Knowledge component was to quantify students’ knowledge regarding transmission of HIV, risk behaviors, and misconceptions. The intent of the attitudinal component was to assess adolescents’ favorable or unfavorable evaluations toward five different attitudinal constructs.

**Content validity.** Content validity is defined as the “… degree to which the scores yielded by a test adequately represent the content, or conceptual domain, that these scores
purport to measure” (Gall et al., 1996, p. 250). One method to establish content validity is to ask professionals who work in a particular area to generate items that are important or representative of a domain (Aday, 1988). Another method, recommended by Crocker and Algina (1986), is to define the domain, select a panel, and obtain items by providing specific instructions of the process and the domain. Afterwards, all the items are collected, sorted, and analyzed for their relevancy toward the domain. Mueller (1986) cautioned that content validity cannot be measured with a statistical index, and, therefore, the process requires documentation. Documentation for the present study was provided by panelists who were familiar with both the HIV/AIDS domain and the characteristics of the target population.

**Construct validity**. Construct validity is defined as “… the extent to which a particular test can be shown to assess the construct that it purports to measure” (Gall et al., 1996, p. 249). Construct validity is more difficult to establish than content validity. There are several conditions that facilitate the construct validation process. The first condition is to operationally define the construct. For example, if the attitudinal domain is to be validated, it would have to be defined. As a psychological construct, it was defined by Mueller (1986) “ … [as] an idealized abstraction that is subject to scientific study and can be measured through inferences about people’s beliefs and behaviors…. ” Items are then written to represent the definition of the construct that is to be assessed.

Another condition is to establish a specific relationship to other constructs. Hypotheses about the construct are then formulated that specify the nature of the association between other psychological constructs (Mueller, 1986). Predictions about the variable’s role within the construct are formulated, and afterwards the results provide the
necessary information about the similarity or dissimilarity between constructs.

Quantifying the relationships among constructs is essential to this type of validation. In particular, the process relies on previous studies that provided evidence to support or renounce the construct. Included among the procedures to establish construct validity are the differentiation between groups, factor analysis, and the multitrait-multimethod matrix method (Crocker & Algina, 1986). Factor analysis has a long history as an acceptable method to establish construct validity (Thompson & Daniel, 1996).

**Confirmatory factor analysis (CFA).** Stevens (1996) and Thompson and Daniel (1996) have noted that confirmatory factor analysis (CFA) is currently being used extensively to establish construct validity. Factor analysis is a method that determines the internal structure of an instrument. Stevens (1996) has stated that if the theoretical evidence underlying the construct is strong or if factors are specified a priori, CFA is advantageous. The HIV/AIDS instrument designed by the CDC, as an example, was purported to represent five attitudinal factors. Additionally, theoretical evidence indicating the usefulness of the attitudinal construct and other psychosocial factors in prevention programs have been established in other studies (Basen-Engquist et al., 1999; Main et al., 1994). These two considerations favored assessing the factorial validity of the CDC's attitudinal section of the instrument with CFA.

The CFA is a powerful method that is used to test and confirm hypotheses regarding a theoretical construct; it provides statistical information through an analysis of the observed variables (Byrne, 1994). The researcher restricts the instrument’s observed variables or items to specifically load on only one “latent” or “unobserved factor” (Byrne, 1994). The relationship of the items to the assigned latent variable is then evaluated. The
Programs that perform a CFA are LISREL, EQS, and Proc Calis (Byrne, 1994; Hatcher, 1994; SAS Institute, 2004). The Proc Calis program by the SAS Institute (2004) requires equations similar to the ones written for the LISREL program for the analysis of data with latent variables (Hatcher, 1994). The predetermined factors serve as the basis for the structural equations that account for the association of the variables to the factors. The covariance matrix of the items and the maximum likelihood method are two important properties of the Proc Calis program for CFA (Hatcher, 1994). Further, the model is specified to include the observed variables as the dependent variable. The latent variables and the errors in the model are the independent variables. The independent and dependent variables are placed in the equations according to a predetermined model; afterwards the model is tested.

To determine if the model fits the data, the program makes use of fit indices, such as the $\chi^2$, root mean square error of approximation (RMSEA), Bentler and Bonett’s Non-normed Index, and Bentler’s comparative fit index. These indices serve to determine if the model fits the data (Hatcher, 1994). The CFA also reveals the correlation among the latent variables, provides factor loadings, and determines the magnitude of the errors associated with the items. The CFA is a powerful tool to establish construct validity.

**Reliability**

A common definition for reliability is “that the instrument consistently measures the intended construct.” Reliability is viewed differently by the proponents of Classical Test Theory and Modern Test Theory. The former theory is relevant to this study and is
comprehensively explained by Crocker and Algina (1986). Briefly, the classical model assumes that the scores from an instrument are represented by the equation $X = T + E$ (Crocker & Algina, 1986, p. 107), where $X$ is the score from the instrument, $T$ is the true score, and $E$ is a random error. The Classical theory asserts that a reliability coefficient can be calculated from either a single administration of an instrument or from two different administrations. When a single administration is given, the internal consistency of the scores is measured with Cronbach’s alpha (Crocker & Algina, 1986). Crocker and Algina’s (1986) interpretation of alpha is that it is “… the percentage of the total score variance that is due to true score variance” (p. 139). Another common interpretation of coefficient alpha was that it describes how the items are functioning together as a unit.

The second method for estimating reliability is the test-retest method. The same instrument is given to the same group of persons at two different times. A Pearson product-moment correlation coefficient (“coefficient of stability”) is calculated between the two different scores. The interpretation of this coefficient is different from that of coefficient alpha. The test-retest provides information of the measurement errors that result from the “… fluctuations of an examinee’s observed scores around the true score because of temporary changes in the examinee’s state” (Crocker & Algina, 1986, p. 133). The source of error is usually from either the administration of the instrument, scoring, guessing, incorrectly marking the instrument, and temporary changes in attitude (Crocker & Algina, 1986; Mueller, 1986).

Thompson and Vacha-Haase (2000) noted that reliability is derived from the scores of a specific population and is not a property of the instrument. They stated that reliability should be reported as a measure associated with the scores. Their observation
was important because it placed the emphasis on the scores and the target population. In other words, the fact that scores are reliable for one group does not guarantee that the scores will be reliable for other groups.

**Cross-Cultural Adaptation**

*The different guidelines.* Researchers who need an instrument to evaluate programs typically have to develop a new instrument or adapt a pre-existing one (Guillemin et al., 1993). The first option is challenging as the methodological procedure and needed resources increase the development time and cost (Guillemin et al., 1993). The second option is to adapt an existing survey to a new population; under the right economic conditions and scientific evidence, this alternative is favorable over developing a new instrument.

The United States and other Western nations dominate the scientific literature, which facilitates the adaptation of instruments to countries with limited resources. An important issue has been the elimination of cultural bias inherent in the construction of the original instrument as it affects the interpretation of the items in a new population (Vijver & Leung, 1997). In particular, the challenge is to obtain two instruments that are proven to be equivalent at the conceptual, operational, item, and scalar level (Hui & Triandis, 1985). However, the methodology of a cross-cultural adaptation is dependent on the purpose of the instrument. When the purpose is complex, such as comparing the intelligence or scholastic aptitude of individuals from two different cultures, the process according to Herdman et al. (1998) requires a complete and complex investigation of how the two cultures perceive the construct.
In contrast, when the purpose is less complex and the construct has universal qualities, as in the case of providing an instrument to assess HIV/AIDS knowledge and attitudes in a different country, the cross-cultural adaptation is less demanding. Favorable conditions must also exist for this type of adaptation. One condition is the recognition within both cultures of a construct with a “universal” aspect (Hui & Triandis, 1985). For example, the risk factors responsible for the transmission of HIV have been established worldwide and have a universal quality. Additionally, adaptations are advantageous when the construct is concrete (Hui & Triandis, 1985), and the origin of the language is similar. As an example, an instrument in English will theoretically be uncomplicated when it is adapted to Spanish, and more complicated if adapted to Chinese or Swahili.

The methodological and measurement characteristics of cross-cultural adaptations have been established through a variety of studies including those that have attempted to compare the health status and quality of life among different countries (Schmidt & Bullinger, 2003). In these studies three types of methods have been used. The first type of method is the simplest and is illustrated in studies by Daza, Novy, Stanley, and Averill (2002), Ruiz, Berrocal, Lopez, and Rivas (2002), and Davis, Tang, Chang, and Noel (1999). The second type is represented by the guidelines proposed by Guillemelin et al. (1993). Finally the third type is reflected in the guidelines proposed by the IQOLA group (Bullinger et al., 1998), Herdman et al. (1998), and the WHOQOL group (Power, Harper, & Bullinger, 1999; Skevington, 2002). This third type is the most complex and combines qualitative and quantitative techniques to cross-culturally adapt and obtain an equivalent instrument.
A comparison of the different methods indicates that certain elements are essential to the process. In particular, the guidelines recommended by Guillemin et al. (1993) and the IQOLA group (Bullinger et al., 1998) differ, but they contain elements that complement each other. These elements include the back-translation method, analysis of the translations by more than one person, synthesis of several translations, cultural review of items, pretesting, and validation of the scores. Since the purpose of this study was to obtain a new instrument for use in El Salvador, the method used in this study will rely mostly on Guillemin’s guidelines to adapt an instrument, and it will be complemented with aspects recommended by Bullinger et al. (1998) and Gandek and Ware (1998).

Guillemin’s guidelines. According to Guillemin et al. (1993) a cross-cultural adaptation is divided into two components: translation and adaptation. The first involves a change from one language to another to obtain a literal meaning. The instrument must be forward-translated by at least two different translators. The forward-translations should retain the same meaning. Afterwards, the translations should be reviewed by a committee. The use of qualified individuals at all stages is essential and directly affects the quality of the final product. The back-translation involves comparing the instrument to the original version. This key step should involve individuals who are not aware of the original instrument. According to Guillemin et al. (1993), their unfamiliarity will reduce bias, and a review by different committees will improve the quality of the cross-cultural adaptation.

The adaptation phase is the process in which the words from the first language have to match the semantic, idiomatic, cultural context, and lifestyle of the target
population. In parallel with the first phase, Guillemin et al. (1993) recommend an evaluation by a multi-disciplinary committee and emphasized the use of bilingual reviewers who are familiar with the culture of the target population. The first step is to establish semantic equivalence. This involves establishing the same meaning as the original items and matching the composition of the sentences in both instruments (Guillemin et al., 1993). To ensure the same meaning, the translated item is written with the same grammatical structure and it should have a similar vocabulary.

In addition to semantic equivalence, the adaptation attempts to achieve idiomatic equivalence. Idiomatic equivalence refers to the translation of idioms and colloquialisms into expressions understood by the target culture. The interpretation of colloquialisms may affect how students respond to the items. Finally, the adaptation phase attempts to achieve conceptual equivalence. Conceptual equivalence relates to the legitimacy of the concept in the target population. The concept must be relevant and understood according to the life experiences of the persons in the new culture (Guillemin et al., 1993). For example the word “cousin” can refer to a first- or a second-generation family member in some cultures. The interpretation of the word has to be the same for every person--either a first or a second-generation member, but it cannot have both. Conceptual equivalence assures that the meaning and interpretation of the items are the same for all of the persons in the sample. Guillemin et al. (1993) noted that the process yielded a cross-cultural equivalent between the source and the adapted version.

The final step in the cross-cultural adaptation is to pretest the instrument with the target population and to identify problematic items using the probing technique. The advantage of the probing technique is that it uncovers items that are not culturally
relevant. The guidelines recommended by Guillemin et al. (1993) provide a sequential process that aims to produce a quality instrument. However, a drawback of their method is the reliance on qualitative methods and the lack of quantitative strategies to confirm the adaptation.

*Guidelines from the IQOLA.* The International Quality of Life Assessment (IQOLA) is a complex, multi-national project that created a cross-cultural equivalent of an instrument to be used in more than 10 different counties (Bullinger et al., 1998; Gandek & Ware, 1998). The method used to create this cross-culturally equivalent instrument was comprehensive, involving many professionals from different nations and large samples from different countries. The process was implemented over a 10-year period, and the method consisted of three steps. Briefly, the first step involved numerous forward- and back-translations with qualitative and quantitative measures (Bullinger et al., 1998). This initial phase culturally adapted the content and used complex procedures to establish the conceptual equivalence of the instrument. This phase identified difficulties related to the translation, eliminated misunderstood items, and revised or eliminated problematic items.

The second step established content validity and construct validity of the scores from different countries. Content validity determines how adequate the sample of items in the instrument reflects the larger domain. In the IQOLA project, content validity was established by comparing the instrument to a known standard (Gandek & Ware, 1998). Further, construct validity relied on evidence related to the variables in the construct, the internal structure, and “… the analysis of the theoretical relationship between scale scores and external criteria” (Gandek & Ware, 1998, pp. 953-954). The internal structure was
established by principal components factor analysis and structural equation modeling. The results provided evidence of the theorized structure and served as a comparison across countries (Keller et al., 1998; Ware et al., 1998).

The goal of the IQOLA project was to reproduce the conceptual model of the health survey across different populations, and their results showed that the dimensions were consistent with those of the original instrument (Keller et al., 1998). The discovery of having the same construct among the different populations supported their claim that the translation and adaptation methods were appropriate. Additionally, they noted that the interpretations of the scores were the same in each country. The success of the adaptation and ensuing method to establish a cross-cultural equivalent of the IQOLA to more than 10 countries in Europe proved the robustness of their method.

The third step in the IQOLA process was to obtain normative data with representative national samples (Bullinger et al., 1998). Gandek and Ware (1998) stated that “normative data make it possible to interpret the scale score for an individual respondent or a group of respondents in comparison to the distribution of scores for the norming sample” (p. 995). A drawback of the methodology developed by the IQOLA group was the amount of resources, length of time, and qualified personnel involved at each stage. The benefits exceed the shortcomings, and the methodology’s success has been demonstrated through many studies (Bullinger et al., 1998; Gandek et al., 1998; Keller et al., 1998).

Synthesis of Cross-Cultural Adaptation Methods

A synthesis of the common components to adapt an instrument is an alternative to following one single method. The components include the back-translation method,
analysis of the translations by more than one person, synthesis of several translations, cultural review of items, pretesting, and validation of the scores. Additionally, the use of expert and lay panels, bilingual reviewers, and expert translators is essential for the process.

The findings reported by Guillemin et al. (1993) and Bullinger et al. (1998) are in agreement with Brislin et al. (1970), who found back-translation to be a valid method. The procedure requires several forward-translations of the instrument by experienced translators and several reviews of the translations by others. A back-translation to the original language then serves as a comparison between the meanings of the two languages. A literal meaning should be retained for the translation to be successful.

However, the number of forward-translations to obtain a quality translation varied from five to one translation. The availability of qualified translators, expert reviewers, and funds were resources that affected the number of translations. Studies by Daza et al. (2002) and Ruiz et al. (2002) used one or two back-translations followed by a review of the instrument by two or three individuals familiar with the research. Both reported successful results. Based on the previous results, one or two back-translations can be acceptable for an adaptation.

The role of language usage is an essential step in a cross-cultural adaptation. The method has to systematically eliminate problematic items that are inappropriate or culturally irrelevant. Guillemin et al. (1993) qualitatively evaluated and adjusted items for semantic, idiomatic, and conceptual equivalence. In contrast, Bullinger et al. (1998) quantitatively evaluated the items according to translation difficulty, clarity, common language, and conceptual equivalence. Since language is the primary form of
communication, this step is crucial. The simplicity of Guillemin’s analysis of language usage is more feasible than the others.

To determine if the items are understood as intended, a pretest with a sample from the target population is necessary. The instrument is tested with a small group and then analyzed for understanding. Bullinger et al. (1998) recommended the cognitive debriefing approach where participants were asked about the item’s difficulty and had to identify items that upset them or that were confusing, whereas Guillemin et al. (1993) advocated the probing technique. The straightforwardness of the probing technique makes better use of time and is appropriate for high school students. The intent is to solicit an open-ended response to compare the true meaning of the problematic item with what was implied or not understood. The protocol recommended by Guillemin et al. (1993) is to ask the question: “What does this item mean?” The student’s responses are then compared to the meaning of the item and the process is useful in that it identifies inappropriate or problematic items. A review by an expert and lay panel allows the introduction of culturally relevant material that is unfamiliar to researchers. Therefore, the addition of panels improves the results of the adaptation by filtering out culturally irrelevant material.

The guidelines from the IQOLA recommended calculating the reliability of the scores and establishing content and construct validity. Reliability can be determined by the test-retest method and by calculating the internal consistency of the instrument. Content validity can be determined by the use of an expert panel that compares the items in the instrument against those from an established domain. Establishing content validity
is essential because it provides assurance that the items represent the domain being assessed.

Factor analysis has a dual role in a cross-cultural adaptation. The first is that it can be used for evaluating construct validity. The second is that it serves to verify the success of the adaptation. A successful adaptation will produce conceptually equivalent instruments, and theoretically they will yield the same factor structure. Keller et al. (1998) explained that they obtained the same factor structure across 10 different countries because the constructs were equally interpreted in each country. Factor analysis is therefore a very useful tool for ascertaining a cross-cultural adaptation.

*Spanish Language Adaptation and Factorial Validation*

Hui and Triandis (1985) assert that cross-cultural adaptations are straightforward when languages are similar and the construct is clearly defined. Studies by Daza et al. (2002) and Ruiz et al. (2002) provide an example that supports their opinion in regard to the use of an instrument written in English and adapted for use in Spain. Daza et al. (2000) adapted and validated an instrument with less difficulty when Hui and Triandis’s principles were satisfied. In contrast, Ruiz et al. (2002) had a more difficult and less clearly defined construct that yielded an adapted instrument that did not retain the factorial dimensions found in the original. These findings raise questions about the translation, previous validation, and the difficult nature of a cross-cultural adaptation.

Daza et al. (2002) compared the English and Spanish translations of the Depression Anxiety Stress Scale-21 and established the Spanish instrument’s validity with confirmatory factor analysis (CFA). Daza et al. (2002) examined the factorial dimension and internal consistency of the two instruments. In particular, if the adaptation
was successful, they expected the internal consistency, convergent validity, and factor structure of the English and Spanish instrument to be the same. They found the convergent and discriminant validity of the translated instrument to be statistically significant and similar to the English version.

Daza et al. (2002) reported that the internal consistency was adequate for the original and the adapted version. Using CFA, they determined the adapted version had the same factor structure as the original, and an important finding was that the factor loadings were significant for a three-factor model ($p < .01$). They concluded that the three-factor structure consisting of depression, anxiety, and stress was similar to the original constructs. Based on this result, they were able to ascertain the construct validity of the adapted instrument. The replication of the same factor structure provided evidence that supported the success of the methodology used for translation and adaptation. The use of a previously validated instrument that had many items that were tested in different populations appeared to facilitate Daza et al.'s (2002) adaptation.

Daza et al. (2002) utilized the back-translation method that yielded a quality translation. Their use of a panel of bilingual Hispanics to establish cultural relevance was advantageous because the panel’s culture was similar to the sample population, and they were able to make relevant contributions that increased the quality of the items. A limitation of the study was the small sample size ($n= 98$) that was used in CFA; a much larger size has been recommended for CFA.

In contrast, a different study by Ruiz et al. (2002) translated the English version of the Weight Efficacy Life-Style questionnaire into Spanish for use in Spain. Ruiz et al.'s (2002) procedure included two back-translations and a review by two professors. Unlike
Daza et al. (2002), they did not report the use of a panel or a pretest, and it was likely that these components may have improved their results. Ruiz et al. (2002) reported that both versions of the instrument had an adequate measure of reliability. However, the factorial dimension of the two instruments was not similar, thus questioning the effectiveness of the translation and the adaptation. In particular, the item’s interpretation was questioned because they were not tested with a sub sample.

Ruiz et al. (2002) tested a five-factor model with CFA (n = 345), and they reported that the Spanish version did not retain the five original factors. Subsequently, items were deleted and retested, yet the analysis did not produce the original five factors. To determine the best model that fit the data, another CFA (three-oblique factor model) was performed, and this yielded a three-factor model with an acceptable goodness of fit index. The primary reason for not attaining the factorial structure of the self-efficacy construct in Ruiz et al.'s adapted version was the complexity of the construct, and the secondary was due to the similarity among the items. Ruiz et al. (2002) reported that the constructs were correlated and that the items loaded on several factors. Apparently, multidimensionality of the items affects the results.

The overall results of the previous study suggested that the translation of certain items might have contributed to the three-factor structure. According to Ruiz et al. (2002), certain items lacked conceptual equivalence after the translation, and social differences among the cultures affected how some items were interpreted. Therefore, the items of an instrument must be conceptually clear to prevent an ambiguous interpretation, and all of the items must be translated properly. A shortcoming of the study was the lack of a pretest that could have identified the cultural acceptability of the items for use in
Spain. Guillemin et al. (1993) recommended the use of a panel or a pretest to identify cultural bias and ambiguous items. In summary, the use of a condensed methodology by Ruiz et al. (2002) and the complexity of their construct affected the results of the adaptation.

*Adaptation of an HIV/AIDS Instrument in Hong Kong*

Davis et al. (1999) reported on a procedure for translating and adapting an English version of the International AIDS Questionnaire into Chinese for use with adolescents in Hong Kong. Unlike the methods recommended by Bullinger et al. (1988) and Guillemin et al. (1993), this procedure was brief. The authors stated that the original instrument was comprised of items from other instruments. One of the instruments was developed in a “Western” nation and the other was an instrument designed specifically for a Chinese population. The original instrument consisted of 35 items. The items were back-translated and reviewed by bilingual researchers for face validity (Davis et al., 1999). According to Davis et al. (1999), the instrument was field-ready after this short procedure.

A total of 863 Chinese students answered the instrument and a CFA determined that the translated version had the same four-factor structure as the English version. They reported eliminating 17 items to obtain a final instrument with 18 items. The overall reliability (Cronbach alpha) of the scores was .73 and the following subscales--Transmission myths, Attitudes, Facts, and Personal Risk--were reported to have an alpha of .73, .66, .45, and .48, respectively. The elimination of items to raise the reliability of the scores and to obtain a four-factor model raised questions about the adaptation. This issue was not addressed by the authors. However, Skevington (2002) cautioned that the reliability of an adapted instrument is lower than that of the original instrument. This
observation is similar to Gullemin et al. (1993) in that they believe that adapted instruments are similar to a new instrument, and the psychometric properties may not be the same as those of the original instrument.

Summary of Literature Review

The literature review discussed the epidemiology of HIV/AIDS in El Salvador and listed the pertinent aspects of the HIV curriculum taught in the public high schools of San Salvador. The risk factors that placed adolescents at risk of infection, with a particular emphasis on sexual behavior, were discussed because they increase the risk of transmission of HIV. In particular, the discussion focused on the effectiveness of school- and community-based educational programs with curricula that integrate components of behavioral theories to reduce the risk factors associated with the transmission of HIV. Two important components, HIV/AIDS knowledge and attitudes, were discussed because they are mediating variables in behavioral theories. Knowledge related to transmission, behavioral factors, and myths have been associated with effective programs. However, other components must also be present to change behavior. The attitudinal component, a key psychosocial factor, mediates behaviors that increase the risk of HIV transmission (Basen-Engquist et al., 1999). Specifically, attitudes related to abstinence, condom use, risk of HIV, drugs/steroids, and peer-pressure have been associated with behavioral change (Basen-Engquist & Parcel, 1992; Kirby et al., 1991). Therefore, educational programs that contain these components have to be evaluated with instruments that provide reliable and valid scores.

The theoretical evidence indicates that the cross-cultural adaptation of an existing instrument is one way to provide new tools for researchers in other parts of the world.
Methodological issues related to an instrument’s translation and adaptation from one language to another were discussed. These issues include obtaining the correct literal translation by the back-translation method and establishing guidelines for cross-cultural adaptation. Measurement issues related to an adapted instrument’s reliability and validity were outlined. In particular, the content and construct validation of scores from an instrument was reviewed because these validation procedures provide a method to ascertain the success of the cross-cultural adaptation. Given this background, an instrument developed by the CDC was translated, adapted, and the scores validated for use in El Salvador.
CHAPTER 3

METHODS

Purpose of the Study

The purpose of this multi-phased study was to translate, cross-culturally adapt, and validate the scores from an instrument that assessed the HIV/AIDS knowledge and attitudes of high school students in El Salvador. The first phase utilized the back-translation method to obtain the first Spanish version of the instrument, which was developed by the CDC to evaluate HIV/AIDS knowledge and attitudes of students in grades 7 to 12. In the next phase, an expert panel of reviewers from El Salvador established the conceptual equivalence of the Spanish instrument. The third phase evaluated the instrument’s content validity and cultural acceptability through a panel composed of HIV experts, health professionals, schoolteachers, and students from El Salvador.

The last phase involved collecting evidence of the validity of the scores from the Spanish version of the CDC instrument; 483 public high school students in the metropolitan area of San Salvador participated in the validation phase. Reliability of the scores was measured by the test-retest method and coefficient alpha. Confirmatory factor analysis was used to evaluate if the attitudinal construct had five different dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV). As part of the concurrent validation process, the Condom and Abstinence subscales from the translated...
CDC instrument were correlated with a set of existing attitudinal items from a published study by Basen-Engquist et al. (1999). An outline of the research plan is presented in Figure 2.

<table>
<thead>
<tr>
<th>Phase 1: Translation of English Instrument into Spanish.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location: United States.</td>
</tr>
<tr>
<td>a. Two forward-translations by native Spanish-speaking translators.</td>
</tr>
<tr>
<td>b. Synthesis of first Spanish version by four bilingual individuals.</td>
</tr>
<tr>
<td>d. Comparison of original and back-translated version.</td>
</tr>
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<td>e. Two individuals will resolve discrepancies.</td>
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<tr>
<th>Phase 2: Establish the Conceptual Equivalence by Comparing the English and Spanish Version.</th>
</tr>
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<tbody>
<tr>
<td>Location: El Salvador.</td>
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<tr>
<td>a. Bilingual review with five professionals from El Salvador. Evaluate for semantic, idiomatic, and conceptual equivalence.</td>
</tr>
<tr>
<td>b. Lay panel review to edit directions, items, and answer choices.</td>
</tr>
<tr>
<td>c. Principal investigator and Lay Panel will edit and identify problematic items.</td>
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<tr>
<th>Phase 3: Readability, Content &amp; Cultural Acceptability Review by Salvadorian Panel.</th>
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<tr>
<td>Location: El Salvador.</td>
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<tr>
<td>a. Seven-member Salvadorian expert panel will determine the content and cultural acceptability.</td>
</tr>
<tr>
<td>1. Problematic items will be revised.</td>
</tr>
<tr>
<td>2. Summarize findings and report level of agreement.</td>
</tr>
<tr>
<td>b. Determine reading level with two Salvadorian experts.</td>
</tr>
<tr>
<td>c. Revise instrument as necessary with Lay Panel.</td>
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<tr>
<th>Phase 4: Pretest of Spanish Instrument in El Salvador.</th>
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<tbody>
<tr>
<td>a. Pretest instrument with Salvadorian adolescents. Form two groups of four individuals (two male and two female students). Use probing technique to check for understanding, interpretation, ambiguous items, and cultural relevance.</td>
</tr>
<tr>
<td>b. Edit instrument and pretest if necessary.</td>
</tr>
<tr>
<td>c. Edit final instrument with the assistance of the Lay Panel.</td>
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<tr>
<th>Phase 5: Administration of Instrument in El Salvador.</th>
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<tbody>
<tr>
<td>a. Randomly select 10 public high schools in San Salvador. Randomly select classrooms to obtain a representative sample of students in grades 10, 11, and 12.</td>
</tr>
<tr>
<td>b. Provide permission slips to 500 students to obtain a sample of at least 300 students.</td>
</tr>
<tr>
<td>c. Randomly select 20-50 students for a one-week test-retest reliability study.</td>
</tr>
<tr>
<td>d. Descriptive statistics.</td>
</tr>
<tr>
<td>e. Univariate analysis and item analysis.</td>
</tr>
<tr>
<td>f. Multivariate (CFA) Statistics.</td>
</tr>
<tr>
<td>g. Determine concurrent validity with the embedded items.</td>
</tr>
</tbody>
</table>

Figure 2. Steps Outlining the Research Methodology of the Multi-phase Study.
Specific Purposes

1. Determine the success of the cross-cultural adaptation by contrasting the first translated version of the CDC instrument with the final Spanish version of the CDC instrument.

2. Determine using a Salvadorian panel, the level of cultural appropriateness of the translated CDC HIV/AIDS knowledge and attitudinal items for use in El Salvador.

3. Ascertain the level of readability of the final Spanish version of the CDC instrument and evaluate content validity.

4. Evaluate the reliability of the scores from the Spanish version of the CDC instrument using a sample of Salvadorian students in grades 10, 11, and 12.

5. Determine if the Spanish version of the CDC instrument contains five attitudinal dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV) when analyzed by confirmatory factor analysis.

6. Evaluate the concurrent validity of the Abstinence and Condom use subscales from the Spanish version of the CDC instrument.

Construction of the English Language Version of the CDC’s Instrument

The Centers for Disease Control’s Assessment Instruments for Measuring Student Outcomes Grades 7-12, Booklet 6 (CDC, 2002b) was ordered from the CDC’s website in May 2002 and served as a source for the knowledge and attitude items. The booklet serves as a question bank that can be modified to assess seven constructs related to HIV/AIDS education: Knowledge, Beliefs, Attitudes, Student Confidence, Friend’s Views, Intentions, and Behavior (CDC, 2002b).
The booklet described the process used by IOX Assessment Associates and the Centers for Disease Control to develop the items. They employed five different review boards to systematically construct, test, and revise the instrument. The procedure included field-testing with small groups of students to confirm that directions, items, and vocabulary were appropriate for this age group. After revising the items, they were field-tested again with adolescents, and the items were revised until they were suitable. Further, several panels of HIV evaluation experts met to review the items to ascertain content validity. Therefore, the content and face validity were acceptable.

The instrument for use in El Salvador was constructed by taking 38 items from the CDC’s booklet and 6 items from a study by Basen-Engquist et al. (1999). These items were translated and cross-culturally adapted to assess HIV/AIDS knowledge and attitudes of public high school students in El Salvador. As described in Appendix A, age, grade, gender, and previous HIV education were included to assess demographic characteristics.

**HIV Knowledge**

The instrument assessed HIV functional knowledge with 15 items. The CDC (2002b) defines functional knowledge as information about the transmission of HIV, testing, risk behaviors, and prevention. Specifically, the 15 items assessed knowledge related to: (1) sexual contact with an infected person; (2) sharing needles with an infected person; and (3) myths about transmission. The information in Table 1 displays the 15 knowledge items from the CDC’s item bank and provides the correct answer for each item.
### Items Assessing HIV Knowledge

<table>
<thead>
<tr>
<th>Items Assessing Knowledge</th>
<th>Source</th>
</tr>
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<tbody>
<tr>
<td>1. You can't get AIDS if you have sex only once or twice without a condom. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>2. A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>3. Condoms are 100% effective in preventing HIV. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>4. Males can pass HIV on to others through their semen. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>5. You can get HIV by sitting on the seat of a toilet that a person with AIDS has used. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>6. Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>7. You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>8. HIV can be found in semen, vaginal fluids, and blood. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>9. A person can get HIV by sharing drug needles. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>10. HIV can be found in breast milk. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>11. Once you are infected with HIV, you are infected for life. (T)</td>
<td>CDC</td>
</tr>
<tr>
<td>12. People infected with HIV are usually very thin and sickly. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>13. Some people have gotten HIV by swimming in the same pool as someone with AIDS. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>14. You can get HIV from a mosquito bite. (F)</td>
<td>CDC</td>
</tr>
<tr>
<td>15. Latex condoms can be used to prevent HIV/AIDS. (T)</td>
<td>CDC, Reworded</td>
</tr>
</tbody>
</table>

**Note.** Items: 2, 4, 6, 8, 9, 10, 11, and 15 were true; 1, 3, 5, 7, 12, 13, and 14 were false.

This instrument made use of a true and false scale with five options: “I am sure it is true,” “I think it is true,” “I don’t know,” “I think it is false,” and “I know it is false.”
Each question was worth one point; however, two responses were possible per statement. For example, if the correct answer is “true,” the following scale was used: “I am sure it is true” – 1 point, “I think it is true” – 1 point, “I don’t know” – 0 points, “I think it’s false” – 0 points, “I am sure it’s false” – 0 points” (CDC, 2002b, p. 6). False statements were scored in reverse.

The eight true and seven false statements balanced the instrument and thus avoided a response set. The inclusion of “do not know” to the scales was intended to eliminate guessing and thus increase the validity of the scores. The scores ranged from 0 (all incorrect) to 15 (all correct), and a percentage was calculated for each individual. This type of scale has been used in the United States and Latin America. In the United States, DiClemente et al. (1986) developed a modified True/False/Do Not Know scale with 30 items to assess AIDS knowledge (reliability was not reported). Jemmott et al. (1992) used the scale developed by DiClemente et al. (1986) to assess HIV/AIDS knowledge in a population of adolescents and reported a coefficient alpha of .73. Likewise, the feasibility of using a modified True/False scale written in Spanish was demonstrated with Honduran adolescents (Fundación Fomento en Salud, 2001). Therefore, the data indicated that the scores from a true and false scale with five options were reliable.

HIV/AIDS Attitudes

Researchers have established the reliability and validity of Likert scales for measuring HIV and AIDS-related attitudes. For example, Coyle et al. (1999) used a four-point scale and reported an internal consistency of .78 and .87 for scores from a population of high school students’ attitudes toward sexual intercourse and condoms,
respectively. The items in Coyle’s study assessed two of the same constructs that were important to this study. Also, with a similar rating scale, both Carvajal et al. (1999) and Silva and Ross (2003) measured adolescents’ HIV attitudes in Latin America and reported reliability of .70 and .88 for the scores, respectively. Based on the previous evidence, Likert scales are appropriate to assess attitudes.

The instrument used in this study is presented in Appendix A. The information in Table 2 shows the number of items by source and describes the construct represented by each item. Twenty-three items from the CDC item bank were used to assess five dimensions of the attitudinal HIV/AIDS construct: (1) Peer-pressure; (2) Abstinence; (3) Condom use; (4) Drugs use; and (5) the Threat of HIV infection (CDC, 2002b). Additionally, six items from an instrument developed by Basen-Engquist et al. (1999) to measure attitudes of adolescents were added as part of the concurrent validity study. Reliability and validity of the six items were established by Basen-Engquist et al. (1999). The reliability of the scores from a four-point scale was reported to be .78 for the Abstinence subscale and .87 for the Condom use subscale.

The 23 items in the attitudinal component of the CDC’s instrument have two characteristics that increase internal consistency. The first is the balance of positively and negatively worded statements. As suggested by Muller (1986), it lowers the chance of answering in a set response. The second is that the instrument covers the full domain of the attitude construct by including affective, behavioral, and cognitive statements (Muller, 1986).
Table 2

Source of Attitudinal Items

<table>
<thead>
<tr>
<th>Source</th>
<th>Items</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>23</td>
<td>Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV</td>
</tr>
<tr>
<td>Basen-Engquist et al. (1999)</td>
<td>6</td>
<td>Condom and Abstinence</td>
</tr>
</tbody>
</table>

The attitudes were measured with a five-point Likert scale that ranged from “strongly agree,” “agree,” “not sure,” “disagree,” to “strongly disagree” and the responses were assigned values of 1 to 5, respectively. Negative statements (items 1, 3, 4, 6, 7, 10, 13, 15, 16, 18, 22, 23, and 26) were scored so that “strongly agree” = 1, “agree” = 2, “not sure” = 3, “disagree” = 4, and “strongly disagree” = 5. The scores for positive statements (items: 2, 5, 8, 9, 11, 12, 14, 17, 19, 20, 21, 24, 25, 27, 28, and 29) were reversed so that “strongly agree” = 5, “agree” = 4, “not sure” = 3, “disagree” = 2, and “strongly disagree” = 1. Higher scores indicated more favorable attitudes and lower scores unfavorable attitudes.

Study 1

Forward-translation, Synthesis, and Back-translation of the Instrument

Forward-translation

The back-translation method is the process of translating an instrument from one language into another language and then translating it back to the original language. This allows the comparison between the original and its back-translation. According to Brislin et al. (1970), the method was valid for translating an instrument written in English and
translated into Spanish. The purpose is to compare the written text and the meaning of the original with the back-translation. A critical factor of the process is the selection of qualified individuals who are proficient in two languages and who have expertise in the subject. Therefore, a challenge of this process is identifying competent translators, bilingual reviewers, native language speakers, and content matter experts because their inclusion will increase the quality of the final translation and affect the adaptation (Brislin et al., 1973; Guillemin et al., 1993; Hui & Triandis, 1985).

The number of forward-translations that yields a quality translation has yet to be determined. Previous studies have used from one to five. Bullinger et al. (1998) demonstrated that at least three different translations were necessary for an acceptable result. In contrast, some obtained successful results with one and two translations (Becher et al., 1999; Davis et al., 1999). The feasibility of two forward-translations was demonstrated by Alonso et al. (1998) who obtained two forward-translations of an instrument written in English and adapted in Spain.

Table 3

<table>
<thead>
<tr>
<th>Qualifications of Translators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Birth Place</td>
</tr>
<tr>
<td>Mother Tongue</td>
</tr>
<tr>
<td>Educational Level</td>
</tr>
<tr>
<td>Experience</td>
</tr>
</tbody>
</table>
Therefore, this study made two different translations by requesting two bilingual individuals to carry out a forward-translation. Their qualifications include a college education, Spanish mother tongue, fluency in English and Spanish, and a combined experience of 50 years translating documents (see Table 3). As demonstrated in Appendix B, the instrument’s directions, items, and answer choices were sent electronically to the translators in a form derived from a study by Beaton, Bombardier, Guillemin, and Ferraz (2002). Subsequently, two versions of the original instrument were independently translated and returned to the primary investigator via email. The translators documented their difficulties on the form and were interviewed to discuss problematic items.

