Published in final edited form as:

AIDS Care. 2012 January ; 24(1): 39–45. doi:10.1080/09540121.2011.592820.

Psychometric assessment of scales measuring HIV public stigma, drug-use public stigma and fear of HIV infection among young adolescents and their parents

Toan Ha^a, Hongjie Liu^{a,*}, Jian Li^a, Jennifer Nield^a, and Zhouping Lu^b

^aDepartment of Epidemiology and Community Health, Virginia Commonwealth University, Richmond, Virginia, USA

^bSchool of Public Health, Guangxi Medical University, Nanning, Guangxi, China

Abstract

The objective of this study was to design and assess measurement instruments that accurately measure the levels of stigma among individuals with a primarily collectivist culture. A cross-sectional study was conducted among middle school students and their parents or guardians in a rural area of China. Exploratory and confirmatory factor analyses were used to examine and determine the latent factors of the sub-scales of stigma respectively among students and their parents. Factor analyses identified three sub-scales: HIV public stigma (7 items), drug-use public stigma (9 items), and fear of HIV infection (7 items). There were no items with cross-loading onto multiple factors, supporting the distinctness of the constructs that these scales were meant to measure. Goodness of fit indices indicated that a three-factor solution fit the data at an acceptable level in the student sample ($\chi^2/\text{degree ratio} = 1.98$, CFI = 0.92, RMSEA = 0.055, SRMR = 0.057) and in the parent sample ($\chi^2/\text{degree ratio} = 1.95$, CFI = 0.91, RMSEA = 0.06, SRMR = 0.059). Reliability of the three scales was excellent (Cronbach's alpha: 0.78–0.92 for students; 0.80–0.94 for parents or guardians) and stable across split samples and for the data as a whole. The scales are brief and suitable for use in developing countries where the collectivist culture prevails.

Keywords

HIV public stigma; drug-use public stigma; measurement scale; psychometric assessment; Chinese

Introduction

In spite of more than a decade of efforts to understand the nature of HIV stigma, raise awareness about its harmful consequences, and implement programs to reduce it, stigma remains a salient issue in the global response to the HIV epidemic. Stigma has been, based on the work of Goffman, described as a quality that 'significantly discredits' an individual in the eyes of others (Goffman, 1963). Although there is great variation in defining or conceptualizing stigma, it is generally considered to be 'an attribute used to separate affected individuals from the normalized social order' (Gilmore & Somerville, 1994). With regard to the HIV epidemic, HIV-related stigma refers to 'prejudice, discounting, discrediting, and discrimination directed at people perceived to have HIV/AIDS, as well as

*Corresponding author: Hongjie Liu Ph.D., M.S., 830 E. Main Street, Suite 5034, Box 980212, Richmond, VA 23298, USA, Phone: 804-628-2517, Fax: 804-828-9773, hliu@vcu.edu.

the individuals, groups, and communities with which they are associated' (Gregory M. Herek & Capitanio, 1997).

Stigma may be conceptualized as both external (public stigma) and personal (felt stigma). Public stigma, as described by Corrigan and Watson (Corrigan & Watson, 2002), encompasses the stigmatizing attitudes or reaction that the general population holds towards persons with stigmatizing attributes, e.g., HIV infection or drug use. Felt stigma, on the other hand, refers to the fear of societal attitudes and potential discrimination perceived by individuals with stigmatizing attributes, e.g., people living with HIV/AIDS or illicit drug users (Brown, Macintyre, & Trujillo, 2003; Scambler, 1998). Although public stigma is distinguished from felt stigma as the reaction that the general population has to people with stigmatizing attributes, research has documented that public stigma leads to felt stigma (Liu et al., 2006). However, some research has indicated that public stigma does not always lead to felt stigma that people living with HIV/AIDS perceive (Jacoby, 1994; VanLandingham, Im-Em, & Saengtienchai, 2005).

Fear of causal contagion of HIV as a result of misconceptions about acquiring HIV infection may lead to public stigma or avoidance of HIV infected individuals (Herek, Capitanio, & Widaman, 2002). Concerns about casual transmission may result in immediate public stigma as people fear physical contact not only with the HIV-infected person themselves, but with anything connected to HIV infected persons. As reported by Liu and colleagues (Liu et al., 2006), perceived fear of or worry about HIV infection was associated with HIV public stigma among rural residents in China.

