Development of Sexual Abstinence Self-efficacy Scale for Thai Female High School Students

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Abstract

**Background.** Although a number of studies have investigated perceived self-efficacy and their relationship to sexual abstinence among female adolescents, the validity and reliability of the instrument used have not been consistently examined. The purpose of the present study was to develop culturally sensitive, reliable, and valid instrument to measure perception of the ability to having sexual abstinence among Thai female adolescents. **Methods.** The items generated for instrument were drawn from a comprehensive literature review and was guided by Social Cognitive Theory. The instrument was confirmed content validity by using two rounds of expert panels and face validity with 6 female students. A pretest study refined using recognized item-analysis methods with convenience samples 300 female students and other 339 female students for psychometric testing. **Results.** Psychometric testing demonstrated satisfactory internal consistency and validity of the instrument for female adolescents, Chronbach’s alpha = 0.95. Construct validity was supported by exploring the factor structure of the instrument using confirmatory factor analysis. **Conclusions.** The study identified culturally sensitive items to measure cognition of ability to having sexual abstinence among Thai female students in their middle adolescence. Health professionals administered the instrument to assist students in determining levels of self efficacy for engaging in sexually abstinent behavior.
Background and significance of the study:

An increasing number of Thai female adolescents are likely to engage in sexual activity during the school year which may result in an increase of social problems. Unplanned pregnancy and spread of sexually transmitted diseases (STDs), including the human immunodeficiency virus (HIV), are significant health concerns for female adolescents. In the long term there are additional economic and educational corollaries of early child bearing. Girls could not continue to study because they became pregnant. They lost the chance of success for an education and career (Supametaporn, 2007). Most unplanned teen pregnancies end up in criminal abortions which can have adverse psychological effects as well as physical morbidity and mortality (Kulczycki, Potts, & Rosenfield, 1996, Warakamin & Boonthai, 2000). These negative consequences of early sexual activity trouble their health, and affect their life. The consequences are one of the country’s major public health problems and also social problems (Thongpat, 2006; Nitirat, 2007).

There are several methods for preventing negative outcome of sexual activity during the school year. However, sexual abstinence is the most suitable method for combating such problems because Thai traditional value does not accept sexual relation without marriage (Pinyapong, 2001; Thianthai, 2004). Although, the spread of western culture has influenced to sexual behavior of new generation, people do not still accept sexual activity during the school year. Thus, promoting sexual abstinence particularly for female student has become a major issue on the health policy of Thailand. Sexual abstinence is the practice of refraining from all aspects of sexual activity (oral, vaginal, and anal sex).

Past research and theoretical considerations suggest that self-efficacy plays an important role in whether a person practices sexual abstinence (Sionean et al., 2002; Santelli, Kaiser, Hirsch, Radosh, Simkin, & Middlestadt, 2004; Buhi, 2006). Reports in the literature provide support for the utility of self-efficacy as a predictor of having sexual abstinence (Buhi, 2006; Childs, 2007; Rasberry, 2007). A qualitative research of Supametaporn (2006) showed that participants who reported high sexual abstinence self-efficacy were more likely to refrain from engaging in sexual activity.

A nurse is one of the health professionals who can play a significant role in sexual abstinence promotion for female students. In order to develop prevention and intervention strategies that are culturally specific to Thai female students, sexual abstinence self-efficacy must be carefully and sensitively explored. However, it is still in the starting stage of sexual abstinence research in Thailand. Most of the developed measurements are based on the western culture. In addition, there is not theoretically based instrument in the literature that
measure sexual abstinence self-efficacy among Thai female students. A culturally sensitive, reliable, and valid instrument is crucial to better understand the determinants of sexual abstinence as a basis for developing more effective interventions to promote a sexual health in this population.

Therefore, the purpose of this article is to describe the development and evaluation of the psychometric properties of culturally sensitive questionnaire that is designed to be measures of perceived self-efficacy to participation in sexual abstinence for Thai female adolescents.