**Synthesis**

The two forward-translations were merged by a committee of four bilingual individuals who had relevant Master’s degrees and/or Spanish as the mother tongue (see Table 3). A form (adapted from Beaton et al. 2002) was provided to each reviewer. The form (see Appendix C) was sent electronically to Bilingual Reviewers 1, 2 and 4. Reviewer 3 participated in the last step and edited the final version.

Bilingual Reviewers 1, 2, and 4 read the two forward-translations and the English version. Afterwards, they compared the two Spanish translations or made their own translation if needed and selected the item that retained the idea or meaning found in the English version. This process produced three translated versions. Bilingual Reviewers 1 and 4 synthesized these translations by selecting the best translation for each item. This was achieved by comparing the items, selecting the best meaning, and then agreeing on the best translation. Next, Microsoft Word XP’s (2003) Spanish dictionary (Salvadorian
version) corrected the spelling and placement of Spanish accents on the words.

Confirmation of the synthesis was then made with Bilingual Reviewer 3 who reviewed the English version, two forward-translations, and the first Spanish version.

Back-translation

The first Spanish version was sent via email (see Appendix D) and was back-translated by an individual unfamiliar with the English version. The method was recommended by Brislin et al. (1973) and Schmidt and Bullinger (2003) and yielded a quality translation. Back-translator 1 had a Master’s degree in English-Spanish language translation and her mother tongue was English. Discrepancies were listed and sent to the primary investigator via email. An interview with the translator was scheduled to resolve problematic items. The back-translated English version and the original version were compared to verify if the meaning of each item was the same. The translated items that did not match the original structure were reevaluated and rewritten.

Study 2

Conceptual Equivalence by Salvadorian Expert Panel

The objective of the adaptation is to have two instruments that are conceptually equivalent. For instruments that are translated and adapted from one language to another it involved the replication of the construct and the elimination of cultural biases that influence the construct's interpretation (Hui & Triandis, 1985; Vijver & Leung, 1997). A vital aspect of the process of establishing conceptual equivalence is to adjust the words to the cultural level of the target population and then to determine if they are relevant and understood as intended. It was expected that establishing a conceptually equivalent instrument would yield acceptable psychometric measures.
According to Guillemin et al. (1993), the process includes establishing the semantic, idiomatic, and conceptual equivalence of an instrument that was adapted from one culture to another. The process systematically replicates the construct from the first culture to the target culture. Guillemin et al. (1993) suggested that a review by a multidisciplinary committee of content matter professionals, linguists, and individuals from the target population is necessary to assure that the cultural content will be adequate. Leplege, Ecosse, Verdier, and Perneger (1998) and Bullinger et al. (1998) made use of a committee composed of experts and reported that it was an integral part of establishing conceptual equivalence.

This study identified an expert panel of Salvadorian professionals by soliciting names from the Salvadorian government, non-governmental organizations, and a search of HIV-related websites in El Salvador. After the initial recruitment, the professionals were informed of the study and asked to participate in the evaluation. Five Salvadorian experts agreed to review and edit the instrument to achieve a Spanish version that was a semantically, idiomatically, and conceptually equivalence for Salvadorian culture. The panel consisted of three medical doctors familiar with issues related to HIV/AIDS and two teachers experienced with the school system. The form in Appendix E was delivered to the panel members’ place of work or handed to them. Directions on the form explained how to proceed with the evaluation, and the checklist described in Table 4 served as a reference guide.
Table 4  

The Definition of Semantic, Idiomatic, and Conceptual Equivalence

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic</td>
<td>Words and the composition of the sentences have the same meaning as the original item.</td>
</tr>
<tr>
<td>Idiomatic</td>
<td>Translation of idioms and colloquialisms into expressions understood by the target culture.</td>
</tr>
<tr>
<td>Conceptual</td>
<td>Validity of the concept and experiences of the target population. The ideas/concepts are the same for each item and will be understood by students in El Salvador. The concepts are relevant to the experiences of Salvadorian adolescents.</td>
</tr>
</tbody>
</table>

Note. The definitions were adapted from Guillemin et al. (1993).

The semantic, idiomatic, and conceptual nature of the items was judged by each panelist on a scale that was pass (1) or fail (0). A frequency for each of the three categories was determined by adding the passing scores for each item. Categories with a frequency of three or more were considered to have reached equivalence. If an item received three negative ratings, it was rewritten and evaluated by the Lay Panel. It was noted that one of the reviewers did not evaluate the semantic or idiomatic equivalence of the items, and only the scores from the other panelist were included. A very useful aspect of the process were the panelists’ comments and suggestions which led to many revisions that improved the cross-cultural adaptation of the instrument for use with high school students. The corrected items were added to the instrument, edited by the Lay Panel, and included in the next review phase.
Study 3

Cultural Adaptation, Content Validity, and Readability

Review by Salvadorian Expert Panel

Cultural Adaptation

A seven-member panel evaluated the appropriateness of the instrument’s cultural content. The panel identified items that needed to be modified or edited to reflect Salvadorian culture. This step ensured the items were interpreted as intended by the students in El Salvador. Table 5 describes the characteristics of the multi-disciplinary expert panel that agreed to assist with the cultural adaptation and content validation.

Table 5

Qualifications of Panelists

<table>
<thead>
<tr>
<th>Person</th>
<th>Profession</th>
<th>Place of Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Medical doctor</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>B</td>
<td>Medical Doctor</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>C</td>
<td>Medical Doctor</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>D</td>
<td>Medical Doctor</td>
<td>FUNDASIDA</td>
</tr>
<tr>
<td>E</td>
<td>Teacher</td>
<td>Montessori Academy</td>
</tr>
<tr>
<td>F</td>
<td>Teacher/Principal</td>
<td>Principal of Montessori Academy</td>
</tr>
<tr>
<td>G</td>
<td>Teacher</td>
<td>Montessori Academy</td>
</tr>
</tbody>
</table>

Each person was provided with the study’s objectives, instructions, and characteristics of the attitudinal domain (see Appendix F). Comments and suggestions were solicited from the panel, and it was expected that they would improve the
instrument’s use with adolescents in El Salvador. Cultural appropriateness was rated with a Likert scale that ranged from “not at all appropriate,” “slightly appropriate,” “moderately appropriate,” to “very appropriate” and was scored from 1 to 4, respectively.

Cultural appropriateness was determined by calculating an average score for each item. A score of 2 indicated an item was “slightly inappropriate,” and, for that reason, items with an average of 2 or less were culturally inappropriate and were reevaluated. In contrast, a score of 3 or 4 indicated the item was “culturally acceptable” to Salvadorian adolescents. The results according to the panelists are reported in Chapter 4 (Results) and in the Appendix.

Content Validity

The instrument’s content validity was established through a two-step process. The first step was an evaluation of the items with a 4-point scale by an expert panel. Scores from the panel were summed and an average was calculated. Items with a mean score of 2 or less were considered as not appropriate for the domain. A similar rating procedure by Jemmott, Jemmott, and Fong (1998) indicated this strategy determined if the HIV content of an instrument was adequate. The second step followed Aday’s (1996) recommendation to solicit items from experts familiar with the domain. This study asked HIV experts to provide items that were missing from the Spanish instrument. The extra items would detect aspects of the domain that were not included in the instrument and identify items that were culturally relevant to students in El Salvador. The results from both steps were triangulated to establish content validity.

The panel was asked to complete the evaluation within four days; however, four individuals were not able to meet the deadline. Because of a strict schedule with the
upcoming pretest with the students, it was decided to proceed with the analysis as
planned and to utilize only three completed reviews. However, the final analysis included
all the forms and the previous decision was found not to have affected the results because
the rating and comments were similar to those from the first group. Additionally, a
review of the forms indicated that some of the categories were not completely filled out.
Again, there were sufficient values to calculate an average score and the results were not
affected.

Role of Salvadorian Lay Panel

Table 6 shows the individuals who formed a lay panel that reviewed the
instrument throughout the adaptation. The instrument’s directions, items, and response
categories were proofread by this panel to identify items that needed to be reworded.
Other functions were to corroborate the other panel's recommendations, edit new
material, and oversee the revisions that occurred after the pretest. In particular, their
expertise with the Spanish language and awareness of the culture was not only helpful in
correcting spelling errors and placing accents on the words, but an asset in culturally
adapting the final version.

Table 6

Characteristics of Salvadorian Lay Panel

<table>
<thead>
<tr>
<th>Person</th>
<th>Training/Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Psychologist/wife/mother of one child</td>
</tr>
<tr>
<td>I</td>
<td>Agronomy/Father of three children</td>
</tr>
<tr>
<td>J</td>
<td>Accounting/Housewife</td>
</tr>
</tbody>
</table>
Reading Level of the Instrument

Readability formulas, such as the SMOG, Lorge, Fox index, and the Cloze Procedure, were frequently used to determine the reading level of books and other reading materials (Contreras, Garcia-Alonso, Echenique, & Daye-Contreras, 1999). The formulas were adequate for determining the reading level of books and reading passages. However, valid readability formulas for instruments that consisted of only one or two sentences were not available. The Word XP (Microsoft, 2003) program has a built-in readability formula (Flesch-Kincaid), and an analysis determined the readability in English was at a grade level of 5.2.

Educators in El Salvador were consulted about the most appropriate procedure to determine the instrument’s readability. They stated that experienced educators could analyze the instrument and determine its reading level. Two educators were selected for the readability analysis. The first reviewer was the principal of the Montessori Academy in San Salvador. The second reviewer was a psychologist/sexuality educator in one of the public high schools. They read the final instrument and determined the reading level. As an additional measure, the lay panel was asked to determine the reading level of the instrument. The reliability of the method in which persons estimate the reading level has not been investigated, and the results have to be interpreted with caution.

Study 4

Pretesting with Salvadorian Adolescents

The purpose of the pretest was to identify ambiguous, irrelevant, difficult to read, or misunderstood items. Also, this phase identified material that was not culturally relevant or inappropriate for use with students in El Salvador. The instrument was
administered under normal testing conditions, and afterwards the probing technique described by Guillemin et al. (1993) was the method that determined the level of understanding and identified problematic items. The results of the probing technique served to corroborate the findings from Study 3. It also facilitated the preparation of the final instrument by including language that was relevant to high school students.

Permission was obtained from the government of El Salvador to conduct the study in the public high schools in San Salvador and a permission letter was issued to all the participating schools (see Appendix G). The principal of the school was informed in person about the study and then asked to participate. Ten high schools were randomly selected from a larger pool of 30 high schools. Two schools from this group were randomly selected for a pretest. However, due to a conflict with the schedule only School 5 participated. One week before the pretest eight Salvadorian high school students (four male and four female) were asked to participate. The study was explained to them, and they were given a signed consent form as requested by the Institutional Review Board (IRB) at the University of South Florida (demonstrated in Appendix H).

The day of the pretest, the onsite administrator from School #5 provided an empty classroom. Two groups of four, consisting of an equal number of male and female students, were scheduled for two different testing sessions. The nature of the study and the right not to participate was explained again to all the participants. A $10 incentive was offered to each student. The students were asked to circle items that were unclear, not understood, or culturally inappropriate. The primary investigator encouraged the use of written comments on the instrument to avert non-participation among shy students. At the end of the test session, the items were read aloud and the proctor asked: “What does
this mean?” The students provided answers aloud, and if the correct meaning was not provided, students were then asked to explain their interpretation. Moreover, they were encouraged to discuss circled or problematic items and asked to explain their perception of these items. The findings are presented in the results section.

The comments or suggestions made during the two pretests were compared to identify problematic items. The directions, items, and answer choices of the instrument were revised as needed and were included in the final instrument. As an additional measure, the lay panel edited items that were reworded or changed during this stage. To summarize, the pretest served to corroborate the results of Study 3 and helped to prepare the final instrument.

**Study 5**

**Confirmatory Factor Analyses and Concurrent Validity**

**Confirmatory Factor Analysis**

The Spanish instrument’s attitudinal construct (see Table 7) was evaluated using confirmatory factor analysis (CFA). The Calis statistical program in SAS version 8.2 (SAS Institute, 2001) was used to perform CFA. The Calis procedure makes use of structural equations in the same manner as the LISREL program for the analysis of data with latent variables (Hatcher, 1994). In particular, the covariance structure of the items and the maximum likelihood method is used to determine the relationship of the items to the latent or unseen variables (Hatcher, 1994). The program follows Bentler’s recommendations for writing structural equations in which the variables are assigned to one latent variable (as described in Hatcher, 1994).
To determine if the data fit the model, several fit indices were consulted. Specifically, the model was tested for overall fit by the $\chi^2$, root mean square error of approximation (RMSEA), Bentler and Bonett’s Non-normed Index, and Bentler’s comparative fit index (Hatcher, 1994). Further, CFA revealed the correlation among the latent variables, provided factor loadings, and determined the magnitude of the errors associated with the items. Therefore the factorial validity of the attitudinal dimension will be established by determining the internal structure of the instrument.

Table 7

*Hypothesized Five-factor Model of Attitudes from CDC Items*

<table>
<thead>
<tr>
<th>Item #</th>
<th>Statement</th>
</tr>
</thead>
</table>

**Factor 1. Peer Pressure**

1. If your friends want you to do something that you think might not be safe, you should at least try it.
6. To keep your friends, you should go along with most things your friends want you to do.
11. Teen-agers should learn how to resist pressures from their friends.
15. When friends want you to do things you don't feel like doing, there's no harm in going along.
19. Teen-agers should be more willing to resist pressures from their friends.

**Factor 2. Abstinence**

2. It's okay not to have sex while you are a teen-ager.
7. People who don't have sex before they get married are strange.
12. It's a good idea for teen-agers not to have sex.
20. These days it makes a lot of sense to wait to have sex until you get married.

**Factor 3. Condom Use**

8. It is not smart to have sex without using a condom.
16. Using a condom doesn't make sex less pleasurable.
21. If people think they might have sex during a date, they should carry a condom.
23. People who use condoms during sex don't trust the person they're with.
Table 7 (continued)

**Factor 4. Drugs/Steroids**

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.</td>
</tr>
<tr>
<td>9</td>
<td>Using needles to inject steroids or drugs is a bad idea.</td>
</tr>
<tr>
<td>13</td>
<td>People who share drug needles shouldn't worry because they probably won't get infected with HIV.</td>
</tr>
<tr>
<td>17</td>
<td>Anyone who shares needles is taking a chance of getting infected with HIV.</td>
</tr>
<tr>
<td>24</td>
<td>People who share drug needles should clean the needles with bleach.</td>
</tr>
</tbody>
</table>

**Factor 5. Threat of HIV infection**

<table>
<thead>
<tr>
<th></th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
</tr>
<tr>
<td>10</td>
<td>It’s okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
</tr>
<tr>
<td>14</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
</tr>
<tr>
<td>18</td>
<td>If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.</td>
</tr>
<tr>
<td>25</td>
<td>HIV is something that teen-agers should think about when they date.</td>
</tr>
</tbody>
</table>

*Concurrent Validity*

The validity of the CDC’s Condom and Abstinence subscales was established through a comparison of an existing model. A study by Basen-Engquist et al. (1999) determined the factorial validity of the six items described in Table 8. They used CFA to establish that three items loaded on an abstinence model and another three on a condom model. These items were translated into Spanish and treated in parallel with the translated items from the CDC. The attitudinal items that load on the abstinence and condom subscales were correlated with items from Basen-Engquist et al. (1999) and served to establish a measure of concurrent validity.
Table 8.

_Basen-Engquist et al. ’s (1999) Condom and Abstinence Model_

<table>
<thead>
<tr>
<th>Condom Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.</td>
</tr>
<tr>
<td>I believe condoms should always be used if a person my age has sex, even if the girl uses birth control pills.</td>
</tr>
<tr>
<td>I believe condoms should always be used if a person my age has sex.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abstinence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>I believe it’s OK for people my age to have sex with several different people in the same month.</td>
</tr>
<tr>
<td>I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.</td>
</tr>
<tr>
<td>I believe people my age should wait until they are older before they have sex.</td>
</tr>
</tbody>
</table>

_Data Collection_

_Reasearch Protocol_

1. Permission for the investigation was obtained through the Department of Public Health and the Department of Education of El Salvador. The study’s protocol, a version of the Spanish instrument, consent forms, and the application to the Institutional Review Board were provided to the appropriate officials in the Division of HIV of the Department of Public Health four months before the start of the study. Subsequently, the Department of Education granted a letter of permission (demonstrated in Appendix G) to conduct the study in 30 high schools in the
metropolitan area of San Salvador. The 30 schools were separated according to their geographic location in San Salvador: Central, East, West, North, or South. Afterwards, 10 schools were randomly selected via a lottery-style drawing two different schools per geographic location.

2. The primary investigator met with the principals or an assistant principal from each school. The nature of the study, the government’s letter of permission, the testing schedule, and an explanation of the consent forms were discussed at this meeting. The designated school official granted permission to conduct the study at the 10 schools.

3. The primary investigator and the principal of the school randomly selected the classrooms. A week before the test session, an explanation of the study was provided to the students in Spanish. Each student was given a general consent form to take home (see Appendix I).

4. As a backup measure, the principal investigator trained two Salvadorian proctors to assist with the instructions, answer student questions, provide the correct responses for the Knowledge items, and collect the instrument from each room. The trained proctors were not needed. The day of the test session, the principal investigator explained the study again. Anonymity was assured and they were reminded of their right not to participate. To assure anonymity, the students did not write their names on the instrument and they placed the completed instrument inside a box. At the end of the session, correct answers to the Knowledge section were provided and questions answered. The sample consisted of 483 students in grades 10, 11, and 12 from 10 different schools.
5. A test-retest reliability study was carried out in 2 of the 10 schools. Permission from the principal was obtained; then the study was explained to the teachers and students. As described in number 3, the students were given a consent form (see Appendix J) and reminded of their right not to participate. To identify the responses and assure anonymity, the students were asked to write a six-digit number in the following sequence: two digits from their birth month, the last two digits of their primary residence or house number, and the last two digits of their phone number. Two classrooms were selected to obtain a sample of 29 students. At the end of the second session, they were provided with the correct answers to the Knowledge section and the student's questions were answered.

Data Analysis of Specific Purposes

This multi-phase study translated, cross-culturally adapted, and validated an instrument to evaluate the HIV/AIDS knowledge and attitudes of public high school students in El Salvador. The research purposes were analyzed as follows:

Research purpose 1: Determine the success of the cross-cultural adaptation by contrasting the first translated version of the CDC instrument with the final Spanish version of the CDC instrument (as described in Table 9). The statements from the two versions were contrasted to determine cultural and conceptual differences. The differences between the first Spanish version and the final instrument were qualitatively recorded and interpreted.

Research purpose 2: Determine using a Salvadorian panel the level of cultural appropriateness of the translated CDC HIV/AIDS knowledge and attitudinal items for use in El Salvador. The panelists’ scores (Study 3) were added together and an average
was calculated for each item. The criterion of inappropriateness was an average of two or less. A score of 2 indicated an item was either slightly appropriate or not at all appropriate. In contrast, higher scores indicated the item was culturally acceptable to Salvadorian adolescents. Inappropriate items were edited and reevaluated by the Lay panel.

Table 9

*Analysis of the Six Specific Purposes*

<table>
<thead>
<tr>
<th>Specific Purpose</th>
<th>Variables</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determine the success of the cross-cultural adaptation by contrasting the</td>
<td>Translated items Language Usage</td>
<td>Qualitative: cultural and conceptual differences.</td>
</tr>
<tr>
<td>first translated version of the CDC instrument with the final Spanish version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>of the CDC instrument.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Determine using a Salvadorian panel, the level of cultural appropriateness</td>
<td>Cultural appropriateness of the items from the HIV/AIDS Knowledge and</td>
<td>Items with an average score of 2 or less will be eliminated.</td>
</tr>
<tr>
<td>of the translated CDC HIV/AIDS knowledge and attitudinal items for use in El</td>
<td>Attitude section.</td>
<td></td>
</tr>
<tr>
<td>Salvador.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Ascertain the level of readability for the final Spanish version of the CDC</td>
<td>Expert review of the HIV/AIDS Knowledge and Attitude section.</td>
<td>Items with an average score of 2 or less will be eliminated.</td>
</tr>
<tr>
<td>instrument and evaluate content validity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Evaluate the reliability of the scores from the Spanish version of the CDC</td>
<td>Scores from the instrument.</td>
<td>Test-retest correlation, Cronbach’s alpha.</td>
</tr>
<tr>
<td>instrument using a sample of Salvadorian students in grades 10, 11, and 12.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Determine if the Spanish version of the CDC instrument contains five</td>
<td>Subscales scores: Peer-pressure, Abstinence, Condom use, Drugs use, and</td>
<td>Confirmatory Factor Analysis.</td>
</tr>
<tr>
<td>attitudinal dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and</td>
<td>the Threat of HIV.</td>
<td></td>
</tr>
<tr>
<td>Threat of HIV) when analyzed by confirmatory factor analysis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>from the Spanish version of the CDC instrument.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Research purpose 3: Ascertain the level of readability of the final Spanish version of the CDC instrument and evaluate content validity.
The readability of the instrument was qualitatively assessed in El Salvador by the principal of the Montessori Academy and by an individual whose qualifications included the role of school psychologist and a teacher of the high school’s sexuality curriculum. The Spanish instrument was reviewed independently, and the reviewer reported the reading level based on previous experience with written material for students in this population. Content validity was determined through a panel of Salvadorian experts (Study 3) who rated the knowledge and attitudinal items. An average score of 2 or less indicated the item was not valid for use in the instrument. Additional items were solicited to determine if the construct was not adequately represented.

Research purpose 4: Evaluate the reliability of the scores from the Spanish version of the CDC instrument using a sample of Salvadorian students in grades 10, 11, and 12. Reliability was determined by the test-retest method at a one-week interval with 29 students in two different schools. The Pearson product-moment correlation coefficient was calculated for the test-retest scores (Gall et al., 1996). Internal consistency was determined by calculating Cronbach’s alpha (Gall et al., 1996).

Research purpose 5: Determine if the Spanish version of the CDC instrument contains five attitudinal dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV) when analyzed by confirmatory factor analysis. The Calis statistical program from the SAS Institute (2001) was used to perform CFA. Maximum likelihood estimation using the covariance matrix of the items was used to determine the factorial structure. The goodness of fit indices and standardized factor pattern coefficients were consulted to determine if the model fit the data.
Research purpose 6: Evaluate the concurrent validity of the Abstinence and Condom use subscales from the Spanish version of the CDC instrument.

The translated CDC Abstinence and Condom use subscales were correlated with their respective subscales from the Basen-Engquist et al. (1999) study.

Summary of the Methods Section

An instrument to evaluate HIV/AIDS knowledge and attitudes in an adolescent population in the United States was compiled by adding items from the CDC and Basen-Engquist et al. (1999). The instrument was translated by two experienced translators, reviewed by a bilingual committee of four individuals, and back-translated to English. The translated instrument was then cross-culturally adapted by a method recommended by Guillemin et al. (1993). A panel of content matter experts and teachers from El Salvador reviewed the instrument to establish the cross-cultural equivalence among the English and Spanish version.

Afterwards a panel of Salvadorian experts established the cultural appropriateness and content validity of the instrument. Finally, a sample of 483 high school students in the metropolitan area of San Salvador answered the instrument. The scores of the instrument served to calculate the reliability and validity.
CHAPTER FOUR

RESULTS

Purpose of the Study

The purpose of this multi-phased study was to translate, cross-culturally adapt, and validate the scores from an instrument that assessed the HIV/AIDS knowledge and attitudes of high school students in El Salvador. The first phase utilized the back-translation method to obtain the first Spanish version of the instrument, which was developed by the CDC to evaluate HIV/AIDS knowledge and attitudes of students in grades 7 to 12. In the next phase, an expert panel of reviewers from El Salvador established the conceptual equivalence of the Spanish instrument. The third phase evaluated the instrument’s content validity and cultural acceptability through a panel composed of HIV experts, health professionals, schoolteachers, and students from El Salvador.

The last phase involved collecting evidence of the validity of the scores from the Spanish version of the CDC instrument; 483 public high school students in the metropolitan area of San Salvador participated in the validation phase. Reliability of the scores was measured by the test-retest method and coefficient alpha. Confirmatory factor analysis was used to evaluate if the attitudinal construct had five different dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV). As part of the concurrent validation process, the Condom and Abstinence subscales from the translated CDC instrument were correlated with a set of existing attitudinal items from a published study by Basen-Engquist et al. (1999).

Study 1
Forward-translation, Synthesis, and Back-translation of Instrument

Forward-translation

Two translations were independently produced (see Appendix K) by two experienced translators. A common problem was reported during the translation process, item 15 from the Knowledge section was reported as problematic by both translators who were unsure of the translation of the words “lambskin condoms.” Translator 1 made the literal translation “piel de cordero,” and Translator 2 did not provide a translation. No other problems were reported during the translation.

Synthesis

Bilingual Reviewers 1, 2, and 4 systematically reviewed the two forward Spanish translations (see Appendix K) and synthesized these into one version. Bilingual Reviewer 3 verified and confirmed the final translation. Their selections, comments, and suggestions from the synthesis are reported in Appendix L. This section provides a description of the major findings.

Bilingual Reviewer 1 commented (see Table 10) that item 12 was confusing due to the word “infected” and was unsure if “contagiado” or “infectado” was the appropriate selection. According to the reviewer, the words had a different interpretation: “contagiado” implied a meaning of an epidemic whereas “infectado” denoted having an infection. The word “infectado” was selected. Further, Knowledge item 15 was problematic due to the translation of the word “lambskin.” The reviewer did not know the correct translation of this word.

Table 10
# Problematic Items and Comments Made by Bilingual Reviewer 1

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Once you are <strong>infected</strong> with HIV, you are infected for life.</td>
<td>Una vez que tú has sido infectado con VIH, tú estás <strong>infectado</strong> de por vida.</td>
<td>Unsure of which is the correct word for infected “Contagiado vs. infectado.”</td>
</tr>
<tr>
<td>15</td>
<td>If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tú quieres protegerte de contraer VIH, usando condones de &quot;piel de cordero&quot; es tan efectivo como usar condones de látex.</td>
<td>Unsure of how to translate “lambskin.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitudinal Items</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si un amigo quiere que tú hagas algo y tú crees que no es seguro, tú debías por lo menos tratar de hacerlo.</td>
<td>Both translations do not retain the exact meaning. Difficult to translate double negative.</td>
</tr>
<tr>
<td>7</td>
<td>People who don't have sex before they get married are <strong>strange.</strong></td>
<td>Las personas que no tienen sexo antes de casarse son extrañas.</td>
<td>Difficulty with the word “strange.” “Raro o extraño” can be used. Item does not retain the meaning of the original. Problematic item.</td>
</tr>
<tr>
<td>14</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
<td>Vague item.</td>
</tr>
<tr>
<td>15</td>
<td>When friends want you to do things you don't feel like doing, there's no harm in going along.</td>
<td>Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces.</td>
<td>Difficulty with “Harm in going along” This is a saying in the United States. Unsure of its translation.</td>
</tr>
<tr>
<td>21</td>
<td>If people think they might have sex during a <strong>date</strong>, they should carry a condom.</td>
<td>Si una persona piensa que podría tener sexo al salir con alguien, ellos deberían traer un condón.</td>
<td>The translation for “date” in Spanish was problematic.</td>
</tr>
</tbody>
</table>

*Note:* Underlined words were problematic.

Further, Bilingual Reviewer 1 reported the statement in Attitudinal item 1, “If your friends want you to do something that you think might not be safe, you should at least try it,” as having an unusual sentence structure. This made the Spanish translation difficult to read. Likewise, the word “strange” in Attitudinal item 7 did not translate well.
The translators suggested the words “raro” and “extraño,” which were not good translations. Further, item 21 was problematic because of the word “date.” The reviewer was unsure of the term given by adolescents in El Salvador when they are in a relationship or are dating another person.

Bilingual Reviewer 2 suggested the word “encuesta” in the directions to convey the process of answering a survey. As described in Table 11, it was suggested to use the words “serán confidenciales” for the words “no one will know how you answered” to assure anonymity. An additional recommendation included the substitution of the word “SIDA” (“AIDS” in English) instead of “VIH” when translating “HIV.” Other recommendations were to place “el” in front of the word “SIDA” for sentences denoting the masculine tense. Additionally, to improve the translations, this reviewer rewrote items 9, 15, and 16.

Table 11

**Problematic Items and Comments Made by Bilingual Reviewer 2**

<table>
<thead>
<tr>
<th>Number</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td>No escriba su nombre en esta encuesta. Sus respuestas serán confidenciales. Nadie sabrá como contesto a las preguntas.</td>
<td>Use word “encuesta”</td>
<td></td>
</tr>
<tr>
<td>What is your gender?</td>
<td>¿Cuál es tu sexo?</td>
<td>The word “sexo” is a better option than “genero.”</td>
<td></td>
</tr>
<tr>
<td>Have you received HIV education in school?</td>
<td>Has recibido educación acerca de VIH en la escuela?</td>
<td>Unsure of using term “VIH” o “SIDA.”</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Using needles to inject steroids or drugs is a bad idea?</td>
<td>Usar agujas para inyectarse esteroides no es mala idea.</td>
<td>Item was reworded.</td>
</tr>
</tbody>
</table>

Table 11 (continued)
<table>
<thead>
<tr>
<th></th>
<th>Original Text</th>
<th>Translation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>When friends want you to do things you don't feel like doing, there's no harm in going along.</td>
<td>Cuando tus amigos quieren que tú hagas cosas que tú hagas cosas indebidas, no correrás riesgo si las haces.</td>
<td>Item was reworded.</td>
</tr>
<tr>
<td>16</td>
<td>Using a condom doesn't make sex less pleasurable.</td>
<td>Usar un condón no te impedirá sentir placer.</td>
<td>Offered a new translation.</td>
</tr>
<tr>
<td>20</td>
<td>These days it makes a lot of sense to wait to have sex until you get married.</td>
<td>En esta época tiene más sentido esperarse a tener relaciones sexuales hasta casarse.</td>
<td>Can use the word “sentido” o “sensato.”</td>
</tr>
<tr>
<td>25</td>
<td>HIV is something that teenagers should think about when they date.</td>
<td>SIDA es algo que los jóvenes deben tener en cuenta cuando empiezan a socializarse.</td>
<td>Unsure about the translation of “date.” It can be “cita,” “socializarse” o “salieron alguien.”</td>
</tr>
</tbody>
</table>

**DIRECTIONS:** This survey asks you to say whether you agree or disagree with a set of statements. Please read each statement, then indicate whether you:

- Strongly Agree (SA), Agree (A), are Not Sure (NS), Disagree (D), or Strongly Disagree (SD), by circling the answer you want.

- Completamente de Acuerdo (CA), De Acuerdo (DA), No estas Seguro (NES), No estoy De Acuerdo (NEDA), Completamente en Desacuerdo (CED), Haga un círculo en la respuesta elegida.

**Instructions:** En ésta encuesta se te pide que digas cuando estás de acuerdo y cuando con la información. Por favor lea cada pregunta, entonces indica si usted está:

- Completamente de Acuerdo (CA), De Acuerdo (DA), No estas Seguro (NES), No estoy De Acuerdo (NEDA), Completamente en Desacuerdo (CED), Haga un círculo en la respuesta elegida.

**Note:** Underlined words were problematic.

Bilingual Reviewer 4 reported that the term “HIV” could be equally translated as “VIH” or “SIDA,” as described in Table 12. A minor problem was reported for Knowledge item 9, which stated, “A person can get HIV by sharing drug needles.” The reviewer was unsure if the translation should have been, “Puede una persona adquirir VIH al compartir agujas para la droga” or “Una persona puede adquirir VIH al compartir agujas para la droga.” The subtle difference is that the former is a statement and the latter is an implied question. Likewise, the use of the word “tú” and not “usted” was raised as an issue for Attitudinal item 1. The word “tú” was used excessively, which made the statement sound redundant (see Table 12).
Table 12

*Problematic Items and Comments Made by Bilingual Reviewer 4*

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Una persona puede “pasar” un examen de anticuerpos de VIH (examen es negativo) pero puede estar infectado con VIH.</td>
<td>Unsure about VIH or SIDA.</td>
</tr>
<tr>
<td>9</td>
<td>A person can get HIV by sharing drug needles.</td>
<td>Puede una persona adquirir VIH al compartir agujas para la droga.</td>
<td>Unsure if the correct translation is “Una persona puede” o “puede una persona.”</td>
</tr>
<tr>
<td>14</td>
<td>You can get HIV from a mosquito bite.</td>
<td>Puedes tú adquirir VIH de una picada de mosquito.</td>
<td>Unsure if to include “tú” and not “usted.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Attitudinal Items</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si sus amigos desean que Ud. haga algo que Ud. no considere seguro, Ud. por lo menos debe de tratar de hacerlo</td>
<td>Suggested the use of “Si tus amigos” and not “tu amigos” to start the sentence.</td>
</tr>
<tr>
<td>2</td>
<td>It’s okay not to have sex while you are a teenager.</td>
<td>Está correcto no tener sexo mientras seas un(a) adolescente.</td>
<td>Change “bien” for “correcto.”</td>
</tr>
<tr>
<td>8</td>
<td>It is not smart to have sex without using a condom.</td>
<td>No es inteligente tener sexo sin usar un condón.</td>
<td>Add the word “muy” before “inteligente.”</td>
</tr>
<tr>
<td>11</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td>Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.</td>
<td>Change to “tienen que aprender” and not use “deben tener.”</td>
</tr>
<tr>
<td>5</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
<td>Meaning is difficult to capture. The words “tienen que saber” is not the same as “realize.”</td>
</tr>
</tbody>
</table>

Note. Underlined words were problematic.

Bilingual Reviewer 4 noted that Attitudinal item 1 started with the statement, “Si sus amigos” and suggested “Si tus amigos” (see Table 12). The addition of “tus” made the item grammatically correct. Item 2 stated “Está correcto no tener sexo mientras seas un (a) adolescente,” and the suggestion was to use the word “bien” instead of “correcto.”
The word “bien” denotes a choice between good and bad and is similar to “OK” in English. In contrast, “correcto” is a formal translation, which can be inferred as a constriction imposed by society. Another change was recommended for the words “it’s not smart” in item 8 because this is a unique saying in the United States. The words “muy inteligente” were added to provide a similar interpretation in Spanish.

Subsequently, the principal investigator (Bilingual Reviewer 1) and Bilingual Reviewer 4 reviewed all the translations to form a synthesis. To find the best translation, the items were read aloud in English and Spanish to compare the meaning and to listen to the grammatical structure of the sentences. As described in Table 13, items that did not sound right were discussed and then edited. Then the selections were spell-checked with the Spanish version of Microsoft Word XP (Microsoft, 2003).

The information in Table 13 describes the changes made to the instrument. The directions were reworded into a concise statement to avoid the redundancy of information in the consent form. Other changes were to keep as separate entities the translation of the virus “HIV” to “VIH” and the disease “AIDS” to “SIDA” (the Spanish term). Moreover, both reviewers decided to use the word “infectado” over “contagiado” for Knowledge item 11, since it referred to someone who had been infected. Both reviewers were unsure of the proper translation of “lambskin” and selected “piel de cordero.” Attitudinal item 1, “Si un amigo quiere que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo,” was found to be problematic due to an uncertainty of the
The translation’s meaning was unclear and the item was considered problematic.

Table 13

**Problematic Items Discussed by Bilingual Reviewers 1 and 4**

<table>
<thead>
<tr>
<th>Item</th>
<th>English</th>
<th>Spanish</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions</td>
<td>Read each question. Carefully check the one answer that fits best. Some of the questions use the phrase &quot;having sex.&quot; This means sexual intercourse. DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td>Lea cada pregunta. Con cuidado marque la respuesta que le parezca adecuada. Algunas preguntas usan la frase &quot;teniendo sexo&quot;. Esto significa relaciones sexuales.</td>
<td>Original directions were shortened.</td>
</tr>
<tr>
<td>Knowledge Items</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Una persona puede “pasar” una prueba de anticuerpos del SIDA(resultados negativos) y aun estar infectado con VIH.</td>
<td>Will use the term “VIH” for HIV and “SIDA” for AIDS.</td>
</tr>
<tr>
<td>9</td>
<td>A person can get HIV by sharing drug needles.</td>
<td>Puede una persona adquirir VIH al compartir agujas para la droga.</td>
<td>Decided to leave as a question in Spanish.</td>
</tr>
<tr>
<td>11</td>
<td>Once you are infected with HIV, you are infected for life.</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
<td>“Infectado” was preferred over “contagiado.”</td>
</tr>
<tr>
<td>15</td>
<td>If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tú quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de látex.</td>
<td>Left “piel de cordero” in the statement.</td>
</tr>
<tr>
<td>Attitudinal Items</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si un amigo quiere que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Frequent use of “tú.”</td>
</tr>
<tr>
<td>2</td>
<td>It’s okay not to have sex while you are a teenager</td>
<td>Está correcto no tener sexo mientras sea un(a) adolescente.</td>
<td>Correcto vs. bien.</td>
</tr>
</tbody>
</table>
The translation of the word “OK” in items 10, 22, and 26 could be translated as “bien” or “correcto.” The decision was to use the word “correcto” to denote a choice between right or wrong. Lastly, item 7 was problematic because the word “strange” (Spanish word “extraños”) was difficult to translate and it did not retain the original meaning. The first Spanish version was then submitted to the last Bilingual Reviewer on the committee.

