Development and Psychometric Evaluation of the Sexual Health Protection Scale for Thai Female Adolescents

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ชื่อวิทยานิพนธ์ การพัฒนาและทดสอบคุณภาพแบบวัดการปกป้องสุขภาพทางเพศสำหรับวัยรุ่นสตรีไทย

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บทคัดย่อ

การศึกษาในครั้งนี้มีวัตถุประสงค์เพื่อพัฒนาและทดสอบคุณสมบัติของเครื่องมือการปกป้องสุขภาพทางเพศของวัยรุ่นสตรีไทย ข้อคำถามถูกพัฒามาจากการทบทวนวรรณกรรมอย่างลึกซึ้ง จากกรอบแนวคิดการปกป้องสุขภาพทางเพศที่ได้จากการคิดและวิเคราะห์กระบวนการปกป้องสุขภาพและข้อมูลเชิงคุณภาพที่ได้จากสัมภาษณ์ระดับลึก เครื่องมือถูกตรวจสอบความตรงเชิงเนื้อหาจากผู้เชี่ยวชาญ 3คน ดัชนีความตรงเชิงเนื้อหาของเครื่องมือยอมรับได้ วัดความตรงเฉพาะหน้าจากวัยรุ่นสตรีจำนวน 12 คน พบเครื่องมือมีความเหมาะสมและชัดเจน เครื่องมือ ได้รับการทดสอบความตรงเชิงโครงสร้างและความเชื่อมั่น เก็บข้อมูลในวัยรุ่นสตรีไทย ที่อาศัยอยู่ในภาคใต้ จำนวน 450คน การประเมินความตรงเชิงโครงสร้างโดยการวิเคราะห์องค์ประกอบ พบมีข้อคำถาม 107ข้อ และมี 8องค์ประกอบได้แก่ 1) การตื่นตัวในการค้นหาข้อมูลสุขภาพทางเพศ 2) การปกป้องเพื่อต่อต้านการมีเพศสัมพันธ์ 3) การรับรู้ความอ่อนแอในการปฏิบัติการมีเพศสัมพันธ์ที่ปลอดภัย 4) การรับรู้สิ่งที่คุกคามจากโรคเอดส์ โรคติดเชื้อทางเพศสัมพันธ์และการตั้งครรภ์ที่ไม่พึงปรารถนา 5) การสื่อสารกับพ่อแม่และกลุ่มเพื่อนเกี่ยวกับเพศสัมพันธ์ที่ปลอดภัย 6) การไม่มีกิจกรรมเกี่ยวกับเรื่องเพศสัมพันธ์ 7) การแสดงออกอย่างเปิดเผยในการหาค้นหาข้อมูล และ(8) การ

ปกป้องตนเอง ค่าความเชื่อมั่นของเครื่องมือทั้งฉบับอยู่ในระดับสูง ($\alpha = 0.93$) ความตรงเชิงโครงสร้างในกลุ่มที่เป็นจริงพบคะแนนการปกป้องสุขภาพทางเพศระหว่างกลุ่มเสี่ยงสูงและกลุ่มเสี่ยงต่ำส่วนใหญ่แตกต่างกันอย่างมีนัยสำคัญทางสถิติ สรุปได้ว่าเครื่องมือนี้เป็นประโยชน์ต่อการประเมินพฤติกรรมการปกป้องสุขภาพทางเพศของวัยรุ่นสตรีไทย

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ABSTRACT

The objectives of this study were to develop a scale to measure sexual health protective behavior in Thai female adolescents and to examine its psychometric properties. The Item generation was based on an extensive literature search overviewing of sexual health protection in female adolescents; the conceptual model of sexual health protection to conceptualize the health protection process and qualitative data generated from in-depth interviews 20 female adolescents. The content validity of the SHPS was determined by three experts. The content validity index was accepted. The face validity evaluation by 12 female adolescents showed the SHPS to be appropriateness and clear. To test for construct validity and internal consistency, the SHPS was completed by 450 female adolescents in the southern part of Thailand.

The results showed that the evaluation of the construct validity through the factor analysis yielded 107 items with eight factors:1) Alertness to search for information on sexual health; 2) Guarding against for having sexual intercourse; 3) Perceiving vulnerability of safe sex practice; 4) Perceived threats of AIDS, STDS and

unwanted pregnancy; 5) Communication with parents and peers about safe sex; 6) Abstinence from sexual activity; 7) Assertiveness in seeking information and 8) Self-protection. Cronbach's alpha of total scale was high (α = 0.93). The validity by contrast group approach found that most of the sexual health protection scores were significantly different between the high risk group and the low risk group.

Conclusion, these findings suggest that the SHPS adequately capture a newly identified construct and should be useful for investigators to measure sexual health protection in Thai context.

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CHAPTER 1

INTRODUCTION

Background and significance of the research problem

Sexual health is an important aspect of public health. There are important changes in female adolescents' behavior patterns associated with sexual health involving sexual identity as well as thought, feelings, and interaction with others. Adolescents bring growth and change, in many aspects, and, too frequently, risk to their sexual health. The need for improving sexual health and services for adolescents, including sexual health promotion, protection and sexual health services, are increasingly recognized throughout the world (WHO, 2001). Promoting adolescents' sexual health, in particular, that of females has become a major issue for the reproductive health policy of Thailand. This is due to the fact that female adolescents normally are seen as victims of men's sexual exploitation (Sirirasamee, Yoddumnerd-Atting, & Gray, 2000). Sexual behavior among adolescents might not be so worrisome if they exercised mature decision-making and could protect themselves from sexual health problem.

Sexual health behavior of Thai adolescents is a major health concern as well. Research studies have shown that about 50 % of Thai adolescents have had sexual experiences, even though the rate for condom use, among adolescents, is known to be very low (Jenkins, Manopaoboon, Samuel, Jeeyapant, Carey, Kilmarx & et al., 2002; Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003). A recent study conducted on Thai vocational students, aged 18-22 years, in Bangkok, indicated that

only 6.3% of sexually active adolescents reported using condoms every time they had sex during the beginning of a sexual relationship (Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003). Moreover, a previous study (Jenkins, & et al., 2002) found that only 25.6% of female adolescents, vocational students in Chiangrai (Northern part of Thailand), reported use of condoms during their first sexual experience. Interestingly, 32.7% of the same women reported consistent use of condoms with their casual partner, although only 5.4% of them stated they do so with their steady partner.