**Conceptual framework:**

Self-Efficacy (SE) is an important aspect of Albert Bandura's Social Cognitive Theory (SCT). Albert Bandura's theory on SE began in the 1970s and continue to be developed by others as it is applied to different behavioral theories and problems.

SE can be defined as the determinant of whether coping behavior will be initiated by an individual or not (Scholz, Dona, Sud, & Schwarzer, 2002). It has also been defined as confidence in ones ability to perform the behaviors necessary to bring about desired outcomes (Gwalney et al., 2001). In the face of life stressors, SE can be the level of optimism and self confidence that one has when facing these challenges.

SE has been described as sense of confidence in which a behavior can be successfully organized and completed. It acts to strengthen our approach to tasks we feel efficacious about and to weaken motivation for tasks which we fell less confident (Bandura, 1986)

SE has emerged as an important variable in the study of health behavior (e.g. smoking cessation, exercise, and condom use). Sexual abstinence is sexual health behavior. Therefore, the model for this study was based on Bandura’s conceptualization of self-efficacy for remaining sexual abstinence. Sexual abstinence self-efficacy was defined as Thai female student’s judgment of her ability to refrain from sexual activity during the school year in social situations where sex is likely to occur.

The processes through which self-efficacy judgments are formed are complex. In evaluating sexual abstinence self-efficacy, consideration must be given to two sets of variables: 1) the female teen’s own skills and abilities, and 2) the circumstances of the situation. There were the four domains from a comprehensive literature review. The 1st set consisted of three skills: 1) negotiate, 2) deny, and 3) assure. Other set, was ability to circumstances of the situation (Hwang, 2001; Buhi, 2006; Childs, 2007; Rasberry, 2007).
Methods:

A descriptive cross-sectional design, conducting of two phases, was used (see Figure 1). Phase I, questionnaire development and phase II, testing psychometric properties of the scale.

Sample

The sample consisted of four groups: 1) 6 participants to examine the face validity of the questionnaire; 2) 30 participants for pilot testing the questionnaire; 3) 300 participants for pretest study the questionnaire; and 4) 339 participants to examine the questionnaire’s psychometric properties. All samples were convenience sample. They were female students who study at public co-education high school (M.4-5-6) of Department of General Education, Office of The Basic Education Commission in Thailand. For the sample 1st and 2nd groups, were in the central regions of Thailand. The sample 3rd group was in the central, the eastern regions of Thailand. The 4th group was in 7 regions of Thailand (Bangkok and perimeter, Central, Eastern, Northeastern, Southern, Upper-Northern, and Lower-Northern).

Selection criteria, for this study, included individuals who were: 1) female student who studied in M.4-5-6, 2) Thai nationality, 3) residing with parent or guardian, 4) willing to participate in this study and 5) permission from parent or guardian. Criteria for exclusion from the study included: having health problems including mental problem, handicap, and participant who withdraw at anytime.

Procedure

The approval for the use of human subjects was obtained from the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University (ECCU). With the permission from each the head of school, the researcher explained about the study to female students and distributed assent form and parental consent forms. At the next activity, female students who returned signed parental consents were asked to complete the questionnaire in a private area of each school. It took approximately 10 to 15 minutes for participants to answer the questions. Their names were not addressed in the data; a code number was used to ensure confidentiality. After obtaining completed questionnaire, participants put it in an envelope and seal. The data samples were collected in 2nd semester of 2009.

Phase I: questionnaire development

The original item pool was generated from a qualitative study of Supametaporn (2006) who explained about sexually abstinent behavior in Thai female and also comprehensive literature review. Each item was constructed by writing a short declarative
statement reflecting the cognitive about sexual abstinence self-efficacy of Thai female adolescents. There were 14 items for sexual abstinence self-efficacy scale (SASE). The scale was measured with 4-point Likert scale (1= not at all sure to 4 extremely sure).