Table 14

<table>
<thead>
<tr>
<th>Knowledge Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

**Bilingual Reviewer 3’s Comments about the First Spanish Version**

<table>
<thead>
<tr>
<th>Spanish</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>¿Has recibido educación sobre el VIH/SIDA? a. Sí _____ b. No _____</td>
<td>Add accent on “Sí.”</td>
</tr>
<tr>
<td>Tú no puedes contraer el SIDA si tú tienes sexo una o dos veces sin un condón.</td>
<td>Use the word “usted” instead of “tú.”</td>
</tr>
<tr>
<td>Los condones son 100% efectivos en prevenir el VIH.</td>
<td>Use “para” instead of “en.”</td>
</tr>
<tr>
<td>Tú puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.</td>
<td>Use the word “usted” instead of “tú.”</td>
</tr>
<tr>
<td>Si tú quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de látex.</td>
<td>Use “si quieres protegerte.”</td>
</tr>
</tbody>
</table>
Bilingual Reviewer 3 confirmed the soundness of the first Spanish version by comparing the following: (1) original English version; (2) two forward-translations; and (3) the first Spanish version. As reported in Table 14, Bilingual Reviewer 3 suggested the following revisions: (1) put an accent on “Si”; (2) use “Ud.” and not “tú” in knowledge item 1; (3) change “en” for “para”; and (4) change to “Ud.” in item 5.

In summary, four bilingual reviewers synthesized the first Spanish version by selecting translated items that retained the same meaning as the ones in the English instrument (as described in Appendix L). Additionally, the items were checked for the correct grammatical structure, spelling, and placements of accents. The first Spanish version was then submitted to a professional translator for a back-translation.

**Back-translation**

The Spanish items were back-translated into English by a professional translator, as reported in Appendix M. Afterwards, the meaning of both English items (the original and back-translated) were compared. The results of the comparison, described in Table 15, revealed that four items were slightly different from the original and that only minor modifications were needed to correct the items.

For example, as described in Table 15, the word “OK” was incorrectly translated. The Spanish word “bien” was added to the instrument to address this. The back-translation of item 21 was problematic because the word “date” was lost in the translation. A new translation was suggested, “Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán traer un condón.” This translation implies that two people are going out. Other departures include the substitution of “OK” for “better” and the word “think” for “believe.” Both departures were acceptable. With the exception of
the four items, no other differences were found. The first Spanish version is presented in Appendix N.

Table 15

Items That Differed in the Original Version and the Back-translation

<table>
<thead>
<tr>
<th>Attitudinal Items</th>
<th>Original Item</th>
<th>Back-translation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>It's okay not to have sex while you are a teen-ager.</td>
<td>It’s right not to have sex while you are a teen-ager.</td>
<td>“Right” is not the same as “OK,” use the Spanish word “bien.”</td>
</tr>
<tr>
<td>3</td>
<td>I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.</td>
<td>I think that condoms should always be used if a person my age has sex, even if the two people know each other well.</td>
<td>The word “believe” has been used instead of “think.” Both words are acceptable.</td>
</tr>
<tr>
<td>9</td>
<td>It’s okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td>It’s right to have sex without using a condom because the chance of becoming infected with AIDS is very low.</td>
<td>“Right” is not the same as “OK.” Use the Spanish word “bien.”</td>
</tr>
<tr>
<td>21</td>
<td>If people think they might have sex during a date, they should carry a condom.</td>
<td>If someone thinks that they are going to have sex with someone, they should bring a condom.</td>
<td>The concept of going out on a “date” has been lost.</td>
</tr>
<tr>
<td>26</td>
<td>I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.</td>
<td>I think it’s better for people my age to have sex with their boyfriend or girlfriend.</td>
<td>“OK” has been back translated as “better.”</td>
</tr>
</tbody>
</table>

Study 2

Conceptual Equivalence by Salvadorian Expert Panel

Results from the Salvadorian Expert Panel

The semantic, idiomatic, and conceptual equivalence of the English and Spanish versions were rated on a pass/fail scale by five professionals from El Salvador. The scores ranged from 0 to 5 and were collected individually from each professional. The passing and failing scores were summed for the semantic, idiomatic, and conceptual categories by item, as reported in Appendix O. As previously described, a passing score ≥
The findings indicated that all items received a passing score in the three categories, and the scores ranged from 3 to 5. As illustrated in Table 16, comments about the items were provided by some of the panelists and they were recorded. Item 16, “Using
a condom doesn't make sex less pleasurable,” had the lowest passing score of 3 for the semantic, idiomatic, and conceptual equivalence. One of the panelists determined this item was improperly translated. In contrast, higher scores of 4 and 5 were observed for other items in each of the three categories. Therefore, the semantic, idiomatic, and conceptual equivalence of the items was determined to be acceptable.

Despite the fact that the panelists determined that all items were acceptable, they identified minor changes that improved the cultural acceptability of the items (see Table 16). As a result of including words recognized by Salvadorian adolescents, seven Knowledge items were reworded. The phrase in item 7, "los tomaderos de agua o tomando agua de un vaso usado por una” was changed to “en el chorro o usando un vaso que ha sido usado por una persona con SIDA.” Likewise, they suggested other minor changes to the phrases in items 10, 12, 13, and 14 (see Table 16).

A panelist noted that “lambskin condoms” (item 15) should be eliminated since they are not used in El Salvador. Therefore, the phrase in item 15 was reworded as “Si tú quieres protegerte de contraer VIH, condones de látex son los mejores” (To protect yourself from getting HIV, latex condoms are the best). This was the most extensive change among the Knowledge items.

The six Attitudinal items reported in Table 17 were edited as a result of their suggestions. Three panelists recommended improving the sentence structure of item 1. Likewise, the words “injecting steroids” in item 9 were considered irrelevant to students in El Salvador. It was suggested to add the word “tattoos” to reflect the new trend among students. Next, item 16 was retranslated by changing it to “Usar condones no hace el sexo menos placentero.” This new translation had a more direct meaning.
# Table 17

## Suggestions and Changes to the Attitudinal Items

<table>
<thead>
<tr>
<th>Attitudinal Items</th>
<th>English</th>
<th>Spanish</th>
<th>Edited Spanish Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, para complacerlos, tú deberías de hacerlo.</td>
</tr>
<tr>
<td>2</td>
<td>It’s okay not to have sex while you are a teen-ager.</td>
<td>Está bien no tener sexo mientras seas un(a) adolescente.</td>
<td>Está bien no tener sexo mientras seas un(a) adolescente.</td>
</tr>
<tr>
<td>9</td>
<td>Using needles to inject steroids or drugs is a bad idea.</td>
<td>Usar agujas para inyectarse esteroides o drogas es una mala idea.</td>
<td>Usar agujas para inyectarse drogas o hacerse tatuajes es una mala idea.</td>
</tr>
<tr>
<td>16</td>
<td>Using a condom doesn't make sex less pleasurable.</td>
<td>Es menos el placer del sexo si se usan condones.</td>
<td>Usar condones no hace el sexo menos placentero.</td>
</tr>
<tr>
<td>21</td>
<td>If people think they might have sex during a date, they should carry a condom.</td>
<td>Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán traer un condón.</td>
<td>Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán llevar un condón.</td>
</tr>
<tr>
<td>26</td>
<td>I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.</td>
<td>Creo que está bien que las personas de mi edad tengan sexo con su novio o novia.</td>
<td>Creo que está bien que las personas de mi edad tengan sexo con su novio o novia.</td>
</tr>
</tbody>
</table>

## Review by Lay Panel

A lay panel of three individuals from El Salvador proofread the instrument’s directions, items, and responses. They recommended making the directions more explicit in the Knowledge and Attitudinal sections. As described in Table 18, the directions in the Knowledge section were modified to inform the students about the anonymity of their
responses and to clarify how to mark their answers. Additionally, directions in the Attitudinal section were modified to include an underline in the phrase, “cuando no estas de acuerdo.”

The panel identified Knowledge item 13 as unclear and suggested it be edited to reflect Salvadorian culture. Also, Attitude item 1 was not clear and was edited as follows, “Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, para complacerlos, tú deberías de hacerlo.” The new statement placed a focus on peer-pressure. As described in Table 18, minor changes were reported for items 5 and 26. The panelists reported that these changes improved the instrument’s readability among adolescents.

Table 18

Recommendations Made by the Lay Panel

<table>
<thead>
<tr>
<th>Item</th>
<th>English Version</th>
<th>First Spanish Version</th>
<th>Edited Spanish Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina que una persona que lo tiene.</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina donde han permanecido personas con SIDA. (Change made in final revision).</td>
</tr>
</tbody>
</table>

Table 18 (continued)
1. If your friends want you to do something that you think might not be safe, you should at least try it.  
   Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.  
   Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, para complacerlos, tú deberías de hacerlo.

5. Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.  
   Los adolescentes tienen el riesgo de ser infectados con el virus del SIDA si tienen relaciones sexuales sin usar un condón.  
   Los adolescentes corren el riesgo de ser infectados con el virus del SIDA si tienen relaciones sexuales sin usar un condón.

26. I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.  
   Creo que está bien que las personas de mi edad tengan sexo con el novio o novia.  
   Yo creo que está bien que las personas de mi edad tengan sexo con su novio o novia. (Revision made in final versión).

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### Study 3

**Cultural Acceptability, Content Validation, and Readability**

**Cultural Acceptability**

A seven-member panel of Salvadorian professionals evaluated the instrument’s cultural appropriateness and established its content validity using a four-point scale. As reported in Appendix P, the individual scores and comments are described for each item. The score for each item was added together and an average was calculated. The procedure, as discussed in the Methods section, was to eliminate or rewrite an item with an average score equal to, or less than, 2.

The average score of cultural appropriateness among the Knowledge items ranged from 2.7 to 4.0. As demonstrated in Table 19, an average of 2.7, 3.4, and 3.4 were calculated for items 1, 2, and 5, respectively. An average score of 3.6 was observed for items 12 and 14. Additionally, items 3, 4, 6, 7, 8, 9, 10, 11, 13, and 15 had the highest averages. Therefore, all the Knowledge items were rated as culturally appropriate for use with Salvadorian high school students.
Table 19

*Average Rating of Appropriateness for Salvadorian Culture by Seven Panel Members*

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>Cultural Appropriateness</th>
<th>Attitudinal Items</th>
<th>Cultural Appropriateness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.7</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>2</td>
<td>3.4</td>
<td>2</td>
<td>3.4</td>
</tr>
<tr>
<td>3</td>
<td>4.0</td>
<td>3</td>
<td>3.9</td>
</tr>
<tr>
<td>4</td>
<td>4.0</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>5</td>
<td>3.4</td>
<td>5</td>
<td>3.7</td>
</tr>
<tr>
<td>6</td>
<td>3.7</td>
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</tr>
<tr>
<td>7</td>
<td>3.7</td>
<td>7</td>
<td>3.0</td>
</tr>
<tr>
<td>8</td>
<td>3.9</td>
<td>8</td>
<td>3.6</td>
</tr>
<tr>
<td>9</td>
<td>3.8</td>
<td>9</td>
<td>3.3</td>
</tr>
<tr>
<td>10</td>
<td>3.7</td>
<td>10</td>
<td>3.4</td>
</tr>
<tr>
<td>11</td>
<td>3.7</td>
<td>11</td>
<td>3.9</td>
</tr>
<tr>
<td>12</td>
<td>3.6</td>
<td>12</td>
<td>3.3</td>
</tr>
<tr>
<td>13</td>
<td>3.9</td>
<td>13</td>
<td>3.6</td>
</tr>
<tr>
<td>14</td>
<td>3.6</td>
<td>14</td>
<td>3.6</td>
</tr>
<tr>
<td>15</td>
<td>3.7</td>
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<td>2.9</td>
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<tr>
<td>16</td>
<td></td>
<td></td>
<td>3.4</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td>3.7</td>
</tr>
<tr>
<td>18</td>
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<td></td>
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<td>19</td>
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<td></td>
<td>3.7</td>
</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td>3.4</td>
</tr>
<tr>
<td>22</td>
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<td>3.6</td>
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<tr>
<td>23</td>
<td></td>
<td></td>
<td>3.9</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td></td>
<td>2.6</td>
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<tr>
<td>25</td>
<td></td>
<td></td>
<td>3.7</td>
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<tr>
<td>26</td>
<td></td>
<td></td>
<td>3.9</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td></td>
<td>3.9</td>
</tr>
<tr>
<td>28</td>
<td></td>
<td></td>
<td>3.1</td>
</tr>
<tr>
<td>29</td>
<td></td>
<td></td>
<td>2.8</td>
</tr>
</tbody>
</table>

*Note*: Scale 1 = not at all appropriate, 2 = slightly appropriate, 3 = moderately appropriate and 4 = very appropriate.

The next category, the Attitudinal items, had average scores that ranged from 2.8 to 4.0. Low mean scores of 2.8, 2.7, 2.6, and 2.8 were reported for items 1, 6, 24, and 29, respectively. Additionally, mean scores of 3.4, 3.3, 3.0, 3.3, 3.4, 3.3, and 3.4 were reported for items 2, 4, 7, 9, 10, 12, and 21, respectively. The highest scores were observed for items 3, 11, 19, 20, 23, 27, 28, and 29 and they were 3.9, 3.9, 3.7, 3.7, 3.7, 3.7, and 3.6, respectively. These results indicate that all the attitudinal items were appropriate for Salvadorian culture.

*Content Validation*
The content validity scores for the Knowledge items ranged from 2.8 to 4.0 (described in Table 20). The lowest average of 2.8 was reported for item 1. The other items had mean scores over 3; for example items 3, 5, 7, 12, and 14 had average scores of 3.3, 3.3, 3.4, 3.2, and 3.2, respectively. Items 4, 6, 8, 9, 10, and 11 had mean scores of 3.8, 4.0, 3.8, 3.8, 4.0, and 3.8, respectively. The ratings determined that the content validity for the knowledge items was acceptable.

The average for the Attitudinal items ranged from a low of 2.8 to a high of 4.0. Items 1 and 6, both peer-pressure items, received the lowest scores of 2.3 and 2.8, respectively. Items 4, 7, 9, 12, 15, 22, 24, and 26 had means of 3.2, 3.2, 3.2, 3.0, 3.2, 3.2, 3.2, and 3.2, respectively. Items 11, 17, 20, 25, 27, and 28 had higher mean scores of 4.0, 3.7, 3.8, 3.8, 3.7, and 3.7, respectively. Therefore, the content validity of the attitudinal items was judged as acceptable.

Once again the panel made recommendations that would improve the instrument. They suggested modifying items 1, 9, 11, 15, and 16 from the Knowledge section to improve their use with adolescents. They suggested the substitution of the word “sexo” for “relaciones sexuales” to describe the term “to have sex.” Additionally, they suggested using both terms “HIV/AIDS” when referring to either HIV or AIDS because more students would be familiar with this term. Another minor suggestion was to place the word “el” (“the”) in front of VIH/SIDA. The panel stated that double negatives are difficult to understand in Spanish and suggested the word “no” taken out of item 1.
Table 20

Mean Scores for Content Validation by Seven Panel Members

<table>
<thead>
<tr>
<th>Knowledge Scores</th>
<th>Item</th>
<th>Average Content Scores</th>
<th>Average Content Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.8</td>
<td>1</td>
<td>2.8</td>
</tr>
<tr>
<td>2</td>
<td>3.8</td>
<td>2</td>
<td>3.7</td>
</tr>
<tr>
<td>3</td>
<td>3.3</td>
<td>3</td>
<td>3.5</td>
</tr>
<tr>
<td>4</td>
<td>3.4</td>
<td>4</td>
<td>3.2</td>
</tr>
<tr>
<td>5</td>
<td>3.3</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>6</td>
<td>4.0</td>
<td>6</td>
<td>2.3</td>
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<tr>
<td>7</td>
<td>3.4</td>
<td>7</td>
<td>3.2</td>
</tr>
<tr>
<td>8</td>
<td>3.8</td>
<td>8</td>
<td>3.5</td>
</tr>
<tr>
<td>9</td>
<td>3.8</td>
<td>9</td>
<td>3.2</td>
</tr>
<tr>
<td>10</td>
<td>4.0</td>
<td>10</td>
<td>3.0</td>
</tr>
<tr>
<td>11</td>
<td>3.8</td>
<td>11</td>
<td>4.0</td>
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<tr>
<td>12</td>
<td>3.2</td>
<td>12</td>
<td>3.0</td>
</tr>
<tr>
<td>13</td>
<td>3.5</td>
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<td>3.5</td>
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<tr>
<td>14</td>
<td>3.2</td>
<td>14</td>
<td>3.5</td>
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<tr>
<td>15</td>
<td>3.8</td>
<td>15</td>
<td>3.2</td>
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<tr>
<td></td>
<td></td>
<td>16</td>
<td>3.6</td>
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<tr>
<td></td>
<td></td>
<td>17</td>
<td>3.7</td>
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<tr>
<td></td>
<td></td>
<td>19</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>3.8</td>
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<tr>
<td></td>
<td></td>
<td>21</td>
<td>3.5</td>
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<tr>
<td></td>
<td></td>
<td>22</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23</td>
<td>3.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>3.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
<td>3.8</td>
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<tr>
<td></td>
<td></td>
<td>26</td>
<td>3.2</td>
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<tr>
<td></td>
<td></td>
<td>27</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28</td>
<td>3.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Note. Scale 1 = not at all appropriate, 2 = slightly appropriate, 3 = moderately appropriate, and 4 = very appropriate.

A new phrase was suggested for item 9 that would make “drug use” the focal point of the sentence (see Table 21). The item was changed to “Una persona puede adquirir VIH/SIDA al compartir agujas en el consumo de diversas drogas.” Additionally, item 11 was changed to, “Una vez que tú has sido infectado con VIH/SIDA, tú eres portador del virus toda tu vida.” The change emphasizes that you will have the virus for the rest of your life. Likewise, the panel recommended modifying items 15 and 16.
Table 21

*Changes to Knowledge Items as Suggested by Salvadorian Panel During the Cultural Review*

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>English</th>
<th>Spanish</th>
<th>Edited For Pretest Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Tú no puedes contraer el SIDA si tú tienes sexo una o dos veces sin un condón.</td>
<td>Tú puedes contraer el SIDA si tú tienes sexo una o dos veces sin un condón.</td>
</tr>
<tr>
<td>9</td>
<td>A person can get HIV by sharing drug needles.</td>
<td>Una persona puede adquirir VIH al compartir agujas para la droga.</td>
<td>Una persona puede adquirir VIH/SIDA al compartir agujas en el consumo de diversas drogas.</td>
</tr>
<tr>
<td>11</td>
<td>Once you are infected with HIV, you are infected for life.</td>
<td>Una vez que tú has sido infectado con VIH, tú estás infectado de por vida.</td>
<td>Una vez que tú has sido infectado con VIH/SIDA, tú eres portador del virus toda tu vida.</td>
</tr>
<tr>
<td>15</td>
<td>If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tú quieres protegerte de contraer VIH conocondones de látex son los mejores.</td>
<td>Una forma de prevención del VIH/SIDA es el uso de condones de látex.</td>
</tr>
</tbody>
</table>

*Note.* Underlined items were included in the final version.

Attitudinal items 1, 6, 16, and 19 were problematic and edited according to the panel’s recommendations. As described in Table 22, item 1 was depicted as too wordy, and subsequently it was reworded to make it more concise by reducing the number of “tú’s” in the statement. Similarly, a suggestion was made to eliminate or rewrite the word “tú” in item 6 because it was repeated four times. Another revision was suggested by one of the panelists, who rewrote item 16 as follows: “Usar condones no hace la relación sexual menos placentera.” He stated this new translation was more accurate. Item 24 was labeled as problematic by one of the panelists who said the topic should not be mentioned.
to students in high school. However, when the content rating (3.2) and cultural appropriateness (2.8) of item 24 was compared, the evidence did not evoke a problem.

Table 22

Changes to Attitudinal Items as Suggested by the Salvadorian Panel During the Cultural Review

<table>
<thead>
<tr>
<th>Attitudinal Items</th>
<th>English</th>
<th>Spanish</th>
<th>Edited For Pretest Version</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Si tus amigos quieren que tú hagas algo incorrecto y tú crees que no es seguro, deberías por lo menos tratar de hacerlo.</td>
<td>Make it more direct, Too many &quot;Tú’s,&quot; (You's).</td>
</tr>
<tr>
<td>6</td>
<td>To keep your friends, you should go along with most things your friends want you to do.</td>
<td>Para mantener tus amistades, tú debes hacer la mayoría de las cosas que tus amigos quieren que tú hagas.</td>
<td>Para mantener tus amistades, debes hacer la mayoría de las cosas que tus amigos quieren que hagas.</td>
<td>One suggestion to rewrite it. Too many “Tú’s.”</td>
</tr>
<tr>
<td>16</td>
<td>Using a condom doesn't make sex less pleasurable.</td>
<td>Usar condones no hace el sexo menos placentero.</td>
<td>Usar condones no hace la relación sexual menos placentera.</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td>Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.</td>
<td>Los adolescentes deben tener más fuerza de voluntad para resistir las presiones de sus amigos.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>People who share drug needles should clean the needles with bleach.</td>
<td>Las personas que comparten agujas para drogas deberán limpiarlas con lejía.</td>
<td>A panelist said it was not a good question.</td>
<td></td>
</tr>
</tbody>
</table>

Note. Underlined words were problematic.

Readability

The readability of the instrument was assessed independently in El Salvador by the principal of the Montessori Academy and by an individual who was a school
psychologist/sexuality education teacher. They reported the words were written at the high school reading level. This finding was corroborated by a similar review conducted by the lay panel. However, the reliability of this method has not been reported and because of this, results have to be interpreted with caution.

Study 4

Pretest with Salvadorian High School Students

High School 5 was selected for a pretest of the instrument. Two groups of students, consisting of two male and two female students per group, answered the Spanish instrument. The students were asked to circle items that were difficult to understand or hard to read. Additionally, they were asked to write comments next to the problematic items.

The students took approximately 35 minutes to complete the instrument. Afterwards, the probing technique was used to detect the meaning of each question and to identify problematic items. Items were read aloud by the principal investigator and the students were asked to provide a brief interpretation of the item. The students took turns responding back to the items and made general comments about the instrument. They said that the instrument was easy to read and that the content would be easily understood by other high school students. They stated that the items were appropriate for an HIV/AIDS survey and that the content was similar to what they had been exposed to in their own HIV class. Positive comments were also made in regard to the cultural appropriateness of the content.

Table 23 describes the findings of the probing technique for the Knowledge section. The students found item 1 to be ambiguous because it was unclear if any of the
persons depicted in the statement were infected with HIV. They suggested the sentence be clarified by indicating if one of the persons having sex had HIV. Item 2 was the only other problematic item from the knowledge section. This item made reference to testing, however, none of the students understood what was being asked. They did not know the meaning of the term “anticuerpos” (“antibodies”). When the term was explained to them, they stated that a “blood test” would be a better term. To improve the item's understanding, the Spanish words “una prueba de sangre” or its English translation “blood test” was added to item 2.

Table 23

*Pretest Results of the Knowledge Section*

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>English</th>
<th>Spanish</th>
<th>Edited For Final Version</th>
<th>Student comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1. 1</td>
<td>You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Tú puedes contraer el VIH/SIDA si tú tienes sexo una o dos veces sin un condón.</td>
<td>Tú puedes contraer el VIH/SIDA si tú tienes sexo una o dos veces sin un condón.</td>
<td>Two students from group 1 and two from group 2 wanted to know if one of the persons is infected with HIV. They said the question could be interpreted in several ways.</td>
</tr>
<tr>
<td>2</td>
<td>A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Una persona puede “pasar” una prueba de anticuerpos de VIH/SIDA (resultados negativos) y aún estar infectado con VIH.</td>
<td>Una persona puede “pasar” una prueba de sangre para el VIH/SIDA (resultados negativos) y aún estar infectado con VIH.</td>
<td>All of the students did not know the meaning of antibodies. Use “blood test.”</td>
</tr>
</tbody>
</table>

The probing technique determined that Attitudinal items 1, 7, 8, 10, 14, 19, 21, and 24 were not interpreted the same as the original version or were problematic. As described in Table 24, the students found item 1 (Peer-pressure subscale) confusing and
unclear. One student’s suggestion was to describe a specific situation in which the teens have to make a choice under the influence of their friends that is right or wrong.

However, two students said they vaguely interpreted the situation as related to peer-pressure, but they were uncertain if others would do the same.

Table 24

*Pretest Results of the Attitudinal Section*

<table>
<thead>
<tr>
<th>Attitudinal Item</th>
<th>English</th>
<th>Spanish</th>
<th>Edited Version</th>
<th>Student comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si tus amigos quieren que hagas algo incorrecto y tú crees que no es seguro, para complacerlos, deberías por lo menos tratar de hacerlo.</td>
<td>No change.</td>
<td>Interpreted as not going along with your friends. A student suggested giving a specific example. Another student said this was related to peer-pressure. One of the students found it confusing.</td>
</tr>
<tr>
<td>7</td>
<td>People who don't have sex before they get married are strange.</td>
<td>Las personas que no tienen sexo antes de casarse son extrañas.</td>
<td>Las personas que no tienen relaciones sexuales antes de casarse son extrañas.</td>
<td>A student responded that if you do not have sex then you are on the other side of the fence. Another said there was something wrong with the person o “ algo mal en si.”</td>
</tr>
<tr>
<td>8</td>
<td>It is not smart to have sex without using a condom.</td>
<td>No es muy inteligente tener sexo sin usar un condón.</td>
<td>No es muy inteligente tener relaciones sexuales sin usar un condón.</td>
<td>A student left a note. They did not understand this question.</td>
</tr>
<tr>
<td>10</td>
<td>It's okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td>Esta bien tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con VIH/SIDA.</td>
<td>Esta bien tener relaciones sexuales sin usar un condón porque el riesgo de ser infectado con VIH/SIDA es muy bajo.</td>
<td>Suggested to not use the word “chance”. Use muy pocas las posibilidades o riesgo.</td>
</tr>
<tr>
<td>14</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH/SIDA.</td>
<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH/SIDA.</td>
<td>One of the students said the question is too general and open to several interpretations. Another student said that not all people know how HIV is transmitted.</td>
</tr>
</tbody>
</table>
Table 24 (continued)

<table>
<thead>
<tr>
<th>Item</th>
<th>Text</th>
<th>Translated Text</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td>Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.</td>
<td>One of the students commented it was the same as question 11. Two students said it was a confusing question since it did not mention a specific situation.</td>
</tr>
<tr>
<td>21</td>
<td>If people think they might have sex during a date, they should carry a condom.</td>
<td>Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán llevar un condón.</td>
<td>A student commented the question is not appropriate. Teens do not go out on dates and expect to have sex. They said sex is only in a relationship. Suggested to add the word “pareja.”</td>
</tr>
<tr>
<td>24</td>
<td>People who share drug needles should clean the needles with bleach.</td>
<td>Las personas que comparten agujas para drogas deberán limpiarlas con lejía.</td>
<td>One of the students said it was a bad question and not something students are concerned with.</td>
</tr>
</tbody>
</table>

Item 7 was problematic because it had several interpretations. According to one student, the word “extraño” was interpreted as “a person who is on the other side of the fence,” and this student made the clarification that they perceived the term as "being gay." Another student concurred and said they interpreted the word as someone who is a homosexual. Yet another student made the comment that there is “something wrong inside of the person if they do not have sex.” It was therefore noted that item 7 (Abstinence subscale) could have many interpretations and may not be representing the dimension to which it was assigned.

A minor modification was suggested for item 10 (see Table 24) that included replacing the word “chance” with either “riesgo” or “muy pocas las posibilidades.” Items 14 and 19 were said to be too general and the students recommended specific examples of situations faced by teen-agers. They stated that the examples be more concrete and not
open to interpretation. The other problem was with items 11 and 19; a student commented that the items were the same when they were not. This indicated that a similar sentence structure was affecting the interpretation of the items.

The students commented that item 21 was irrelevant to adolescents in El Salvador. They said that in El Salvador young persons do not have sex when they go out on a date and that casual sex rarely happens. Instead, sexual relations occur if two people are in a long-term relationship. They suggested rewording the item to reflect this situation and recommended adding the word “pareja” as a reference to the couple. Further, a comment was made that item 24 was a bad item. According to one of the students, “It is not important for adolescents to know how to clean drug needles.” As described earlier, a panelist made the same comment and this indicated the item was problematic.

Finally, the eight completed instruments were reviewed after the students left and the following items were circled: 2, 11, 19, 20, and 24 from the Attitudinal section. A note was written on the instrument, that said item 8 was not understood. The results were then used to edit the instrument, and with the assistance of the Lay Panel, the final instrument (see Appendix Q) was prepared for the reliability and validity study.

Study 5

Reliability Study, Confirmatory Factor Analysis, and Concurrent Validity

Reliability Study

Reliability of Knowledge Scores

Participants. Ten schools were randomly selected from 30 public high schools in the metropolitan area of San Salvador. The schools were similar in that they were all public and were composed of students from a lower socioeconomic and social status.
Nine of the schools were co-ed; however, two of the schools had different characteristics, School 5 was predominantly male, and School 8 admitted only females. A random selection of classrooms yielded a total of 496 students, and 13 either refused or were not permitted to participate. The final sample for the analysis consisted of 483 students.

The sample consisted of 41% males and 59% females (as described in Table 25). Additionally, the distribution by grade level was 31% in 10th, 42% in 11th, and 27% in 12th. The classrooms were randomly selected by the school principal, and they ranged in size from 23 to 54 students. The students’ ages consisted of < 1% in the age group 13 to 14, 25% in the 15 to 16 age group, and 74% in the 17 or older age group. Finally, 90% of the students reported having received HIV education.

Table 25

*Characteristics of the 10 Public High Schools*

<table>
<thead>
<tr>
<th>School</th>
<th>Students Selected</th>
<th>Grade</th>
<th>Percentage of Males</th>
<th>Percentage of Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>12</td>
<td>27</td>
<td>73</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>11</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>85</td>
<td>10 and 11</td>
<td>26</td>
<td>74</td>
</tr>
<tr>
<td>4</td>
<td>54</td>
<td>12</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>5</td>
<td>86</td>
<td>10, 11, and 12</td>
<td>97</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>28</td>
<td>10</td>
<td>42</td>
<td>58</td>
</tr>
<tr>
<td>17</td>
<td>31</td>
<td>10</td>
<td>39</td>
<td>61</td>
</tr>
<tr>
<td>8</td>
<td>47</td>
<td>11</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>38</td>
<td>11</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>23</td>
<td>10</td>
<td>30</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>10, 11, and 12</td>
<td>41</td>
<td>59</td>
</tr>
</tbody>
</table>
Internal consistency. Prior to looking at internal consistency, descriptive statistics were computed for the 15-item Knowledge test. A total of 483 students answered the Knowledge test. The instrument was scored by allowing two correct answers per item, and, as described in the Methods section, non-missing responses were not considered for the final score. The information in Table 26 describes the distribution of the scores for the 10 schools. Schools 1 and 7 had the lowest mean score (62%) and School 4 had the highest mean score (74%). The mean score for the 10 schools was 69% correct and the standard deviation was 16. The mode was 80% and the median was 73%. The correct scores ranged from 20% to 100%. The scores had a negative skewness (-0.47) and a negative kurtosis (-0.16). The remaining characteristics were similar for each of the 10 schools.

Table 26

Score Distribution of the 15 True and False Knowledge Items According to School

<table>
<thead>
<tr>
<th>School</th>
<th>Number of Students</th>
<th>Mean %</th>
<th>Standard Deviation</th>
<th>Maximum Score</th>
<th>Minimum Score</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47</td>
<td>62</td>
<td>18</td>
<td>93</td>
<td>26</td>
<td>0.12</td>
<td>-1.02</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>65</td>
<td>17</td>
<td>100</td>
<td>20</td>
<td>-0.21</td>
<td>-0.13</td>
</tr>
<tr>
<td>3</td>
<td>86</td>
<td>64</td>
<td>17</td>
<td>93</td>
<td>20</td>
<td>-0.60</td>
<td>-0.17</td>
</tr>
<tr>
<td>4</td>
<td>55</td>
<td>79</td>
<td>12</td>
<td>100</td>
<td>47</td>
<td>-0.46</td>
<td>0.13</td>
</tr>
<tr>
<td>5</td>
<td>86</td>
<td>70</td>
<td>14</td>
<td>100</td>
<td>33</td>
<td>-0.33</td>
<td>-0.21</td>
</tr>
<tr>
<td>6</td>
<td>28</td>
<td>74</td>
<td>11</td>
<td>87</td>
<td>53</td>
<td>-0.54</td>
<td>1.08</td>
</tr>
<tr>
<td>7</td>
<td>32</td>
<td>62</td>
<td>11</td>
<td>80</td>
<td>33</td>
<td>-0.73</td>
<td>0.17</td>
</tr>
<tr>
<td>8</td>
<td>48</td>
<td>75</td>
<td>12</td>
<td>93</td>
<td>46</td>
<td>-0.43</td>
<td>-0.46</td>
</tr>
<tr>
<td>9</td>
<td>38</td>
<td>70</td>
<td>14</td>
<td>93</td>
<td>33</td>
<td>-0.45</td>
<td>-0.10</td>
</tr>
<tr>
<td>10</td>
<td>23</td>
<td>65</td>
<td>16</td>
<td>93</td>
<td>33</td>
<td>-0.13</td>
<td>-0.82</td>
</tr>
<tr>
<td>Total</td>
<td>483</td>
<td>69</td>
<td>16</td>
<td>100</td>
<td>20</td>
<td>-0.47</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

The scores of the 483 students had an internal consistency (Cronbach alpha) of .57. As described in Table 27, the item-to-total correlation ranged from .07 to .35. The observed alpha may have resulted from a combination of factors known to lower the
reliability of scores. These factors include the variance of an item, item discrimination, and test length (Crocker & Algina, 1986).

The item-to-total correlation is an index of discrimination and provides information about how strongly the item relates to the total score. Items that had an item-to-total correlation less than or equal to .2 are marginal, and items with a value greater than or equal to .3 are acceptable. The item-to-total correlations of items 6, 7, 8, and 13 in Table 27 indicated they had an acceptable index of discrimination. In contrast, the item-to-total correlation of items 2, 3, 9, 10, 11, 12, and 15 indicated a low discrimination.

Table 27

*Mean Score and Item-to-total Correlation of the 15 True and False Knowledge Items*

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean</th>
<th>Item-to-total correlation (Discrimination)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.81</td>
<td>.21</td>
</tr>
<tr>
<td>2</td>
<td>0.46</td>
<td>.19</td>
</tr>
<tr>
<td>3</td>
<td>0.71</td>
<td>.07</td>
</tr>
<tr>
<td>4</td>
<td>0.78</td>
<td>.23</td>
</tr>
<tr>
<td>5</td>
<td>0.65</td>
<td>.25</td>
</tr>
<tr>
<td>6</td>
<td>0.79</td>
<td>.30</td>
</tr>
<tr>
<td>7</td>
<td>0.75</td>
<td>.36</td>
</tr>
<tr>
<td>8</td>
<td>0.92</td>
<td>.33</td>
</tr>
<tr>
<td>9</td>
<td>0.95</td>
<td>.13</td>
</tr>
<tr>
<td>10</td>
<td>0.63</td>
<td>.18</td>
</tr>
<tr>
<td>11</td>
<td>0.93</td>
<td>.17</td>
</tr>
<tr>
<td>12</td>
<td>0.22</td>
<td>.17</td>
</tr>
<tr>
<td>13</td>
<td>0.65</td>
<td>.35</td>
</tr>
<tr>
<td>14</td>
<td>0.53</td>
<td>.20</td>
</tr>
<tr>
<td>15</td>
<td>0.49</td>
<td>.15</td>
</tr>
</tbody>
</table>

Items answered correctly by most of the students lowered the variance. Because the calculation of alpha is affected by the variance in the sample (Crocker & Algina, 1986), the observed alpha was directly affected by a lower variance. Items 8, 9, and 11 were answered correctly by more than 90% of the students, and according to their item-to-total correlation, they should be reworded or eliminated to improve the reliability of
the scores. These items were assessing knowledge that was important for students to know and were therefore an integral component of the instrument.

In contrast, items 2 and 12 were the most difficult for the students. Item 2 (A person can "pass" an HIV antibody test (test negative) but still be infected with HIV) was correctly answered by 46% of the students. As in items 8, 9, and 11, this item assessed an important dimension. Similarly, item 12 (People infected with HIV are usually very thin and sickly) was correctly answered by 22% of the students. As illustrated in Table 27, there were not enough difficult items. A characteristic of a well-designed instrument was an equal number of difficult and non-difficult items. Nevertheless, the disproportion of difficult items was not a concern because of the general purpose of the assessment. The intent of the Knowledge section was to assess the global characteristics of HIV transmission, identify risky behaviors, and dispel misconceptions. The instrument was similar to a criterion-based test where the researcher is concerned with mastery of a particular domain.

*Test-retest reliability.* The reliability study was conducted with a subset of 39 students who were randomly selected from the study’s larger population of 483 students. The initial group for the subset consisted of 26 students from School 1 and 35 students from School 5. Unfortunately, during the last administration of the instrument, many of the students were not present in their classroom and did not participate. Fourteen students from School 1 and six from School 5 were absent. One of the teachers commented that it was unusual for so many students to be absent. Additionally, two more students incorrectly filled out the identification codes and were dropped from the reliability study.
The final sample for the test-retest study consisted of 39 individuals. There was a disproportionate number of male students (74%) in the sample, and the distribution by grade level was 67% in 10th and 33% in 12th. Additionally, 72% of the students reported receiving HIV education. These students were given the same instrument at two different times during a one-week period. The scores from the two occasions were correlated to obtain a Pearson product-moment correlation coefficient.