The major reason that the general population possesses stigmatizing attitudes towards people living with HIV/AIDS is the sexual behavior or drug-use practices through which they were infected. Globally, illicit drug use is socially unacceptable and thus highly stigmatized. Drug-use stigma has been found to be positively associated with HIV injection drug use risk behavior (Latkin et al., 2010) and to negatively affect drug users' mental and physical health (Ahern, Stuber, & Galea, 2007; Fulton, 1999). Because of drug-use public stigma, drug users tend to internalize stigma and hide their status of drug use, which may worsen their health problems and result in low self-esteem (Albrecht & Levy, 1982; Luoma et al., 2007). Although injection drug use is one of the major HIV transmission routes in China (Wang et al., 2009), there is a dearth of empirical research of the assessment of the negative impact of drug-use stigma in China. This lack of information is likely due to the lack of an instrument to measure the general public's stigmatizing attitudes toward drug use.

A variety of scales have been developed to measure HIV-related stigma in the US and African countries (Berger, Ferrans, & Lashley, 2001; File & Wright, 2000; Kalichman et al., 2005; Zelaya et al., 2008). These measurements include the stigma perceived and experienced by people living with HIV/AIDS as well as the general public's stigmatizing attitudes toward PLWHA. However, there are few validated instruments that measure stigmatizing attitudes towards HIV infection and drug use among young adolescents and their parents in China, where the HIV epidemic has expanded to the youth and elders (China CDC & WHO, 2010).

Stigma is a complicated issue which is believed to be deeply rooted in culture (Valdiserri, 2002). Different forms of stigma have been identified in countries with different cultures (Murthy, 2002). Stigma manifestation in countries with collectivist culture (e.g. China) may differ from those with individualist culture (e.g. US) (Liu et al., 2011; Liu et al., 2006). Chinese collectivist culture may nourish stigma (Lin & Lin, 1981), as it focuses on a social pattern that is tightly woven between people who consider themselves to be closely linked with one another (Triandis, 1995). Members of collectivist cultures subordinate individual

interests to that of the group or collective (Hui & Triandis, 1986). As a result, Chinese pay more attention than other cultures to how they feel they would be evaluated or viewed by others. It has been reported that Chinese societies display an unusually high degree of stigma and that stigma associated with mental illness was more severe than in the West (Lin & Lin, 1981).

It is thus necessary to design specific measurement instruments that can be used to accurately measure the levels of stigma in a population with a primarily collectivist culture (Visser, Kershaw, Makin, & Forsyth, 2008). Accordingly, we designed and assessed psychometric scales which measure HIV public stigma, drug-use public stigma, and fear of HIV infection and we implemented them in a study among middle school students and their parents in a rural area of China.

Methods

Study site

We selected “H County” in Guangxi province as the study site. Guangxi is along a drug trafficking route, which originates from the “Golden Triangle”, passes through northern provinces of Vietnam and Guangxi and finally into Hong Kong and the rest of the world (Beyrer et al., 2000). Guangxi ranked second among China’s 31 provinces in terms of the estimated number of people living with HIV/AIDS in 2007 (Wang et al., 2009). Similar to the national epidemic of HIV, the majority of infected cases are from rural areas. H County is one of the most HIV and heroin-stricken rural areas in Guangxi.

School selection and participant eligibility

The procedures of school selection and interviews have been described (Liu, Li, Lu, Liu, & Zhang, 2010). Briefly, we randomly selected middle schools located in the areas where prevalence of heroin injection use was high. The following steps were taken to select schools: (1) ranked all rural towns based on the levels of heroin injection prevalence, using local surveillance data; (2) selected the top five towns in the ranking; (3) randomly selected one school from each town if there was more than one school; (4) randomly selected 2 schools out of 5 schools for qualitative studies and the remaining 3 schools for a cross-sectional study. Participants were eligible if: (1) they were enrolled in second or third grade (equivalent to the 7th and 8th grade in the US) in one of the three selected middle schools, and (2) they were able to obtain parental permission and to invite one of their parents or guardians to participate in the study.

All students who obtained parental permission and invited one of their parents or guardians participated in the study. The study protocol was approved by the Institutional Review Boards of Virginia Commonwealth University and Guangxi Medical University.