Content validity was confirmed by using expert content for two times. The first round, content validity was tested by five experts in the field of nursing and sexual health/sexuality education, and expert in the area of instrument development to establish content validity of the items. Experts were asked toward the content validity form with the respect of placing each item in one of four-point scale that would reflect to relevance to the operational definition. Furthermore, the expert panel was asked to evaluate item wording, response format, and instrument length. Items content validity index (I-CVI) of scales was tested. Next, minor item revisions were needed based on the first round results. The second round, scale content validity index (S-CVI/UA) was tested by three expert panels in the field of nursing (1 expert) and sexual health/sexuality education (1 expert), and the area of instrument development (1 expert).

Face validity then was performed via review of the questionnaire by 6 female high school students. The participants were asked to complete the questionnaire and then specify: (1) items they had difficulty responding to, and why; (2) items they had questions about; (3) revisions they believed should be made; and (4) suggestions for items they felt should be included. Minimal formatting changes were made to SASE after input from the participant’s comment. In addition, reliability of the scores was assessed internal consistency of the first draft scale though a pilot-test with 30 female high school students.

The pretest study was conducted to construct the second draft of the scales. To meet purposes of the pretest study, the first draft of the scales which composed of 14 items was examined by using item analysis (n=300) and item review (n=10). Item analysis was employed to obtain statistical data. In pretest study, both statistical and qualitative data were used as criteria for selecting, revising and improving items appropriately to construct the second draft scale.

After completing pretest study, the number of 14 items in the first draft scale was reduced to 12 items in this step and used for constructing the second draft of the scales. The procedures of developing the scale could be summarized as shown in Figure 1.
Phase I
1. Identifying scale’s format
Questionnaire Development
2. Generating item pool from literature review (14 items)
3. Investigating content validity
   a) 1st round of content validity by the experts for I-CVI (n=5)
   b) 2nd round of content validity by the experts for S-CVI/UA (n=3)
   c) Face validity by Thai female high school students (n=6)
   The first draft of the scale (14 items)
   Pilot study on the first draft of the scale (n=30)
4. Pretest study on the first draft of the scale (14 items)
   Item analysis (n = 300)            Item review by female high school students (n=10)
5. Select items for analysis (2nd draft of scale) (12 Items)
   Phase II
   Testing construct validity and internal consistency reliability
   Psychometric properties of the second draft scale (n = 339)
   Final scale (12 Items)

Figure 1: The flow chart of the scale development procedures
Phase II: testing psychometric properties of the scale

The psychometric testing phase was operated to test validity and reliability of the scale. This section consisted of two steps. First, confirmatory factor analysis was used to test construct validity of the scale on a large group of samples in the field test study. Second, psychometric testing phase was an investigation of internal consistency reliability. The expected outcome of this phase was a valid and reliable research instrument for measuring the cognitive of the ability to refrain from sexual activity during the school year among Thai female adolescents.

Data analysis
Descriptive statistics was used to analyze the participants’ demographics. Pearson’s product moment correlation was used to analyze items analysis. Computation of coefficient alpha was used to test internal consistency reliability. Last, confirmatory factor analysis was used to analyze construct validity.
Results:

Phase I: questionnaire development

**Content validity and reliability of the 1st draft of the SASE**

The first draft of the SASE consisted of 14 items was tested content validity. The results from the five experts’ item review at the first round showed the items content validity index (I-CVI) of scales was 0.8-1. The second round, three expert panels establish content validity of the items by scale content validity index (S-CVI/UA) of scales as 0.86. Based upon the reviewers’ comments, some instrument items were revised wording and rearranged. After the face validity of the SASE, a pilot-test was subsequently conducted with a convenience sample of 30 female high school students to test reliability. Cronbach’s alpha coefficient of the 1st draft of SASE was 0.95.