Table 28

*Characteristics of the 15 True and False Knowledge Scores at Time 1 and Time 2*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Time 1 (n = 39)</th>
<th>Time 2 (n = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>63%</td>
<td>60%</td>
</tr>
<tr>
<td>Mode</td>
<td>47</td>
<td>67</td>
</tr>
<tr>
<td>Median</td>
<td>66</td>
<td>60</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.35</td>
<td>0.08</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-.091</td>
<td>-0.11</td>
</tr>
<tr>
<td>Cronbach's alpha</td>
<td>.62</td>
<td>.52</td>
</tr>
</tbody>
</table>

The test-retest reliability coefficient for the scores of the 15 Knowledge items was .59. This implied that 59% of the variance was due to the true score variance for this group of students. Additionally, 31% of the variance can be attributed to measurement errors associated with temporary changes in the examinees. As described in Table 28, the means (correct answers) for Time 1 and Time 2 were 63% and 60%, respectively. Additionally, the alpha at Time 1 and Time 2 was very similar, .62 and .52, respectively. It was noted that the alpha for the larger study was .57.
Reliability of the Attitudinal Scores

Descriptive statistics of Attitudinal items. The 23 translated items from the CDC were administered to a sample of 483 students. It was noted that the instrument had many unanswered items. Particularly, items 3, 16, 23, 24, and 25 were recorded as having 16, 17, 11, 14, and 14 missing responses, respectively. The largest number of non-responses was observed for items 3, 16, and 23, which were from the Condom subscale. A non-response may have come from students who were either sexually inexperienced or who were uncomfortable answering the questions about condom use. Missing data were not used in the calculation of the mean score or in any of the other calculations.

The items in the instrument included statements that were a combination of negative or positive statements, and this mixture was expected to avoid a response set. The negative statements were scored so that “strongly agree” = 1, “agree” = 2, “not sure” = 3, “disagree” = 4, and “strongly disagree” = 5. Positive statements were scored in reverse so that “strongly disagree” = 1, “disagree” = 2, “not sure” = 3, “agree” = 4, and “strongly agree” = 5. The mean, standard deviation, skewness, and kurtosis for the translated Attitudinal items are reported in Table 29.

The means for the 23 attitudes ranged from 2.30 to 4.60. Univariate tests showed that for many of the items the distribution was negatively skewed. This indicated that for most of the students the scores were mostly positive. The large value for skewness was -2.72. Kurtosis values ranged from -1.10 (item 24 in the Drug use subscale) to 7.80 (item 14 in the Threat of HIV subscale).
### Table 29

**Descriptive Statistics for the 23 CDC Translated Attitudinal Items**

<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Number of Missing Scores</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>479</td>
<td>4</td>
<td>4.34</td>
<td>0.80</td>
<td>-1.46</td>
<td>2.84</td>
</tr>
<tr>
<td>6</td>
<td>481</td>
<td>2</td>
<td>4.34</td>
<td>0.87</td>
<td>-1.63</td>
<td>2.96</td>
</tr>
<tr>
<td>11</td>
<td>475</td>
<td>8</td>
<td>3.84</td>
<td>1.49</td>
<td>-0.91</td>
<td>-0.77</td>
</tr>
<tr>
<td>15</td>
<td>479</td>
<td>4</td>
<td>4.02</td>
<td>1.08</td>
<td>-1.19</td>
<td>0.97</td>
</tr>
<tr>
<td>19</td>
<td>477</td>
<td>6</td>
<td>4.39</td>
<td>1.05</td>
<td>-1.87</td>
<td>2.63</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>480</td>
<td>3</td>
<td>3.87</td>
<td>1.34</td>
<td>-0.87</td>
<td>-0.56</td>
</tr>
<tr>
<td>7</td>
<td>480</td>
<td>3</td>
<td>4.27</td>
<td>1.12</td>
<td>-1.66</td>
<td>1.96</td>
</tr>
<tr>
<td>12</td>
<td>479</td>
<td>4</td>
<td>3.99</td>
<td>1.27</td>
<td>-1.05</td>
<td>-0.13</td>
</tr>
<tr>
<td>20</td>
<td>479</td>
<td>4</td>
<td>4.25</td>
<td>1.14</td>
<td>-1.44</td>
<td>0.97</td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>475</td>
<td>8</td>
<td>3.82</td>
<td>1.33</td>
<td>-0.93</td>
<td>-0.37</td>
</tr>
<tr>
<td>16</td>
<td>466</td>
<td>17</td>
<td>2.95</td>
<td>1.25</td>
<td>-0.03</td>
<td>-0.77</td>
</tr>
<tr>
<td>21</td>
<td>477</td>
<td>6</td>
<td>4.23</td>
<td>1.03</td>
<td>-1.57</td>
<td>2.04</td>
</tr>
<tr>
<td>23</td>
<td>472</td>
<td>11</td>
<td>3.46</td>
<td>1.33</td>
<td>-0.42</td>
<td>-0.95</td>
</tr>
<tr>
<td>Drugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>475</td>
<td>8</td>
<td>4.01</td>
<td>1.12</td>
<td>-1.02</td>
<td>0.35</td>
</tr>
<tr>
<td>9</td>
<td>479</td>
<td>4</td>
<td>4.26</td>
<td>1.27</td>
<td>-1.63</td>
<td>1.29</td>
</tr>
<tr>
<td>13</td>
<td>478</td>
<td>5</td>
<td>4.33</td>
<td>1.09</td>
<td>-1.82</td>
<td>2.61</td>
</tr>
<tr>
<td>17</td>
<td>477</td>
<td>6</td>
<td>4.56</td>
<td>0.86</td>
<td>-2.49</td>
<td>6.41</td>
</tr>
<tr>
<td>24</td>
<td>469</td>
<td>14</td>
<td>2.54</td>
<td>1.41</td>
<td>0.41</td>
<td>-1.10</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>480</td>
<td>3</td>
<td>4.39</td>
<td>1.11</td>
<td>-2.03</td>
<td>3.19</td>
</tr>
<tr>
<td>10</td>
<td>479</td>
<td>4</td>
<td>4.31</td>
<td>1.09</td>
<td>-1.79</td>
<td>2.53</td>
</tr>
<tr>
<td>14</td>
<td>477</td>
<td>6</td>
<td>4.60</td>
<td>0.84</td>
<td>-2.72</td>
<td>7.80</td>
</tr>
<tr>
<td>18</td>
<td>476</td>
<td>7</td>
<td>2.36</td>
<td>1.32</td>
<td>0.66</td>
<td>-0.69</td>
</tr>
<tr>
<td>25</td>
<td>469</td>
<td>14</td>
<td>4.45</td>
<td>0.89</td>
<td>-2.10</td>
<td>4.57</td>
</tr>
</tbody>
</table>

**Note.** Positive statements: Items 2, 5, 8, 9, 11, 12, 14, 17, 19, 20, 21, 24, and 25. Negative statements: Items 1, 3, 4, 6, 7, 10, 13, 15, 16, 18, 22, and 23. The negative statements were scored so that “strongly agree” = 1, “agree” = 2, “not sure” = 3, “disagree” = 4, and “strongly disagree” = 5. Positive statements were scored in reverse to compute the mean.

**Descriptive statistics of the Attitudinal subscales.** As described in Table 30, the 23 translated items from the CDC’s Booklet #6 (CDC, 2003) were hypothesized to represent five factors. The items were grouped according to the original designation given by the authors of the instrument. A mean score for each subscale was calculated by adding the responses for each item belonging to the subscale, and then dividing it by the total
number of items in that subscale. A higher subscale mean score indicated a favorable attitude for that construct, and a lower mean score indicated an unfavorable attitude.

The Condom subscale had the lowest mean (M = 3.63, SD = 0.61), and this indicated the majority of the responses were from students with a neutral attitude (“I am not sure”). Likewise, the Drug use subscale had a mean of 3.94 and a standard deviation of 0.58, which was very close to an overall favorable attitude. The other subscales, Peer-pressure, Abstinence, and Threat of HIV, were considered to be favorable as they had mean responses greater than 4. In particular, the response for the Peer-pressure (M = 4.19, SD = 0.64) was the highest of the five subscales.

Table 30

*Descriptive Statistics of Attitudinal Subscales*

<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>465</td>
<td>4.19</td>
<td>0.64</td>
<td>-0.61</td>
<td>-0.21</td>
</tr>
<tr>
<td>Abstinence</td>
<td>472</td>
<td>4.09</td>
<td>0.81</td>
<td>-0.77</td>
<td>0.01</td>
</tr>
<tr>
<td>Condom</td>
<td>453</td>
<td>3.63</td>
<td>0.61</td>
<td>-0.12</td>
<td>0.07</td>
</tr>
<tr>
<td>Drugs</td>
<td>453</td>
<td>3.94</td>
<td>0.58</td>
<td>-0.57</td>
<td>0.29</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>458</td>
<td>4.03</td>
<td>0.54</td>
<td>-0.56</td>
<td>0.57</td>
</tr>
</tbody>
</table>

*Note.* Sample was 483 students. N is the number of responses.

Pearson product-moment correlation coefficients were calculated to determine the relationship among the five subscales. As described in Table 31, the largest correlation (.41) was calculated for the Peer-pressure and Threat of HIV infection subscales. The Abstinence and Peer-pressure subscales had a medium correlation of .39. The correlation among the Abstinence and Drug use subscales was .36. The Condom and Abstinence subscales had the lowest correlation (.12). A medium to moderate correlation was expected due to the content that was being assessed (HIV and AIDS) and because items that assess attitudes were known to have a moderate correlation.
Table 31

*Pearson Correlation Matrix of the Five Attitudinal Subscales (n = 393)*

<table>
<thead>
<tr>
<th></th>
<th>Peer-pressure</th>
<th>Abstinence</th>
<th>Condom</th>
<th>Drugs</th>
<th>Threat of HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinence</td>
<td>.35</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom</td>
<td>.32</td>
<td>.18</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td>.36</td>
<td>.32</td>
<td>.21</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>.41</td>
<td>.29</td>
<td>.33</td>
<td>.25</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Note.* p < .0001.

*Internal consistency.* Internal consistency coefficients (Cronbach's alpha) for the translated CDC’s attitudinal subscales are presented in Table 32. The subscales had reliability coefficients that ranged from 0 to .58 (set to zero because reliabilities have a minimum value of 0). The Peer-pressure and Abstinence subscales were found to have a reliability coefficient of .55 and .58, respectively. The reliability coefficients of the Drug use and Threat of HIV subscales were .24 and .30, respectively. In contrast, the Condom subscale did not have an acceptable level of internal consistency (0), and this indicated that the scores for this scale were not reliable.
Table 32

Cronbach’s Alpha and Item-to-total Correlation of the 23 Translated CDC Attitudinal Items

<table>
<thead>
<tr>
<th>Subscale</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Item-to-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>1</td>
<td>479</td>
<td>4.34</td>
<td>0.80</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>481</td>
<td>4.34</td>
<td>0.87</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>475</td>
<td>3.84</td>
<td>1.49</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>479</td>
<td>4.02</td>
<td>1.08</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>477</td>
<td>4.39</td>
<td>1.05</td>
</tr>
<tr>
<td>Abstinence</td>
<td>2</td>
<td>480</td>
<td>3.87</td>
<td>1.34</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>480</td>
<td>4.27</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>479</td>
<td>3.99</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>479</td>
<td>4.25</td>
<td>1.14</td>
</tr>
<tr>
<td>Condom use</td>
<td>8</td>
<td>475</td>
<td>3.82</td>
<td>1.33</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>466</td>
<td>2.95</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>477</td>
<td>4.23</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>472</td>
<td>3.46</td>
<td>1.33</td>
</tr>
<tr>
<td>Drugs</td>
<td>4</td>
<td>475</td>
<td>4.01</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>479</td>
<td>4.26</td>
<td>1.27</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>478</td>
<td>4.33</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>477</td>
<td>4.56</td>
<td>0.86</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>469</td>
<td>2.54</td>
<td>1.41</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>5</td>
<td>480</td>
<td>4.39</td>
<td>1.11</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>479</td>
<td>4.31</td>
<td>1.09</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>477</td>
<td>4.60</td>
<td>0.84</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>476</td>
<td>2.36</td>
<td>1.32</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>469</td>
<td>4.45</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note. Positive statements: Items 2, 5, 8, 9, 11, 12, 14, 16, 17, 19, 20, 21, 23, and 25.
Negative statements: Items 1, 3, 4, 6, 7, 10, 13, 15, 18, 22, and 23.
The negative statements were scored so that “strongly agree” = 1, “agree” = 2, “not sure” = 3, “disagree” = 4, and “strongly disagree” = 5.
Positive statements were scored in reverse to compute the mean.

The range of the item-to-total correlations for the subscales were from -.13 to .45 (see Table 33). The item-to-total correlation identifies how the items measure the scale. Items with a negative or low value suggest possible weak items (Hatcher, 1994). The item-to-total correlations in the Peer-pressure and Abstinence subscales were determined to be acceptable. The item-to-total correlations for the Threat of HIV (.02 to .23) were
very low. Additionally, the range of the item-to-total correlation for the Condom and Drug use subscales was low and indicated that some of the items were weakly related to their respective construct.

Table 33

*Cronbach Alpha and Item-to-total Correlation of the Subscales*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>N</th>
<th>Mean</th>
<th>Number of Items in the Subscale</th>
<th>Cronbach Alpha</th>
<th>Range of Item-to-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>465</td>
<td>4.19</td>
<td>5</td>
<td>.55</td>
<td>.27 to .42</td>
</tr>
<tr>
<td>Abstinence</td>
<td>472</td>
<td>4.09</td>
<td>4</td>
<td>.58</td>
<td>.16 to .45</td>
</tr>
<tr>
<td>Condom use</td>
<td>453</td>
<td>3.63</td>
<td>4</td>
<td>0.0</td>
<td>-.13 to .08</td>
</tr>
<tr>
<td>Drug use</td>
<td>453</td>
<td>3.94</td>
<td>5</td>
<td>.24</td>
<td>-.13 to .31</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>458</td>
<td>4.03</td>
<td>5</td>
<td>.30</td>
<td>.02 to .23</td>
</tr>
</tbody>
</table>

*Note.* N is the number of responses from a sample of 483 students. The non-response for the subscales were 18 (Peer-pressure), 11 (Abstinence), 30 (Condom use), 30 (Drug use), and 25 (Threat of HIV).

*Test-retest.* The responses from the subset of students (39) were used to calculate a reliability coefficient between the two scores after a one-week period. The Peer-pressure subscale had the highest reliability coefficient (.62). In decreasing order, the next smallest reliability coefficient was observed for the Drug use subscale (.58). And the next two smallest were calculated for the Threat of HIV (.49) and Abstinence (.43) subscales, respectively. The lowest reliability coefficient (.17) was observed for the Condom use subscale. Overall, the reliability of the scores was moderate for four of the subscales and inadequate for the Condom use subscale. The information in Table 34 indicated that the subset’s mean score for each subscale was similar at Time 1 and Time 2. The standard deviation was similar for both groups.
### Table 34

**Characteristics of Attitudinal Items at Different Times**

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Time 1 (n = 39)</th>
<th>Time 2 (n = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Peer-Pressure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.84</td>
<td>4.01</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.67</td>
<td>0.53</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.35</td>
<td>-0.21</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.21</td>
<td>-0.69</td>
</tr>
<tr>
<td>Missing Responses</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Abstinence</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.58</td>
<td>3.49</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.71</td>
<td>0.75</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.63</td>
<td>0.03</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.90</td>
<td>-0.59</td>
</tr>
<tr>
<td>Missing Responses</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Condom use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.26</td>
<td>3.52</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.65</td>
<td>0.62</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.80</td>
<td>0.89</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.19</td>
<td>0.56</td>
</tr>
<tr>
<td>Missing Responses</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td><strong>Drug use</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.74</td>
<td>3.79</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.61</td>
<td>0.58</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.08</td>
<td>0.05</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>-0.42</td>
<td>0.45</td>
</tr>
<tr>
<td>Missing Responses</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Threat of HIV</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.89</td>
<td>3.80</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.47</td>
<td>0.49</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.13</td>
<td>-0.45</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.43</td>
<td>-0.23</td>
</tr>
<tr>
<td>Missing Responses</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Note.** Response scaled ranged from 1 to 5.

N is the number of responses from a sample of 483 students.

#### Reliability of the Attitude Scores from Basen-Engquist et al.’s (1999) Study

**Descriptive Statistics.** The mean, standard deviation and other descriptive statistics for the items from Basen-Engquist et al. (1999) are presented in Table 35. The means for the six items ranged from 3.64 (SD = 1.35) to 4.49 (SD = 0.89). Additionally, the distribution of the scores was negatively skewed, and this distribution was similar to
the one from the translated CDC items. Additionally, missing responses were found in all of the items. Item 3 (Condom subscale) had 16 non-responses and item 26 (Abstinence subscale) had 14 non-responses. As described earlier, the reasons for a non-response may be due to the lack of sexual experience and unfamiliarity with condoms. However, these reasons will have to be investigated in future research as they may affect the reliability and validity of the scores.

When the items were combined to form Condom and Abstinence subscales, the mean was 4.22 (SD = 0.86) and 4.12 (SD = 0.89), respectively. Both subscales had distributions that were negatively skewed (see Table 36). The mean of Basen-Engquist et al.’s (1999) Abstinence subscale was similar to the translated CDC’s Abstinence subscale (4.09). In contrast, Basen-Engquist et al.’s (1999) Condom subscale (4.22) was higher than the translated CDC Condom use (3.63) subscale. Overall, the reliability of the scores from Basen-Engquist et al.’s Condom and Abstinence subscales was found to be adequate.

Table 35

Descriptive Statistics for Basen-Engquist et al.’s (1999) Items

<table>
<thead>
<tr>
<th>Item</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>475</td>
<td>4.49</td>
<td>0.89</td>
<td>-2.17</td>
<td>4.89</td>
</tr>
<tr>
<td>26</td>
<td>469</td>
<td>3.64</td>
<td>1.35</td>
<td>-0.59</td>
<td>-0.92</td>
</tr>
<tr>
<td>27</td>
<td>471</td>
<td>4.25</td>
<td>1.12</td>
<td>-1.54</td>
<td>1.42</td>
</tr>
<tr>
<td>Condom</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>467</td>
<td>4.14</td>
<td>1.16</td>
<td>-1.27</td>
<td>0.55</td>
</tr>
<tr>
<td>28</td>
<td>474</td>
<td>4.33</td>
<td>0.97</td>
<td>-1.66</td>
<td>2.41</td>
</tr>
<tr>
<td>29</td>
<td>473</td>
<td>4.17</td>
<td>1.12</td>
<td>-1.37</td>
<td>1.04</td>
</tr>
</tbody>
</table>

Note. Positive statements: Items 22, 27, 28, and 29. Negative statements: Items 3 and 26. Response scaled ranged from 1 to 5. N is the number of responses from a sample of 483 students.
Table 36


<table>
<thead>
<tr>
<th>Factor</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom</td>
<td>458</td>
<td>4.22</td>
<td>0.86</td>
<td>-1.31</td>
<td>1.49</td>
</tr>
<tr>
<td>Abstinence</td>
<td>463</td>
<td>4.12</td>
<td>0.89</td>
<td>-0.97</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Note. N is the number of responses from a sample of 483 students.

*Internal consistency.* As described in Table 37, the Basen-Engquist et al. (1999) Condom and Abstinence subscales, which were used as part of the concurrent validity analysis, had three items each. Internal consistency was .68 for the Abstinence and .69 for the Condom subscales. Therefore, the reliability of the scores for the items in this subscale indicated that the items were functioning together as a group.

Table 37

Cronbach Alpha and Item-to-total Correlation of Basen-Engquist et al.’s (1999) Subscales

<table>
<thead>
<tr>
<th>Scale</th>
<th>N</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha</th>
<th>Item-to-total Correlation (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basen-Engquist’s</td>
<td>463</td>
<td>3</td>
<td>.68</td>
<td>.45 to .57</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basen-Engquist’s</td>
<td>458</td>
<td>3</td>
<td>.69</td>
<td>.40 to .58</td>
</tr>
<tr>
<td>Condom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. N is the number of responses from a sample of 483 students.

*Test-retest.* The scores of the sample of 39 students had a reliability coefficient of .78 for the Abstinence subscale and .67 for the Condom subscale. Both reliability coefficients were greater than the ones observed for the translated CDC subscales. The
means were compared for Time 1 and Time 2 (see Table 38). Both means were very close in value and had a similar standard deviation.

Table 38

Comparison of Basen-Engquist et al.’s (1999) Condom and Abstinence Subscales at Different Times

<table>
<thead>
<tr>
<th>Factor</th>
<th>Time 1 (n = 39)</th>
<th>Time 2 (n = 39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.58</td>
<td>3.49</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.71</td>
<td>0.75</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.63</td>
<td>0.03</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>0.90</td>
<td>-0.59</td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>3.20</td>
<td>3.52</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.65</td>
<td>0.62</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.80</td>
<td>0.89</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>1.19</td>
<td>0.56</td>
</tr>
</tbody>
</table>

Study 5

Confirmatory Factor Analysis

Model 1

To evaluate the factorial validity of the five-factor attitudinal model underlying the CDC instrument, the Calis statistical program from the SAS Institute (2001) was used to perform the confirmatory factor analysis (CFA). The Calis procedure makes use of structural equations in the same manner as the LISREL program for the analysis of data with latent variables (Hatcher, 1994). Maximum likelihood estimation, using the variance-covariance matrix of the observed variables, was used to determine the relationship of the items with the latent or unseen variables (Hatcher, 1994).

Fit indices. Figure 3 presents the five-factor correlated model that was tested. The results from CFA indicated that a five-factor attitudinal model did not fit the data. Several fit indices were consulted as recommended by Bryne (1994) and Hatcher (1994). As
described in Table 39, the first index, the $\chi^2 (220, N = 408) = 586, p < .0001$, was statistically significant. Therefore, the hypothesis of the model fitting the data was rejected. However, Bryne (1994) has noted that sample size affects the chi-square test and that other indices should be consulted before making a final decision.

Table 39 included the goodness of fit indices such as Bentler and Bonett’s Non-normed Index and Bentler’s Comparative Fit Index. The values for the previous indices were .69 and .72, respectively. Values greater than .9 have generally been viewed as indicative that a model has an acceptable fit. Further, the Root Mean Square Error of Approximation (RMSEA) had a value of .064. An RMSEA value between 0 and .05 indicates the model fits the data (Bryne, 1994). Values between .05 and .08 indicate marginal fit. Therefore, the interpretation of the fit indices suggested the fit of the model was less than acceptable.

Table 39

**Goodness of Fit Indices to Examine Model Fit**

<table>
<thead>
<tr>
<th>Fit index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>586</td>
</tr>
<tr>
<td>Chi-square degrees of freedom</td>
<td>220</td>
</tr>
<tr>
<td>p value</td>
<td>.0001</td>
</tr>
<tr>
<td>Bentler &amp; Bonett’s (1980) Non-normed Index</td>
<td>.66</td>
</tr>
<tr>
<td>Bentler’s comparative fit index</td>
<td>.71</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.064</td>
</tr>
</tbody>
</table>

*Note.* RMSEA is the Root Mean Square Error of Approximation.
Figure 3. Standardized Factor Loadings for Model 1.
Standardized factor loadings. The standardized factor pattern coefficients (i.e., loadings), error variances, and t-test for significance were evaluated for each variable to determine sources of misfit. As demonstrated in Figure 3, the standardized factor loadings ranged in size from -.13 to .68. The data indicated a non-significant (p > .05) standardized factor loading for items 24 (Drug use subscale) and 18 (Threat of HIV subscale). The standardized factor loadings for items 1, 6, 11, and 15 from the Peer-pressure subscale were .43, .43, .46, .40, and .59, respectively.

Items 2, 7, 12, and 20 from the Abstinence subscale had standardized factor loadings of .54, .26, .68, and .63, respectively. Further, items 8, 16, 21, and 23 from the Condom subscale had standardized factor loadings of .42, -.13, .47, and .20, respectively. In contrast, items 4, 9, 13, and 24 had loadings below .4 for the Drug subscale. Similarly, items 5, 10, 18, and 25 were weakly associated with the Threat of HIV subscale. Therefore, the items in the Abstinence subscale had a strong association to their factor and the rest of the items had a weak association to their factors.
### Table 40

*Standardized Factor Loading, Error Variance, and Squared Multiple Correlation Coefficient of the Attitudinal Variables from Model 1*

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Standardized Loading</th>
<th>Uniqueness</th>
<th>t-Value</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0.43</td>
<td>0.04</td>
<td>7.77</td>
<td>.19</td>
</tr>
<tr>
<td>6</td>
<td>0.43</td>
<td>0.04</td>
<td>7.72</td>
<td>.18</td>
</tr>
<tr>
<td>11</td>
<td>0.46</td>
<td>0.08</td>
<td>8.31</td>
<td>.21</td>
</tr>
<tr>
<td>15</td>
<td>0.40</td>
<td>0.06</td>
<td>6.54</td>
<td>.14</td>
</tr>
<tr>
<td>19</td>
<td>0.59</td>
<td>0.05</td>
<td>10.83</td>
<td>.35</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.54</td>
<td>0.07</td>
<td>9.78</td>
<td>.30</td>
</tr>
<tr>
<td>7</td>
<td>0.26</td>
<td>0.06</td>
<td>4.53</td>
<td>.07</td>
</tr>
<tr>
<td>12</td>
<td>0.68</td>
<td>0.07</td>
<td>12.21</td>
<td>.47</td>
</tr>
<tr>
<td>20</td>
<td>0.63</td>
<td>0.06</td>
<td>11.32</td>
<td>.40</td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>0.42</td>
<td>0.08</td>
<td>6.75</td>
<td>.17</td>
</tr>
<tr>
<td>16</td>
<td>-0.13</td>
<td>0.07</td>
<td>-2.28</td>
<td>.02</td>
</tr>
<tr>
<td>21</td>
<td>0.47</td>
<td>0.06</td>
<td>7.35</td>
<td>.22</td>
</tr>
<tr>
<td>23</td>
<td>0.20</td>
<td>0.07</td>
<td>3.58</td>
<td>.04</td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.35</td>
<td>0.06</td>
<td>6.02</td>
<td>.12</td>
</tr>
<tr>
<td>9</td>
<td>0.47</td>
<td>0.07</td>
<td>8.27</td>
<td>.22</td>
</tr>
<tr>
<td>13</td>
<td>0.33</td>
<td>0.06</td>
<td>5.77</td>
<td>.11</td>
</tr>
<tr>
<td>17</td>
<td>0.66</td>
<td>0.04</td>
<td>11.45</td>
<td>.43</td>
</tr>
<tr>
<td>24</td>
<td>-0.06</td>
<td>0.08</td>
<td>-1.07*</td>
<td>.004</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.27</td>
<td>0.05</td>
<td>5.30</td>
<td>.07</td>
</tr>
<tr>
<td>10</td>
<td>0.31</td>
<td>0.05</td>
<td>5.95</td>
<td>.09</td>
</tr>
<tr>
<td>14</td>
<td>0.45</td>
<td>0.04</td>
<td>8.27</td>
<td>.20</td>
</tr>
<tr>
<td>18</td>
<td>-0.04</td>
<td>0.06</td>
<td>-0.93*</td>
<td>.002</td>
</tr>
<tr>
<td>25</td>
<td>0.43</td>
<td>0.04</td>
<td>8.06</td>
<td>.19</td>
</tr>
</tbody>
</table>

*Note.* Items 18 and 24 did not have a statistically significant factor loading (p > .05).

**Correlation of the factors.** The confirmatory factor analysis (CFA) produced a correlation matrix of the latent factors which indicated that two correlations were inadmissible (see Table 41). The Peer-pressure and the Threat of HIV subscales had a correlation of 1.01, an inadmissible value. Similarly, the correlation between the Threat of HIV and the Condom use subscale was 1.26 (see Table 41). A correlation this high was problematic, and it indicated a potential problem with the solution derived for the five-factor model.
Table 41

*Correlation of the Five Factors*

<table>
<thead>
<tr>
<th></th>
<th>Peer-pressure</th>
<th>Abstinence</th>
<th>Condom</th>
<th>Drugs</th>
<th>Threat of HIV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinence</td>
<td>.52</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom</td>
<td>.76</td>
<td>.76</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td>.74</td>
<td>.52</td>
<td>.72</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>1.01</td>
<td>.64</td>
<td>1.26</td>
<td>.95</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*Modification of the model.* Major sources of misfit occur when an item wants to load on more than one item, and when there is correlation of the errors for pairs of items on more than one factor. The model assumes that measurement error for pairs of items are uncorrelated. Theoretically, the measurement error is random and random errors by definition are not correlated. Sources of misfit can be identified by using the modification feature in the Calis program. The Lagrange test is a modification index that estimates the reduction in chi-square if additional paths are added to the model (Hatcher, 1994). It predicts how a model will change by altering the paths among the variables; however, new paths must be inspected to determine if they are theoretically sound.

Because the original model was inadequate, five modifications were proposed and the new models were subsequently tested. The new models were: (1) Model 2, removed items 18 (Threat of HIV) and 24 (Drug use); (2) Model 3, the exact replica of Model 2 with the exception of allowing 10 measurement errors to be correlated; (3) Model 4, separate analyses of each of the five subscales with CFA; (4) Model 5, eliminated the
Condom subscale from the original model; (5) Model 6 similar to Model 5, with the exception of allowing nine measurement errors to be correlated.

As summarized in Table 42, the Lagrange test suggested that a new path from an item to other factors and from one error to another correlated error would improve fit. Items that loaded on the Condom (item 21), Abstinence (item 7), and Drug use (item 13) factor were recommended by the Lagrange test to also load on the Peer-pressure factor. Specifically, item 21, which was associated with the Condom factor, had a secondary loading on both the Threat of HIV and Abstinence factor. Item 2, which was associated with the Abstinence factor, had a secondary loading on the Drug factor.

Table 42

New Paths Suggested by the Lagrange Test

<table>
<thead>
<tr>
<th>Item</th>
<th>Subscale</th>
<th>Change in $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 (Condom)</td>
<td>Peer-pressure</td>
<td>16</td>
</tr>
<tr>
<td>21 (Condom)</td>
<td>Peer-pressure</td>
<td>15</td>
</tr>
<tr>
<td>21 (Condom)</td>
<td>Threat of HIV</td>
<td>14</td>
</tr>
<tr>
<td>7 (Abstinence)</td>
<td>Peer-pressure</td>
<td>12</td>
</tr>
<tr>
<td>21 (Condom)</td>
<td>Abstinence</td>
<td>12</td>
</tr>
<tr>
<td>13 (Drugs)</td>
<td>Peer-pressure</td>
<td>9</td>
</tr>
<tr>
<td>2 (Abstinence)</td>
<td>Peer-pressure</td>
<td>8</td>
</tr>
<tr>
<td>7 (Abstinence)</td>
<td>Drugs</td>
<td>7</td>
</tr>
<tr>
<td>2 (Abstinence)</td>
<td>Drugs</td>
<td>7</td>
</tr>
<tr>
<td>16 (Condom)</td>
<td>Threat</td>
<td>6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Error</th>
<th>Error</th>
<th>Change in $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>E6 (Peer-pressure)</td>
<td>E1 (Peer-pressure)</td>
<td>35</td>
</tr>
<tr>
<td>E19 (Peer-pressure)</td>
<td>E11 (Peer-pressure)</td>
<td>34</td>
</tr>
<tr>
<td>E10 (Threat)</td>
<td>E7 (Abstinence)</td>
<td>29</td>
</tr>
<tr>
<td>E7 (Abstinence)</td>
<td>E6 (Peer-pressure)</td>
<td>24</td>
</tr>
<tr>
<td>E10 (Threat)</td>
<td>E13 (Drug)</td>
<td>24</td>
</tr>
<tr>
<td>E23 (Condom)</td>
<td>E7 (Abstinence)</td>
<td>21</td>
</tr>
<tr>
<td>E13 (Drug)</td>
<td>E7 (Abstinence)</td>
<td>18</td>
</tr>
<tr>
<td>E13 (Drug)</td>
<td>E21 (Condom)</td>
<td>16</td>
</tr>
<tr>
<td>E9 (Drug)</td>
<td>E8 (Condom)</td>
<td>15</td>
</tr>
<tr>
<td>E18 (Threat)</td>
<td>E23 (Condom)</td>
<td>14</td>
</tr>
</tbody>
</table>

Note. Factors in parentheses indicate the original designation.
These new paths provided statistical evidence that items were associated to more than one factor and supported the conclusion that some of the items were multi-dimensional. Items that were multi-dimensional may have affected the correlation among the factors. Multi-dimensionality was evaluated by inspecting the paths for practical significance. Afterwards, it was determined that new paths with items 21 and 23 (both Condom use items) had a small degree of practical significance, but that it was not sufficient to include them in a new model.

Table 43

_Goodness of Fit Indices of Model 1 and Model 3_

<table>
<thead>
<tr>
<th>Fit Index</th>
<th>Model 1 Value</th>
<th>Model 3 Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>586</td>
<td>322</td>
</tr>
<tr>
<td>Chi-square degrees of freedom</td>
<td>220</td>
<td>170</td>
</tr>
<tr>
<td>p value</td>
<td>.0001</td>
<td>.0001</td>
</tr>
<tr>
<td>Bentler &amp; Bonett’s (1980) Non-normed Index</td>
<td>.66</td>
<td>.84</td>
</tr>
<tr>
<td>Bentler’s Comparative Fit Index</td>
<td>.71</td>
<td>.87</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.064</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note.* Model 1 was the original five-factor model. Model 2, was similar to Model 1 with the exception that items 18 (Threat of HIV) and 24 (Drug use) were removed. Model 3 was similar to Model 2 except that 10 measurement errors were allowed to be correlated.

_Model 2 and Model 3_

Model 2 was similar to the first, but it differed in that two statistically non-significant items (18 and 24) were removed. The model was tested and the findings indicated Model 2 did not fit the data. A third model was tested, and, as with the second model, it did not include items 18 and 24, but it did allow the 10 errors in Table 42 to be
correlated. The indices from CFA improved, but the fit was still marginal. Table 43 compares both models, and the information indicated that Model 3 was an improvement over the first model. Indices such as Bentler and Bonett’s Non-normed Index (.84) and Bentler’s Comparative Fit Index (.87) were higher in the third model than in the first model. Further, the Root Mean Square Error of Approximation (RMSEA) was .04, which indicated acceptable fit. Therefore, to make a confident conclusion, other indicators were examined to determine how well the model fit the data.

Table 44

*Standardized Factor Loadings for Model 1 and Model 3*

<table>
<thead>
<tr>
<th>Subscale/Item</th>
<th>Model 1 Standardized Factor Loading</th>
<th>Model 3 Standardized Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.43</td>
<td>.39</td>
</tr>
<tr>
<td>6</td>
<td>.43</td>
<td>.37</td>
</tr>
<tr>
<td>11</td>
<td>.46</td>
<td>.38</td>
</tr>
<tr>
<td>15</td>
<td>.40</td>
<td>.35</td>
</tr>
<tr>
<td>19</td>
<td>.59</td>
<td>.52</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.54</td>
<td>.54</td>
</tr>
<tr>
<td>7</td>
<td>.26</td>
<td>.22</td>
</tr>
<tr>
<td>12</td>
<td>.68</td>
<td>.68</td>
</tr>
<tr>
<td>20</td>
<td>.63</td>
<td>.63</td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>.42</td>
<td>.42</td>
</tr>
<tr>
<td>16</td>
<td>-.13</td>
<td>-.12</td>
</tr>
<tr>
<td>21</td>
<td>.47</td>
<td>.48</td>
</tr>
<tr>
<td>23</td>
<td>.20</td>
<td>.20</td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.35</td>
<td>.34</td>
</tr>
<tr>
<td>9</td>
<td>.47</td>
<td>.49</td>
</tr>
<tr>
<td>13</td>
<td>.33</td>
<td>.30</td>
</tr>
<tr>
<td>17</td>
<td>.66</td>
<td>.69</td>
</tr>
<tr>
<td>24</td>
<td>-.06</td>
<td>Item was deleted</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.27</td>
<td>.27</td>
</tr>
<tr>
<td>10</td>
<td>.31</td>
<td>.28</td>
</tr>
<tr>
<td>14</td>
<td>.45</td>
<td>.45</td>
</tr>
<tr>
<td>18</td>
<td>-.04</td>
<td>Item was deleted</td>
</tr>
<tr>
<td>25</td>
<td>.43</td>
<td>.45</td>
</tr>
</tbody>
</table>
The standardized factor loadings for Model 1 and Model 3 were examined (see Table 44), and the values were very similar across the same items. The loadings were significant \((p < .05)\) for all the items in Model 3. However, the standardized factor loadings in Model 3 did not improve, and therefore the strength of association between the items and their factors was not altered by allowing the errors to be correlated. Based on this evidence, correlated errors may be affecting the fit of the model, but including these parameters into the model was not enough to achieve excellent fit.

**Model 4. Confirmatory Factor Analysis of Each Subscale**

The five factors were tested separately with five different CFAs to determine how the model fit the data. Three of the five models were determined to have an adequate fit. The Non-normed Index, Comparative Fit Index, and the RMSEA for the Abstinence subscale indicated that the model fit the data (see Table 45). In particular, items 2, 12, and 20 were found to have a statistically significant factor loading and the loadings were strong. This information and the results from Model 1 suggested the three items were adequate for measuring the abstinence dimension.

The CFA of the Condom use subscale indicated the model fit the data. The goodness of fit indices were .89 for the Non-normed index, .96 for the Comparative Fit Index, and .04 for the RMSEA. However, the standardized factor loadings for the Condom use subscale were unacceptable. Even after properly reversing the item, item 16 had a negative standardized loading, and item 23 did not have acceptable standardized factor loadings \((< .4)\). The standardized factor loadings for items 8 and 21 in the Condom subscale were .50 and .40, respectively. The CFA of the Drug use subscale indicated the model fit the data, and a similar situation existed for the relationship among the Drug use
subscales and its items. For example, items 13 and 24 did not have acceptable
standardized factor loadings and only one item (# 17) had a standardized factor loading of
.70. A stronger relationship between the factors and the items was expected for this
analysis.