The consequence of unsafe sex practice or poor sexual health behavior often lead adolescents to sexual health problems, such as high rate of teenage pregnancy and a raise in the number of STDs and HIV infections, with the number of STDs being the highest among adolescents. (CDC, 2002; Talashek, Norr, & Dancy, 2003). The most significant sexual health problem for adolescents is unprotected sexual relations. This is due to the fact that premature sexual activity increases risks associated with premature and/or unwanted pregnancies, induced abortions, reproductive tract infections, sexually transmitted diseases (STDs) and HIV infections resulting in AIDS. Lack of knowledge regarding basic reproductive health information, a lack of skills in negotiating sexual relationships, a lack of access to contraception and reproductive health services and vulnerability to sexual abuse put adolescents at the highest risk for STDs, HIV infections and unwanted pregnancies. Many adolescents also lack strong stable relationships with their parents, or other adults, whom they could address their reproductive health concerns and pressures (Kelly, Lesser, & Alexandia, 2005; Talashek, Norr, & Dancy, 2003).

In Thai society, cultural norms based on gender inequality in sexual relations expect that women must be inexperienced and naïve in sexual matters. Thai females

are considered to be passive receptacles of men's sexual passions, while Thai males are nurtured to have higher status and more sexual power than females (Balance, 2001; Fongkaew, 1996; Yoddumne-Atting, 2001). Most females are afraid of saying "no" to their partners and have difficulty asking their partners to use a condom (Taylor-Seehafer & Lynn, 2000). Therefore, the powerlessness of Thai female adolescents in sexual negotiations places them at greater risk for sexual health problems than Thai male adolescents.

The treatment of sexual health problems, such as AIDS, constitutes both individual and social burden. Adolescents' sexual health protection costs less and is easier to institute than having to treat sexual health problems as they occur. Pender (1996, 2002) has stated that health protection is a health behavior that includes health practices directed towards reducing or avoiding the probability of diseases. In addition, Shearer and Wingo (2002) developed a model of protection from Schuster, Kruger, and Hebenstreit's (1985) situation specific- theory of protection, and proposed that the model of protection risk should be specific for each health risk problem. In this model, people should behave carefully, with accurate management and communication to protect them from harm or risk. Their components of health protection have been considered to be appraisal of threats, controlling, regulating, guarding against, seeking information, persuading and altering perceptions. In this study, the model of protection (Shearer & Wingo, 2002) was used to construct a concept of sexual health protection, because it was developed from the original theory; a theory of protection (Schuster, Kruger, & Hebenstreit, 1985) which focuses on sex education for children.

Based on the protection model of Shearer and Wingo (2002) and review of the literature, the investigator found that sexual health protection is composed of five

attributes: (1) appraisal of the threat of STDs, HIV infections and unwanted pregnancy (ManZini, 2001; Rock, Ireland, & Resnick, 2003); (2) perceived behavioral control for condom use (Jemmott, Jemmot, & Fong, 1998; Jemmott, Jemmott, & Villarruel, 2002; Hutchinson, Sosa, & Thomson, 2001; Salabarria-Pena, Lee, Montgomery, Hopp, & Muralles, 2003; Villarruel, Jemmott, Jemmott, & Ronis, 2004) and negotiating the use of safe sexual practices (Montano & Kasprzyk, 2002; Phuphaibul, 2004; Villarruel, 2001); (3) self-regulation of condom use (Ann, Richard, Robert, William, Jeffrey, & Susan, 2005; Svenson, 2002) and the delay of initial sexual intercourse (Stammers, 2005; Villaruel, 1998); (4) guarding against and avoiding the use of drugs and alcohol before and/or during sexual intercourse (Champian, 2005); (5) guarding against communication with family, partners and peers (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004), good hygienic care (McKee, Baquero, Anderson, Alvarez, & Karasz, 2008; Turkistanli, Saydam, & Aydemir, 2003) and avoiding situations of risk (Norris, Masters, & Zawacki, 2004; Patel, Yoskowitz, & Kaufman, 2007; Talashek, Norr, & Dancy, 2003); (6) seeking sexual health information (Arenth ,1999; Kitaura, 1997; Pornchaikate, 2003) by assertively seeking information about one's sexual partner (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995) and sexual self-disclosure (Dibble & Swanson, 2000).

There have been few research studies which have focused on sexual health protection behavior (Dilorio, Dudley, Wang, Wasserman, Eichler, & Berlcher, 2001; Cobb, 1997; Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003). Instruments used in these studies have been developed for specific and limited health protection issues. However, none of them have addressed the concept of sexual health protection, which may not be appropriate for use in the Thai culture. For example, the

Safe Sex Behavior Questionnaire (SSBQ) (Dilorio, Parsons, Lehr, Adame, & Carlone, 1992) was designed to measure safe sex practices. The Interpersonal Communication Scale and Sexual Protective Practices Scale (Cobb, 1997) focused on safe sex practice and safe-sex communication. The AIDS Health Belief Scale (AHBS) (Zagumny & Brady, 1997) focused on the beliefs and attitudes of sexual health protection from AIDS. The Self-Efficacy and Outcome Expectancy Tool (Dilorio, Dudley, Wang, Wasserman, Eichler, & Berlcher, 2001) was designed to specificly measure the roles of parents as protectors for their adolescents from sexual health problems. Similar to all of the other instruments, the Sexual Possibility Situations Index (SPS) and the Protective Index (DiLorio, Dudley, Soet, & McCarty, 2004) were developed to measure protective factors and sexual risk behavior.

In Thai culture, the Condom Self-Efficacy Scale (Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003) has been translated and validated. This scale focuses on communication regarding the correct and consistent use of condoms. Current measures inadequately assess sexual health protection in female adolescents; therefore, the Sexual Health Protection Scale (SHPS) needs to be developed for the Thai context.