**Characteristic of the sample**

The descriptive statistics from the sample of 300 Thai female students showed that all respondents were between 14 and 19 years old ($\bar{X} = 16.52$, SD = 0.89). Almost of them were Buddhist (99%) and most samples was single child (75.7%), living with parent (83.7%). Two hundred and seventy eight participants (92.7%) had having sexually abstinent behavior. Twenty two participants (7.3%) had not having sexually abstinent behavior, these subjects had sexual activity experience showed that eleven participants (3.7%) had oral intercourse experiences, twenty two participants (7.3%) had vaginal intercourse experiences, and six participants (2 %) had anal intercourse experiences.

**The procedure of instrument development**

Precision of items was examined using corrected item-total correlations. Results of this phase showed that almost items of the scales had the item-total correlations greater than 0.3. For correlation matrix, when considered, there were 7 paired-items of the scale which had inter-item correlation ≥ 0.7. The item review by ten female students was used to investigate appropriateness and clarity of each item wording. It was found that during questionnaire being held, some respondents acted such behaviors as long pauses, scribbing, or answer-changing. These behaviors and recorded including causes behind those response behaviors such as misunderstanding, having difficulty to understand, or reluctant to answer some item statements. This finding was used for modifying those item statements. After completing the questionnaire, a briefing had taken place in which respondents were invited to comment on each item and offered suggestions.
Guidances for selecting appropriate items were conducted from item distribution and the results of both item analysis and item review. Although statistic data had been very useful for item selection, the final decision to include or reject any items in the final scale should be primarily based on human judgment regarding to what the item analysis shown (Nunnally and Bernstein, 1994). Therefore, corrected item-total, inter-item correlation, operational definition of each constructs, and results of item review, were cooperated on making decision to select the items. Based on the findings from the pretest study, 12 items of SASE were retained and 2 items were deleted.

**Phase II: psychometric properties of the scale.**

**Characteristic of the sample**

The respondents were asked to complete the questionnaire. All respondents (n=339) were between 14 and 19 years old ($X = 16.60$, SD = 0.90). Almost of them were Buddhist (99.1%) and most samples were single child (74%), living with parent (84.4%). Three hundred and ten subjects (91.4%) had having sexual abstinence. Twenty nine participants (8.6%) had not having sexual abstinence, these participants had sexual activity experience showed that nine participants (5.6%) had oral intercourse experiences, twenty nine participants (8.6%) had vaginal intercourse experiences, and six participants (1.8 %) had anal intercourse experiences.

**The procedure of psychometric testing**

Confirmatory factor analysis (CFA) was used to test the proposed measurement model of the scale. Due to the complexity of the structure of the scale which scale composed of a multidimensional factor, the proposed model of the scale had to test construct validity. The scale was testing on measurement model of each dimension of the factors using second order factor analysis. The second draft scale was conceptualized as a multidimensional scale. Measurement model of the scale was identified as having 12 items with 4 dimensions of SASE (see Figure 2).
The results showed that factor loading of all 12 indicators ranging from 0.73 to 1 were statistically significant (Table 1). For the second level of CFA, the results show that all regression weights between the four factors and the sexual abstinence self-efficacy ranged from 0.75 to 0.95 were statistically significant at \( p < .01 \). It was indicated that the ability to negotiate, the ability to deny, the ability to assure, and the ability to circumstances were actual predictors of the sexual abstinence self-efficacy. In case of construct reliability of the four factors, it was found that their squared multiple correlations ranged from 0.57 to 0.89.

Table 1: Factor loadings and construct reliability of SASE
There were two factors; the ability to deny and the ability to assure, which were in unsatisfied level of construct reliability ($R^2 < 0.7$). The model fits reasonably well with overall fit ($\chi^2=48.72$, df= 35, P-value= 0.062, $\chi^2$/df=1.39, GFT= 0.98, AGFI= 0.95, RMSEA= 0.03).