Interview

Students in the cross-sectional study used a self-administered questionnaire to answer questions in classrooms in each selected middle school. Only one student was permitted to sit at a desk to answer questions on the anonymous questionnaire (two students share one desk in Chinese schools in rural areas). One or two trained interviewers presented the questionnaire in the classrooms and answered questions raised by students. These interviewers were either junior faculty or graduate students from Guangxi Medical University, whose home towns were not in the areas being studied. School principals and teachers at the middle schools assisted in organizing the interviews, but were not allowed to be present at the interview sessions. Parents or guardians were invited to participate in the interviews and filled out a similar anonymous, self-administered questionnaire in class

rooms (only one parent was permitted to sit at a desk to answer questions, and their child was not permitted to be present). For those who could not read, trained interviewers conducted face-to-face interviews in private rooms. All interviewers received training in interviewing techniques, developing rapport, ensuring confidentiality, and answering questions raised by subjects.

Measures

Items measuring HIV public stigma and fear of HIV infection were adapted from a set of scales designed for our previous studies (Liu, Detels, Li, Ma, & Yin, 2002; Liu et al., 2006). The selection of items that measured drug-use public stigma was adapted from Ahern and colleagues' measurement scales (Ahern et al., 2007), and based on the findings from 16 in-depth interviews among students in the two selected middle schools and another 16 in-depth interviews among their parents.

Measurement items were initially drafted in English and then translated into Chinese by three research members who were fluent in both languages. The Chinese version of these items was distributed to research team members who reviewed and modified wording to make it appropriate for the Chinese context. Next, the self-administered questionnaire was piloted among 56 students in a second-grade classroom in a middle school. After completion of the questionnaire, researcher members asked students to make comments or suggestions, focusing on the understanding and wording of each item listed in the measurement scales and whether the students could easily understand the questions and possible answers. Some modifications of the questionnaire were made based on the results of the pilot survey.

Analysis

Analyses were performed separately for students and parents. Exploratory factor analysis (EFA), using principle component analysis, was first performed to identify the latent factor structure underlying the data (Nunnally & Bernstein, 1994; Pett & Sullivan, 2003; Tabachnick & Fidell, 2001). The number of retained meaningful factors was determined by eigenvalue > 1 criterion (interpreted as the total amount of variance explained by each factor) (Kleinbaum, Kupper, Muller, & Nizam, 1998), the scree test (Nunnally & Bernstein, 1994) and the proportion of variance extracted (Pett & Sullivan, 2003). Then, a Varimax rotation was conducted to determine the factor loading on each item (Kaiser, 1958). In this study, loading values greater than 0.35 were considered "meaningful loadings". That is, an item was said to load on a given factor if the factor loading was 0.35 or greater for that factor, and was less than 0.35 for all others. SAS (version 9.1) was used to perform EFA.

Based on the suggested structures from the exploratory factor analysis, confirmatory factor analysis (CFA) was performed to confirm the latent structure (Pett & Sullivan, 2003). CFA is used to validate the relationship among factors and between each item and its factor (Di Lorio, 2005). Goodness of fit was assessed with $\chi^2/\text{degree ratio}$ (<2), the comparative fit index (CFI ≥ 0.90), root mean square error of approximation (RMSEA ≤ 0.06) and the standardized root mean square residual (SRMR ≤ 0.06). CFA was performed using *Mplus 4* (Muthen & Muthen, Los Angeles, CA).

The internal consistency of the scales was examined using Cronbach's alpha coefficient. The stability of the scale reliability was assessed through a random split-half of the total sample. Cronbach's alpha coefficient of each scale was estimated for the first half sample, the second half sample and for the sample as a whole.

Results

A total of 461 students completed questionnaires. The mean age of student participants was 14.9 years (SD = 0.78, range: 13–18 years old). Over one third of the students (36%) were in the second grade and 64% were in grade three. Of 512 parents or guardians interviewed, 199 were males (39%). The mean age of the parents and guardians was 40.9 years (SD = 10.06, range: 15–77 years old), and 80% reported a middle-school education or above.