The SHPS will be a significant tool for future research and the sexual health behavior of female adolescents will be important to investigate regarding sexual health protection strategies employed in dealing with sexual risk situations. This is especially important given that the SHPS can be utilized in intervention research to measure the various strategies of sexual health protection. Furthermore, because it is a more specific sexual health protection instrument, this tool can be developed to assess interventions specific for Thai women. As a result, the findings of this research will contribute to new knowledge in nursing and may be a useful application for other disciplines.

Objectives

The purpose of this study is to develop a scale to measure sexual health protective behavior in Thai female adolescents and to examine its psychometric properties.

Research Questions

What are the components of the Sexual Health Protection Scale (SHPS)?
How reliable and valid is the SHPS in measuring the sexual health protection behaviors of Thai female adolescents?

Conceptual Framework

The concept of sexual health protection was developed based on the concept of health protection (Pender, 1996, 2002) and the model of protection developed by Shearer & Wingo (2002). Five major attributes of sexual health protection included: appraisal of threat, perceived behavioral control, self-regulation, guarding against, and seeking information. The attributes of sexual health protection were explained as follows:

1. Appraisal of threat

Appraisal of threat means the ability of a person to identify the threat or risk to life (Jan, Champion, & Strecher, 2002; Shearer & Wingo, 2002). Research studies found that perceived susceptibility and severity of STDs, HIV/AID and unwanted pregnancy are important factors regarding the implementation of sexual health protection for female adolescents (Bryan, Aiken, & West, 1997; Jan, Champion, & Strecher, 2002; Manzini, 2001; Rock, Ireland, & Resnick, 2003; Rosengard et al.,

2005). Appraisal of threat from sexual health problems, for female adolescents, is composed of perceived severity and susceptibility of STDs and HIV infections, and unwanted pregnancy.

2. Perceived behavioral control

Perceived behavioral control (power) is the perception of ones' ability or confidence to perform behavior in order to protect oneself from a sexual health problem (Ajzen, 1991; Montano & Kasprzyk, 2002; Villarruel, 2001). Protection of female adolescents from STDS and HIV infections, and unwanted pregnancy, requires skill in use of condoms, availability of condoms and negotiations for the use of condoms. (Jemmott, Jemmott, Hines, & Fong, 2001; Villarruel, Jemmott, Jemmott, & Ronis, 2004; Salazar, 2005).

3. Self-regulation

Self-regulation is the ability of an individual to manage or monitor oneself in order to attain a standard of safety which is free from risk (Bandura, 1986; Hallam & Petosa, 2004; Nezami, Sussman, & Penz, 2003; Scisney-Maltlock, Watkins, & Colling, 2001; Shearer & Wingo, 2002). Self-regulation involves maintaining abstinence and/or postponement of sexual activity, attention to education and consistent use of condoms when having sexual intercourse. These actions can protect female adolescent from STDs, HIV/AIDS and unwanted pregnancy (Ann, 2004; Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005; Hallam & Petosa, 2004; Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005; Schvaneveldt, Miller, Berry, & Lee, 2001).

4. Guarding against

Guarding against is the ability of a person to use protective barriers or devices to reduce or eliminate the threat or the risk (Shearer & Wingo, 2002). Communication

between parents and peers can be used to guard against initiation of sex, STDs and HIV infections, and unwanted pregnancies (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Martyn & Martin, 2003; Smith & DiCliement, 2000). Avoiding substances, such as drugs and alcohol is an important factor of sexual health protection (Champian, 2005; Millstein & Moscick, 1995). Avoiding situation risks, such as going to a private place with an intimate boyfriend, going out alone with an intimate boyfriend and having a party without adult supervision can provide female adolescents protection from sexual problems (Norris, Masters, & Zawacki, 2004; Patel, Yoskowitz, & Kaufman, 2007; Poonsanasuwansi, 1997 cited in Pongyuen, 2004; Talashek, Norr, & Dancy, 2003). Good hygiene care also is another method that will enhance sexual health protection for female adolescents (Anderson, McKee, Yukes, Alvarez, & Karasz, 2008; McKee, Baquero, Anderson, Alvarez, & Karasz, 2008; Turkistanli, Saydam, & Aydemir ,2003).

5. Seeking information

Seeking information is the ability of individual to seek knowledge of health and health behavior information of the whomever he or she associates with in order to protect oneself from health risks (Arenth, 1999; Martyn & Martin, 2003; Shearer & Wingo, 2002; Pornchaikate, 2003). Seeking information is a strategy for protecting female adolescent from STDs and HIV infections, and unwanted pregnancies (Arenth, 1999; Dibble & Swanson, 2000; Martyn & Martin, 2003). Seeking information is composed of obtaining sexual health information, or knowledge, about STDs and HIV infections, and assertively seeking information and sexual-disclosure regarding one's intimate boyfriend or sexual partner (Cobb, 1997; Martyn & Martin, 2003).

Definition of Terms

1. Sexual health refers to a state of physical, emotional, mental and social well-being related to sexuality. Sexual health is related to the absence of disease, dysfunction or infirmity, a positive and respectful approach to sexuality and sexual relationships, the possibility of having pleasurable and safe sexual experiences which are free of coercion, as well as discrimination and violence.

2. Appraisal of threat refers to perceived severity and perceived susceptibility of HIV/AIDS, STDs and unwanted pregnancy.

3. Perceived behavioral control refers to negotiation for abstinence from or postponement of sexual intercourse, negotiation in the use of condoms, skills in using condoms, and availability of condoms.

4. Self-regulation refers to the ability to maintain consistent abstinence and/or postponement of sexual intercourse, consistent use of condoms over time and attention for education.

5. Guarding against refers to communication with parents and peers about safe sex practices, avoiding drugs, alcohol, risky situation and hygiene care.

6. Seeking information refers to seeking sexual health information, assertively seeking information and sexual-disclosure.

7. Sexual health protection behavior refers to Thai female adolescents showing both inner thinking and outer behavior in order to protect themselves from sexual health problems such as appraisal of the threat of HIV/AIDS, STDs and unwanted pregnancy, perceived behavioral control, self-regulation, guarding against and seeking information.