Table 45

*Summary of the Goodness of Fit Indices for the CFA of the Five Subscales*

<table>
<thead>
<tr>
<th>Subscale/ Item</th>
<th>p value</th>
<th>Bentler &amp; Bonett’s Non-normed Index</th>
<th>Bentler’s Comparative Fit Index</th>
<th>RMSEA</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>.0001</td>
<td>.43</td>
<td>.71</td>
<td>.17</td>
<td>Data did not fit</td>
</tr>
<tr>
<td>(1, 6, 11, 15, 19)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstinence</td>
<td>.78</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Data fit</td>
</tr>
<tr>
<td>(2, 7, 12, 20)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom use</td>
<td>.18</td>
<td>.89</td>
<td>.96</td>
<td>.03</td>
<td>Data fit</td>
</tr>
<tr>
<td>(8, 16, 21, 23)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug use</td>
<td>.06</td>
<td>.89</td>
<td>.94</td>
<td>.04</td>
<td>Data fit</td>
</tr>
<tr>
<td>(4, 9, 13, 17)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>.01</td>
<td>.67</td>
<td>.83</td>
<td>.06</td>
<td>Data did not fit</td>
</tr>
<tr>
<td>(5, 10, 14, 25)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As described in Table 46, goodness of fit indices associated with the Peer-pressure subscale indicated that the model did not fit the data. Items 1, 6, and 15 had
moderate standardized factor loadings. The other two Peer-pressure items were less than
.4. A final CFA was performed on the Threat of HIV subscale and the results indicated
that the model did not fit the data. Three of the items in the Threat of HIV subscale had
unacceptable standardized factor loadings, and the loadings for the other two items were small.
Table 46

*Summary of the Standardized Factor Loadings from Separate CFAs*

<table>
<thead>
<tr>
<th>Factor/Item</th>
<th>Standardized Factor Loading</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.63</td>
<td>.77</td>
</tr>
<tr>
<td>6</td>
<td>.64</td>
<td>.76</td>
</tr>
<tr>
<td>11</td>
<td>.23</td>
<td>.97</td>
</tr>
<tr>
<td>15</td>
<td>.42</td>
<td>.90</td>
</tr>
<tr>
<td>19</td>
<td>.35</td>
<td>.93</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.58</td>
<td>.81</td>
</tr>
<tr>
<td>7</td>
<td>.19</td>
<td>.98</td>
</tr>
<tr>
<td>12</td>
<td>.65</td>
<td>.75</td>
</tr>
<tr>
<td>20</td>
<td>.62</td>
<td>.77</td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>.50</td>
<td>.86</td>
</tr>
<tr>
<td>16</td>
<td>-.36</td>
<td>.93</td>
</tr>
<tr>
<td>21</td>
<td>.40</td>
<td>.91</td>
</tr>
<tr>
<td>23*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.35</td>
<td>.93</td>
</tr>
<tr>
<td>9</td>
<td>.44</td>
<td>.89</td>
</tr>
<tr>
<td>13</td>
<td>.28</td>
<td>.95</td>
</tr>
<tr>
<td>17</td>
<td>.70</td>
<td>.70</td>
</tr>
<tr>
<td>24</td>
<td>-.14</td>
<td>.99</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.31</td>
<td>.94</td>
</tr>
<tr>
<td>10</td>
<td>.31</td>
<td>.95</td>
</tr>
<tr>
<td>14</td>
<td>.40</td>
<td>.91</td>
</tr>
<tr>
<td>18*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>.49</td>
<td>.86</td>
</tr>
</tbody>
</table>

*Note: * indicates an item with a non-significant factor loading (p > .05).

Model 5 and Model 6. Confirmatory Factor Analysis

*Model 5.* The items from the Condom subscale were found to be inadequate for use as a subscale based on information from the adaptation, pretest, and the lack of internal consistency (alpha = 0). Those items were eliminated from Model 5. As illustrated in Figure 4, the 19 translated items in Model 5 were assumed to represent four dimensions: Peer-pressure, Abstinence, Drug use, and Threat of HIV. The goodness of fit indices from CFA determined the model did not fit the data.
Figure 4. Proposed four-dimensional attitudinal structure in Model 5.
The results revealed that items 18 (Threat of HIV) and 24 (Drug use) had non-significant factor loadings. The largest standardized factor loadings were observed in item 2 (.55), item 12 (.66), item 17 (.62), and item 20 (.63). It was noted that a correlation among the Peer-pressure and Threat of HIV was 1.01 (an inadmissible value), and the correlation among the Drug use and Threat of HIV was .98. The findings were consistent with the high correlations in Model 1. Furthermore, the Lagrange test identified new paths from one error to another correlated error. It was hypothesized that adding new paths allowing pairs of errors to correlate would improve the model’s fit.

**Model 6.** Model 6 was similar to the previous model, but it differed in that several measurement errors were allowed to correlate. As described in Table 47, nine errors were allowed to be correlated in the model. The Comparative Fit Index, Non-normed Index, and the RMSEA were .90, .88, and .04, respectively. Based on the fit indices, it was concluded that the model fit the data. The internal structure of the 19 items was therefore determined to have four different dimensions with nine measurement errors.

**Correlated errors.** Correlated errors are common in instruments that assess attitudes. They can occur for two items within the same factor or in two items in two different factors. As described in Table 47, the Peer-pressure subscale had three sets of correlated errors: item 1 and item 6; item 11 and item 19; and item 11 and item 6. Correlated errors are common in items that are next to each other in questionnaires. In this study there were two sets of errors next to each other: item 6 and item 7; and item 17 and item 18. Other errors occurred for items in two different factors: Abstinence (item 7) and Threat of HIV (item 10), Threat of HIV (item 10) and Drug use (13), and Abstinence (7) and Drug use (13).
### Table 47

**Description of New Paths Among the Errors in Model 6**

<table>
<thead>
<tr>
<th>Error- (Subscale)</th>
<th>Error- (Subscale)</th>
<th>Expected Change in $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>E6 (Peer-pressure)</td>
<td>E1 (Peer-pressure)</td>
<td>38</td>
</tr>
<tr>
<td>E19 (Peer-pressure)</td>
<td>E11 (Peer-pressure)</td>
<td>32</td>
</tr>
<tr>
<td>E10 (Threat of HIV)</td>
<td>E7 (Abstinence)</td>
<td>28</td>
</tr>
<tr>
<td>E7 (Abstinence)</td>
<td>E6 (Peer-pressure)</td>
<td>25</td>
</tr>
<tr>
<td>E10 (Threat of HIV)</td>
<td>E13 (Drug use)</td>
<td>21</td>
</tr>
<tr>
<td>E18 (Threat of HIV)</td>
<td>E17 (Drug use)</td>
<td>16</td>
</tr>
<tr>
<td>E13 (Drug use)</td>
<td>E7 (Abstinence)</td>
<td>15</td>
</tr>
<tr>
<td>E11 (Peer-pressure)</td>
<td>E6 (Peer-pressure)</td>
<td>12</td>
</tr>
<tr>
<td>E5 (Threat of HIV)</td>
<td>E4 (Drug use)</td>
<td>12</td>
</tr>
</tbody>
</table>

*Standardized factor loadings.* Unlike a strong model that has high-standardized factor pattern coefficients (i.e., loadings), this model had many low standardized factor loadings. Peer-pressure items 1, 6, 11, and 15 had a weak association to the factor, and item 19 had a strong association with the factor. This information was consistent with the qualitative results of the adaptation and is useful in explaining the lower loadings. For example, items 1 and 6 were identified as marginally representing the Peer-pressure dimension.

Three items from the Drug use subscale had non-significant loadings that were below .4. A similar pattern was observed for the Threat of HIV subscale: item 18 had a non-significant loading, and items 5 and 10 had unacceptable loadings. Only two items, 14 and 25, had marginal loadings for the Threat of HIV subscale. Based on the marginal standardized factor loadings, the model was not very strong, and the evidence related to the construct validity of the scores was therefore not strong.
Table 48

Standardized Factor Loadings for Model 6

<table>
<thead>
<tr>
<th>Subscale/ Item</th>
<th>Standardized Factor Loading</th>
<th>Uniqueness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-Pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>.40</td>
<td>.91</td>
</tr>
<tr>
<td>6</td>
<td>.41</td>
<td>.91</td>
</tr>
<tr>
<td>11</td>
<td>.38</td>
<td>.92</td>
</tr>
<tr>
<td>15</td>
<td>.36</td>
<td>.92</td>
</tr>
<tr>
<td>19</td>
<td>.50</td>
<td>.86</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.56</td>
<td>.82</td>
</tr>
<tr>
<td>7</td>
<td>.27</td>
<td>.96</td>
</tr>
<tr>
<td>12</td>
<td>.67</td>
<td>.73</td>
</tr>
<tr>
<td>20</td>
<td>.62</td>
<td>.77</td>
</tr>
<tr>
<td>Drug use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>.36</td>
<td>.92</td>
</tr>
<tr>
<td>9</td>
<td>.45</td>
<td>.89</td>
</tr>
<tr>
<td>13</td>
<td>.35</td>
<td>.93</td>
</tr>
<tr>
<td>17</td>
<td>.65</td>
<td>.75</td>
</tr>
<tr>
<td>24</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Threat of HIV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>.26</td>
<td>.96</td>
</tr>
<tr>
<td>10</td>
<td>.33</td>
<td>.94</td>
</tr>
<tr>
<td>14</td>
<td>.47</td>
<td>.88</td>
</tr>
<tr>
<td>18</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>.46</td>
<td>.88</td>
</tr>
</tbody>
</table>

*Note.* * indicated a non-significant standardized factor loading.

Study 5

Concurrent Validity

To obtain a measure of concurrent validity, six items developed by Basen-Engquist et al. (1999) to measure attitudes toward condom use and abstinence were translated and treated in parallel with the translated CDC items. The attitudinal items from the translated CDC’s Abstinence and Condom subscales were correlated with their respective subscales developed by Basen-Engquist et al. (1999). As reported in Table 49, a correlation of .44 was observed between the translated CDC Condom subscale and the Condom subscale from Basen-Engquist et al. (1999).
Table 49

_Correlation Between Basen-Engquist’s Subscales and CDC’s Items (n = 483)_

<table>
<thead>
<tr>
<th>CDC Scale</th>
<th>Basen-Engquist Condom</th>
<th>Basen-Engquist Abstinence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condom</td>
<td>.44</td>
<td></td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td>.67</td>
</tr>
</tbody>
</table>

_Note._ Pearson Product-moment Correlation Coefficients

The correlation between the translated CDC Abstinence subscale and Basen-Engquist et al.’s Abstinence subscale was .67. A strong correlation with the translated CDC Abstinence subscale provided evidence that the scales were measuring a similar construct. In contrast, the translated CDC Condom subscale had a smaller correlation with the Condom subscale from Basen-Engquist et al.’s study. Although this correlation was of low to moderate strength, it should be noted that with the low reliability of the translated CDC Condom subscale scores, this correlation has been weakened by the low reliability.

_Summary of the Results_

In conclusion, this section presented the results of a multi-phased study. The results of two forward-translations, a back-translation, and a synthesis were presented. Next, the results were presented for three different panels that reviewed the instrument to cross-culturally adapt it for use with Salvadorian adolescents. The instrument was pretested with two groups of students before it was administered to 483 high school students in San Salvador, El Salvador. Finally, the results of the reliability study, factorial validity, content validity, and concurrent validity were presented.
CHAPTER FIVE

DISCUSSION

Purpose of the Study

The purpose of this multi-phased study was to translate, cross-culturally adapt, and validate the scores from an instrument that assessed the HIV/AIDS knowledge and attitudes of high school students in El Salvador. The first phase utilized the back-translation method to obtain the first Spanish version of the instrument, which was developed by the CDC to evaluate HIV/AIDS knowledge and attitudes of students in grades 7 to 12. In the next phase, an expert panel of reviewers from El Salvador established the conceptual equivalence of the Spanish instrument. In the third phase, the instrument’s content validity and cultural acceptability were evaluated by a panel of HIV experts, health professionals, schoolteachers, and students from El Salvador.

The last phase involved collecting evidence of the validity of the scores from the Spanish version of the CDC instrument; 483 public high school students in the metropolitan area of San Salvador were randomly selected for the validation phase. Reliability of the scores was measured by the test-retest method and coefficient alpha. Confirmatory factor analysis was used to evaluate if the attitudinal construct had five different dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV). As part of the concurrent validation process, the Condom and Abstinence subscales from the translated CDC instrument were correlated with a set of existing Attitudinal items from a published study by Basen-Engquist et al. (1999).
The discussion is organized around six specific purposes. These purposes were to:

1. determine the success of the cross-cultural adaptation by contrasting the first translated version of the CDC instrument with the final Spanish version of the CDC instrument;
2. determine, using a Salvadorian panel, the level of cultural appropriateness of the translated CDC HIV/AIDS Knowledge and Attitudinal items for use in El Salvador;
3. ascertain the level of readability of the final Spanish version of the CDC instrument and evaluate content validity;
4. evaluate the reliability of the scores from the Spanish version of the CDC instrument using a sample of Salvadorian students in grades 10, 11, and 12;
5. determine if the Spanish version of the CDC instrument contains five Attitudinal dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV) when analyzed using confirmatory factor analysis; and
6. evaluate the concurrent validity of the Abstinence and Condom use subscales from the Spanish version of the CDC instrument.

**Purpose One: Determine the Success of the Cross-cultural Adaptation by Contrasting the First Translated Version of the CDC Instrument with the Final Spanish Version of the CDC Instrument**

A comparison of the first translated version of the instrument (see Appendix N) with the final translated (see Appendix Q) version provided information on cultural differences and served as a measure of the success of the adaptation. The first minor differences were in the written assurance to guarantee anonymity in the directions and the instructions about how to mark the answers on the document. These differences were due to the bilingual reviewers’ request not to duplicate the information in the informed consent and were not related to cultural differences. The final version reiterated the
anonymity guaranteed throughout the study and perhaps improved the outcome since anonymity can be a precursor to providing honest answers.

*Differences in the Knowledge section.* The Knowledge section had seven minor and three major differences. Minor differences in the final version included the addition of the term “VIH/SIDA” to portray the terms HIV and AIDS. The original English version differentiated HIV the virus from AIDS the disease. In El Salvador, the virus and disease are grouped under an umbrella term that facilitates understanding the concepts related to the disease. By combining both terms the focus of the items was shifted to assessing general and not specific knowledge. Another minor difference was the use of the term “relaciones sexuales” to denote “having sex”; the term not only defined the concept, but it also was culturally relevant and appropriate for the adolescent population. The term thus improved the instrument by identifying the correct risk factor for this population.

Minor changes were made to the final version consisting of editing one or two words in the following items: 7 (chorro), 9 (consumo de drogas), 10 (maternal), 11 (portador), 12 (se ven enfermizas), and 14 (zancudo). The four bilingual reviewers overlooked these words. The panelists, on the other hand, identified them as colloquialisms from El Salvador, and these changes clarified the meaning and increased the instrument’s cultural appropriateness. The addition of these words met the idiomatic equivalence recommended by Guillemin et al. (1993) and substantiated the usefulness of the panels in the methodology.

The major differences were observed in Knowledge items 1, 2, and 15. The double negative in the first version (item 1) was eliminated to improve readability and
reduce the chance of students passing over it or guessing. This was less of a cultural difference and more of an attempt to improve a grammatically difficult item. A cultural difference existed in how HIV testing is promoted in the United States and El Salvador. The term “antibody test” in item 2 is common in the United States, yet in El Salvador it is not, and every student in the pretest misunderstood the Spanish translation. This exemplified the utility of the pretest in combination with a panel review and highlighted the difficulty of unilaterally obtaining a concept’s semantic equivalence. Additionally, the use of the probing technique recommended by Guillemín et al. (1993) was invaluable in establishing semantic equivalence.

The translation of the term “lambskin condoms” in Knowledge item 15 was difficult and labeled as problematic by the two translators and bilingual reviewers. A Salvadorian panelist indicated the term was not familiar in El Salvador because, unlike in the United States, only one type of condom is promoted in El Salvador. The cultural difference in this item was eliminated by rewording it to assess the role of latex condoms in the prevention of HIV. Students were therefore prevented from passing over it or guessing.

Differences in the Attitude section. Differences between the two versions in Attitudinal items 1, 9, 16, and 21 suggested that difficulties resulted from a combination of the complexity in the original construct, cultural differences, and an inexact translation. The translation of item 1 did not completely retain the English version’s concept of peer-pressure, and even after several revisions, the interpretation was still not clear. Item 1 was labeled as problematic and the Lay Panel attempted to refine the
concept of peer-pressure by focusing on words that conveyed the idea of having to do something wrong for one’s friends.

This item was slightly problematic for the students in the pretest. They described it as vague, but did mention that it had a peer-pressure component to it. This suggested a cultural difference in how peer-pressure is interpreted among students. Students in El Salvador favored a concrete definition, one with vivid examples. Therefore, the differences appear to be related to an interaction of factors and provide support for Hui and Triandis’s (1985) view that the conceptual/functional equivalence of a construct is dependent on its level of abstraction. In this case, the Peer-pressure item was given a global and abstract definition by the developers of the instrument, and, when tested, the students demanded a more concrete example.

Another difference centered on the substitution of the word “steroids” for the word “tattoos” in item 9 (final version). The substitution, according to one panelist, made the item culturally relevant as it reflected a new trend among high school students in the public schools in El Salvador. Next, item 16 was improperly translated in the first version and was retranslated to adequately express the concept that “condoms do not make sex less pleasurable.” The new translation was adequate for sexually active students who use condoms, but it introduced a new dilemma. During the administration of the instrument, three female students said they did not understand the question; therefore, this item was determined to be inappropriate for sexually inexperienced youth.

The divergence in item 21 was due to the naïveté of the four bilingual reviewers with regard to the dating practices of adolescents in El Salvador. The bilingual reviewers projected the view that adolescents are likely to have sexual intercourse during a date,
which is more true in the United States than in El Salvador. Guillemin et al. (1993) have stressed the importance of capturing the experiential equivalence of the target culture to correctly adapt an instrument. The role of sexual relations was not raised as an issue by the panelists, but the students reported that sexual relations occurred mostly in long-term relationships. The students suggested changing the item to reflect the situation in El Salvador. This suggestion provides support for the methodology used to adapt the instrument in El Salvador.

The study’s methodology shared several components from the IQOLA (Bullinger et al., 1998; Gandek & Ware, 1988; Wagner et al., 1998). The use of experts was one of them. The experts’ ability to modify the instrument’s content so that the concepts were understood by the target population proved to be advantageous. Salvadorian experts made the necessary adjustments to reduce cultural differences. The differences revolved around colloquialisms that adolescents would understand and the clarification of the peer-pressure concept. Differences were also found in specific topics, such as the use of latex condoms, dating practices of adolescents, and the emergence of tattoos in students. These topics were adjusted to reflect the current situation in El Salvador, tested with students, and found to be culturally acceptable.

The panel’s rating of the HIV/AIDS content provided evidence that supported the effectiveness of the methodology. The panel determined that the content was valid and culturally acceptable for use with Salvadorian adolescents. Furthermore, the differences between the two Spanish versions highlighted the necessity of including the Salvadorian panels to complement the work of the bilingual reviewers.
Purpose Two: Determine, using a Salvadorian Panel, the Level of Cultural Appropriateness of the Translated CDC HIV/AIDS Knowledge and Attitudinal Items for use in El Salvador

Brislin et al. (1973) and Guillemin et al. (1993) reported on the benefit of expert panels to culturally adjust an instrument's content. The procedure in this study made use of three different panels. The intent of the first two panel reviews in the adaptation phase was to improve the wording of the items and increase the cultural acceptability of the instrument. The inclusion of the last panel was based on the premise that an association with the target population provides the necessary knowledge about the cultural characteristics of the students and school environment. Therefore, a panel formed by Salvadorian teachers, health workers, and HIV professionals rated the cultural appropriateness of the adapted items for use in high schools in El Salvador.

Culture encompasses a very broad definition (Brislin et al., 1973), and there is no agreement among scientists. A cultural adaptation is therefore dependent on persons who have experience living in the target culture. The advantage of including Salvadorian professionals is that they uphold the standards of the community by acting as the gatekeepers of information for the younger population. They have the responsibility to identify culturally inappropriate items that can be deemed as offensive for certain cultures. Also, they can identify items that are appropriate for the target population. This issue is particularly relevant for HIV/AIDS researchers who depend on instruments with sexually-related content. The panelists’ quantitative evaluation established the cultural appropriateness of the content for use with high school students in El Salvador.
Purpose Three: Ascertain the Level of Readability for the Final Spanish Version of the CDC Instrument and Evaluate Content Validity

**Readability.** Not having the correct reading level for the intended audience of the instrument can introduce systematic errors that result when items are misinterpreted. Additionally, when items are too difficult to read, a student may not answer the question or may guess. To minimize this effect, the translators and the four bilingual reviewers were asked to use simple words when representing the constructs. As an additional measure of quality, the Salvadorian panels substantiated the translation during the review process. When items were revised, the panelists were instructed to include words or sentences that were at a high school reading level. Because of this procedure, the final version was expected to be at an appropriate reading level.

The readability of this instrument was assessed independently by the principal of the Montessori Academy in San Salvador and by a high school psychologist/sexuality education teacher. They concluded the reading level was appropriate for high school students. As an additional measure, the Salvadorian Lay Panel qualitatively analyzed the reading level and concurred that it was at a high school level.

**Content validity.** The two-step process to establish content validity served to verify the importance of the items for use in El Salvador. First, the panelists rated each item’s appropriateness toward the HIV/AIDS constructs. Second, they were asked to provide additional items needed to represent the domains. The content found in the Knowledge and Attitude section was found to be acceptable. The high ratings indicated all the items were important to the domain, and the lack of additional items supported the conclusion that the domain was adequately represented in the final instrument.
The inclusion of content matter experts in the review of an instrument is a strategy reported by Aday (1996). The process of identifying non-essential items was similar to Jemmott et al.’s (1992) study in which experts used a Likert type-scale to accept or reject items. One advantage of this process was the combination of two strategies: the solicitation of additional items and a rating system. An additional advantage was the inclusion of 15 Knowledge and 29 Attitudinal items that were previously validated (content) and found by the CDC (2002b) to adequately cover the HIV/AIDS domain. Finally, the results of the content validation study demonstrated that the HIV/AIDS content was similar in both cultures.

The results are in agreement with a prediction made by Hui and Triandis (1985) that a cross-cultural adaptation has a greater chance of success when the construct is familiar to both cultures. In this case, the ongoing AIDS epidemic has not only acquainted more individuals with the HIV/AIDS construct, but it has heightened awareness of the role of risk factors associated with HIV infection. Specifically, El Salvador’s HIV/AIDS epidemic has been addressed through governmental and non-governmental educational programs that attempt to contain its transmission.

As a result of these efforts, many qualified HIV professionals were available to assist with the adaptation and validation. According to Guillemin et al. (1993), the inclusion of experts familiar with the target culture is a vital part of a cross-cultural adaptation. In this study, their familiarity with the culture underscores their role in the content validation of items for use in the public high schools in El Salvador.
Purpose Four: Evaluate the Reliability of the Scores from the Spanish Version of the CDC Instrument Using a Sample of Salvadorian Students in Grades 10, 11, and 12

Reliability of the Knowledge Scores. Two methods were used to calculate the reliability of the scores from the Knowledge section. The first was the test-retest method, and the second was the determination of internal consistency by calculating Cronbach’s alpha. A subset (n = 39) of the population was administered the same instrument twice in a one-week period for the test-retest study. The Pearson product-moment correlation coefficient between the two scores was .59. According to Crocker and Algina (1986), a minimum acceptable value has not been set. Yet for this study, a higher value was expected because HIV/AIDS knowledge does not change during a one-week period unless a student has been exposed to a new program.

Several factors were responsible for the low value of the test-retest correlation. One factor was the grading procedure that allowed a statement which was “true” to have two acceptable answers, “I know it is true” or “I think it is true” (the reverse was followed when the statement was “false”). The rationale for this scale was that it discourages a guess response and provides a global measure of HIV/AIDS knowledge. However, two correct scores reduced the variability of the scores and consequently lowered alpha. Another factor was that several items were answered correctly by more than 90% of the participants and this also lowers alpha.

The scores from the Knowledge section (n = 483) had an internal consistency (Cronbach’s alpha) of .57, and this value was lower than the traditionally accepted value of .70 (Hatcher, 1994). As previously described, two correct answers affects the variance and, as a consequence, the alpha value was lower than expected. The same analysis with
one correct answer resulted in a higher Cronbach’s alpha of .74. This value was acceptable and indicated that the scores were moderately reliable. Additionally, the results with one correct answer were similar to Jemmott et al.’s (1992), who reported a coefficient alpha of .73 for scores in a population of adolescents. The use of two correct responses was responsible for lowering alpha.

Item difficulty and discrimination also provided information that can be used to improve the internal consistency of the scores. Discrimination is a measure of how an item separates the higher scoring students who know the material against the scores of the lower scoring students or those who do not know the material (Crocker & Algina, 1986). The item-to-total correlation was used as an index of discrimination. Ideally, an item-to-total correlation > .3 was desirable, and it was noted that items 6, 7, 8, and 13 had a favorable index of discrimination. These items assessed general knowledge about the transmission of HIV, and the index suggested they differentiated among the low and high scoring groups. In contrast, items 3, 9, 11, 12, and 15 had marginal discrimination (item-to-total correlation < .2) that implied a problem with the items. Items 9 and 11 were answered correctly by most of the students, and because their variance was lower, also lowered alpha. If items 9 and 11 were eliminated, the value of alpha would drop from .57 to .56. The two items were retained because their removal would not have improved alpha and there were only 15 items in the instrument.

Given high quality items, longer tests have a higher reliability coefficient than shorter tests (Crocker & Algina, 1986). The reliability of the scores could be increased by adding more items. The Spearman-Brown prophecy formula indicated that increasing the number of items to 50 would yield a reliability coefficient of .75. However, adding 35
more items is not practical for an instrument that assesses HIV/AIDS knowledge in an adolescent population, especially when researchers and program evaluators often include other measures (e.g., attitude instruments) when studying adolescents.

To summarize, the reliability of the 15 Knowledge scores was moderate for the sample of Salvadorian high school students. The weakness of the instrument was that it contained a mixture of easy and difficult items. That restricted the variance in these items. This was not a concern because the items were representative of the important sources of HIV transmission, risk behaviors, and myths that are taught in many HIV prevention programs.

Reliability of the Attitudinal scores. Test-retest reliability and internal consistency reliability were calculated for the Attitudinal scores. The reliability coefficients obtained in the test-retest were found to be inconsistent across the different Attitudinal subscales. The scores from the Peer-pressure subscale yielded the highest reliability coefficient (.62). The reliability coefficients (in decreasing value) of the other subscales were .58 for the Drug use, .49 for the Threat of HIV, .43 for the Abstinence, and lastly, .17 for the Condom use (described in Table 50). In contrast, the reliability coefficients for the scores from Basen-Engquist et al.’s (1999) Abstinence and Condom use were .78 and .67, respectively.

The HIV/AIDS attitudes were not expected to change in a one-week period unless the students were exposed to an educational program during that week. The large amount of random measurement error is reflected in the low internal consistency reliabilities at each time point. Therefore, the low test-retest reliability may be due to the large amount of random measurement in the scales at each time point. As described in Table 50, the
scores of the Condom and Abstinence subscales from Basen-Engquist et al. (1999) had the highest Cronbach alpha for all the subscales. The values were .69 and .68, respectively. Further, an alpha of .55 for the Peer-pressure and .58 for the Abstinence indicted the reliability of the scores was acceptable. However, these values were not as high as the alpha values reported by Carvajal et al. (1999) and Silva and Ross (2003). Both researchers measured HIV attitudes of adolescents in Latin America; the former reported an alpha of .70 and the latter reported an alpha of .88.

Table 50

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Number of Items</th>
<th>Cronbach Alpha</th>
<th>Test-retest Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td>5</td>
<td>.55</td>
<td>.62</td>
</tr>
<tr>
<td>Abstinence</td>
<td>4</td>
<td>.58</td>
<td>.43</td>
</tr>
<tr>
<td>Condom</td>
<td>4</td>
<td>0.0</td>
<td>.17</td>
</tr>
<tr>
<td>Drug use</td>
<td>5</td>
<td>.24</td>
<td>.58</td>
</tr>
<tr>
<td>Threat of HIV</td>
<td>5</td>
<td>.30</td>
<td>.49</td>
</tr>
<tr>
<td>Abstinence (Basen-Engquist)</td>
<td>3</td>
<td>.68</td>
<td>.78</td>
</tr>
<tr>
<td>Condom (Basen-Engquist)</td>
<td>3</td>
<td>.69</td>
<td>.67</td>
</tr>
</tbody>
</table>

Note. A negative reliability coefficient for the condom scale was set to .00.

Unfortunately, the scores of the Condom use subscale had an alpha close to zero that placed the interpretation of the scores in doubt. This suggested the responses were not correlated to each other and were not internally consistent. Crocker and Algina (1986) reported that a low alpha is indicative of poor item quality and a lack of content homogeneity. Future research will need to re-examine the Condom use items. Moreover, the internal reliability of the Drug use and the Threat of HIV subscales indicated the items did not possess strong internal consistency. Because the CDC did not publish the
reliability of the scores from either of the subscales, the values from this study could not be compared to the CDC values.

The effect of a cross-cultural adaptation on measures of reliability is uncertain and the evidence is mixed. Theoretically, if the methodology of the cross-cultural adaptation is sound and reproduces the construct for the target culture, the reliability of the scores should be acceptable. Guillemin et al. (1993) observed that an adaptation is similar to constructing a new instrument. They stressed the importance of obtaining the psychometric characteristics of the instrument with the new populations.

Davis et al. (1999) reported that a successful adaptation of an instrument with 35 items yielded positive results. However, they found it necessary to eliminate 17 items to reach alpha values of .73, .66, and .45 for HIV/AIDS myths, attitudes, and facts, respectively. The quality of the items and their cultural appropriateness were not evaluated by Davis et al. (1999). Thus the effect of the adaptation on the interpretation of the items cannot be ruled out, as it was necessary to eliminate one-half of the items to reach an acceptable level of reliability in the new population.

Skevington (2002) believes that an adaptation will always affect reliability and stated that when the “… psychometric properties of a source instrument are compared with those of a new translation from a rigorously tested instrument in a target culture, the accepted parameters of reliability and validity tend to be notably poorer for the target culture than for the source” (p. 137). A successful adaptation allows items to be used in a new population for the first time, and as the items are revised and improved by correctly matching them to the population, the effect will be to increase the quality of the instrument’s psychometric properties.
To summarize, the results of the test-retest study and the internal consistency determined that the reliability of the scores from the Knowledge section was moderate. The reliability of the scores from the five Attitudinal subscales varied. The scores from the two subscales developed by Basen-Engquist et al. (1999) had reliability. The reliabilities of the scores from the Peer-pressure and Abstinence subscales were low. The least reliable scores were from the Threat of HIV and Drug use. The reliability of the scores from the Condom subscale was not acceptable. Consequently, some of the items representing the Condom use, Drug use, and Threat of HIV will need to be reworded so they represent one domain and re-tested to determine if the interpretation is adequate. In addition, more items with good discrimination could be added to improve the reliability of the scores.

*Purpose Five: Determine, Using Confirmatory Factor Analysis, if the Spanish Version of the CDC Instrument Contains Five Attitudinal Dimensions (Peer-pressure, Condom use, Abstinence, Drug use, and Threat of HIV)*

The construct validity of the attitudinal items was examined with confirmatory factor analysis (CFA) to determine how well the data fit the five-factor model consisting of: Peer-pressure, Abstinence, Condom use, Drug use, and Threat of HIV. Once it was determined that the five-factor model had a poor fit, CFA was used in an exploratory manner to evaluate alternative models. Given the post hoc nature of the analysis, the results need to be viewed with caution. These alternative models will have to be cross-validated in future research. Five additional models were proposed and when examined with CFA, only one of the models yielded an acceptable fit.
Confirmatory Factor Analysis of Model 6

Results from CFAs, the reliability study, and the expert panel suggested that the Condom use subscale was problematic and should be eliminated from the instrument. The Condom use subscale was removed. A new model with four factors (Peer-pressure, Abstinence, Drug use, and Threat of HIV) and nine correlated errors was re-evaluated with CFA. The results showed that acceptable fit was achieved with the addition of nine correlated error terms.

These results provide partial support for the four different attitudinal dimensions. As can be seen in Figure 5, the number of items (9 items) with a weak or low standardized factor loading (≤ .4) was almost equal to the number (10 items) of loadings that were moderate (> .4). This indicated that the model was not very strong and could be improved.

Large secondary loadings affect the model’s fit. The Lagrange test identified 10 items in Model 6 that had a secondary loading on another factor; two of these items had practical significance. Drug use item 13 (“People who share drug needles shouldn't worry because they probably won't get infected with HIV”) had a secondary loading in the Threat of HIV subscale. This item can be interpreted as having a slight association to the risk dimension. Similarly, Drug use item 17 (“Anyone who shares needles is taking a chance of getting infected with HIV”) was associated with the Threat of HIV subscale. The translation of the item included the word “risk” (“riesgo”), and its interpretation was more directly perceived as a risk or threat of HIV.
Figure 5. Standardized factor loadings of the four-dimensional Attitudinal model.
The secondary loadings suggested that the items may need to be revised so they correspond to one subscale. The model assumed that each item loaded on only one factor because each subscale was conceptually different. However, because the overall construct was about HIV/AIDS, correlations among the subscales were expected. Instruments that assess attitudes are also expected to have a certain amount of correlation among the subscales. A problem occurs when items can be theoretically associated with more than one factor. For example, the inclusion of multi-dimensional items in the instrument was problematic because it affected the internal structure of the instrument and produced a high correlation among subscales. Two unusually high correlations were identified in Model 6.

The first was a correlation of .94 between the Peer-pressure and Threat of HIV subscales. This suggested that the subscales, although designed to be conceptually different, overlapped significantly. Reasons for the high correlation were not evident. The words in the items did not yield clues for explaining the strong relationship. The words in the items from the Threat of HIV subscale did not make a specific reference to friends or peers. Items 5, 14, 18, and 25 used the word “teen-agers” in their statements (see Appendix 1), but the words were not written to directly involve a perceived risk involving sexual intercourse with a friend or with their peers.

An alternative explanation for the high correlation between the Peer-pressure and Threat of HIV subscales was the students’ perception of “risk” in some of the Peer-pressure items. The students in the pretest said that Peer-pressure items 1 and 6 were making a vague reference to a risk because they understood the statement as “a student’s choice between a friend or a harmful situation.” As an example, Peer-pressure item 1 (“If
your friends want you to do something that you think might not be safe, you should at least try it”), may be indicative of a situation involving a risk. The same “risk” concept was implied in items 6 and 15. It is likely that such an interpretation may have played a role in producing the high correlation.

The second high correlation of .94 was found between the Drug use and Threat of HIV subscales. A direct relationship was apparent because items from the Drug use subscale made reference to the risk of injecting drugs and HIV. Similar words were used in items 4, 13, and 17. In particular, the words in item 4, “A teen-ager can inject drugs once in a while without a risk of getting infected with HIV,” were directly related to a risk dimension. Based on the fact that the word “risk” was included in these items, a high correlation was expected.

Table 51

<table>
<thead>
<tr>
<th>Item</th>
<th>Original Subscale</th>
<th>Projected Subscale</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Drug use</td>
<td>Drug use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>5</td>
<td>Threat of HIV</td>
<td>Condom use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>9</td>
<td>Drug use</td>
<td>Drug use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>10</td>
<td>Threat of HIV</td>
<td>Condom use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>13</td>
<td>Drug use</td>
<td>Drug use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>17</td>
<td>Drug use</td>
<td>Drug use &amp; Risk/Threat of HIV</td>
</tr>
<tr>
<td>18</td>
<td>Threat of HIV</td>
<td>Abstinence, Risk/Threat of HIV &amp; Condom use</td>
</tr>
<tr>
<td>21</td>
<td>Condom use</td>
<td>Abstinence &amp; Condom use</td>
</tr>
<tr>
<td>25</td>
<td>Threat of HIV</td>
<td>Abstinence &amp; Risk/Threat of HIV</td>
</tr>
</tbody>
</table>
An examination of the words in items 4, 5, 9, 10, 13, 17, 18, 21, and 25 by the primary investigator indicated that the items could be interpreted as pertaining to more than one subscale (see Table 51). As discussed previously, items in the Drug use subscale were strongly associated with the Threat of HIV subscale. Furthermore, items (5 and 10) from the Threat of HIV could be associated with a condom dimension, and items 18 and 25 could be associated with an abstinence dimension. Seven items were associated with more than one subscale, and many of these items implied a risk or threat of HIV. The large number of items associated with assessing risk suggested that the instrument might be strongly assessing the Threat of HIV dimension.

The model assumes that measurement errors for pairs of items are uncorrelated. Correlations between measurement errors could exist between pairs of items on the same factor and for items in different factors. In this study, Model 6 allowed the errors to be correlated to other errors (see Table 52) thus improving the fit of the model. The identification of correlated errors was useful because it provided information that can be used to improve the instrument.

Specifically, Bryne (1994) reported that covariation, which results from correlated measurement errors, can be introduced by non-random errors associated with the item’s format. The type of scale in the instrument can introduce error. Furthermore, Basen-Engquist et al. (1999) reported that correlated errors affected their model, and they identified the grammatical structure as a source of error.

In this study, items 1, 6, and 15 (Peer-pressure) had similar characteristics, such as positively worded statements and a similar grammatical structure. As described in Table 52, the correlation between the errors from items 1 and 6 was the greatest, and the

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similarity of the concept may have contributed to the correlation. The correlation between errors in items 11 and 19 was large, and both items were negatively worded and had similar grammar. During the pretest, a student inquired why items 11 and 19 were the same. The students perceived the two items to be the same. From this observation, it appeared the content and format were viewed to be the same by the students and substantiated Bryne (1994) and Basen-Engquist et al.’s (1999) observations about the effect of correlated errors.