The findings of exploratory factor analysis suggested a three-factor solution. Using eigenvalue > 1 criterion, three factors which had eigenvalues > 1 were retained in each of the two samples (Table 1). The remaining factors had an eigenvalue ≤ 1. This pattern was consistent with the results of a scree test. The scree test of eigenvalues plotted against the first ten factors (of 24) for both samples displays a break point between factor 3 and factor 4, and the curve flattens out from factor 4 (Figure 1), suggesting that factors 1, 2 and 3 be retained. The eigenvalues of the three factors in the student sample that accounted for 99.4% of the total variance are 62.2% (factor 1- HIV public stigma), 22.7% (factor 2- fear of HIV infection), and 14.4% (factor 3- drug-use public stigma). The eigenvalues of the three factors in the parent sample that accounted for 98.8% of the total variance were 61.3% (factor 1- HIV public stigma), 19.7% (factor 2- fear of HIV infection), and 17.8% (factor 3- drug-use public stigma).

Table 2 presents the number of items and their loadings for three factors in both samples. An item was considered to load on a targeted factor if the item had a loading factor that was ≥ 0.35 for that factor and was < 0.35 on any other factor. A total of seven items loaded on the first factor, which measures HIV public stigma. Seven items loaded on factor 2, which assesses fear of HIV infection. The remaining nine items loaded on the third factor, which is drug-use public stigma.

CFA was performed to confirm the factor structure suggested by EFA. Goodness of fit indices indicated that a three-factor solution fit the data at an acceptable level in the student sample ($X^2/\text{degree ratio} = 1.98$, CFI=0.92, RMSEA = 0.055, SRMR = 0.057) and in the parent sample ($X^2/\text{degree ratio} = 1.95$, CFI=0.91, RMSEA = 0.06, SRMR = 0.059).

Scale reliability was assessed using the Cronbach coefficient alpha. There were no substantial differences on alpha estimated from the first half of the sample, the second half of the sample and the whole sample, indicating good stability. In the total sample of students, Cronbach's alpha was 0.80 for HIV public stigma, 0.92 for fear of HIV infection, and 0.78 for drug-use public stigma. In the total sample of parents or guardians, it was 0.85, 0.94 and 0.80 for HIV public stigma, fear of HIV infection and drug-use public stigma, respectively. Three scales were statistically correlated in both samples (Table 3).

In addition, we conducted separate analyses of exploratory factor analysis (EFA) for four sub-samples: male students, female students, mothers (or female guardians), and fathers (or male guardians). Findings documented a three-factor solution for the four sub-samples. Cronbach's alphas estimated from the four sub-samples revealed acceptable reliability (the range of the four alphas was between 0.77 – 0.94).

Discussion

This study demonstrated that the scales were reliable and a three-factor solution was acceptable. The items selected for inclusion into these scales covered several important aspects of students' and parents' HIV public stigma, fear of HIV infection and drug-use public stigma toward those who are living with HIV/AIDS and drug users. The EFA suggested that items strongly and cleanly loaded on to the three respective recommended

factors and no cross-loading items were detected. These scales were found to be reliable for different populations (students and parents). The Cronbach's alpha for each of the three factors was quite high (0.78–0.92 for the whole student sample and 0.80–0.94 for the whole parent sample). The alpha estimates revealed minor differences in both samples. These scales are easy to administer and can be easily integrated into HIV- and drug-related risk assessments and intervention programs in developing countries where the collectivist culture prevails. These scales are also not time-consuming as they include only 7–9 items.

The result from CFA documented these scales shared the same factor structure in student and parent samples, indicating their consistence across different populations. Each item demonstrated the evidence of belonging to its targeted scale. The goodness of fit indices in CFA indicated that a three-factor solution fit the data quite well. The CFA also demonstrated that these scales have good psychometric properties. Taken together, these scales demonstrated their usefulness in assessing the levels of HIV public and drug-use public stigma in prevention programs targeting stigma reduction.

This study had several limitations. The study subjects were recruited from a rural county in Guangxi which may not be generalizable to all areas in China. Evaluation and refinement of the scales may be needed via a large scale study that would provide further evidence on their utility. It was a challenge to invite students' parent to participate in the study. Consequently, the average response rate was approximately 70% at the selected schools. The low response rate may cause bias. While the scale reliability is robust, the scale validity could not be directly examined. Further research is needed to evaluate their validity.