CHAPTER 2

LITERATURE REVIEW

The purpose of this chapter is to review selected literature that provides empirical and theoretical evidence background related to sexual health protection and measurement theory. The literature is organized in the concept of sexual health, the concept of sexual health protection, literature review of empirical evidence related to sexual health protection in Thai female adolescents, the overview of sexual health protection instrument and psychometric measurement.

Concept of Sexual Health Protection

Sexual Health

Sexual health is defined by World Health Organization (WHO, 2002) as a state of physical, emotional, mental and social well-being related to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free from intimidation, discrimination and violence. For sexual health to be obtained and maintained, the sexual rights of all people must be respected, protected and fulfilled.

Sexual rights embrace human rights that are already recognized in national laws, international human rights documents and other consensus documents. These include the right of all people, free from intimidation, discrimination and violence, to the highest attainable standard of health in relation to sexuality, including access to sexual

and reproductive health care services; seek, receive and impart information in relation to sexuality; sexuality education; respect for bodily integrity; choice of partner; right to decide to be sexually active or not; consensual marriage; right to decide whether or not, and when to have children; and pursue a satisfying, safe and pleasurable sexual life. Optimum sexual functioning requires an intact nervous and circulatory system. The experience of sexual arousal depends on myotonia (muscle tension) and vasocongestion, without these the response cycle is impaired. The central nervous system integrates and directs the drive for sexual fulfillment such as sexual pleasure, emotions, erotic pleasure, appetite for sex; the ability to sexually stimulate oneself or a partner, also sustaining interest is sex is a sufficient level of sex hormone (androgen). The physiological aspect of sexual health is crucial to have healthy sexual function. It is important that biological sex and gender identity be harmonious and that personal and social behaviors be harmonious with gender identity. Sexual health also includes the ability to have effective interpersonal relationships with members of both sexes who have the potentiality for love and long-term commitment. The individual should have the capacity to respond to erotic stimuli in ways that make sexual activity a positive and pleasurable experience. It is important to have congruence between personal sexual value systems and sexual behavior. It is important to have the maturity of judgment to make decisions about sexual behavior that are not in conflict with overall value systems and beliefs about life.

Related to the concept of sexual health is the view of sexuality as one of the basic human needs that must be met if health is to be achieved and maintained. Maslow (1954 cite in Fogel & Lanver, 1990) views sex as one of the basic physiological needs necessary for existence and survival, although in the strict sense, sexuality is necessary

only for survival of species. Although sexual activity with each other can be deferred for a life time, sexuality is an essential factor in an individual's need for psychological security, self-esteem, love, and feelings of belonging.

The definition of sexual health composed of the biological, physical and sociological dimension of sexuality. It is also integrity and continuity of the individual, the necessity of incorporating sexual health into the concept of total personal health. The concept of sexual health suggests the importance of a holistic and positive approach to human sexuality. The individual's right to sexual information is viewed as basic. Sexual health care becomes a way in which a person's life and personal relationships may be enhanced (Lion, 1982 cite in Fogel & Lanver, 1990).

In this study sexual health refers to a state of physical, emotional, mental and social well-being related to sexuality. Sexual health is related to the absence of disease, dysfunction or infirmity, a positive and respectful approach to sexuality and sexual relationships, the possibility of having pleasurable and safe sexual experiences, free from intimidation, as well as discrimination and violence.

For adolescent the transition from childhood to adulthood places them at greater risk of getting sexual health problems such as STDs, HIV and unwanted pregnancy than adults; because they are physically and psychosocially immature. (Patricia, Lesser, & Alexandia, 2005) Therefore to have sexual health and maintain it, the sexual right of each and individual must be protected and respected.

Model of Protection

In nursing, the term of protection or health protection has often been used interchangeably with the terms "health promotion," "disease prevention" and "health

maintenance". Pender (1996, 2002) distinguishes the term health promotion and health protection. Health promotion is the desire to increase well being and actualize human health potential. Health protection is the behavior motivated by a desire to actively avoid illness, detect it early, or maintain functioning within the constraints of illness. There are three differences between health protection and health promotion. First, health protection is illness or injury specific; health promotion is not. Second, health protection is avoidance motivated, whereas health promotion is approach motivated. Third, health protection seeks to prevent the occurrence of insults to health and well-being, whereas health promotion seeks to expand positive potential for health.

Schuster, Kruger and Hebenstreit (1985) have supported the concept of health protection of Pender (1996; 2002). They proposed that health protection is a state and a process of a person in order to protect oneself from the organism of disease or illness. They presented a situation specific theory of protection. The theory was based on idea of parents' involvement in educating their children about sex. In this study protection was the primary category that emerged, along with related categories of control, boundary, knowledge, values, and mutuality. The theory of protection defined protection as the goal of sex education, the outcome of educational activities, and the ability to defend from risk. Control was the ability to institute and maintain a boundary. Boundary was the limit of acceptability of various situations such as use of language, nudity, touching, and forming of relationship with other people. Knowledge was the subject's understanding of sexuality and sex-related facts such as physiological function. Values were the judgments about good and bad in the realm of sexuality. Mutuality was the level of congruence between the subjects' understandings, values and expectation.

Shearer and Wingo (2002) adopted the theory of protection from Schuster, Kruger and Hebenstreit (1985) and proposed process of model of protection which is composed of three components, they are: vigilant management, vigilant communication, and context of protection. Shearer and Wingo (2002) supported the concept of health protection of Pender (1996, 20002) and Schuster, Kruger and Hebenstreit (1985) and stated that protection is a mature concept in nursing. They proposed components of health.

Vigilant management

Vigilant management is the idea of management which implies a responsibility towards all parties as in the ethical protection of subject and data protection. Vigilant management is composed of appraising of threat, controlling, regulation, and guarding against.

1. Appraising of threat. Appraising of threat means person identifies the threat or risk. In the case of child protection, recognition of threat was essential for protection of the child (Hanafin, 1998).