Table 52

*Paths in Model 6 Representing Correlated Error*

<table>
<thead>
<tr>
<th>Error- (Subscale)</th>
<th>Error- (Subscale)</th>
<th>Expected Change in $\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>E6 (Peer-pressure)</td>
<td>E1 (Peer-pressure)</td>
<td>38</td>
</tr>
<tr>
<td>E19 (Peer-pressure)</td>
<td>E11 (Peer-pressure)</td>
<td>32</td>
</tr>
<tr>
<td>E10 (Threat of HIV)</td>
<td>E7 (Abstinence)</td>
<td>28</td>
</tr>
<tr>
<td>E7 (Abstinence)</td>
<td>E6 (Peer-pressure)</td>
<td>25</td>
</tr>
<tr>
<td>E10 (Threat of HIV)</td>
<td>E13 (Drug use)</td>
<td>21</td>
</tr>
<tr>
<td>E18 (Threat of HIV)</td>
<td>E17 (Drug use)</td>
<td>16</td>
</tr>
<tr>
<td>E13 (Drug use)</td>
<td>E7 (Abstinence)</td>
<td>15</td>
</tr>
<tr>
<td>E11 (Peer-pressure)</td>
<td>E6 (Peer-pressure)</td>
<td>12</td>
</tr>
<tr>
<td>E5 (Threat of HIV)</td>
<td>E4 (Drug use)</td>
<td>12</td>
</tr>
</tbody>
</table>

Correlated error is common when items are conceptually similar and persons provide a general response that reflects their overall attitude. Items in this study were assigned to one subscale, but they could be interpreted as belonging to another subscale. As previously described in Table 51, the possibility existed that it was difficult for students to discern the conceptual differences among some of the items, and this situation contributed to the observed correlated errors. Table 52 shows the correlation between errors that occurred for items from two different factors (E7 and E10, E10 and E13, E7
and E13). The conceptual similarity reflected by multi-dimensional items in the Threat of HIV, Drug use, and Abstinence subscales may have been responsible for these correlated errors.

Moreover, correlated measurement errors occur when similar items are placed next to each other and students answer in a set response. There were three sets of correlated errors from items that were next to each other (E4 and E5, E6 and E7, E17 and E18). The correlation between the error in item 4 (Drug use) and item 5 (Threat of HIV) may have been due to a similarity in both the words and concept. The correlation between the error in item 6 and item 7 was difficult to interpret and could not be explained. Different words and a different grammatical structure were observed in items 17 and 18; however, both items conveyed a risk for HIV, and this may explain the observed correlated error. To minimize the effect of errors, items that are grammatically and conceptually similar must be evenly dispersed in the instrument and not placed next to each other. In summary, Model 6, which tested the internal structure of a four-factor model (Abstinence, Drug use, Threat of HIV, and Peer-pressure) and included paths involving correlated errors, yielded an acceptable statistical fit. Additional research is needed to evaluate the robustness of this model.

*Purpose Six: Evaluate the Concurrent Validity of the Abstinence and Condom use Subscales from the Spanish Version of the CDC Instrument*

Pearson product-moment correlation coefficients were calculated to assess the relationship between the CDC’s translated Condom and Abstinence subscales with their respective subscales developed by Basen-Engquist et al. (1999). The concurrent validity analysis showed a strong correlation (.67) between the two different translated
Abstinence subscales. The strong correlation among the two subscales indicated the scales measured the Abstinence construct. The data from the reliability study and CFA provided additional evidence about the validity of the items to assess the abstinence subscale. The translated CDC’s Abstinence subscale was therefore acceptable for measuring the dimension.

A much lower correlation was observed between the two condom subscales. This lower correlation was not surprising because the coefficient alpha for the translated CDC’s Condom subscale was not acceptable. The information from all phases of the study suggested that the items for the translated CDC Condom subscale need to be revised and retested.

Significance and Implications of the Results

Significance. This study provided an example of the methodology to translate, cross-culturally adapt, and validate the scores of an instrument for use in El Salvador. Guillemin et al.’s (1993) guidelines for a cross-cultural adaptation were successfully implemented to provide program planners with a Spanish instrument for use with students in public high schools in El Salvador. In particular, an HIV/AIDS knowledge component can be assessed with a high degree of confidence and an attitudinal component can be assessed with a lower degree of confidence. The methodology for the cross-cultural adaptation was straightforward and advantageous because fewer resources, personnel, and time were needed compared to if a new instrument had been developed in El Salvador.

Psychometric properties were also calculated to establish the baseline characteristics of the adapted instrument in the new population. The scores from the
instrument were used to estimate reliability and establish construct validity. The psychometric properties of new instruments provide information that clarifies the interpretation of the scores from the target population and identifies components of the instrument that need to be improved. The combination of Guillemin et al.’s (1993) guidelines and the IQOLA (Bullinger et al., 1998; Gandek & Ware, 1998) group’s suggestions was advantageous in that it provided a measure of the instrument’s cultural adaptation. These procedures also provided the information about the reliability, content validity, and construct validity of the scores of the instrument.

Two of the study’s purposes were vital to the cross-cultural adaptation. The first was to construct an instrument with an acceptable level of content validity. The second was to achieve a high level of cultural acceptability of the items for use in high school. Both purposes were achieved with the assistance of three different Salvadorian panels and two pretests with high school students. They identified the content that had to be adjusted to meet the cultural views of Salvadorian adolescents. Additionally, their review lessened the concern about issues of human sexuality that could be deemed as offensive or not appropriate for use in high school. More importantly, assuring the content and cultural acceptability was essential in obtaining conceptual equivalence in the adapted version. When the HIV/AIDS content in the adapted version is equivalent, it will reduce the bias that occurs when instruments are interpreted differently by another cultural group (Hui & Triandis, 1985).

Items related to peer-pressure, drug use, and dating practices were interpreted in different ways among Salvadorian adolescents. Peer-pressure items 1, 6, and 11 made a general reference to peer-pressure, and the students in the pretests had a different view of
these items. They wanted a situation that focused on making a choice between a healthy behavior over the demands imposed by their friends. This perception raised the issue that peer-pressure consisted of two dimensions: an “influence” and a “resistance.” A new problem is introduced if the items are written to reflect a situation in which a friend influences a student into a harmful situation. The inclusion of a harmful situation involving an HIV risk, drugs, or abstinence increases the chance that the attitudinal concept will be perceived as multi-dimensional because two new factors were introduced, one associated with the peer/friend and the other to a potentially harmful situation. This becomes problematic in that a multi-dimensional item has the potential to confound the results.

Conversely, the “resistance” dimension was typically represented by the following statement: “Teen-agers should be more willing to resist pressures from their friends.” These statements are straightforward and easy to interpret. Students may find statements about “resistance” to be repetitive. As demonstrated in this study, when items were similar to each another, it introduced correlated measurement errors. The addition of an equal number of positively and negatively worded "resistance" based peer-pressure items should be investigated in a future study. The results of this study provide a starting point of how peer-pressure is perceived among Salvadorian adolescents.

Another observed cultural difference was the irrelevancy of item 24 (Drug use). The item made reference to cleaning drug needles with bleach to prevent the transmission of HIV. Students in the pretest and a panelist observed that it was unimportant to know how to clean drug needles. The prevalence of injecting drugs is not known for this population although a person on the Lay Panel said it was low. However, if injecting
drugs is known to be high in a population, then it will substantiate the inclusion of item 24. At this point, the expert panel reported that the use of needles for tattoos was the wiser topic to assess because needles are a source of infection and tattoos were becoming fashionable. Based on this information, item 24 should be excluded from the instrument.

The final difference centered on the sexual practices of adolescents who were dating. Item 21 assumed that teen-agers in the United States have sexual intercourse when they go out on a date. The item was relevant to teen-agers in the United States and was supported by data from the Youth Risk Behavior Survey, which estimated that 50% of high school students in the United States had sexual relations (Kann et al., 2000). The same data for Salvadorian high school students were not available. A recent survey in El Salvador estimated that 51% of women (15 to 25 years of age) were sexually active and that the percentage was higher for males in the same age (Associacion Demographica Salvadorena, 2003). From this information, it is apparent that young adults in El Salvador are sexually active, which emphasizes the need to investigate the cultural context of sexual relations.

The Salvadorian students reported that sexual relations are not casual among them and rarely occur when two students go out on a date. They added that sexual relations occur when a couple has been in a long-term relationship. Items to assess abstinence and condom use must reflect the cultural characteristics of the dating practices of Salvadorian adolescents. The knowledge gained from exploring and assessing the context in which sexual relations occur in Salvadorian adolescents will be beneficial to HIV prevention. In particular, prevention programs can specifically target adolescents in a relationship. Attitudes related to abstinence or condom use can be strengthened by focusing on the
characteristics and expectations related to relationships among adolescents. Also, the relevancy of other issues common in relationships, such as power, communication, and pregnancy prevention, should also be taught to couples. To summarize, the study’s methodology for a cross-cultural adaptation provided an instrument in Spanish for use in El Salvador. In particular, the Knowledge component can be used with a high degree of confidence but the Attitudinal component can be used with less confidence.

Validation techniques, such as factor analysis, that evaluate the internal structure of an instrument, are valuable to a cross-cultural adaptation. Factor analysis allows the factorial structure of cross-culturally adapted instruments to be evaluated. If the instruments yield the same structure, then it can be inferred that the same construct is being assessed, thus supporting the cross-cultural adaptation (Gandek & Ware, 1998). Achieving cross-cultural equivalence is the optimal goal in an adaptation. Ware et al. (1988) demonstrated the robustness of the IQOLA’s methods to achieve equivalence by providing evidence--with the use of CFA--that their adapted instruments retained a two-factor structure across 10 different countries. Likewise, in another study, Daza et al. (2002) replicated the factorial structure of an instrument in Spain. The adaptation was judged to be successful because the internal structure of the original instrument was the same as the newly adapted instrument.

An important point derived from the results of Daza et al. (2002) and the IQOLA group was that a previously validated instrument allows the factor structure of the adapted version to be compared. These two studies provide lessons for future adaptations and highlight the shortcoming of using items from an item bank. In this study, the CDC’s items had a high degree of face validity, but other psychometric data were not available.
The construct validity of the original CDC instrument was not determined by statistical analysis. In contrast, the items from Basen-Engquist et al. (1999) were used in several studies (Basen-Engquist et al., 2001; Coyle et al., 2001), and the scores were validated by an expert panel and through statistical procedures. These items were included in this study, treated in parallel to the CDC items and used in the concurrent validity study. The reliabilities of the scores for the adapted Basen-Engquist et al. (1999) Abstinence (alpha = .68) and Condom use (alpha = .69) subscales were very high. These results suggest that there are positive benefits of using a previously validated instrument on the outcome of the adaptation.

Determining the factors responsible for the failure to replicate the original five-factor structure was difficult. A cross-cultural adaptation is a complex procedure. As discussed previously, extreme cultural differences and the use of a previously validated instrument can affect the results. Multi-dimensionality of the items is another factor that can affect the internal structure of an instrument. Ruiz et al. (2002) adapted the English version of the Weight Efficacy Life-Style Questionnaire for use in Spain. They reported that the new instrument did not retain the original five-factor model, and they stated that the original factor structure was not replicated due to items which were culturally irrelevant and ambiguous. In this study, one of the dimensions was not replicated, and multi-dimensionality affected an item's interpretation and subsequently affected the factor structure.

The nature of the HIV/AIDS domain presented a challenge to writing quality items reflective of only one domain. Several items from the instrument were written to assess more than one domain. For example, the risk or threat of HIV could be interpreted
as belonging to either the condom use or abstinence domain. The use of words that were associated with the Drug use, Condom use, and Abstinence subscales were used for items that assessed a Threat of HIV. Merging words from different constructs confuses the intended meaning and results in more than one interpretation. As an example, item 10 (Threat of HIV) stated: “It's okay to have sex without a condom because your chance of getting infected with HIV is very low.” The challenge for writing items similar to item 10 is to write statements without including words associated with the abstinence and condom use dimensions.

The words in the Condom use items were also found to be problematic due to their interpretation and the fact that sexual experience was required to form an attitude. Condom use items have to be carefully written to assess the act of using a condom. It was important to distinguish the use of condoms from the act of having intercourse because it confounds the abstinence dimension. Another issue was the misunderstanding of the items by sexually inexperienced adolescents. During the administration of the instrument, four females discreetly said they did not understand the meaning of the item (“Using a condom doesn't make sex less pleasurable”). The formation of attitudes related to condom use may be dependent on previous sexual experience. Therefore, attitudes about condom use should be assessed in a population of older persons that may have a higher proportion of sexually experienced persons.

Many HIV/AIDS prevention programs attempt to reduce or eliminate risk behaviors associated with sexual intercourse, delaying sexual activity, and condom use (Kirby et al., 1994; Kirby, 2001). Kirby (2001) reported that behavioral theories were the difference in every successful program because they systematically targeted a variety of
psychosocial factors and provided information about HIV transmission. Knowledge and attitudes were selected because of their role as mediating variables in behavioral theories and because there is a need to evaluate HIV/AIDS prevention programs. Accordingly, curriculum planners in El Salvador will benefit by including psychosocial factors in their programs to reduce risky sexual behavior. The objectives should be directed at changing or modifying psychosocial factors, such as attitudes toward abstinence, attitudes about risk of HIV infection, sexual norms, attitudes toward peer-pressure, refusal skills, and attitudes about contraception or condom use. These programs must be evaluated with instruments that provide valid scores that can be used to determine the effectiveness of the interventions.

*Implications.* The purpose of this study was to provide an instrument in Spanish to assess the HIV/AIDS knowledge and attitudes in the population of students in public high schools in El Salvador. The results from the reliability and validity of the scores of the Knowledge component suggested that this part of the instrument could be used with a high degree of confidence. Particularly, Knowledge items 2 to 15 were appropriate for use in El Salvador. In contrast, item 1 could be improved by restating it as: “If you have sex without a condom and the other person has HIV, then you can get AIDS.” After this minor modification, the instrument could be used by program evaluators to assess an HIV knowledge component.

The Attitudinal section was theorized to assess five dimensions (Abstinence, Peer-pressure, Condom use, Threat of HIV, and Drug use); however, partial support for the validity of the scores was provided for only four of the dimensions. The validity of the scores for four-factor model was determined to be moderate when correlated errors...
were added to the model. Additionally, the following translated attitudinal items: 2, 4, 5, 9, 10, 11, 12, 13, 17, 19, 20, and 21 were judged to be acceptable for use in El Salvador. In contrast, the 11 Attitudinal items described in Table 53 should be reworded to improve and narrow their meaning so that they reflect one dimension; these items will then have to be retested in El Salvador.

Table 53

* Suggested Changes to the Attitudinal Items

<table>
<thead>
<tr>
<th>Subscale/Item</th>
<th>Original Statement</th>
<th>New Version</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer-pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>*</td>
<td>Investigate how peer-pressure is perceived in El Salvador.</td>
</tr>
<tr>
<td>6</td>
<td>To keep your friends, you should go along with most things your friends want you to do.</td>
<td>*</td>
<td>Investigate how peer-pressure is perceived in El Salvador and alter the grammatical structure to reduce correlated error.</td>
</tr>
<tr>
<td>11</td>
<td>Teen-agers should learn how to resist pressures from their friends.</td>
<td>* Leave as is and change 19 or vice versa.</td>
<td>Change the grammatical structure of 11 and 19.</td>
</tr>
<tr>
<td>19</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td>*</td>
<td>Similar to item 11.</td>
</tr>
<tr>
<td>Abstinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>People who don't have sex before they get married are strange.</td>
<td>People should wait to have sexual relations until marriage.</td>
<td></td>
</tr>
<tr>
<td>Condom use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>It is not smart to have sex without using a condom.</td>
<td>A condom should be used every time a person has sexual relations.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Using a condom doesn't make sex less pleasurable.</td>
<td>*</td>
<td>This question is appropriate with sexually experienced persons.</td>
</tr>
<tr>
<td>23</td>
<td>People who use condoms during sex don't trust the person they're with.</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>
Table 53 (continued)

<table>
<thead>
<tr>
<th></th>
<th>Threat of HIV</th>
<th></th>
<th>Investigate how the threat of HIV is perceived in El Salvador.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>It’s okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>HIV is something that teen-agers should think about when they date.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: *An alternative version has to be developed and then pilot tested in El Salvador.

The items from the Peer-pressure subscale were marginally associated with the dimension and should be reworded to strengthen this association. The recommendation from the pretest was to add a unique situation where students made a choice between a situation and their friends. However, the context of the situation has to be investigated in El Salvador, and, as discussed previously, the items must be carefully written to retain a peer-pressure dimension.

Overall, the items that assessed the abstinence dimension were found to be adequate. The exception was item 7 which should be reworded because the word “strange” (extraños) was problematic. As presented in Table 53, the item can be improved by eliminating the word “extraños” and rewording the item as: “People should wait to have sexual relations until marriage.” If an adequate translation is not achieved, then the item should be eliminated.
The Condom use subscale was not acceptable for use and items within this scale will have to be rewritten. Attitudes toward condom use were difficult to write because the global nature of the concept includes a dimension related to abstinence, relationships, and a partner’s pressure to use or not to use a condom. These items can be reworded either independently of sexual relations or written to reflect an attitude toward condom use immediately before sexual relations occur. For example, item 8 can be written specifically to assess condom use attitudes among adolescents by changing it to: “A condom should be used if an adolescent has sexual relations.” The statement attempts to assess a global attitude toward condom use. Additionally, the three condom items from Basen-Engquist et al. (1999) were worded differently than the ones from the CDC. The data from the study indicated Basen-Engquist et al.’s items had an acceptable measure of reliability and were appropriate for use in El Salvador. New items can be modeled after these items; for example, item 28 (Basen-Engquist et al., 1999) stated, “I believe condoms should always be used if a person my age has sex.” The item directly assessed a global attitude toward condom use; however, a limitation of the three items was the use of the words “I believe.” The term will have to be used sparingly because a similar structure can introduce correlated measurement errors.

To summarize, there was partial support that the instrument contained four Attitudinal dimensions (Abstinence, Peer-pressure, Threat of HIV, and Drug use). In particular, the construct validity of the Abstinence dimension was the strongest followed by Peer-pressure. More research is needed to provide additional validity and reliability evidence before this instrument can be recommended with a high degree of confidence to assess programs in El Salvador.
Limitations and Directions for Future Research

As an initial study, this research has contributed to the methodology of cross-cultural instrument adaptation and validation. Despite this contribution, additional research is needed that builds on the present design. The design of the study can be improved by increasing the size and diversity of the sample. Confirmatory factor analysis benefits from large samples. A larger sample can be obtained by including more schools. An advantage of a larger sample when using CFA is that it provides the flexibility to cross-validate the results. Cross-validation with two groups of 500 will allow an independent CFA with each sample. The factor structure of both groups can then be compared to verify the validity of the scores from the instrument. Additionally, the study can be extended by collecting data at more than one point. This would allow a comparison of the data during different times of the year.

A limitation of the study was the small number of students (n = 39) who participated in the test-retest study. A larger sample size should be used in a test-retest. Additionally, the generalizability of the study was limited to Salvadorian students in public high schools. A future study should include private schools. Then the scores from the two groups could be compared to determine the differences among the two groups. The results of the study cannot be generalized to students who dropped out of school or who did not have the financial resources to stay in school. A future study should attempt to include members from these groups.

The lack of published data related to the construct validity and the reliability of the scores of the CDC’s items limited comparisons to the adapted version. Furthermore, no published studies have examined the construct validity of HIV/AIDS instruments for
use in a Spanish-speaking population. This limitation precluded comparisons to the adapted version. Given the importance of measuring knowledge and attitudes related to HIV/AIDS in countries like El Salvador, future research will need to continue to collect validity evidence evaluating the success of translating and cross-culturally adapting instruments such as those developed by the CDC.
REFERENCES


Appendix A. *The English Knowledge and Attitude Survey*

**DIRECTIONS:** Read each question. Carefully check the one answer that fits best. Some of the questions use the phrase "having sex." This means sexual intercourse. DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.

1. What is your gender?  
   a. Male____  
   b. Female____

2. What grade are you in?  
   a. 9th____  
   b. 10th____  
   c. 11th____  
   d. 12th____

3. What is your age?  
   a. 13-14____  
   b. 15-16____  
   c. 17-19____

4. Have you received HIV education in school?  
   a. Yes____  
   b. No____

5. In what year was the education received?  
   _________

6. Where did you receive HIV education?  
   a. School  
   b. Community  
   c. Church  
   d. other __________

Please check one answer that best fits:

<table>
<thead>
<tr>
<th>Statement</th>
<th>I am sure it is True</th>
<th>I think it is True</th>
<th>I don’t know</th>
<th>I think it is False</th>
<th>I am sure it is False</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. You can't get AIDS if you have sex only once or twice without a condom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>3. Condoms are 100% effective in preventing HIV.</td>
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<td></td>
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<tr>
<td>4. Males can pass HIV on to others through their semen.</td>
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<td></td>
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<tr>
<td>5. You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.</td>
<td></td>
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</tr>
<tr>
<td>6. Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7. You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>8. HIV can be found in semen, vaginal fluids, and blood.</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

183
<table>
<thead>
<tr>
<th></th>
<th>I am sure it is True</th>
<th>I think it is True</th>
<th>I don’t know</th>
<th>I think it is False</th>
<th>I am sure it is False</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>A person can get HIV by sharing drug needles.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>HIV can be found in breast milk.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Once you are infected with HIV, you are infected for life.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>12.</td>
<td>People infected with HIV are usually very thin and sickly.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>13.</td>
<td>Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td></td>
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</tr>
<tr>
<td>14.</td>
<td>You can get HIV from a mosquito bite.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15.</td>
<td>If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Appendix A (continued)**

**DIRECTIONS:** This survey asks you to say whether you agree or disagree with a set of statements. Please read each statement, then indicate whether you:

Strongly Agree, Agree, are Not Sure, Disagree, or Strongly Disagree

**Indicate your response by marking an “x” in the box.**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. It’s okay not to have sex while you are a teen-ager.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. To keep your friends, you should go along with most things your friends want you to do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. People who don't have sex before they get married are strange.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. It is not smart to have sex without using a condom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Using needles to inject steroids or drugs is a bad idea.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. It's okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Teen-agers should learn how to resist pressures from their friends.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Not Sure</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
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<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>12.</td>
<td>It's a good idea for teen-agers not to have sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>People who share drug needles shouldn't worry because they probably won't get infected with HIV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>When friends want you to do things you don't feel like doing, there's no harm in going along.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Using a condom doesn't make sex less pleasurable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Anyone who shares needles is taking a chance of getting infected with HIV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>These days it makes a lot of sense to wait to have sex until you get married.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>If people think they might have sex during a date, they should carry a condom.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>I believe it’s OK for people my age to have sex with several different people in the same month.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>People who use condoms during sex don't trust the person they're with.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>People who share drug needles should clean the needles with bleach.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix A (continued)

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Not Sure</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.</td>
<td>HIV is something that teen-agers should think about when they date.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>I believe people my age should wait until they are older before they have sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>I believe condoms should always be used if a person my age has sex.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>I believe condoms should always be used if a person my age has sex, even if the girl uses birth control pills.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Thank you for your time**
Appendix B. Sample Form for the Forward-translation into Spanish

Directions: Please read the statement on the left. Write the correct Spanish translation on the right. If there is a problem in the translation look at the form at the end of the document. Write the item number and describe any difficulty involved in the translation. Thank you for your Help.

Translator _____________.

<table>
<thead>
<tr>
<th>Original Version Item</th>
<th>Spanish Translated Item.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Knowledge and Attitude Survey:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTIONS: Read each question. Carefully check the one answer that fits best. Some of the questions use the phrase &quot;having sex.&quot; This means sexual intercourse.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. What is your gender? A. Male B. Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What grade are you in? A. 9th B. 10th C. 11th D. 12th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Have you received HIV education in school? A. Yes B. No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. You can't get AIDS if you have sex only once or twice without a condom.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix C. Sample Form Sent to Bilingual Reviewers for the Synthesis

Directions: Read the statement in English. Then read the translated versions and select the best one and place it at the end of the form. If there is a discrepancy or word that does not fit the translation write a note (use red font) in the block.

<table>
<thead>
<tr>
<th>Original English Version Item</th>
<th>Forward Translated Item. #1</th>
<th>Forward Translated Item. #2</th>
<th>Final Translated Item. Write a note in red font if there is a discrepancy.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Knowledge and Attitude Survey</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIRECTIONS: Read each question. Carefully check the one answer that fits best. Some of the questions use the phrase &quot;having sex.&quot; This means sexual intercourse.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. What is your gender?</td>
<td>A. Male    B. Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What grade are you in?</td>
<td>A. 9th    B.10th   C. 11th   D. 12th</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Have you received HIV education in school?</td>
<td>A. Yes   B. No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. You can't get AIDS if you have sex only once or twice without a condom.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Condoms are 100% effective in preventing HIV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Males can pass HIV on to others through their semen.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Appendix D. Sample of Back-translation Form:

Please translate the Spanish items and place the translation in the appropriate block.

<table>
<thead>
<tr>
<th>Please write a note and make a list (at the bottom of the document) if you encountered a difficult item.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cuestionario de Conocimientos y Actitudes de HIV/SIDA</strong></td>
</tr>
</tbody>
</table>

No escriba su nombre en esta encuesta. Sus respuestas serán guardadas completamente confidenciales. Nadie sabrá como contesto a las preguntas.

**INSTRUCCIONES:** Lea cada pregunta. Con cuidado marque la contestación que sea apropiada. Algunas preguntas usan la frase “teniendo sexo.” Esto significa relaciones sexuales.

1. Cúal es tu género?  
   A. masculino   B. Femenino

2. En que grado estás?  
   A. 9°   B. 10°  C. 11°  D. 12°

3. Que edad tienes?  
   A. 13-14  B. 15-16  C. 17-19

4. Has recibido educación sobre El SIDA en la escuela?  
   A. Sí  B. No

5. Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón

6. Una persona puede “pasar” una prueba de anticuerpos del SIDA (resultados negativos) y aun estar infectado por el SIDA.

7. Los condones son 100% efectivos en prevenir VIH

8. Los hombres pueden pasar VIH a través de su semen

Appendix E. Form for Semantic Equivalence (condensed version)

Dear Reviewer:
Thank you for participating in this review. I have translated an instrument developed in the USA to assess HIV/AIDS knowledge and attitudes. I would like to use this survey with adolescent students in El Salvador. I need to find out if the translation was done properly and if it is linguistically the same. If you have questions about the process do not hesitate to ask.

**DIRECTIONS:** I am asking that you compare the English and Spanish version and to mark in the Box “X” if you agree that the English and Spanish statements are equal in semantic, idiomatic and conceptual structure. If you have comments add them in the box. Please email this back to me at Czometaiii@aol.com or call me at 28-0871 (I will be in El Salvador September 18 to October 20th) and I will can pick it up. Could you please send me your name and a brief description of your professional qualifications?
Thank you very much!

*The definition of semantic, idiomatic and conceptual equivalence.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semantic</td>
<td>words and the composition of the sentences have the same meaning as the original item.</td>
</tr>
<tr>
<td>Idiomatic</td>
<td>Idioms and colloquialisms have been translated into expressions understood by Salvadorian adolescents. These are words that are unique to one culture but not understood by the culture.</td>
</tr>
<tr>
<td>Conceptual</td>
<td>The ideas/concepts are the same and will be understood by students in El Salvador. The concepts are relevant to the experiences of Salvadorian adolescents.</td>
</tr>
</tbody>
</table>

**Directions:** After each statement circle Pass= _____ or mark an X (for computer version) next to pass if both statements are equal.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón.</td>
<td>Pass = ______</td>
<td>Failure = no response</td>
</tr>
<tr>
<td>2 A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Una persona puede “pasar” una prueba de anticuerpos de VIH (resultados negativos) y aun estar infectado con VIH.</td>
<td>Pass = ______</td>
<td>Failure = no response</td>
</tr>
<tr>
<td>3 Condoms are 100% effective in preventing HIV.</td>
<td>Los condones son 100% efectivos en prevenir el VIH.</td>
<td>Pass = ______</td>
<td>Failure = no response</td>
</tr>
<tr>
<td>4 Males can pass HIV on to others through their semen.</td>
<td>Los hombres pueden pasar VIH a través de su semen.</td>
<td>Pass = ______</td>
<td>Failure = no response</td>
</tr>
</tbody>
</table>
Appendix E (continued)

<table>
<thead>
<tr>
<th></th>
<th>You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.</th>
<th>Tú puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.</th>
<th>Pass = ______</th>
<th>Pass = ______</th>
<th>Pass = ______</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fail = no response</td>
<td>Fail = no response</td>
<td>Fail = no response</td>
</tr>
</tbody>
</table>

|   | Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV. | Abstinencia de sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | If your friends want you to do something that you think might not be safe, you should at least try it. | Si tus amigos quieren que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | It's okay not to have sex while you are a teen-ager. | Está bien no tener sexo mientras seas un(a) adolescente. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | I believe condoms should always be used if a person my age has sex, even if the two people know each other very well. | Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | A teen-ager can inject drugs once in a while without a risk of getting infected with HIV. | Un adolescente puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom. | Los adolescentes tienen el riesgo de ser infectados con VIH si tienen relaciones sexuales sin usar un condón. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |

|   | To keep your friends, you should go along with most things your friends want you to do. | Para mantener tus amistades, tú debes hacer la mayoría de las cosas que tus amigos quieren que tú hagas. | Pass = ______ | Pass = ______ | Pass = ______ |
|   |                                                                 |                                                                                | Fail = no response | Fail = no response | Fail = no response |
Appendix F  Cultural and Content Validity Form

Estimado Panelista:
A usted se le ha solicitado participar en un panel para revisar y evaluar un instrumento que medirá los conocimientos y actitudes de VIH/SIDA entre adolescentes de bachillerato en San Salvador. Quiero saber si las palabras y las ideas de estas preguntas son culturalmente apropiadas o si van a hacer entendidas por estudiantes Salvadoreños. También, necesito saber si las preguntas acerca de los conocimientos y actitudes miden estos dos conceptos apropiadamente. Solicito preguntas adicionales que podrán mejorar esta encuesta. Entonces las tres metas son:

1. Determinar si las preguntas son apropiadas para la cultura Salvadoreña. Si no son, por favor corrija la pregunta o sugiera una nueva.
2. Determinar si el componente del conocimiento es apropiado.
3. Determinar si las actitudes son apropiadas. Las cinco dimensiones son: Abstinencia, uso de condones, drogas/esteroides, amenaza de infección de VIH e influencia de los amigos.

Por favor lea cada pregunta y provea su opinión de acuerdo a la escala siguiente:
No está apropiado = 1, Poco Apropiado = 2, Moderadamente apropiado = 3, Muy apropiado = 4.

<table>
<thead>
<tr>
<th>Preguntas</th>
<th>Conocimientos de VIH/SIDA</th>
<th>Cultura Salvadoreña</th>
<th>Comentarios o Preguntas Adicionales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
<tr>
<td>2 Una persona puede “pasar” una prueba de anticuerpos de VIH (resultados negativos) y aún estar infectado con VIH.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
<tr>
<td>3 Los condones son 100% efectivos en prevenir el VIH.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
<tr>
<td>4 Los hombres pueden pasar VIH a través de su semen.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
<tr>
<td>5 Tú puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
<tr>
<td>6 Abstinencia de sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH.</td>
<td>1-2-3-4</td>
<td>1-2-3-4</td>
<td></td>
</tr>
</tbody>
</table>
Appendix G. Letter of permission from the government

MINISTERIO DE SALUD PÚBLICA Y ASISTENCIA SOCIAL
REPUBLICA DE EL SALVADOR, CA.

Oficio 2003-9640-SIDA-461
29 Jul. 2003

Dear Mr. Carlos S. Zometa:
Department of Educational Measurement and Research,
College of Education
University of South Florida.

I am writing this letter on your behalf to support the doctoral research that will be conducted in El Salvador in August 2003. I understand that the nature of the research is to adapt a survey to determine HIV knowledge and attitudes of high school students in San Salvador and its immediate area.

The Division of HIV located within the Department of Health in El Salvador will provide the required documents to obtain access to the population of adolescents attending high school throughout the area. Additionally, we have looked at the consent forms that guarantee the protection of human subjects and are aware that study has a minimum risk for the high school students.

We welcome the opportunity to assist you in this research project. Please inform me if you need additional information or further assistance.

Sincerely,

[Signature]

Mr. Rodrigo Samán Sire
Chief of National HIV/AIDS Program.

Calle Acero No. 827, San Salvador, El Salvador, C.A., MSPAS Telefax 221-0790
Compañero PBX 221-0966 Ext. 173-292

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HEALTH NOT POLICY

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INFORMACION PARA PRETEST. PERMISO PARA PARTICIPANTES Y PADRES DE FAMILIA

Estimado Padre de Familia:

Su hija/hijo está invitado a participar en una encuesta que forma parte de un proyecto de la Universidad del Sur de Florida (USF), de la ciudad de Tampa, Florida, Estados Unidos. A través de ésta carta le pedimos permiso para que su hijo(a) llene un cuestionario anónimo y que los científicos les puedan hacer una entrevista y preguntar sobre el entendimiento. Por favor lea esta carta que explica la naturaleza del estudio y si tiene preguntas por favor llame me y le explicaré el estudio. Si usted está de acuerdo que ellos tomen parte en éste estudio por favor firme el papel y regréselo con su hijo(a). Hay un pago de $10 por participar. También, si el joven no da su aprobación ellos no tienen que tomar parte en el estudio. Muchas Gracias por su ayuda.

Titulo del Estudio: La traducción, adaptacion y validacion de un instrumento del Centro de Control de Enfermedades (USA) para medir los conocimientos y actitudes de VIH/SIDA entre una poblacion de adolescentes en bachillerato.

Investigador Principal: Carlos Salvador Zometa MSPH (estudiante de doctorado)
Lugar: El Salvador, escuelas de San Salvador y sus alrededores.

Objetivo General: Evaluar los conocimientos y actitudes del VIH/SIDA en los jóvenes de bachillerato en San Salvador, así obtener un equivalente cultural de un taller desarrollado por el Centro de Control de Enfermedades (CDC).

Población: adolescentes estudiantes entre los 14 y 18 años, de ambos sexos, de San Salvador y sus alrededores.

Instrumento: Se pide al joven que complete una encuesta para poder medir el conocimiento y sus actitudes hacia el VIH/SIDA.

Tiempo aproximado: una hora.

Beneficios: No habrá beneficios personales al participar en este estudio. Pero ayudara a incrementar los conocimientos sobre esta problemática.

Riesgos: No hay riesgos conocidos o anticipados con la encuesta.

Normas establecidas:
- La participación es voluntaria y si deciden no participar, no perderán ningún beneficio que recibirán.
- Una vez iniciado el proceso de llenado de la encuesta, es permitido abandonarla o no empezar a llenarla. La encuesta es anónima, no es necesario poner el nombre del participante.
- Los datos son privados y la información será procesada por el Departamento de Salud y Recursos Humanos y la Comisión Institucional de Revisión de la Universidad del Sur de La Florida.
- El estudio se publicara en combinación con otros datos, y en ningún caso revelara información particular de los participantes.
- Al finalizar el estudio, los datos obtenidos serán destruidos.

Mayor información con Carlos Salvador Zometa al teléfono 28-0871. Cualquier reclamo llamar a la División de Quejas de Investigación de la Universidad del Sur de Florida al 00-144-00-1- (813) 974-5638.
Appendix H (continued)

**Aprobación para que el joven tome parte en el estudio:**

Yo libremente doy mi aprobación para que mi hijo (a) tome parte en éste estudio. Me doy por informado de lo anterior y he recibido una copia de esta forma.

<table>
<thead>
<tr>
<th>Firma de los padres</th>
<th>Nombre de los padres</th>
<th>Fecha</th>
</tr>
</thead>
</table>

**Declaración del Investigador:**

Yo he explicado cuidadosamente el contenido y la naturaleza de éste protocolo. Y por lo tanto certifico que con todo mi conocimiento la persona que firma esta forma da consentimiento entiende la naturaleza, demandas, riesgos y beneficios al participar en este estudio.

<table>
<thead>
<tr>
<th>Firma del investigador</th>
<th>Fecha</th>
</tr>
</thead>
</table>

Si el joven no quiere llenar la encuesta, por favor explique las razones aquí:

<table>
<thead>
<tr>
<th>Firma de los padres del joven participantes</th>
<th>Escriba el nombre de los padres</th>
<th>Fecha</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Firma del jóven participante</th>
<th>Nombre del jóven participante</th>
<th>Fecha</th>
</tr>
</thead>
</table>

**Forma de consentimiento para ser firmada por los jóvenes participantes.**

(Lic.Carlos S Zometa. MSPH) me ha explicado acerca de ésta estudio llamado (Adaptación Cultural Combinada, Confiable y Válida de una Encuesta para Medir el Conocimiento y la Actitud hacia el VIH de los jóvenes de El Salvador).

Yo estoy de acuerdo en tomar parte en éste estudio.

<table>
<thead>
<tr>
<th>Firma del jóven tomando parte</th>
<th>Escriba su nombre</th>
<th>Fecha</th>
</tr>
</thead>
<tbody>
<tr>
<td>En este estudio</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Firma de los padres del jóven Tomando parte en éste estudio</th>
<th>Escriba su nombre</th>
<th>Fecha</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Firma de la persona que recibe consentimiento</th>
<th>Escriba su nombre</th>
<th>Fecha</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Firma de un testigo</th>
<th>Escriba su nombre</th>
<th>Fecha</th>
</tr>
</thead>
</table>
INFORMACION GENERAL Y PERMISO PARA PARTICIPANTES

Estimado Padre de Familia:

Su hija/hijo está invitado a participar en una encuesta que forma parte de un proyecto de la Universidad del Sur de Florida (USF), de la ciudad de Tampa, Florida, Estados Unidos. A través de ésta carta le pedimos permiso para que su hijo(a) llene un cuestionario anónimo en la escuela. Por favor lea esta carta que explica la naturaleza del estudio y si tiene preguntas por favor llame me y le explicaré el estudio. Si usted está de acuerdo que ellos tomen parte en éste estudio nada mas es necesario que su hijo(a) llene el cuestionario en la escuela. También, si el joven no da su aprobación ellos no tienen que tomar parte en el estudio. Muchas Gracias por su ayuda.