In conclusion, in spite of the limitations, the measurement scales developed in this study could serve as a useful resource for programmers to assess and reduce the negative effects of HIV-related stigma, worry about HIV infection and drug-related stigma in the general public in China and other countries with a similar cultural background.

Acknowledgments

We are grateful to the staff from Guangxi Medical University for participation in the study and to all the participants who gave so willingly of their time to provide the study data.

References

- Ahern J, Stuber J, Galea S. Stigma, discrimination and the health of illicit drug users. *Drug and alcohol dependence*. 2007; 88(2–3):188–196. [PubMed: 17118578]
- Albrecht VW, Levy J. Social distance from the stigmatized: A test of two theories. *Social Science & Medicine*. 1982; 16(14):1319–1327. [PubMed: 6214849]
- Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: psychometric assessment of the HIV stigma scale. *Research in nursing & health*. 2001; 24(6):518–529. [PubMed: 11746080]
- Beyrer C, Razak MH, Lisam K, Chen J, Lui W, Yu XF. Overland heroin trafficking routes and HIV-1 spread in south and south-east Asia. *AIDS*. 2000; 14(1):75–83. [PubMed: 10714570]
- Brown L, Macintyre K, Trujillo L. Interventions to reduce HIV/AIDS stigma: what have we learned? *AIDS Education & Prevention*. 2003; 15(1):49–69. [PubMed: 12627743]
- Corrigan PW, Watson AC. Understanding the impact of stigma on people with mental illness. *World psychiatry: official journal of the World Psychiatric Association (WPA)*. 2002; 1(1):16–20. [PubMed: 16946807]
- Di Lorio, KC. *Measurement in Health Behavior*. San Francisco- CA: Jossey-Bass; 2005.
- File BL, Wright ER. The dimensionality of stigma: A comparison of its impact on the self of person with HIV/AIDS and Cancer. *Journal of Health and Social Behavior*. 2000; 41(1):50–67. [PubMed: 10750322]