2. Controlling. Control is related to the management in uncertain situations or at risk. Control is the outcome of appraisal process and exhibit as internal locus of control. Schuster, Kruger, & Hebenstreit (1985) proposed that control of personal boundary was the goal of sex education and boundary is a relevant dimension to the state of protection. Control is the ability to institute and maintain a boundary.

3. Regulation. Regulation implies monitoring efforts to attain standard, whether informal, normative, or policy. Pender (2002) proposed that regulatory measures for clean air may be passed to prevent exposure to asbestos as a cancer risk factor; that is the example of health protection. Self-regulation occurs when one uses personal (self)

processes to strategically monitor and control his of her behavior and the environment. Self-regulation can be taught and brought under the control of the student.

4. Guarding against. Guarding against implies a threat to be reduced or eliminated by barriers and devices. Protection included both micro level guarding of the psyche and macro level guarding.

Vigilant Communication

Vigilant communication is accurate and cautious giving and receiving information which makes a person to have the knowledge that may alter perception about protection of individual. Moreover, vigilant communication should be able to persuade people for building rule or regulation in order to protect them from harm or risk factors. Vigilant communication is composed of seeking information, persuading, and alter perception.

1. Seeking information. Seeking information is accurate and cautious way of giving and receiving information. Person seeks information in order to alter perception for decision making to do or act for healthy behavior. Moreover, seeking information makes people to have knowledge which is a variable that had moderated the quality of protection.

2. Persuading. Persuading is persuasive communication which is related to control. Persuasive communications should make the people potential for building regulation and policy making.

3. Alter perception. Alter perception is the people's perception which occurs when they have knowledge from seeking information and it can make people to have ability for decision making for protecting themselves.

Context of health protection

Components of context include timeliness, threat expose and resource of strengths and capabilities. 1) Timeliness means the duration of time which individual, groups or communities expose from the risk or threat of disease or illness. For example, if a child lives in the community which has air pollution for long time; it shows that they are exposed to the risk of respiratory disease. Threat of exposure is essential to the concept of protection because it showed that some lifestyle of people is exposed to risk factors. 2) Resource of strengths and capabilities is included protective and risk. Risk factors are included here because they are interchangeable with protective factors. They mediate outcome along vulnerability-adjustment continuum and correlate with other factors that are in the context.

From the concept of protection (Shearer & Wingo, 2002) proposed model of protection that is in the figure 1.

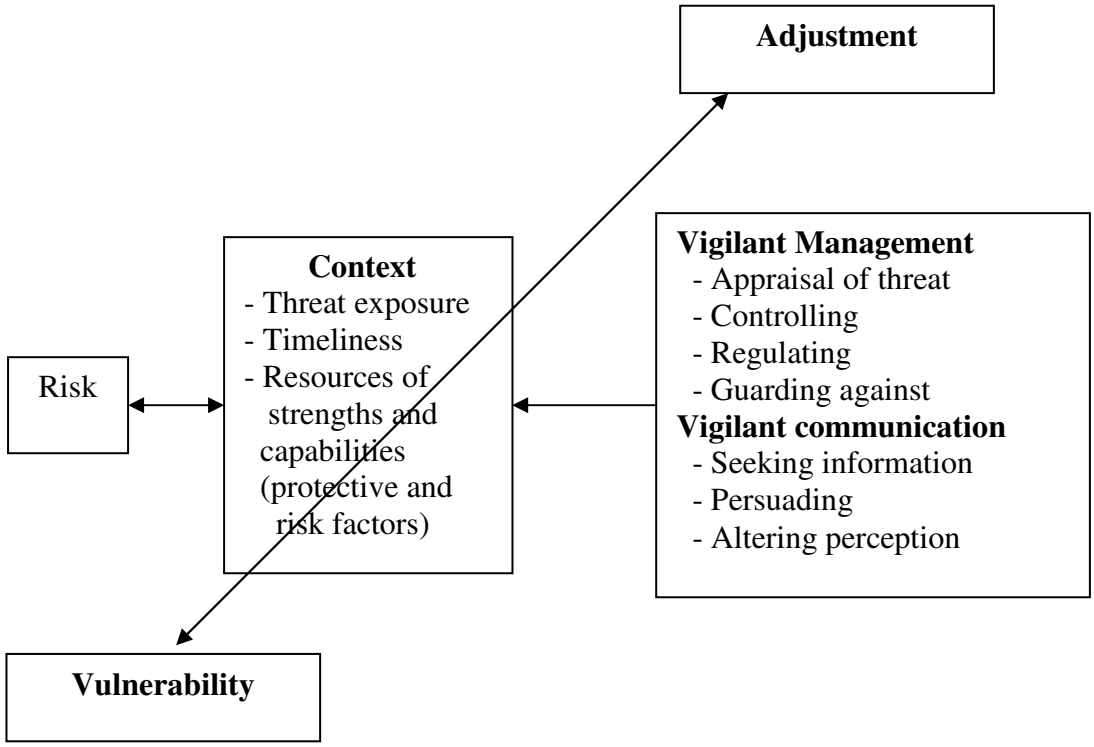


Figure 1 The Model of Protection (Shearer & Wingo, 2002)

In this model the antecedent of protection is risk or threat of exposure in the context. Without intervention, risk can lead to consequences of mal-adjustment. The interaction of risk trajectory and mediating (protective factors) and moderating variables (vigilant management and vigilant communication) results in a changed trajectory called protection. The context variables are interrelated: threat exposure, timeliness, and resources of strengths and capabilities.

There are six attributes of model of protection comprises seven attributes including appraisal of threat, controlling, regulation, guarding against, seeking information persuading and alter perception. In order to explore the meaning of all attributes, the researcher conducted an extensive literature review and searched evidence to support these attributes. Then, five attribute (appraisal of threat, controlling, regulation, guarding against, and seeking information) were selected to develop the

concept of sexual health protection except persuading and alter perception because there were not fit to the model.