Título del Estudio: La traducción, adaptacion y validacion de un instrumento del Centro de Control de Enfermedades (USA) para medir los conocimientos y actitudes de VIH/SIDA entre una poblacion de adolescentes.

Investigador Principal: Carlos Salvador Zometa MSPH (estudiante de doctorado)
Lugar: El Salvador, escuelas de San Salvador y sus alrededores.

Objetivo: General: Evaluar los conocimientos y actitudes del VIH/SIDA en los jóvenes de bachillerato en San Salvador, así obtener un equivalente cultural de un taller desarrollado por el Centro de Control de Enfermedades (CDC).

Población: adolescentes estudiantes entre los 14 y 18 años, de ambos sexos, de San Salvador y sus alrededores.

Instrumento: Se pide al joven que complete una encuesta para poder medir el conocimiento y sus actitudes hacia el VIH/SIDA.

Tiempo aproximado: Media hora.

Beneficios: No habrá beneficios personales al participar en este estudio. Pero ayudara a incrementar los conocimientos sobre esta problemática.

Riesgos: No hay riesgos conocidos o anticipados con la encuesta.

Normas establecidas:
- La participación es voluntaria. Si deciden a participar o no participar, no perderán ningún beneficio que recibirán.
- Una vez iniciado el proceso de llenado de la encuesta, es permitido abandonarla o no empezar a llenarla. La encuesta es anónima, no es necesario poner el nombre del participante
- Los datos son privados y la información será procesada por el Departamento de Salud y Recursos Humanos y la Comisión Institucional de Revisión de la Universidad del Sur de La Florida.
- El estudio se publicara en combinación con otros datos, y en ningún caso revelara información particular de los participantes.
- Al finalizar el estudio, los datos obtenidos serán destruidos.

Mayor información con Carlos Salvador Zometa al teléfono 28-0871.
Cualquier reclamo llamar a la División de Quejas de Investigación de la Universidad del Sur de Florida al 00-144-00-1- (813) 974-5638.
Appendix I (continued)

**Firme si no aprueba que el jóven tome parte en el estudio:**

Yo no doy mi aprobación para que mi hijo (a) tome parte en éste estudio. Me doy por informado de lo anterior y he recibido una copia de esta forma.

<table>
<thead>
<tr>
<th>Firma de los padres</th>
<th>Nombre de los padres</th>
<th>Fecha</th>
</tr>
</thead>
</table>

**Declaración del Investigador:**

Yo he explicado cuidadosamente el contenido y la naturaleza de éste protocolo. Y por lo tanto certifico que con todo mi conocimiento la persona que firma esta forma da consentimiento entiende la naturaleza, demandas, riesgos y beneficios al participar en este estudio.

<table>
<thead>
<tr>
<th>Firma del investigador</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Nombre del investigador</th>
<th>Fecha</th>
</tr>
</thead>
</table>
Appendix J. Informed Consent for Test-Retest.

INFORMACION GENERAL Y PERMISO PARA PARTICIPANTES

Estimado Padre de Familia:

Su hija/hijo está invitado a participar en una encuesta que forma parte de un proyecto de la Universidad del Sur de Florida (USF), de la ciudad de Tampa, Florida, Estados Unidos. A través de ésta carta le pedimos permiso para que su hijo(a) llene un cuestionario anónimo en la escuela. También un grupo pequeño van a tomar el cuestionario dos veces para un estudio de recopilacion. Por favor lea esta carta que explica la naturaleza del estudio y si tiene preguntas por favor llame me y le explicaré el estudio. Si usted está de acuerdo que ellos tomen parte en éste estudio nada mas es necesario que su hijo(a) llene el cuestionario en la escuela. También, si el joven no da su aprobación ellos no tienen que tomar parte en el estudio. Muchas Gracias por su ayuda.

Título del Estudio: La traducción, adaptacion y validacion de un instrumento del Centro de Control de Enfermedades (USA) para medir los conocimientos y actitudes de VIH/SIDA entre una poblacion de adolescentes.

Investigador Principal: Carlos Salvador Zometa MSPH (estudiante de doctorado)
Lugar: El Salvador, escuelas de San Salvador y sus alrededores.

Objetivo: General: Evaluar los conocimientos y actitudes del VIH/SIDA en los jóvenes de bachillerato en San Salvador, así obtener un equivalente cultural de un taller desarrollado por el Centro de Control de Enfermedades (CDC).

Población: adolescentes estudiantes entre los 14 y 18 años, de ambos sexos, de San Salvador y sus alrededores.

Instrumento: Se pide al joven que complete una encuesta para poder medir el conocimiento y sus actitudes hacia el VIH/SIDA. También un grupo pequeño va a tomar el cuestionario dos veces para medir la recopilación de datos.

Tiempo aproximado: Media hora.

Beneficios: No habrá beneficios personales al participar en este estudio. Pero ayudara a incrementar los conocimientos sobre esta problemática.

Riesgos: No hay riesgos conocidos o anticipados con la encuesta.

Normas establecidas:
- La participación es voluntaria. Si deciden a participar o no participar, no perderán ningún beneficio que recibirán.
- Una vez iniciado el proceso de llenado de la encuesta, es permitido abandonarla o no empezar a llenarla. La encuesta es anónima, no es necesario poner el nombre del participante.
- Los datos son privados y la información será procesada por el Departamento de Salud y Recursos Humanos y la Comisión Institucional de Revisión de la Universidad del Sur de La Florida.
- El estudio se publicara en combinación con otros datos, y en ningún caso revelara información particular de los participantes.
- Al finalizar el estudio, los datos obtenidos serán destruidos.

Mayor información con Carlos Salvador Zometa al teléfono 28-0871.
Cualquier reclamo llamar a la División de Quejas de Investigación de la Universidad del Sur de Florida al 00-144-00-1- (813) 974-5638.
Appendix J (continued)

**Firme si no aprueba que el jóven tome parte en el estudio:**

Yo no doy mi aprobación para que mi hijo (a) tome parte en éste estudio. Me doy por informado de lo anterior y he recibido una copia de esta forma.

<table>
<thead>
<tr>
<th>Firma de los padres</th>
<th>Nombre de los padres</th>
<th>Fecha</th>
</tr>
</thead>
</table>

**Declaración del Investigador:**

Yo he explicado cuidadosamente el contenido y la naturaleza de éste protocolo. Y por lo tanto certifico que con todo mi conocimiento la persona que firma esta forma da consentimiento entiende la naturaleza, demandas, riesgos y beneficios al participar en este estudio.

<table>
<thead>
<tr>
<th>Firma del investigador</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Nombre del investigador</th>
<th>Fecha</th>
</tr>
</thead>
</table>
## Appendix K. Results of Forward-translation of English Instrument

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>The Knowledge and Attitude Survey</td>
<td>El Conocimiento y Actitudes de la Encuesta</td>
<td>Cuestionario de Conocimiento y Actitudes</td>
</tr>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept</td>
<td>NO ESCRIBA su nombre en ésta forma, sus respuestas se</td>
<td>No escriba su nombre en esta ENCUESTA. Sus respuestas serán</td>
</tr>
<tr>
<td>secret. No one will know how you answered these questions.</td>
<td>mantendrán secretas. Nadie va a saber como usted ha</td>
<td>guardadas completamente confidencias. Nadie sabrá como</td>
</tr>
<tr>
<td></td>
<td>contestado las preguntas.</td>
<td>contesto a las preguntas.</td>
</tr>
<tr>
<td>DIRECTIONS: Read each question. Carefully check the one answer</td>
<td>DIRECCIONES: Lea cada pregunta. Cuidadosamente marque la</td>
<td>INSTRUCCIONES: Lea cada pregunta. Con cuidado marque la</td>
</tr>
<tr>
<td>that fits best. Some of the questions use the phrase &quot;having</td>
<td>respuesta que le parezca adecuada. En algunas de las</td>
<td>contestación que sea apropiada. Algunas preguntas usan la</td>
</tr>
<tr>
<td>sex.&quot; This means sexual intercourse.</td>
<td>preguntas se usó la frase &quot;teniendo sexo&quot; esto significa</td>
<td>frase “teniendo sexo”. Esto significa relacioones</td>
</tr>
<tr>
<td></td>
<td>contacto sexual.</td>
<td>sexuales.</td>
</tr>
<tr>
<td>1. What is your gender?</td>
<td>Cúal es tu género?</td>
<td>Cuál es su género?</td>
</tr>
<tr>
<td>A. Male   B. Female</td>
<td>A. masculino B. Femenino</td>
<td>A. Hombre B. Mujer</td>
</tr>
<tr>
<td>2. What grade are you in?</td>
<td>En que grado estás?</td>
<td>En que grado estás?</td>
</tr>
<tr>
<td>A. 9th    B. 10th    C. 11th    D. 12th</td>
<td>A. 9° B.10° C. 11° D. 12°</td>
<td>A. 9no B. 10 C. 11avo D. 12avo</td>
</tr>
<tr>
<td>3. What is your age?</td>
<td>Qué edad tienes?</td>
<td>Que edad tienes?</td>
</tr>
<tr>
<td>4. Have you received HIV education in school?</td>
<td>Has recibido educación sobre El SIDA en la escuela?</td>
<td>Has recibido educación sobre El SIDA en la escuela?</td>
</tr>
<tr>
<td>A. Yes    B. No</td>
<td>A. Sí B. No</td>
<td>A. Sí B. No</td>
</tr>
<tr>
<td>1. You can't get AIDS if you have sex only once or twice</td>
<td>Tu no puedes contraer SIDA si tienes sexo una vez o dos</td>
<td>Tu no puedes contraer el SIDA si tu tienes sexo una o dos</td>
</tr>
<tr>
<td>without a condom.</td>
<td>veces solamente sin usar condones.</td>
<td>veces sin un condón.</td>
</tr>
<tr>
<td>2. A person can &quot;pass&quot; an HIV antibody test (test negative) but</td>
<td>Una persona puede “pasar” un exámen de anticuerpos de VIH</td>
<td>Una persona puede “pasar” una prueba de anticuerpos del SIDA</td>
</tr>
<tr>
<td>still be infected with HIV.</td>
<td>(exámen es negativo) pero puede estar infectado con VIH.</td>
<td>(resultados negativos) y aun estar infectado por el SIDA.</td>
</tr>
<tr>
<td>3. Condoms are 100% effective in preventing HIV.</td>
<td>Los condones son 100% efectivos en prevenir VIH.</td>
<td>Los condones son 100% efectivos para prevenir el SIDA.</td>
</tr>
<tr>
<td>4. Males can pass HIV on to others through their semen.</td>
<td>Los hombres pueden pasar VIH a través de su semen.</td>
<td>Los hombres pueden contagiar a otros con el SIDA por medio</td>
</tr>
<tr>
<td>5. You can get HIV by sitting on the seat of a toilet that a</td>
<td>Tu puedes adquirir VIH al sentarte en un inodoro que fué</td>
<td>Ud. Puede contraer el SIDA al sentarse en el asiento del</td>
</tr>
<tr>
<td>person with AIDS has used.</td>
<td>usado por una persona con VIH.</td>
<td>inodoro donde una persona con SIDA se ha sentado.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6. Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.</td>
<td>Abstinencia de sexo y drogas es la mejor forma para que los jóvenes eviten el VIH.</td>
<td>Abstinencia del sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el SIDA.</td>
</tr>
<tr>
<td>7. You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from.</td>
<td>Puedes adquirir VIH en los tomaderos de agua o tomando agua de un vaso usado por una persona con VIH.</td>
<td>Ud. puede contraer el SIDA al tomar líquidos en el mismo vaso o en la fuente del agua donde una persona con SIDA ha tomado.</td>
</tr>
<tr>
<td>8. HIV can be found in semen, vaginal fluids, and blood.</td>
<td>VIH puede estar presente en el semen, fluidos vaginales, y sangre.</td>
<td>El SIDA puede encontrarse en el semen, fluidos vaginales y la sangre.</td>
</tr>
<tr>
<td>10. HIV can be found in breast milk.</td>
<td>VIH puede estar presente en la leche maternal.</td>
<td>El SIDA puede encontrarse en la leche maternal</td>
</tr>
<tr>
<td>11. Once you are infected with HIV, you are infected for life.</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
<td>Una vez que has sido contagiado con el SIDA, estas contagiado de por vida.</td>
</tr>
<tr>
<td>12. People infected with HIV are usually very thin and sickly.</td>
<td>Personas infectadas con VIH son bien delgadas y se notan enfermizas.</td>
<td>Las personas contagiadas con el SIDA generalmente se ven muy delgados y enfermizos</td>
</tr>
<tr>
<td>13. Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td>Algunas personas han adquirido VIH nadando en la misma piscina con una persona con SIDA.</td>
<td>Algunas personas han contraído el SIDA al nadar en la misma piscina que una persona que lo tiene</td>
</tr>
<tr>
<td>14. You can get HIV from a mosquito bite.</td>
<td>Puedes tú adquirir VIH de una picada de mosquito.</td>
<td>Ud. puede contraer el SIDA del piquete de un mosquito</td>
</tr>
<tr>
<td>15. If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tu quieres protejerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de latex.</td>
<td>Si Ud. desea evitar contraer el SIDA, usando condones”lambskin” es tan eficiente como usando condones de latex</td>
</tr>
<tr>
<td>16. A new vaccine has been developed for the treatment of AIDS.</td>
<td>Sabes si hay alguna vacuna que ha sido descubierta para curar el VIH?</td>
<td>Una nueva vacuna ha sido desarrollada para tratar el SIDA</td>
</tr>
<tr>
<td>17. If a pregnant woman has AIDS, there is a chance it may harm her unborn baby.</td>
<td>Si una mujer preñada tiene SIDA, existe la posibilidad que el feto sufra daños?</td>
<td>Si una mujer embarazada tiene el SIDA, hay un chance que contagiará a su bebé que no ha nacido.</td>
</tr>
<tr>
<td>1. If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si un amigo quiere que tu hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Si sus amigos desean que Ud. haga algo que Ud. no considera seguro, Ud. por lo menos debe de tratar de hacerlo</td>
</tr>
<tr>
<td>Appendix K. (continued)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **2. It's okay not to have sex while you are a teen-ager.**  
| Está bien no tener sexo cuando tú eres aún un jovencito.  
| Está correcto no tener sexo mientras sea un(a) adolescente. |
| **3. I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.”**  
| Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.  
| Considero que los condones siempre deben usarse aunque dos personas se conozcan bien. |
| **4. A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.**  
| Un joven puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.  
| Un adolescente se puede inyectar drogas de vez en cuando sin correr el riesgo de obtener el SIDA |
| **5. Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.**  
| Los jóvenes tienen riesgo de infectarse con VIH si ellos practican sexo sin usar condones.  
| Los adolescentes tienen el riesgo de ser infectados con el virus del SIDA si tienes relaciones sexuales sin usar un condón. |
| **6. To keep your friends, you should go along with most things your friends want you to do.**  
| Para no perder tus amigos, tú tienes que complacerlos con todas las cosas que ellos quieren que tú hagas.  
| Para mantener sus amistades, Ud. debe hacer la mayoría de las cosas que sus amigos quieren que Ud. haga |
| **7. People who don't have sex before they get married are strange.**  
| Las personas que no tienen sexo antes de casarse son raras. Raras as in frequency  
| Las personas que no tienen sexo antes de casarse son extraños. |
| **8. It is not smart to have sex without using a condom.**  
| No es muy inteligente tener sexo sin usar condones.  
| No es inteligente tener sexo sin usar un condón |
| **9. Using needles to inject steroids or drugs is a bad idea.**  
| Usar agujas para inyectarse esteroides no es una mala idea. Added drugs and took out no  
| Las personas que comparten agujas para las drogas, no deben preocuparse porque posiblemente no serán infectados por el SIDA. |
| **10. It's okay to have sex without a condom because your chance of getting infected with HIV is very low.**  
| Esta bien tener sexo sin usar condones ya que tus chances de contraer VIH son muy bajos.  
| Esta correcto tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con el SIDA. |
| **11. Teen-agers should learn how to resist pressures from their friends.**  
| Los jóvenes tienen que aprender a resistir las presiones de sus amigos.  
| Los adolescents deben saber resistir las presiones de sus amigos |
| **12. It's a good idea for teen-agers not to have sex.**  
| Es una buena idea si los jóvenes no tienen sexo.  
| Es una buena idea para los adolescentes no tener sexo. |
| **13. People who share drug needles shouldn't worry because they probably won't get infected with HIV.**  
| Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.  
| Las personas que comparten agujas para las drogas, no deben preocuparse porque posiblemente no serán infectados por el SIDA. |

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14. Teen-agers should realize that if they're not careful, they could get infected with HIV.
- Los jóvenes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.
- Los adolescentes deben pensar que si no tienen cuidado, pueden ser infectados con el SIDA.

15. When friends want you to do things you don't feel like doing, there's no harm in going along.
- Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces.
- Cuando los amigos quieren que haga cosas que Ud. no se siente con deseos de hacer, no hay peligro en seguir la corriente.

16. Using a condom doesn't make sex less pleasurable.
- Es menos el placer del sexo si se usan los condones.
- Usando un condón, no hace el sexo menos placentero.

17. Anyone who shares needles is taking a chance of getting infected with HIV.
- Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.
- Cualquiera que comparte las agujas, está tomando el chance de ser infectados con el SIDA.

18. If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.
- Si los jóvenes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.
- Si los adolescents tienen cuidado seleccionando sus compañeros sexuales, ellos no serán infectados por el SIDA.

19. Teen-agers should be more willing to resist pressures from their friends.
- Los jóvenes deberan resistir las presiones de sus amigos.
- Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.

20. These days it makes a lot of sense to wait to have sex until you get married.
- En ésta época hace mas sentido esperar a tener sexo al casarse.
- En estos tiempos es mas sensato esperarse a tener sexo hasta que uno se case.

21. If people think they might have sex during a date, they should carry a condom.
- Si una persona piensa que debe tener sexo al salir con alguien, ellos deberan traer un condón.
- Si las personas consideran que pueden tener sexo durante una salida, es mejor llevar consigo un condón.

22. I believe it’s OK for people my age to have sex with several different people in the same month.*
- Yo creo que está bien que las personas de mi edad tengan sexo con diferentes personas y en el mismo mes.
- Considero que es correcto para personas de mi edad tener sexo con diferentes personas en el mismo mes.

23. People who use condoms during sex don't trust the person they're with.
- La persona que usa condones cuando tiene sexo no confía en su pareja.
- Las personas que usan condones durante el sexo, no confían en la persona con quien estan.

24. People who share drug needles should clean the needles with bleach.
- Las personas que comparten agujas para drogas deberan limpiar éstas con lejía.
- Las personas que comparten las agujas para las drogas, deben limpiarlas con “bleach.”

25. HIV is something that teen-agers should think about when they date.
- VIH es algo en que los jóvenes deberan meditar cuando van a tener una cita.
- El SIDA es un asunto que los adolescentes deben de pensar cuando salen con alguien.
26. I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.*

Ya creo que está bien que las personas de mi edad tengan sexo con un novio o novia.

27. I believe people my age should wait until they are older before they have sex.*

Yo creo que las personas de mi edad deberían esperar un poco más de tiempo para tener sexo.

28. I believe condoms should always be used if a person my age has sex.*

Creo que los condones siempre deben ser usados por una persona de mi edad para tener sexo.

29. I believe condoms should always be used if a person my age has sex, even if the girl uses birth control pills.*

Considero que los condones deben usarse si una persona de mi edad tiene sexo, aunque la joven use pastillas anticonceptivas.

<table>
<thead>
<tr>
<th>YOUR VIEWS</th>
<th>Tus Puntos de Vista</th>
<th>SUS PUNTOS DE VISTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am sure it's true.</td>
<td>Yo estoy seguro que es verdad</td>
<td>Estoy seguro que es verdad</td>
</tr>
</tbody>
</table>

| I think it's true. | Yo creo que es verdad | Creo que es verdad |
| I don't know. | Yo no sé | No se |
| I think it's false. | Yo creo que esto es falso | Creo que es falso |
| I am sure it's false | Yo estoy seguro que es falso | Estoy seguro que es falso |

Note. * Indicates items from Basen-Engquist et al. (1999).

Appendix L. Results of Synthesis of Translations by the Bilingual Reviewers.

<table>
<thead>
<tr>
<th>Original English Version Item</th>
<th>Bilingual Reviewer #1.</th>
<th>Bilingual Reviewer #2.</th>
<th>Bilingual Reviewer #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Knowledge and Attitude Survey</td>
<td>Cuestionario de Conocimientos y Actitudes de HIV/SIDA</td>
<td>El Conocimiento y Actitudes de la Encuesta</td>
<td>NO ESCRIBA su nombre en ésta forma, sus respuestas se mantendrán secretas. Nadie va a saber como usted ha contestado las preguntas.</td>
</tr>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td>No escriba su nombre en esta encuesta. Sus respuestas serán guardadas completamente confidenciales. Nadie sabrá como contesto a las preguntas.</td>
<td>NO ESCRIBA su nombre en encuesta, sus respuestas serán confidenciales secretas. Nadie va a saber como usted ha contestado las preguntas.</td>
<td>NO ESCRIBA su nombre en esta forma, sus respuestas se mantendrán secretas. Nadie va a saber como usted ha contestado las preguntas.</td>
</tr>
<tr>
<td>1. You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón</td>
<td>Tu no puedes contraer SIDA si tienes sexo una vez o dos veces solamente sin usar condones.</td>
<td>5. Tu no puedes contraer SIDA si tienes sexo una vez o dos veces solamente sin usar condones.</td>
</tr>
</tbody>
</table>

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2. A person can "pass" an HIV antibody test (test negative) but still be infected with HIV.

Una persona puede “pasar” una prueba de anticuerpos del SIDA (resultados negativos) y aun estar infectado por el SIDA.

Una persona puede “pasar” un exámen de anticuerpos de SIDA (exámen es negativo) pero puede estar infectado con SIDA.

Una persona puede “pasar” un examen de anticuerpos de VIH (examen es negativo) pero puede estar infectado con VIH.

3. Condoms are 100% effective in preventing HIV.

Los condones son 100% efectivos en prevenir VIH.

Los condones son 100% efectivos en prevenir el SIDA.

Los condones son 100% efectivos en prevenir VIH.

4. Males can pass HIV on to others through their semen.

Los hombres pueden pasar VIH a través de su semen.

Los hombres pueden pasar el SIDA a través de su semen.

Los hombres pueden pasar VIH a través de su semen.

5. You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.

Tu puedes adquirir VIH al sentarte en un inodoro que fué usado por una persona con VIH.

Tu puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.

Tu puedes adquirir VIH al sentarte en un inodoro que fué usado por una persona con VIH.

6. Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.

Abstinencia del sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH.

Abstinencia de sexo y drogas es la mejor forma para que los jóvenes eviten el SIDA.

Abstinencia de sexo y drogas es la mejor forma para que los jóvenes eviten el VIH.

7. You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from.

Puedes adquirir VIH en los tomadores de agua o tomando agua de un vaso usado por una persona con VIH.

Puedes adquirir VIH en los tomadores de agua o tomando agua de un vaso usado por una persona con VIH.

Puedes adquirir VIH en los tomadores de agua o tomando agua de un vaso usado por una persona con VIH.

8. HIV can be found in semen, vaginal fluids, and blood.

VIH puede estar presente en el semen, fluidos vaginales, y sangre.

VIH puede estar presente en el semen, fluidos vaginales, y sangre.

VIH puede estar presente en el semen, fluidos vaginales, y sangre.

9. A person can get HIV by sharing drug needles.

Puedes adquirir VIH al compartir agujas para la droga.

Puedes adquirir VIH al compartir agujas para la droga.

Puedes adquirir VIH al compartir agujas para la droga.

10. HIV can be found in breast milk.

VIH puede estar presente en la leche maternal.

VIH puede estar presente en la leche maternal.

VIH puede estar presente en la leche maternal.
Appendix L. (continued)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Once you are infected with HIV, you are infected for life.</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
</tr>
<tr>
<td>12. People infected with HIV are usually very thin and sickly.</td>
<td>Personas infectadas con VIH son bien delgadas y se notan enfermizas.</td>
<td>Personas infectadas con VIH son bien delgadas y se notan enfermizas.</td>
</tr>
<tr>
<td>13. Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina que una persona que lo tiene.</td>
<td>Algunas personas han adquirido VIH nadando en la misma piscina con una persona con SIDA.</td>
</tr>
<tr>
<td>15. If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tu quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de látex.</td>
<td>Si tu quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de látex.</td>
</tr>
<tr>
<td>16. A new vaccine has been developed for the treatment of AIDS.</td>
<td>Una nueva vacuna ha sido desarrollada para tratar el SIDA.</td>
<td>Una nueva vacuna ha sido desarrollada para tratar el SIDA.</td>
</tr>
<tr>
<td>17. If a pregnant woman has AIDS, there is a chance it may harm her unborn baby.</td>
<td>Si una mujer preñada tiene SIDA, existe la posibilidad que el feto sufra daños?</td>
<td>Si una mujer preñada tiene SIDA, existe la posibilidad que el feto sufra daños?</td>
</tr>
<tr>
<td>1. If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si un amigo quiere que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Si un amigo quiere que tú hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
</tr>
<tr>
<td>2. It's okay not to have sex while you are a teen-ager.</td>
<td>Está correcto no tener sexo mientras seas un(a) adolescente.</td>
<td>Está correcto no tener sexo mientras seas un(a) adolescente.</td>
</tr>
</tbody>
</table>
3. I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.*

52. Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.*

4. A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.

Un joven puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.

5. Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.

Los adolescentes tienen el riesgo de ser infectados con el virus del SIDA si tienen relaciones sexuales sin usar un condón.

6. To keep your friends, you should go along with most things your friends want you to do.

Para mantener sus amistades, Ud. debe hacer las mayoría de las cosas que sus amigos quieren que Ud. haga.

7. People who don't have sex before they get married are strange.

Las personas que no tienen sexo antes de casarse son extraños.

8. It is not smart to have sex without using a condom.

No es muy inteligente tener sexo sin usar condones.

9. Using needles to inject steroids or drugs is a bad idea.

Usar agujas para inyectarse esteroides o drogas es una mala idea.

10. It's okay to have sex without a condom because your chance of getting infected with HIV is very low.  

Esta correcto tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con el SIDA

11. Teen-agers should learn how to resist pressures from their friends.

Los adolescentes deben saber resistir las presiones de sus amigos.

<table>
<thead>
<tr>
<th>3. I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.*</th>
<th>52. Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.*</th>
<th>NA</th>
<th>Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.</td>
<td>Un joven puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
<td>Un joven puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
<td>Un joven puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
</tr>
<tr>
<td>5. Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
<td>Los adolescentes tienen el riesgo de ser infectados con el virus del SIDA si tienen relaciones sexuales sin usar un condón.</td>
<td>Los jóvenes tienen riesgo de infectarse con VIH si ellos practican sexo sin usar condones.</td>
<td>Los jóvenes tienen riesgo de infectarse con VIH si ellos practican sexo sin usar condones.</td>
</tr>
<tr>
<td>6. To keep your friends, you should go along with most things your friends want you to do.</td>
<td>Para mantener sus amistades, Ud. debe hacer las mayoría de las cosas que sus amigos quieren que Ud. haga.</td>
<td>Para no perder tus amigos, tú tienes que complacerlos con todas las cosas que ellos quieren que tú hagas.</td>
<td>Para no perder tus amigos, tú tienes que complacerlos con todas las cosas que ellos quieren que tú hagas.</td>
</tr>
<tr>
<td>7. People who don't have sex before they get married are strange.</td>
<td>Las personas que no tienen sexo antes de casarse son extraños.</td>
<td>Las personas que no tienen sexo antes de casarse son raras.</td>
<td>Las personas que no tienen sexo antes de casarse son extrañas.</td>
</tr>
<tr>
<td>8. It is not smart to have sex without using a condom.</td>
<td>No es muy inteligente tener sexo sin usar condones.</td>
<td>No es muy inteligente tener sexo sin usar condones.</td>
<td>No es inteligente tener sexo sin usar un condón.</td>
</tr>
</tbody>
</table>
| 10. It's okay to have sex without a condom because your chance of getting infected with HIV is very low.  
11. Teen-agers should learn how to resist pressures from their friends. | Esta correcto tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con el SIDA | Esta bien tener sexo sin usar condones ya que tus chances de contraer VIH son muy bajos. | Esta bien tener sexo sin usar condones ya que tus chances de contraer VIH son muy bajos. |
|                                                                      | Los adolescentes deben saber resistir las presiones de sus amigos | Los jóvenes tienen que aprender a resistir las presiones de sus amigos | Los adolescentes deben saber resistir las presiones de sus amigos |
Appendix L. (continued)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>12. It's a good idea for teen-agers not to have sex.</td>
<td>Es una buena idea para los adolescentes no tener sexo.</td>
<td>Es una buena idea que los jóvenes no tengan sexo.</td>
<td>Es una buena idea para los adolescentes no tener sexo.</td>
</tr>
<tr>
<td>13. People who share drug needles shouldn't worry because they probably won't get infected with HIV.</td>
<td>Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.</td>
<td>Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.</td>
<td>Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.</td>
</tr>
<tr>
<td>14. Teen-agers should realize that if they're not careful, they could get infected with HIV.</td>
<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
<td>Los jóvenes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
<td>Los jóvenes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
</tr>
<tr>
<td>15. When friends want you to do things you don't feel like doing, there's no harm in going along.</td>
<td>Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces. (Harm in going along is a USA saying?)</td>
<td>Cuando tus amigos quieren que tú hagas cosas indebidas, no correrás riesgo si las haces.</td>
<td>Cuando los amigos quieren que haga cosas que Ud. no se siente con deseos de hacer, no hay peligro en seguir la corriente</td>
</tr>
<tr>
<td>16. Using a condom doesn't make sex less pleasurable.</td>
<td>Es menos el placer del sexo si se usan los condones.</td>
<td>Usar un condon no te impidira entir placer..</td>
<td>Es menos el placer del sexo si se usan los condones.</td>
</tr>
<tr>
<td>17. Anyone who shares needles is taking a chance of getting infected with HIV.</td>
<td>Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.</td>
<td>Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.</td>
<td>Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.</td>
</tr>
<tr>
<td>18. If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.</td>
<td>Si los adolescentes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.</td>
<td>Si los jóvenes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.</td>
<td>Si los jóvenes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.</td>
</tr>
<tr>
<td>19. Teen-agers should be more willing to resist pressures from their friends.</td>
<td>Los jóvenes deberan resistir las presiones de sus amigos.</td>
<td>Los jóvenes deberan resistir las presiones de sus amigos.</td>
<td>Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.</td>
</tr>
<tr>
<td>20. These days it makes a lot of sense to wait to have sex until you get married.</td>
<td>Los jóvenes deberan resistir las presiones de sus amigos.</td>
<td>En ésta época tiene mas sentido esperar a tener relaciones sexuales hasta casarse.</td>
<td>En estos tiempos es más sensato esperarse a tener sexo hasta que uno se case.</td>
</tr>
<tr>
<td></td>
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<td>---</td>
</tr>
<tr>
<td>21. If people think they might have sex during a date, they should carry a condom.</td>
<td>Si una persona piensa que podría tener sexo al salir con alguien, ellos deberían traer un condón. (What is the word for “Date” in Spanish)</td>
<td>Si una persona piensa que tal vez tenga sexo al salir con alguien, ellos deberían traer un condón.</td>
<td>Si las personas consideran que pueden tener sexo durante una salida, es mejor llevar consigo un condón</td>
</tr>
<tr>
<td>23. People who use condoms during sex don't trust the person they're with.</td>
<td>Las personas que usan condones durante el sexo, no confían en la persona con quien están.</td>
<td>La persona que usa condones cuando tiene sexo no confía en su pareja.</td>
<td>Las personas que usan condones durante el sexo, no confían en la persona con quien están.</td>
</tr>
<tr>
<td>24. People who share drug needles should clean the needles with bleach.</td>
<td>Las personas que comparten agujas para drogas deberán limpiar éstas con lejía.</td>
<td>Las personas que comparten agujas para drogas deberán limpiar éstas con blanqueador.</td>
<td>Las personas que comparten agujas para drogas deberán limpiar éstas con lejía.</td>
</tr>
<tr>
<td>25. HIV is something that teen-agers should think about when they date.</td>
<td>El SIDA es un asunto que los adolescentes deben de pensar cuando salen con alguien.</td>
<td>SIDA es algo que los jóvenes deben tener en cuenta cuando empiezan a socializar.</td>
<td>VIH es algo en que los jóvenes deberán meditar cuando van a tener una cita.</td>
</tr>
<tr>
<td>26. I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.*</td>
<td>Yo creo que está bien que las personas de mi edad tengan sexo con el novio o novia.*</td>
<td>Yo creo que está bien que las personas de mi edad tengan sexo con el novio o novia.*</td>
<td>Yo creo que está bien que las personas de mi edad tengan sexo con el novio o novia.*</td>
</tr>
<tr>
<td>27. I believe people my age should wait until they are older before they have sex.*</td>
<td>Yo creo que las personas de mi edad deberían esperar un poco más de tiempo para tener sexo.*</td>
<td>Yo creo que las personas de mi edad deberían esperar un poco más de tiempo para tener sexo.*</td>
<td>Creo que las personas de mi edad deben esperar hasta que tengan más edad antes de tener sexo.*</td>
</tr>
<tr>
<td>28. I believe condoms should always be used if a person my age has sex.*</td>
<td>Yo creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo</td>
<td>Yo creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo.*</td>
<td>Creo que los condones siempre deben ser usados por una persona de mi edad para tener sexo.*</td>
</tr>
</tbody>
</table>
Appendix L. (continued)

<table>
<thead>
<tr>
<th>DIRECTIONS: This survey asks you to say whether you agree or disagree with a set of statements. Please read each statement, then indicate whether you:</th>
<th>Strongly Agree (SA), Agree (A), are Not Sure (NS), Disagree (D), or Strongly Disagree (SD), by circling the answer you want.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am sure it's true.</td>
<td>Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque la joven use pastillas para no salir embarazada.</td>
</tr>
<tr>
<td>I don't know</td>
<td>No se</td>
</tr>
<tr>
<td>I think it's false.</td>
<td>Creo que es falso</td>
</tr>
<tr>
<td>I am sure it's false</td>
<td>Estoy seguro que es falso</td>
</tr>
<tr>
<td>DIRECTIONS: En esta encuesta se te pide que digas cuando estás de acuerdo y cuando no estás de acuerdo con lo que se dice aquí. Por favor lee cada pregunta, entonces indica si estás seguro de que es verdad.</td>
<td></td>
</tr>
<tr>
<td>Strongly Agree (SA)</td>
<td>Completamente de Acuerdo (CA)</td>
</tr>
<tr>
<td>Agree (A)</td>
<td>De Acuerdo (DA)</td>
</tr>
<tr>
<td>Are Not Sure (NS)</td>
<td>No Estoy Seguro (NES)</td>
</tr>
<tr>
<td>Disagree (D)</td>
<td>No Estoy de Acuerdo (NEDA)</td>
</tr>
<tr>
<td>Or Strongly Disagree (SD)</td>
<td>Completamente en Desacuerdo (CED)</td>
</tr>
</tbody>
</table>

Appendix M. Results of the Back-translation.