- Fulton, R. A report submitted to the committee on stigma and addiction at the Centre for Addiction and Mental Health. Toronto: Centre for Addiction and Mental Health; 1999. The stigma of substance use and attitudes of professionals: A review of the literature.
- Gilmore N, Somerville MA. Stigmatization, scapegoating and discrimination in sexually transmitted diseases: overcoming 'them' and 'us'. *Social Science & Medicine*. 1994; 39(9):1339–1358. [PubMed: 7801170]
- Goffman, E. *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice Hall; 1963.
- Herek GM, Capitanio JP. AIDS stigma and contact with persons with AIDS: Effects of direct and vicarious contact. *Journal of Applied Social Psychology*. 1997; 27(1):1–36.
- Herek GM, Capitanio JP, Widaman KF. HIV-related stigma and knowledge in the United States: prevalence and trends, 1991–1999. *American Journal of Public Health*. 2002; 92(3):371–377. [PubMed: 11867313]
- Hui CH, Triandis HC. Individualism-collectivism: A study of cross-cultural researchers. *Journal of Cross-Cultural Psychology*. 1986; 17(2):225–248.
- Jacoby A. Felt versus enacted stigma: a concept revisited. Evidence from a study of people with epilepsy in remission. *Social Science & Medicine*. 1994; 38(2):269–274. [PubMed: 8140453]
- Kaiser HF. The varimax criterion for analytic rotation in factor analysis. *Psychometrika*. 1958; 23(3):187–200.
- Kalichman SC, Simbayi LC, Jooste S, Toefy Y, Cain D, Cherry C, Kagee A. Development of a brief scale to measure AIDS-related stigma in South Africa. *AIDS*. 2005; 9(2):135–143.
- Kleinbaum, DG.; Kupper, LL.; Muller, KE.; Nizam, A. *Applied Regression Analysis and Other Multivariate Methods*. Pacific Grove, CA: Duxbury Press; 1998.
- Latkin C, Srikrishnan AK, Yang C, Johnson S, Solomon SS, Kumar S, Solomon S. The relationship between drug use stigma and HIV injection risk behaviors among injection drug users in Chennai, India. *Drug and alcohol dependence*. 2010; 110(3):221–227. [PubMed: 20462707]
- Lin, TY.; Lin, MC. Love, denial and rejection: Responses of Chinese families to mental illness. In: Kleinman, A.; Lin, TY., editors. *Normal and abnormal behavior in Chinese culture*. Dordrecht, Holland: D. Reidel Publishing Company; 1981. p. 387–401.
- Liu H, Detels R, Li X, Ma E, Yin Y. Stigma, delayed treatment, and spousal notification among male patients with sexually transmitted disease in China. *Sexually transmitted diseases*. 2002; 29(6):335–343. [PubMed: 12035023]
- Liu H, Feng T, Ha T, Liu H, Cai Y, Liu X, Jian L. Chinese culture, homosexuality stigma, social support, and condom use: A path analytic model. *Stigma Research and Action*. 2011; 1(1):27–35. [PubMed: 21731850]
- Liu H, Hu Z, Li X, Stanton B, Naar-King S, Yang H. Understanding interrelationships among HIV-related stigma, concern about HIV infection, and intent to disclose HIV serostatus: a pretest-posttest study in a rural area of eastern China. *AIDS patient care and STDs*. 2006; 20(2):133–142. [PubMed: 16475894]
- Liu H, Li J, Lu Z, Liu W, Zhang Z. Does Chinese culture influence psychosocial factors for heroin use among young adolescents in China? A cross-sectional study. *BMC Public Health*. 10:563. [PubMed: 20858259]
- Luoma JB, Twohig MF, Waltz T, Hayes SC, Roget N, Padilla M, Fisher G. An investigation of stigma in individuals receiving treatment for substance abuse. *Addictive behaviors*. 2007; 32(7):1331–1346. [PubMed: 17092656]
- Murthy RS. Stigma is universal but experiences are local. *World psychiatry: official journal of the World Psychiatric Association (WPA)*. 2002; 1(1):28. [PubMed: 16946816]
- Nunnally, J.; Bernstein, I. *Psychometric theory*. New York: McGraw-Hill; 1994.
- Pett, MALRN.; Sullivan, JJ. *Making sense of factor analysis: the use of factor analysis for instrument development in health care research*. Thousand Oaks: Sage publication; 2003.
- Scambler G. Stigma and disease: changing paradigms. *Lancet*. 1998; 352(9133):1054–1055. [PubMed: 9759769]
- Tabachnick, BG.; Fidell, LS. *Using Multivariate Statistics*. Needham Heights, MA: Allyn & Bacon; 2001.

- Triandis, HC. Individualism & collectivism. Boulder, CO: Westview Press; 1995.
- Valdiserri RO. HIV/AIDS stigma: an impediment to public health. American journal of public health. 2002; 92(3):341–342. [PubMed: 11867303]
- VanLandingham MJ, Im-Em W, Saengtienchai C. Community reaction to persons with HIV/AIDS and their parents: an analysis of recent evidence from Thailand. Journal of health and social behavior. 2005; 46(4):392–410. [PubMed: 16433283]
- Visser JM, Kershaw T, Makin DJ, Forsyth WB. Development of Parallel Scales to Measure HIV-Related Stigma. AIDS and Behavior. 2008; 12(5):759–771. [PubMed: 18266101]
- Wang L, Wang N, Wang L, Li D, Jia M, Gao X, Smith K. The 2007 Estimates for People at Risk for and Living With HIV in China: Progress and Challenges. Journal of acquired immune deficiency syndromes. 2009; 50(4):414–418. [PubMed: 19214116]
- China CDC & WHO. Report of the HIV Epidemic in 2009. Beijing: China CDC; 2010.
- Zelaya EC, Sivaram S, Johnson CS, Srikrishnan KA, Solomon S, Celentano DD. HIV/AIDS Stigma: Reliability and Validity of a New Measurement Instrument in Chennai, India. AIDS and Behavior. 2008; 12(5):781–788. [PubMed: 18030613]

Figure 1.
The screening test: the first 10 factors among students and parents

Table 1

Eigenvalues and variance explained by factors

Factor	Students			Parents		
	Eigenvalue	% Variance	% Cumulative	Eigenvalue	% Variance	% Cumulative
I	6.05	62.3	62.2	6.95	61.3	61.3
II	2.21	22.7	85.0	2.23	19.7	81.0
III	1.40	14.4	99.4	2.02	17.8	98.8