From the literature review the concepts appraisal of threat, controlling and regulating are important aspect of sexual health protection. These three concepts have been used in different terms but were the same meaning of concepts in other theories. Appraisal of threat was similar to perceived threat in Health Belief Model (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002), control was similar to perceived behavioral control in theory of Planned Behavior (Ajzen, 1991) and regulation was similar to self-regulation in Social Cognitive Theory (Bandura, 1986). The extensive literatures review found that terms of appraisal of threat, perceived behavioral control, and self-regulation were used to study issues of sexual health protection. All these terms are analyzed in the present research. According to there were evidences support guarding against, and seeking information which were attributes of the Model of Protection, so both of attributes were selected to developed the concept of sexual health protection. Therefore, sexual health protection composed of five attributes included appraising of threat, perceived behavioral control, self regulation, guarding against, and seeking information. The attributes of the concept sexual health protection were as following.

Appraising of threat

Appraisal of threat means the ability or the exercise of person to identify the threat or risk in life event. If people lack the accuracy in appraisal of threat they will confront with life threatening disease. It is the necessary for female adolescents to have appraisal of sexual risk because they are physically and psychologically immature.

Moreover, they are at significant risk for STDs and HIV infection because they may not accurately incorporate indicators of risk into their perceptions of susceptibility. The meaning of appraisal of threat in the Model of Protection (Shearer & Wingo, 2002) is similar to perceived threat in the Health Belief Model (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002). When a person is confronted with a health threat, a cognitive process, the threat appraisal is initiated (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002). Two factors are considered within the threat appraisal process; one has to do with the assessment of perceived severity, or the seriousness of the health threat and the other is concerned with level of perceived vulnerability, or one's belief of susceptibility to the threat (Ethier, Kershaw, Niccolai, Lewis, & Lckovics, 2003). Therefore, in this study appraisal of threat composed of perceived severity and perceives susceptibility of STDs and HIV infection and unwanted pregnancy.

1. Perceived susceptibility

Perceived susceptibility refers the ability of person to identify the threat or risk of life and to consider one has a chance to get the risk. Accurately assessing personal risk and making the connection between behavior and susceptibility to infection are first important steps in preventing disease. In order to perceive themselves as susceptible, adolescents should be able to recognize a number of factors as indicators of risk for STDs. For instance, unprotected intercourse and multiple sexual partners are significant sources of STDs risk and are the focus of most prevention programs. If adolescents appropriately understand the factors that put them at risk for STDs, they should recognize that these indicators make them more susceptible to STDs. Further, accurate perceptions of susceptibility of STDs should be related to actual infection.

Many research studied supported that perceived susceptibility of HIV/AIDS was associated with increasing condom use, having fewer sex partners, and decreasing number of sexual encounters (Bryan, Aiken, and West, 1997; Jan, Champion, & Strecher, 2002; Rock, Ireland, & Resnick, 2003). Supporting the previous study Rosengard, Adler, Millstein, Gurvey, & Ellen (2005), found that adolescent perceived STD risk, and perceived health values for delaying sexual intercourse with new partners. .

However, in the study of Ethier, Kershaw, Niccolai, Lewis, & Lckovics (2003) female adolescents who were at high risk for STDs did not perceive susceptibility for disease outcomes. There was no relation between indicators of STDs susceptibility, including the experience of symptoms, having had unprotected sex, having multiple partners, and perceived susceptibility. In this study, female adolescents who were diagnosed with either chlamydia or gonorrhea over a one year period, almost (81.3%) had perceived themselves to be at little or no risk of STD**.** Similar to Ethier, Kershaw, Niccolai, Lewis, & Lckovics (2003), a research study (Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003) used the expanded health belief model (EHBM) as a framework for identifying predictors of condom use among adolescent Thai vocational students. The result found that perceived susceptibility of STDs, HIV/AIDS, and unwanted pregnancy was not significant predictor of condom use. Several felt no risk for pregnancy or susceptibility to HIV/AIDS. The majority of condom users used condom for the purpose of preventing pregnancy (86.3%). Fewer than half of them used condom to prevent AIDS and STDs. The researcher suggested that the low rate of condom use may have been the cause of lack of perceived susceptibility to the negative outcomes of unprotected premarital sexual behavior as well as to cultural barriers. In

Thai culture, especially among young women requesting to use condoms is not an appropriate behavior because it signifies being sexually active and planning to have sex.

2. Perceived severity

Perceived severity refers to the feeling of the seriousness of contracting an illness or of leaving it untreated includes evaluation of both medical and clinical consequences (for example, death, disability and pain) and possible social consequences (such as effects of the conditions on work, family life and social relation). Many research studies conducted the concept of perceived severity relating with sexual health problems (Bryan, Aiken, & West, 1997; Jan, Champion, & Strecher, 2002; ManZini, 2001; 2004; Rock, Ireland, & Resnick, 2003; Rosengard, Adler, Millstein, Gurvey, & Ellen 2005). However, there was a research study (Neff &Crawford, 1998) showed that perceived severity is not related to condom use and sexual intercourse. found that among male and female adults perceived severity was unrelated to HIV risk in all ethic subgroup (Anglo Maxican-American and Afarican-American).

Perceived behavioral control

Control is the ability to set up and maintain a boundary for protection the risk. People use controlling for reducing the risk event or uncertain situation (Shearer & Wingo, 2002). Perceived behavioral control reflects the perception that a person has sufficient resources and skills to perform the behavior (control belief) and the confidence that he or she can adequately perform the behavior (perceived power) (Ajzen, 1991; Cobb, 1997; Dilorio, Parsons, Lehr, Adame, & Carlone 1992; Hutchinson & Thomson, 2001; Jemmott, Jemmott, & Villarruel, 2002; Montano & Kasprzyk, 2002;

Phuphaibul, 2004; Salabarria-Pena Lee, Montgomery, Hopp, & Muralles, 2003; Villarruel, 2001; Villarrrul, Jemmott, Jemmott, & Ronis, 2004).