**Discussion:**

The questionnaire to assess sexual abstinence self-efficacy was developed and validated for cultural “fit” in a cross-sectional study. The instrument containing the questionnaire was developed from various sources in the literature, items were selected based on the consideration of contextuality, cultural relevance, and language issues. Content validity of the instrument was established by a panel of experts evaluate the instrument to obtain the most appropriate item content for two times. The literature indicates that satisfactory results for content validity, for a new instrument, should be greater than 0.80 (Nunnally& Bernstein, 1994). The SASE was found, by the experts, to have a good CVI. In addition, face validity proved to be useful in refining the content of the instrument.

After validating the content, 14 items were put in the first draft of SASE. An items analysis (n=300) and item review (n=10) were conducted on examining the first draft scale. Finishing on scale construction phase, 12 items were selected to create the second draft of the SASE which was introduced to test construct validity.

Based on the results from the CFA, the final version of the SASE included 12 items. The four subscales (or factors) were: ability to negotiate (F1), ability to deny (F2), ability to assure (F3), and ability to circumstances (F4). This results were supported by studies of Hwang, 2001; Buhi, 2006; Childs, 2007; Rasberry, 2007. All 12 items of the second draft scale were tested and indicated all items successfully loading. Therefore, the 4 factors structure solution that showed satisfactory fit indices was used.

Results from this study provided strong support for internal consistency reliability of the questionnaire. It demonstrated acceptable internal consistency of the instrument in two groups of Thai female students. Cronbach’s alpha values for refined overall scale of first draft of the SASE was 0.95 in a sample of 30 participants as same as the final scale was 0.95 in a sample of 339 participants.

Sample size is important for CFA. Therefore, all efforts were made to maximize the number of subjects in the database. Tabachnick and Fidell (1996) provide guidelines for appropriate sample size for factor analysis. These guidelines state that a sample size of 50 is very poor, 100 is poor, 200 is fair, 300 is good, 500 is very good, and 1000 is excellent. The
sample size of 339 with in this study adequately met this standard, providing an added level of certainty regarding the performance of SASE as a measurement tool.

**Suggestion**

The CFA also identified subscales within the scale. Though reliability for two subscales was adequate, two subscales had alpha values below 0.7. The problematic subscales had only one item (i.e., the ability to deny and the ability to assure), which tends to reduce alpha (Bijttebier et al, 2000). It would be useful for future research to develop additional items for these subscales. Test–retest reliability was not measured in this study; therefore, this should be performed in future studies to establish the stability of this instrument. In addition, longitudinal analysis of factorial invariance could be used to better establish the stability of the measurement over time (Motl et al., 2000)

Several limitations were noted for the current instrumentation study. Because convenience samples were used in this study therefore, further research replicating the analyses in large randomized samples of Thai female adolescents is recommended. The reliance on self reported sexual abstinence is another important limitation of this study. The responses of participants can be over or under estimated for variety of reasons such as sexual experience. As consequence, the information obtained from questionnaires may have some bias. Although this study employed a powerful tool, CFA, to examine construct validity of SASE additional study is warranted to validate the new refined measures using multigroup analysis to test the equivalence of this model’s parameters across different groups and time.

In summary, instrumentation for measuring cognitions of ability to having sexual abstinence related to sexual abstinence in Thai female adolescents is still in the developmental stage. However, this scale can help nurse and health professionals to identify individuals’ perceived ability to having sexual abstinence during the school year and also to assist students in determining levels of self efficacy for engaging in sexually abstinent behavior. To further determine developmental and cultural sensitivity, research is needed using the instrument constructed in this study with other samples of Thai children in different age groups or other Asian populations sharing similar cultures and beliefs. Until more can be made known about this phenomenon, this will encourage nurses, health care provider, and policy-maker to use interventions such as those proposed here that are based on SE because interventions based on this theory have proven effective for a number of health behaviors (e.g., condom use for HIV prevention; exercise; and smoking).
References


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