<table>
<thead>
<tr>
<th>Original English</th>
<th>English Back-translation</th>
<th>Spanish items for the first version</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO NOT put your name on this survey. Your answers will be kept secret. No one will know how you answered these questions.</td>
<td>Do not write your name on this survey. Your answers will be kept completely confidential. No one will now how you answered the questions.</td>
<td>No escriba su nombre en esta encuesta. Sus respuestas serán guardadas completamente confidenciales. Nadie sabrá como conteste a las preguntas</td>
</tr>
<tr>
<td>DIRECTIONS: Read each question. Carefully check the one answer that fits best. Some of the questions use the phrase &quot;having sex.&quot; This means sexual intercourse.</td>
<td>Instructions: Read each question. Take care to mark the appropriate answer. Some questions use the phrase “having sex.” This means sexual intercourse.</td>
<td>INSTRUCCIONES: Lea cada pregunta. Con cuidado marque la contestación que sea apropiada. Algunas preguntas usan la frase “teniendo sexo.” Esto significa relaciones sexuales</td>
</tr>
<tr>
<td></td>
<td>Note: Does’nt genero/masculine/femenino refer just to grammar? So says my dictionary. Would not Cúal es a sexo? varón/hembra or hombre/mujer be more correct?</td>
<td></td>
</tr>
<tr>
<td>4. Have you received HIV education in school? A. Yes B. No</td>
<td>Have you received AIDS education at your school? A. Yes B. No</td>
<td>Has recibido educación sobre El SIDA en la escuela? A. Si B. No</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>English</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Tu no puedes contraer el SIDA si tienes sexo una o dos veces sin un condón</td>
</tr>
<tr>
<td>Note: Are these “true or false” questions? I think new instructions are needed on how the respondent is to answer questions 6…</td>
<td>Note: Or should the Spanish be: Una persona puede adquirir VIH al compartir agujas para la droga</td>
</tr>
<tr>
<td>A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Una persona puede “pasar” una prueba de anticuerpos del SIDA (resultados negativos) y aun estar infectado por el SIDA</td>
</tr>
<tr>
<td>Condoms are 100% effective in preventing HIV.</td>
<td>Los condones son 100% efectivos en prevenir VIH</td>
</tr>
<tr>
<td>Males can pass HIV on to others through their semen.</td>
<td>Los hombres pueden pasar VIH a través de su semen</td>
</tr>
<tr>
<td>You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.</td>
<td>Tu puedes adquirir VIH al sentarte en un inodoro que fué usado por una persona con VIH</td>
</tr>
<tr>
<td>Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.</td>
<td>Abstinencia del sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH</td>
</tr>
<tr>
<td>You can acquire HIV from drinking from the same glass or water fountain that a person with AIDS drank from.</td>
<td>Puedes adquirir VIH en los tomaderos de agua o tomando agua de un vaso usado por una persona con VIH</td>
</tr>
<tr>
<td>HIV is present in semen, vaginal fluids, and blood.</td>
<td>VIH puede estar presente en el semen, fluidos vaginales, y sangre</td>
</tr>
<tr>
<td>Can a person acquire HIV from sharing drug needles? Note: Or should the Spanish be: Una persona puede adquirir…</td>
<td>Puede una persona adquirir VIH al compartir agujas para la droga</td>
</tr>
</tbody>
</table>
### Appendix M. (continued)
English – Back translation, Spanish items for 1st version

<table>
<thead>
<tr>
<th></th>
<th>English</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>10.</strong> HIV can be found in breast milk.</td>
<td>HIV can be present in breast milk.</td>
<td>VIH puede estar presente en la leche maternal</td>
</tr>
<tr>
<td><strong>11.</strong> Once you are infected with HIV, you are infected for life.</td>
<td>Once you are infected with HIV, you are infected for the rest of your life.</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
</tr>
<tr>
<td><strong>12.</strong> People infected with HIV are usually very thin and sickly.</td>
<td>People infected with HIV are very thin and are notably very sick.</td>
<td>Personas infectadas con VIH son bien delgadas y se notan enfermas</td>
</tr>
<tr>
<td><strong>13.</strong> Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td>Some people have contracted HIV by swimming in the same swimming pool as someone else who has it.</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina que una persona que lo tiene</td>
</tr>
<tr>
<td><strong>14.</strong> You can get HIV from a mosquito bite.</td>
<td>Can you acquire HIV from a mosquito bite?</td>
<td>Puedes tú adquirir VIH de una picada de mosquito</td>
</tr>
<tr>
<td><strong>15.</strong> If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>If you want to protect yourself from contracting HIV, using “lamb skins” condoms is just as effective as using latex condoms. <strong>Note:</strong> would el usar or el uso be more correct than the gerund usando?</td>
<td>Si tu quieres protejerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de latex</td>
</tr>
<tr>
<td><strong>16.</strong> A new vaccine has been developed for the treatment of AIDS</td>
<td>A new vaccine has been developed to treat AIDS.</td>
<td>Una nueva vacuna ha sido desarrollada para tratar el SIDA</td>
</tr>
<tr>
<td><strong>17.</strong> If a pregnant woman has AIDS, there is a chance it may harm her unborn baby</td>
<td>If a pregnant woman has AIDS, is there a possibility her fetus could be hurt?</td>
<td>Si una mujer preñada tiene SIDA, existe la posibilidad que el feto sufra daños?</td>
</tr>
<tr>
<td><strong>1.</strong> If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>If a friend wants you to do something and you think it’s not safe, you should at least try it.</td>
<td>Si un amigo quiere que tu hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo</td>
</tr>
</tbody>
</table>

215
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>It's okay not to have sex while you are a teen-ager.</td>
<td>Está correcto no tener sexo mientras sea un(a) adolescente</td>
</tr>
<tr>
<td>3.</td>
<td>I believe condoms should always be used if a person my age has sex, even if the two people know each other very well.</td>
<td>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien</td>
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<tr>
<td>4.</td>
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<td>5.</td>
<td>Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
<td>Los adolescentes tienen el riesgo de ser infectados con el virus del SIDA si tienen relaciones sexuales sin usar un condón.</td>
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<td>6.</td>
<td>To keep your friends, you should go along with most things your friends want you to do.</td>
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<td>8.</td>
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<td>No es muy inteligente tener sexo sin usar condones</td>
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<tr>
<td>9.</td>
<td>Using needles to inject steroids or drugs is a bad idea.</td>
<td>Usar agujas para inyectarse esteroides o drogas es una mala idea</td>
</tr>
<tr>
<td>10.</td>
<td>It's okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td>Esta correcto tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con el SIDA</td>
</tr>
</tbody>
</table>
11. Teen-agers should learn how to resist pressures from their friends.  
Teen-agers should know how to resist peer pressure.  
Los adolescentes deben saber resistir las presiones de sus amigos.

12. It's a good idea for teen-agers not to have sex.  
It's a good idea for teen-agers to have sex.  
(Forgot word NOT)  
Es una buena idea para los adolescentes no tener sexo.

13. People who share drug needles shouldn't worry because they probably won't get infected with HIV.  
People who share drug needles shouldn’t worry because they probably won’t be infected with HIV.  
Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.

14. Teen-agers should realize that if they're not careful, they could get infected with HIV.  
Teen-agers should know that if they aren't careful, they can become infected with HIV.  
Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.

15. When friends want you to do things you don't feel like doing, there's no harm in going along.  
When your friends want you to do something and you don't feel you should do it, there’s no risk in not doing it.  
Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces.

16. Using a condom doesn't make sex less pleasurable.  
Sex is less pleasurable if you use condoms.  
Personal Note: Well, of course it’s less pleasurable, Carlos, but that’s no reason for teen-agers not to use one. Is this a trick question?  
Es menos el placer del sexo si se usan los condones.

17. Anyone who shares needles is taking a chance of getting infected with HIV.  
Anyone who shares needles is taking the risk of being infected Sex is less pleasurable if you use condoms.  
Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.

18. If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.  
If teen-agers aren’t careful in choosing their sex partner, they will be infected with HIV.  
Si los adolescentes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.

19. Teen-agers should be more willing to resist pressures from their friends.  
Young people should resist peer pressure.  
Note: deberán  
Los jóvenes deberan resistir las presiones de sus amigos.
Appendix M. (continued)
English – Back translation, Spanish items for 1st version

| 20. These days it makes a lot of sense to wait to have sex until you get married. | NA | NA |
| 21. If people think they might have sex during a date, they should carry a condom. | If someone thinks that they are going to have sex with someone, they should bring a condom. | Si una persona piensa que podría tener sexo al salir con alguien, ellos deberan traer un condón. |
| 22. I believe it's OK for people my age to have sex with several different people in the same month. | I think it's okay for people my age to have sex with different people in the same month. | Creo que está bien que las personas de mi edad tengan sexo con diferentes personas en el mismo mes. |
| 23. People who use condoms during sex don't trust the person they're with. | People who use condoms during sex don’t trust the person that they are with. | Las personas que usan condones durante el sexo, no confían en la persona con quien estan |
| 24. People who share drug needles should clean the needles with bleach. | People who share drug needles should clean them with bleach. | Las personas que comparten agujas para drogas deberan limpiar éstas con lejía |
| **Note:** deberán or is “deben de” better? |  |  |
| 25. HIV is something that teen-agers should think about when they date. | AIDS is an issue that teen-agers should think about when they date someone. | El SIDA es un asunto que los adolescents deben de pensar cuando salen con alguien. |
| 26. I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend. | I think it’s better for people my age to have sex with their boyfriend or girlfriend. | Yo creo que está bien que las personas de mi edad tengan sexo con el novio o novia. |
| 27. I believe people my age should wait until they are older before they have sex. | I think people my age should wait a little while longer before having sex. | Yo creo que las personas de mi edad deberan esperar un poco más de tiempo para tener sexo. |
| **Note:** deberán or is deben de better? |  |  |
| 28. I believe condoms should always be used if a person my age has sex. | I think that condoms should always be used when someone my age is having sex. | Yo creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo |

218
29. I believe condoms should always be used if a person my age has sex, even if the girl uses birth control pills.

<table>
<thead>
<tr>
<th>I am sure it's true.</th>
<th>I think it’s true.</th>
<th>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque la joven use pastillas anticonceptivas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think it's true.</td>
<td>I think it’s true.</td>
<td>Creo que es verdad</td>
</tr>
<tr>
<td>I don't know.</td>
<td>I don’t know</td>
<td>No sé</td>
</tr>
<tr>
<td><strong>Note:</strong> No sé</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think it's false.</td>
<td>I think it’s false.</td>
<td>Creo que es falso</td>
</tr>
<tr>
<td>I am sure it's false</td>
<td>I’m sure it’s false.</td>
<td>Estoy seguro que es falso</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strongly Agree (SA)</th>
<th>Completely Agree (CA)</th>
<th>Completamente de Acuerdo (CA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree (A),</td>
<td>Agree (A)</td>
<td>De Acuerdo (DA)</td>
</tr>
<tr>
<td>Not Sure (NS),</td>
<td>Not Sure (NS)</td>
<td>No Estoy Seguro (NES)</td>
</tr>
<tr>
<td>Disagree (D),</td>
<td>Disagree (D)</td>
<td>No Estoy de Acuerdo (NEDA)</td>
</tr>
<tr>
<td>Strongly Disagree (SD)</td>
<td>Completely Disagree (CD)</td>
<td>Completamente en Desacuerdo (CED)</td>
</tr>
</tbody>
</table>

Appendix N. First Spanish Version

Cuestionario de Conocimientos y Actitudes de HIV/SIDA


2. ¿En que año de bachillerato estás? a. 1° b. 2° c. 3°
3. ¿Qué edad tienes? a. 13-14 b. 15-16 c. 17-19
4. ¿Has recibido educación sobre El VIH/SIDA? a. Si b. No
5. ¿En donde has recibido dicha información? a. Escuela b. Charlas c. FUNDASIDA d. Otras

<table>
<thead>
<tr>
<th>Marque la respuesta que le parezca adecuada (x):</th>
<th>Estoy seguro que es verdad</th>
<th>Creo que es verdad</th>
<th>No se</th>
<th>Creo que es falso</th>
<th>Estoy seguro que es falso</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Una persona puede “pasar” una prueba de anticuerpos de VIH (resultados negativos) y aún estar infectado con VIH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Los condones son 100% efectivos en prevenir el VIH.</td>
<td></td>
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</tr>
<tr>
<td>4. Los hombres pueden pasar el VIH a través de su semen.</td>
<td></td>
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</tr>
<tr>
<td>5. Tú puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. Abstinencia de sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Puedes adquirir VIH en los tomaderos de agua o tomando agua de un vaso usado por una persona con VIH.</td>
<td></td>
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</tr>
<tr>
<td>8. El VIH puede estar presente en el semen, fluidos vaginales, y sangre.</td>
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</tr>
<tr>
<td>10. VIH puede estar presente en la leche maternal.</td>
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<td>-----------------------------------------------------------------</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Las personas infectadas con VIH son bien delgadas y se notan enfermizas.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina que una persona que tiene SIDA.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Tú puedes adquirir VIH de una picada de mosquito.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Si tu quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de látex.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
INSTRUCCIONES: En ésta encuesta se te pide que digas cuando estás de acuerdo y cuando no estás de acuerdo con lo que se dice aquí. Por favor lea cada pregunta, entonces indica si tú estás:

Complectemente de Acuerdo, De Acuerdo, No Estoy Seguro, No Estoy de Acuerdo, Completamente en Desacuerdo

<table>
<thead>
<tr>
<th>Marque la respuesta que le parezca adecuada con una “x”.</th>
<th>Complettamente de Acuerdo</th>
<th>De Acuerdo</th>
<th>No Estoy Seguro</th>
<th>No Estoy de Acuerdo</th>
<th>Completamente en Desacuerdo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Si tus amigos quieren que tu hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Está bien no tener sexo mientras sea un(a) adolescente.</td>
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</tr>
<tr>
<td>3. Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.</td>
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<tr>
<td>4. Un adolescente puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Los adolescentes tienen el riesgo de ser infectados con VIH si tienen relaciones sexuales sin usar un condón.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Para mantener tus amistades, tú debes hacer la mayoría de las cosas que tus amigos quieren que tú hagas.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Las personas que no tienen sexo antes de casarse son extraños.</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8. No es muy inteligente tener sexo sin usar un condón.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Usar agujas para inyectarse esteroides o drogas es una mala idea.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Esta bien tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con VIH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Los adolescentes tienen que aprender a resistir las presiones de sus amigos.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Es una buena idea para los adolescentes no tener sexo.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
14. Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.

15. Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces.

16. Es menos el placer del sexo si se usan un condón.

17. Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.

18. Si los adolescentes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.

19. Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.

20. En estos tiempos es más sensato esperarse a tener sexo hasta que uno se case.

21. Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán traer un condón.

22. Creo que está bien que las personas de mi edad tengan sexo con diferentes personas en el mismo mes.

23. Las personas que usan condones durante el sexo, no confían en la persona con quien están.

24. Las personas que comparten agujas para drogas deberán limpiarlas con lejía.

25. El VIH es un tema en que los adolescentes deben de pensar cuando salen con alguien.

26. Creo que está bien que las personas de mi edad tengan sexo con el novio o novia.

27. Creo que las personas de mi edad deberán esperar un poco más de tiempo para tener sexo.

28. Creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo.

29. Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque la joven use pastillas anticonceptivas.

**Muchas gracias por tu tiempo.**
### Appendix P. Summary of Results from the Conceptual Equivalence.

A Salvadorian panel composed of five members rated each item on a pass (1) or fail (0) scale. A mean score was calculated and a passing score of 3 or higher indicated conceptual equivalence.

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
<th>Comment or Suggested change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> You can't get AIDS if you have sex only once or twice without a condom.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
<tr>
<td><strong>2</strong> A person can &quot;pass&quot; an HIV antibody test (test negative) but still be infected with HIV.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
<tr>
<td><strong>3</strong> Condoms are 100% effective in preventing HIV.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
<tr>
<td><strong>4</strong> Males can pass HIV on to others through their semen.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
<tr>
<td><strong>5</strong> You can get HIV by sitting on the seat of a toilet that a person with AIDS has used.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
<tr>
<td><strong>6</strong> Abstinence from sex and drugs is the best way for teen-agers to avoid getting HIV.</td>
<td>Pass = 4</td>
<td>Fail =</td>
<td>Pass = 5</td>
<td></td>
</tr>
</tbody>
</table>
Appendix P. (continued)

<table>
<thead>
<tr>
<th></th>
<th>Knowledge</th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
<th>Comment or Suggested change</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>You can get HIV from drinking from the same glass or water fountain that a person with AIDS drank from.</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td>Pass =5</td>
<td>Chorro o usando un vaso, instead of tomaderos. (Dr. Castro)</td>
</tr>
<tr>
<td>8</td>
<td>HIV can be found in semen, vaginal fluids, and blood.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>A person can get HIV by sharing drug needles.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>HIV can be found in breast milk.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td>Leche maternal instead of leche maternal. (Dr. Castro)</td>
</tr>
<tr>
<td>11</td>
<td>Once you are infected with HIV, you are infected for life.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>People infected with HIV are usually very thin and sickly.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td>Change to: Personas infectadas con VIH usualmente se ven bien delgadas y enfermizas. (Dr. Castro)</td>
</tr>
<tr>
<td>13</td>
<td>Some people have gotten HIV by swimming in the same pool as someone with AIDS.</td>
<td>Pass =4</td>
<td>Pass =4</td>
<td>Pass =5</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina que una persona que lo tiene. (Dr. Castro)</td>
</tr>
</tbody>
</table>

225
### Appendix P. (continued)

<table>
<thead>
<tr>
<th></th>
<th>Knowledge</th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
<th>Comment or Suggested change</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>You can get HIV from a mosquito bite.</td>
<td>Tú puedes adquirir VIH de una picada de mosquito.</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
<td>Pass = 5</td>
</tr>
<tr>
<td>15</td>
<td>If you want to keep from getting HIV, using &quot;lambskin&quot; condoms is just as good as using latex condoms.</td>
<td>Si tu quieres protegerte de contraer VIH, usando condones de “piel de cordero” es tan efectivo como usar condones de latex.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
</tr>
<tr>
<td>16</td>
<td>A new vaccine has been developed for the treatment of AIDS.</td>
<td>Una nueva vacuna ha sido desarrollada para tratar el SIDA.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
</tr>
<tr>
<td>17</td>
<td>If a pregnant woman has AIDS, there is a chance it may harm her unborn baby.</td>
<td>Si una mujer embarazada tiene SIDA, existe la posibilidad que el feto sufra daños.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
</tr>
<tr>
<td>1</td>
<td>If your friends want you to do something that you think might not be safe, you should at least try it.</td>
<td>Si tus amigos quieren que tu hagas algo y tú crees que no es seguro, tú deberías por lo menos tratar de hacerlo.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
</tr>
<tr>
<td>2</td>
<td>It’s okay not to have sex while you are a teenager.</td>
<td>Está bien no tener sexo mientras seas un(a) adolescente.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
</tr>
<tr>
<td>3</td>
<td>I believe condoms should always be used if a person my age has sex, even if the two people known each other very well.</td>
<td>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.</td>
<td>Pass = 4</td>
<td>Pass = 4</td>
<td>Pass = 5</td>
</tr>
</tbody>
</table>
## Appendix P. (continued)

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>4</strong></td>
<td>A teen-ager can inject drugs once in a while without a risk of getting infected with HIV.</td>
<td>Un adolescente puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>Teen-agers are at risk of getting infected with HIV if they engage in sex without a condom.</td>
<td>Los adolescentes tienen el riesgo de ser infectados con VIH si tienen relaciones sexuales sin usar un condón.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>To keep your friends, you should go along with most things your friends want you to do.</td>
<td>Para mantener tus amistades, tú debes hacer la mayoría de las cosas que tus amigos quieren que tú hagas.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>People who don't have sex before they get married are strange.</td>
<td>Las personas que no tienen sexo antes de casarse son extraños.</td>
</tr>
<tr>
<td><strong>8</strong></td>
<td>It is not smart to have sex without using a condom.</td>
<td>No es muy inteligente tener sexo sin usar un condón.</td>
</tr>
<tr>
<td><strong>9</strong></td>
<td>Using needles to inject steroids or drugs is a bad idea.</td>
<td>Usar agujas para inyectarse esteroides o drogas es una mala idea.</td>
</tr>
<tr>
<td><strong>10</strong></td>
<td>It's okay to have sex without a condom because your chance of getting infected with HIV is very low.</td>
<td>Esta bien tener sexo sin usar un condón porque es muy bajo el chance de ser infectado con VIH.</td>
</tr>
</tbody>
</table>
### Appendix P. (continued)

<table>
<thead>
<tr>
<th></th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
<th>Suggested change or comments</th>
</tr>
</thead>
</table>
|11 | Teen-agers should learn how to resist pressures from their friends.  
Los adolescentes tienen que aprender a resistir las presiones de sus amigos.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 5  
Fail =  | | | |
|12 | It's a good idea for teen-agers not to have sex.  
Es una buena idea para los adolescentes no tener sexo.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 5  
Fail =  | | | |
|13 | People who share drug needles shouldn't worry because they probably won't get infected with HIV.  
Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran de VIH.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 5  
Fail =  | | | |
|14 | Teen-agers should realize that if they're not careful, they could get infected with HIV.  
Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 5  
Fail =  | | | |
|15 | When friends want you to do things you don't feel like doing, there's no harm in going along.  
Cuando tus amigos quieren que tú hagas cosas que tú sientes no deben hacerse, no hay ningún riesgo si tú las haces.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 4  
Fail =  | | | |
|16 | Using a condom doesn't make sex less pleasurable.  
Es menos el placer del sexo si se usan condones.  
Pass = 3  
Fail =  
Pass = 3  
Fail =  
Pass = 3  
Fail =  | | | Re translate. Usar un condon no hace el sexo menos placentero.(Lic Armas and Dr. Gavidia) |
|17 | Anyone who shares needles is taking a chance of getting infected with HIV.  
Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con VIH.  
Pass = 4  
Fail =  
Pass = 4  
Fail =  
Pass = 5  
Fail =  | | | |
<table>
<thead>
<tr>
<th></th>
<th>Semantic</th>
<th>Idiomatic</th>
<th>Conceptual</th>
<th>Suggested change or comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>If teen-agers are careful about choosing sexual partners, they won't get infected with HIV.</td>
<td>Si los adolescentes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.</td>
<td>Pass =4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>19</td>
<td>Teen-agers should be more willing to resist pressures from their friends.</td>
<td>Los adolescentes deben tener más buena voluntad para resistir las presiones de sus amigos.</td>
<td>Pass = 4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>20</td>
<td>These days it makes a lot of sense to wait to have sex until you get married.</td>
<td>En estos tiempos es mas sensato esperarse a tener sexo hasta que uno se case</td>
<td>Pass = 4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>21</td>
<td>If people think they might have sex during a date, they should carry a condom.</td>
<td>Si las personas piensan que podrían tener sexo al salir con alguien, ellos deberán traer un condón</td>
<td>Pass = 4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>22</td>
<td>I believe it’s OK for people my age to have sex with several different people in the same month.</td>
<td>Creo que está bien que las personas de mi edad tengan sexo con diferentes personas en el mismo mes.</td>
<td>Pass = 4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>23</td>
<td>People who use condoms during sex don't trust the person they're with.</td>
<td>Las personas que usan condones durante el sexo, no confían en la persona con quien están.</td>
<td>Pass =4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td>24</td>
<td>People who share drug needles should clean the needles with bleach.</td>
<td>Las personas que comparten agujas para drogas deberían limpiarlas con lejía.</td>
<td>Pass =4&lt;br&gt;Fail =</td>
<td>Pass =5&lt;br&gt;Fail =</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Semantic</td>
<td>Idiomatic</td>
<td>Conceptual</td>
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<tr>
<td>25</td>
<td>HIV is something that teen-agers should think about when they date.</td>
<td>El VIH es un tema que los adolescentes deben de pensar cuando salen con alguien.</td>
<td>Pass = 4 Fail =</td>
<td>Pass =4 Fail =</td>
</tr>
<tr>
<td>26</td>
<td>I believe it’s OK for people my age to have sex with a steady boyfriend or girlfriend.</td>
<td>Creo que está bien que las personas de mi edad tengan sexo con el novio o novia.</td>
<td>Pass =4 Fail =</td>
<td>Pass =4 Fail =</td>
</tr>
<tr>
<td>27</td>
<td>I believe people my age should wait until they are older before they have sex.</td>
<td>Creo que las personas de mi edad deberán esperar un poco más de tiempo para tener sexo.</td>
<td>Pass =4 Fail =</td>
<td>Pass =4 Fail =</td>
</tr>
<tr>
<td>28</td>
<td>I believe condoms should always be used if a person my age has sex.</td>
<td>Creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo.</td>
<td>Pass =4 Fail =</td>
<td>Pass =4 Fail =</td>
</tr>
<tr>
<td>29</td>
<td>I believe condoms should always be used if a person my age has sex, even if the girl uses birth control pills.</td>
<td>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque la joven use pastillas anticonceptivas.</td>
<td>Pass =4 Fail =</td>
<td>Pass =4 Fail =</td>
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</table>
Appendix Q. Individual Results for Cultural Acceptability and Content Validity of Knowledge and Attitudinal Items.

<table>
<thead>
<tr>
<th>Knowledge Items</th>
<th>Panelist A</th>
<th>Panelist B</th>
<th>Panelist C</th>
<th>Panelist D</th>
<th>Panelist E</th>
<th>Panelist F</th>
<th>Panelist G</th>
<th>Panelist H</th>
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</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td>Tu no puedes contraer el SIDA si tu tienes sexo una o dos veces sin un condón.</td>
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<td>2</td>
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<td></td>
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<tr>
<td>Comments</td>
<td>Con o sin condon siempre hay un riesgo de contratar el VIH</td>
<td>Eliminate double negatives. Add “relaciones sexuales”.</td>
<td>Una persona puede obtener un resultado negativo de la prueba VIH aun estar infectado?</td>
<td>Tu puedes contraer el virus del VIH si tienes sexo una o dos veces sin un condón</td>
<td>Debe escribir como pregunta, es una afirmación.</td>
<td></td>
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<tr>
<td><strong>2</strong></td>
<td>Una persona puede “pasar” una prueba de anticuerpos de VIH (resultados negativos) y aun estar infectado con VIH.</td>
<td></td>
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<tr>
<td>Comments</td>
<td>Se tendría que evaluar el conocimiento de anticuerpos por los adolescentes</td>
<td>Focus on results of the test. Prueba del VIH me resulta negativa</td>
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</table>
Los condones son 100% efectivos en prevenir el VIH.

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<tbody>
<tr>
<td>4</td>
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</tr>
<tr>
<td>Comments</td>
<td>Si se usan correcta y consistentemente</td>
<td>Los condones usados en forma correcta y consistente reducen el riesgo de contraer el VIH</td>
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</table>

Los hombres pueden pasar VIH a través de su semen.

<table>
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<td>4</td>
</tr>
<tr>
<td>Comments</td>
<td>Add “el” in front of VIH</td>
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</tbody>
</table>

Tú puedes adquirir VIH al sentarte en un inodoro que fue usado por una persona con VIH.

<table>
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</thead>
<tbody>
<tr>
<td>5</td>
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| Knowledge Content | 4  | 2  | 4  | 3  | 4  | 4  | 4  |

232
<table>
<thead>
<tr>
<th>Comments</th>
<th>Add “el” in front of VIH.</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>Abstinencia de sexo y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH.</td>
</tr>
<tr>
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<tr>
<td>Knowledge Content</td>
<td>4</td>
</tr>
<tr>
<td>Comments</td>
<td>Add “relaciones sexuales”</td>
</tr>
<tr>
<td>7</td>
<td>Puedes adquirir VIH en el chorro o usando un vaso que ha sido usado por una persona con VIH/SIDA.</td>
</tr>
<tr>
<td>Salvadorian Cultura</td>
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</tr>
<tr>
<td>Knowledge Content</td>
<td>4</td>
</tr>
<tr>
<td>-------------------</td>
<td>---</td>
</tr>
<tr>
<td>Comments</td>
<td>Add “el” VIH</td>
</tr>
<tr>
<td>8 El VIH puede estar presente en el semen, fluidos vaginales, y sangre.</td>
<td></td>
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<tr>
<td>Knowledge Content</td>
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</tr>
<tr>
<td>Comments</td>
<td>Add “en la” sangre.</td>
</tr>
<tr>
<td>9 Una persona puede adquirir VIH al compartir agujas para la droga.</td>
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<tr>
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<tr>
<td>Knowledge Content</td>
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<tr>
<td>Comments</td>
<td>Una persona puede adquirir VIH al compartir agujas en el consumo de diversas drogas Add “el” VIH.</td>
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10 VIH puede estar presente en leche materna.

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<tr>
<td>Comments</td>
<td>Add “el” VIH. Add “en la” sangre.</td>
<td>Add el, and la</td>
<td></td>
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</table>

11 Una vez que tu has sido infectado con VIH, tu estás infectado de por vida.

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<tr>
<td>Comments</td>
<td>Una vez… Tu eres portador del virus toda la vida(x estigma y discriminación)</td>
<td>Add “el” VIH.</td>
<td></td>
<td></td>
<td></td>
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</table>

12 Personas infectadas con VIH usualmente se ven bien delgadas y enfermizas.
<table>
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<tr>
<td></td>
<td>Comments</td>
<td>Las personas</td>
<td>Add “el” VIH</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>13</td>
<td>Algunas personas han contraído el VIH al nadar en la misma piscina donde ha nadado una persona con SIDA.</td>
<td></td>
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<td>4</td>
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<tr>
<td></td>
<td>Comments</td>
<td>En la población Salvadoreña continua siendo un mito sobre VIH/SIDA.</td>
<td>Cambia nadado para evitar monotonia.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>14</td>
<td>Tú puedes adquirir VIH de una picada de zancudo.</td>
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<tr>
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<td>Add “el” VIH</td>
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</tr>
<tr>
<td>15 Si tu quieres protegerte de contraer VIH condones de latex son los mejores.</td>
<td></td>
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<td>4</td>
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<td></td>
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<tr>
<td>Comments</td>
<td>Una forma de prevención es el uso de condones de latex Add “el” VIH. Add “los” condones. Los condones de latex evitan contraer el VIH durante una relación sexual.</td>
<td></td>
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<tr>
<td>16 Una nueva vacuna ha sido desarrollada para tratar el SIDA.</td>
<td></td>
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<td>Comments</td>
<td>Existe una vacuna contra el VIH</td>
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</table>
17 Si una mujer embarazada tiene SIDA, existe la posibilidad que el feto sufra daños.

<table>
<thead>
<tr>
<th></th>
<th>Panelist #1</th>
<th>#2</th>
<th>#3</th>
<th>#4</th>
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<td>4</td>
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<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Si una mujer tiene vih/sida, existe la posibilidad de que su hijo nazca infectada</td>
<td>Que sea transmitido a su hijo.</td>
<td>Incluir no solo SIDA sino así VIH/SIDA.</td>
<td></td>
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*No está apropiado = 1, Poco Apropiado = 2, Moderadamente apropiado = 3, Muy apropiado = 4.*
<table>
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<th>Confusing</th>
<th>Se puede expresar más directamente. More direct.</th>
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<tr>
<td>2</td>
<td>Está bien no tener sexo mientras seas un (a) adolescente.</td>
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<td>4</td>
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<tr>
<td>Comments</td>
<td>Change tener sexo for relaciones sexuales.</td>
<td></td>
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<tr>
<td>3</td>
<td>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque las dos personas se conozcan muy bien.</td>
<td></td>
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<td>---------------------------------------------------------------------------------</td>
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</tr>
<tr>
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<td></td>
<td>Change tener sexo for relaciones sexuales</td>
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<tr>
<td>4 Un adolescente puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH.</td>
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<td>Un adolescente puede usar drogas de vez en cuando sin riesgo de contraer VIH</td>
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<tr>
<td>-------------------</td>
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<tr>
<td>5. Los adolescentes tienen el riesgo de ser infectados con VIH si tienen relaciones sexuales sin usar un condón.</td>
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<tr>
<td>Comments</td>
<td></td>
<td>Hay riesgo con o sin condon</td>
</tr>
<tr>
<td>6. Para mantener tus amistades, tú debes hacer la mayoría de las cosas que tus amigos quieren que tú hagas.</td>
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### Attitudinal Ítems

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<td>Creo que esta preguntase pudiese for mar, porque lo que quermos es que el o la adolescente fortalezcan y puedan decir no, como esta planteada es cierto.</td>
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<td>Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH.</td>
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<td>Cuando tus amigos quieren que tú hagas cosas que tú sienten no deben hacerse, no hay ningún riesgo si tú las haces.</td>
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<td>Si los adolescentes son cuidadosos al escoger su pareja para sexo, ellos no serán infectados con VIH.</td>
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<td>28</td>
<td>Yo creo que siempre se debe de usar condones cuando una persona de mi edad tiene sexo.</td>
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<td>Creo que los condones deberán siempre ser usados si una persona de mi edad tiene sexo, aunque la joven use pastillas anticonceptivas.</td>
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<td>Confunde pregunta que el condón es 100% efectivo.</td>
<td>Relaciones sexuales</td>
<td>Aunque la joven use anticonceptivos.</td>
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Appendix R. Final Spanish Instrument

INSTRUCCIONES: No pongas tu nombre en la encuesta, es anónima y nadie sabrá que respondiste. Lea las afirmaciones y marque la respuesta que le parezca adecuada con una “X”.

2. ¿En qué año de bachillerato estás? a. 1°____ b. 2° ____ c. 3° ___
3. ¿Qué edad tienes? a. 13-14____ b. 15-16____ c. 17-mas____
4. ¿Has recibido educación sobre VIH/SIDA? a. Sí____ b. No ____
5. ¿En qué año recibió esa educación? _______________.
6. ¿En donde has recibido dicha información? Si fue en más de un lugar, indica con varias “X’ s”.
   a. Escuela____ b. Charlas____ c. FUNDASIDA____ d. Otras____

<table>
<thead>
<tr>
<th>Marque la respuesta que le parezca adecuada (x):</th>
<th>Estoy seguro que es verdad</th>
<th>Creo que es verdad</th>
<th>No se</th>
<th>Creo que es falso</th>
<th>Estoy seguro que es falso</th>
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<tbody>
<tr>
<td>1. Tu puedes contraer el VIH/SIDA si tu tienes relaciones sexuales una o dos veces sin un condón.</td>
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<td>2. Una persona puede “pasar” una prueba de sangre para el VIH/SIDA (resultados negativos) y aun estar infectado con VIH.</td>
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<td>3. Los condones son 100% efectivos en prevenir el VIH/SIDA.</td>
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<td>4. Los hombres pueden pasar el VIH/SIDA a través de su semen.</td>
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<td>5. Tú puedes adquirir VIH/SIDA al sentarte en un inodoro que fue usado por una persona con VIH/SIDA.</td>
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<td>6. Abstinencia de relaciones sexuales y de las drogas es la mejor forma para que los adolescentes eviten contraer el VIH/SIDA.</td>
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<td>7. Puedes adquirir VIH/SIDA en el chorro o usando un vaso que ha sido usado por una persona con VIH/SIDA.</td>
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<td>8. El VIH/SIDA puede estar presente en el semen, fluidos vaginales y sangre.</td>
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<tr>
<td>9. Una persona puede adquirir VIH/SIDA al compartir agujas en el consumo de diversas drogas.</td>
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<tr>
<td>10. El VIH/SIDA puede estar presente en la leche materna.</td>
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### Marque la respuesta que le parezca adecuada (x):

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<th>Creo que es verdad</th>
<th>No se</th>
<th>Creo que es falso</th>
<th>Estoy seguro que es falso</th>
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<tbody>
<tr>
<td>11.</td>
<td>Una vez que has sido infectado con VIH/SIDA, tu eres portador del virus toda tu vida.</td>
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<td>12.</td>
<td>Personas infectadas con el VIH/SIDA usualmente se ven bien delgadas y enfermizas.</td>
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<td>13.</td>
<td>Algunas personas han contraído el VIH/SIDA al nadar en la misma piscina donde han permanecido personas con SIDA.</td>
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<td>14.</td>
<td>Tú puedes adquirir VIH/SIDA de una picada de zancudo.</td>
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<td>15.</td>
<td>Una forma de prevención del VIH/SIDA es el uso de condones de latex.</td>
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**INSTRUCCIONES:** En esta encuesta se te pide que digas cuando estas de acuerdo y cuando no estas de acuerdo con lo que se dice aquí. Por favor lee cada pregunta, entonces indica con un “X” si tú estás:

Complete de Acuerdo, De Acuerdo, No Estoy Seguro, No Estoy de Acuerdo, Completamente en Desacuerdo.

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<th>No Estoy Seguro</th>
<th>No Estoy de Acuerdo</th>
<th>Completamente en Desacuerdo</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Si tus amigos quieren que hagas algo incorrecto y tú crees que no es seguro, para complacerlos, deberías por lo menos tratar de hacerlo.</td>
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<td>2.</td>
<td>Está bien no tener relaciones sexuales mientras seas un(a) adolescente.</td>
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<td>3.</td>
<td>Yo creo que los condones deberán siempre ser usados si una persona de mi edad tiene relaciones sexuales, aunque las dos personas se conozcan muy bien.</td>
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<td>4.</td>
<td>Un adolescente puede inyectarse drogas de vez en cuando sin riesgo de contraer VIH/SIDA.</td>
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<td>5.</td>
<td>Los adolescentes corren el riesgo de ser infectados con VIH/SIDA si tienen relaciones sexuales sin usar un condón.</td>
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<tr>
<td>Marque la respuesta que le parezca adecuada con una “x”.</td>
<td>Completamente de Acuerdo</td>
<td>De Acuerdo</td>
<td>No Estoy Seguro</td>
<td>No Estoy de Acuerdo</td>
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<td>6. Para mantener tus amistades, debes hacer la mayoría de las cosas que tus amigos quieren que hagas.</td>
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<td>7. Las personas que no tienen relaciones sexuales antes de casarse son extraños.</td>
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<td>8. No es muy inteligente tener relaciones sexuales sin usar un condón.</td>
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<td>9. Usar agujas para inyectarse drogas o hacerse tatuajes es una mala idea.</td>
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<td>10. Esta bien tener relaciones sexuales sin usar un condón porque el riesgo de ser infectado con VIH/SIDA es muy bajo.</td>
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<td>11. Los adolescentes tienen que aprender a resistir las presiones de sus amigos.</td>
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<td>12. Es una buena idea para los adolescentes no tener relaciones sexuales.</td>
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<td>13. Las personas que comparten agujas para drogas no deben preocuparse porque ellos probablemente no se infectaran con el VIH/SIDA.</td>
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<td>14. Los adolescentes tienen que saber que si no son cuidadosos, ellos pueden ser infectados con VIH/SIDA.</td>
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<td>15. Cuando tus amigos quieren que hagas cosas que sientes que no deben hacerse, no hay ningún riesgo si las haces.</td>
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<td>16. Usar condones no hace la relación sexual menos placentera.</td>
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<td>17. Cualquiera que comparte agujas se está tomando el riesgo de ser infectado con el VIH/SIDA.</td>
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<td>18. Si los adolescentes son cuidadosos al escoger su pareja para relaciones sexuales, ellos no serán infectados con el VIH/SIDA.</td>
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<td>19. Los adolescentes deben tener más fuerza de voluntad para resistir las presiones de sus amigos.</td>
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<td>20. En estos tiempos es mas sensato esperarse a tener relaciones sexuales hasta que uno se case.</td>
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Appendix R. (continued)

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<tr>
<td>21. Si las personas piensan que podrían tener relaciones sexuales al salir con su pareja, ellos deberán llevar un condón.</td>
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<tr>
<td><strong>Marque la respuesta que le parezca adecuada con una “x”</strong>.</td>
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<td><strong>De Acuerdo</strong></td>
<td><strong>No Estoy Seguro</strong></td>
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<td>22. Yo creo que está bien que las personas de mi edad tengan relaciones sexuales con diferentes personas en el mismo mes.</td>
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<td>23. Las personas que usan condones durante las relaciones sexuales, no confían en la persona con quien están.</td>
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<td>24. Las personas que comparten agujas para drogas deberán limpiarlas con lejía.</td>
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<tr>
<td>25. El VIH/SIDA es un tema que los adolescentes deben de pensar cuando salen con alguien.</td>
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**Muchas gracias por tu tiempo.**
About the Author

Carlos S Zometa attended Santa Fe Community College, received a Bachelor’s in Science in microbiology from the University of Florida and then obtained a Master’s of Science in tropical public health and infectious diseases from the College of Public Health at the University of South Florida. His professional experience includes two years of laboratory based research in immunology/parasitology, six years as a science teacher at an inner city middle school in Tampa, and one year at a high school in Tampa, Florida.