In the concept of sexual health protection female adolescents have to control themselves from STDs, HIV, and unwanted pregnancy. Perceived behavioral control reflects the perception that a person has sufficient resources and skills to perform the behavior and the confidence that he or she can adequately perform the behavior (Ajzen, 1991). Thus, a person who holds strong control beliefs about the existence of factors that facilitate the behavior will hold high perceived control over the behavior. In contrast, a person who holds strong control beliefs about the existence of factors that impede the behavior will have low perceived control over the belief. Many research studied supported that condoms use is the best way to avoid STD, HIV and unwanted pregnancy. Condom prevents the spread and contraction of local bacteria, viral, and fungal infection but are useless against parasite infection (Cobb, 1997; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; DiClemente, Hansen, & Ponton, 1996; Montano & Kasprzyk, 2002). This study perceived behavioral control refers to the ability of female adolescent to negotiate abstinence or postpone sexual intercourse; negotiation in the use of condoms, available and have technical skills for using condoms.

1. Negotiation for abstinence or postpone sexual intercourse

Delay or postponing sexual intercourse is an important behavioral strategy for preventing HIV, STD and unwanted pregnancy among adolescents (Stammers, 2005; Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006; Villaruel, 1998). Many adolescents, including younger adolescents, have not initiated sexual intercourse and many sexually experienced adolescents and young adults are abstinent for various periods of time. There is broad support for abstinence as a necessity and appropriate

part of sexual education. Controversy arises when abstinence is provided to adolescents as a sole choice and where health information on other choices is restricted or misrepresented. Although abstinence is theoretically fully effective, in actual practice abstinence often fails for sexual active adolescents (Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006). Abstinence from sexual intercourse is an important behavioral strategy for preventing HIV, STD, and unwanted pregnancy among adolescents. However, abstinence is not sufficient to promote sexual behavior in adolescents especially in sexually active adolescents (Stammers, 2005; Villaruel, 1998).

Using a randomized-controlled trial, Jemmott, Jemmott and Fong (1998) evaluated the effects of an abstinence intervention that focused on the initiation and frequency of sexual intercourse, and a safer sex intervention that focused condom use with African-American middle-school children. The youth who participated in the abstinence intervention were less likely to report having short-term sexual intercourse (three months following the intervention), but not long-term (six or 12 months following the intervention). Youths who participated in the safer sex intervention were more likely to use condoms both for short-term and long-term. In addition, youths who were sexually active and participated in the safe-sex intervention reported less sexual intercourse both short-term and long term than the youths who participated in the abstinence intervention. Findings from this study suggest that more needs to be done, to sustain the positive effects of an abstinence intervention. Thus, teaching youth's safer sex skill is an effective way to decrease the risk of STDs and unwanted pregnancies.

Similar to Jemmott, Jemmott, and Fong (1998) and Aarons (2000) conducted postponing sexual intercourse among urban junior high school students. To describe a randomized, controlled evaluation of a school-based intervention to delay sexual

intercourse among adolescents, Six Washington, D.C., junior high schools were randomly assigned to the intervention or nonintervention control condition for an education program. Three health professionals implemented the program, which consisted of reproductive health classes, the postponing sexual involvement curriculum, health risk screening, and "booster" educational activities. The result showed intervention and control group differences in virginity, attitudes toward delayed sex, childbearing, sexual knowledge and behavior were assessed at all four times points. Thus, for delay sexual intercourse adolescent should be taught negotiation skills that will help to postpone sex until they are ready. They must be able to say with confidence and without lossing self-respect, "Not yet, not now." Adolescent were also taught, how to avoid situations in which it will be difficult to "just say no" (Villaruel, 1998).

2. Condoms use negotiation

Condoms use negotiation is influenced by the belief of adolescents that they can convince their partner to use condom. Negotiation beliefs reflect the adolescents' confidence that they can persuade their sexual partners to use condom, even if he or she does not want to use them (Villarruel, Jemmott, Jemmott, & Ronis, 2004). Impulse control reflects adolescents' confidence that they can control themselves enough to use condom when sexually excited (Ajzen, 1991; Jemmott, Jemmott, & Fong, 1998; Montano & Kasprzyk, 2002; Phuphaibul, 2004; Villarruel, 2001). Considering the behavior of condom use as an example, a female adolescent used negotiation strategy to control her partner to use condom. Negotiation to use condoms is influenced by the perceived ease or difficult in negotiating for using condom (perceived behavioral control) without, for example, ruining the mood or decreasing sexual pleasure. Many research studied supported that impulse control and negotiation are control beliefs that

have been identified as relevant for using condoms among adolescent (Jemmott, Jemmott, & Fong, 1998; Jemmott, Jemmott, & Villarruel, 2002; Sutton, McVey, & Glanz, 2003; Villarruel, Jemmott, Jemmott, & Ronis, 2004).

With in norm or expectation of Thai culture, especially among young women, seeking or requesting the use of condoms is not an appropriate behavior because it signifies being sexual active and planning to have sex (Thato, Charron-Prochownik, Dorn, Albrecht, & Stone, 2003). Moreover, females may think that condom use is a male task and it is shameful for females to have knowledge and ability about condom use (Boonmongkon Jaranasri, Thanaisawanyangkoon, & Limsumphan, 1998; Taylor-Seehafer & Raw, 2000). Moreover, Thai female adolescent may perceive them powerless for the negotiation of the use of condoms. Thus, in this study control beliefs may or may not influence sexual intercourse and use of condom especially among Thai female adolescents.

Fear of Condom Use Negotiation is intended to describe the frequency with which one feels fear or worry associated with negotiation for the use of condom with sex partners. From the research of Salazar (2005) it is found that participants were asked how frequently they feared of talking about using condoms with sex partners. The result showed that girls higher in self-esteem were more likely to hold positive attitudes towards condoms, felt more efficacious in negotiating the use of condoms, had more frequent communication with sex partners and parents, perceived fewer barriers in using condoms, and were less fearful for negotiating the use of condoms.

3. Availability and technical skills for use of condoms

Availability refers to adolescents' confidence that they can obtain condoms and have them available when need arises. Technical skill reflects the individual's ability to

use condoms with ease without affecting the mood or sexual pleasure. Availability and technical skills have been identified as relevant to use of condoms among adolescent (Jemmott, Jemmott, & Fong, 1998; Jemmott, Jemmott, & Villarruel, 2002; Sutton, McVey, & Glanz, 2003; Villarruel, Jemmott, Jemmott, & Ronis, 2004).