Table 2

Items and corresponding factor loadings from the rotated factor structure matrix: principal axis factoring with a Varimax rotation

	Students			Parents		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
HIV Public stigma						
1. HIV infected people should be ostracized by their spouse or family members	0.56*	0.02	0.12	0.59*	0.10	-0.13
2. HIV infected people would lose their friends if they knew their HIV status	0.56*	0.19	0.29	0.63*	0.26	-0.14
3. HIV infected people should be forced to leave their villages	0.58*	0.09	0.23	0.68*	0.22	-0.15
4. HIV infected people's family would not care for them	0.47*	0.10	0.10	0.57*	0.19	0.00
5. No one would be willing to take care of their children when HIV infected people die from AIDS	0.55*	0.05	0.11	0.67*	0.08	-0.10
6. Children should not go to school because their parents are infected with HIV	0.62*	0.06	0.19	0.73*	0.09	-0.03
7. HIV infected people should not have the same rights to education and employment as others	0.60*	0.10	0.19	0.71*	0.12	-0.05
Fear about HIV infection						
How worried about HIV infection would you be if you were:						
1. to have meals with an HIV infected person	0.10	0.67*	0.23	0.24	0.73*	-0.16
2. to have hair cut by an HIV infected person	0.11	0.67*	0.11	0.14	0.70*	-0.18
3. to allow your child play with an HIV infected child	0.13	0.79*	0.30	0.13	0.82*	-0.11
4. to work together with an HIV infected person	0.08	0.84*	0.23	0.22	0.82*	-0.17
5. to play a game with HIV infected persons (play poker, chess and so on)	0.10	0.79*	0.21	0.24	0.83*	-0.16
6. to let your child study or share the same desk with an HIV infected child.	0.04	0.77*	0.25	0.13	0.85*	-0.17
7. to visit an HIV infected family	0.16	0.72*	0.15	0.16	0.82*	-0.14
Drug-use Public stigma						
1. Drug users are abnormal.	0.00	0.06	0.39*	0.03	0.06	0.41*
2. Drug users are dangerous people and should be isolated.	0.03	0.11	0.62*	-0.08	0.00	0.63*
3. Drug users should not be accepted by society.	0.10	0.10	0.61*	-0.13	-0.03	0.62*
4. Drug users should be treated differently from others.	0.08	-0.08	0.45*	-0.10	0.05	0.58*
5. Drug users would lose their friends if they knew they were drug users.	0.03	0.04	0.63*	-0.14	-0.03	0.60*
6. Drug users' family would not care for them.	0.07	0.00	0.54*	-0.11	-0.21	0.51*
7. Children should not play with drug users' children.	0.10	0.19	0.45*	-0.23	-0.19	0.42*
8. Drug users should not have the same rights to education and employment as others.	0.05	0.16	0.53*	-0.18	-0.26	0.55*
9. Drug users are not welcome in public gatherings, e.g., party, night club, or meeting.	0.20	0.11	0.53*	-0.17	-0.24	0.54*

Table 3

Cronbach's coefficient alpha and correlation of three scales in student and parent samples

Factors	Cronbach's coefficient alpha					Correlation	
	Means ^a	SD ^b	1st half ^c	2nd half ^d	Whole sample	1 ^e	2 ^f
Among students							
HIV public stigma (7 items)	1.76	0.48	0.80	0.80	0.80	1	
Worry about HIV infection (7 items)	2.63	0.60	0.91	0.92	0.92	0.48 (p<0.01)	1
Drug-use public stigma (9 items)	1.41	0.48	0.79	0.78	0.78	0.23 (p<0.01)	0.25 (p<0.01)
Among parents							
HIV public stigma (7 items)	2.03	0.49	0.84	0.86	0.85	1	
Worry about HIV infection (7 items)	2.69	0.58	0.93	0.93	0.94	0.39 (p<0.01)	1
Drug-use public stigma (9 items)	2.51	0.44	0.79	0.81	0.80	0.23 (p<0.01)	0.35 (p<0.01)

^a Range: 1–4;

^b standard deviation;

^c 1st half sample;

^d 2nd half sample

^e HIV public stigma

^f Worry about HIV infection