A previous study (Blake, Ledsky, Goodenow, Sawyer, Lohrmann, & Windsor, 2003) assessed relationships between condom availability programs accompanied by community discussion and involvement and adolescent sexual practices. Sexual practice and condom use differences were assessed in a representative sample of 4166 adolescents enrolled in high schools with and without condom availability programs. The results showed that adolescents in schools where condoms were available were more likely to receive condom use instruction and less likely to report lifetime or recent sexual intercourse. Sexually active adolescents in those schools were twice as likely to use condoms, but less likely to use other contraceptive methods, during their most recent sexual encounter. The strategy of making condoms available, an indication of socio-environmental support for condom use, may improve HIV prevention practices. A research study focuses on condom use errors and problems among college men (Richard, Stephanie, William, Brian, & Cynthia, 2002). An essential yet understudied aspect of condom use is whether they are used correctly. The goal of the study was to comprehensively evaluate condom use errors and problems reported by heterosexual college men (N = 158). A cross-sectional survey, involving a 3-month recall period, was conducted. The result showed of the 158 participants, 60% did not discuss condom use with their partner before sex; 42% reported they wanted to use condoms but did not have any available; 43% put condoms on after starting sex; 15% removed condoms before ending sex; 40% did not leave space at the tip; 30% placed the condom upside

down on the penis and had to flip it over; and 32% reported losing erections in association with condom use. Nearly one-third reported breakage or slippage during sex. Few participants reported errors related to lubrication, storage, and reusing condoms. Higher error scores were associated with breakage/slippage rather than with consistency of condom use. Condom use errors were common, and error scores were associated with breakage and slippage. Increasing the focus on correcting potential user failures may be an important public health strategy.

Condom availability programs may increase access to condoms and contribute to increased condom use among youth. From a study of Zellner˙ Martinez-Donate, Hovell, Sipan, Blumberg, & Carizosa (2006) that describes the characteristics, degree of satisfaction, and gender differences among users of a CAP implemented in two high schools in Tijuana (Baja California, Mexico). A kiosk distributing free male condoms was set up in two high schools in Tijuana. Kiosk users (*N*=570) were more likely to be male, young, and/or enrolled in a lower SES school. Most kiosk users were either sexually active or planning to have sex. Females were less likely to request condoms and to continue using the kiosk, but more likely to request information on other contraceptive methods. Results demonstrate the feasibility of implementing CAPs in Mexican schools and suggest that these programs can improve adolescents' condom access.

Connie (2004) examined contraceptive methods currently available to adolescents and highlights newer products that may help meet some of the unique contraceptive needs of sexually active teens. The three newest agents (OrthoEvra, NuvaRing, and Seasonale) offer advantages such as higher contraceptive efficacy, increased privacy, ease of use, and low side effect profiles. A major advantage of each

of these methods is that they eliminate the need for the teen to take daily action to prevent pregnancy. Nurses can be instrumental in helping teens to avoid unwanted pregnancy by assessing teens' contraceptive needs and educating them about contraceptive options. However, it is important to remember that because none of these new methods offer protection against sexually transmitted diseases, we should continue to educate adolescents about the need for condom use and provide them with instructions on using condoms correctly.

Jemmott, Jemmott and Fong (1998) reported a study about abstinence and safer sex HIV risk-reduction interventions for African-American adolescents. Six hundred and fifty-nine African-American adolescents with a mean age of 11.8 years attending the sixth or seventh grade in three middle schools serving low-income communities in Philadelphia were recruited through announcements in assemblies, classrooms, and the cafeteria and in letters to parents and guardians. The abstinence group included information on HIV and sexually transmitted diseases (STDs) and acknowledged that condoms can reduce pregnancy, STDs, and HIV but emphasized the need for abstinence to provide absolute protection. This intervention also placed emphasis on the beliefs that abstinence can prevent pregnancy, STDs, and HIV as well as increase the likelihood of attaining future goals. Finally, this intervention stressed development of skills and self-efficacy in negotiating abstinence and resisting peer pressure to have sexual intercourse.

The safer sex group included information that abstinence was the "best choice" in preventing negative outcomes from sexual activity; however, this group emphasized the need to use condoms if one was sexually active. Topics covered included knowledge of HIV and STDs, enhancement of hedonistic beliefs regarding condom use

as it relates to sexual pleasure, and exercises to increase skills and self-efficacy to use condoms and negotiate condom use. The control group focused on non-HIV/ nonsexuality health issues, including healthy dietary practices, aerobic exercise, breast and testicular self-examination, and cigarette smoking, to reduce behaviors related to cardiovascular disease, stroke, and cancer. Each group had educational and entertaining exercises, which included videos, games, discussion, and skill building. Subjects completed confidential questionnaires before and after the intervention and again at 3, 6, and 12 months after the intervention. These questionnaires measured self-reported sexual behaviors in the previous 3 months including condom use, as well as behavioral beliefs based on the theory of reasoned action, planned behavior, and social cognitive theory.

Condom availability beliefs, as well as condom use technical skills, impulse control, negotiation, self-efficacy, prevention beliefs, intentions to use condoms, and knowledge about use were measured. In addition, the questionnaire probed beliefs about abstinence preventing pregnancy and AIDS, about enhancing attainment of future career goals, about attitudes and intentions to have sexual intercourse, and about HIV risk reduction knowledge.

The results showed the abstinence group compared with the control group was also more likely to believe that abstinence would help them achieve future goals. (This was not the case for the abstinence-safe sex comparison.) Adolescents in the safe sex group had better condom use knowledge; were more likely to believe that condoms prevent pregnancy, STDs, and HIV and would not interfere with sexual enjoyment; and were more likely to believe that they would have condoms available than subjects in the other two intervention groups. Subjects in the safe sex group scored better on impulse

control for condom use and self-efficacy than the control group. Overall HIV knowledge was better for both the abstinence and safe sex groups than the control group, and the safe sex group scored the best.

Self-regulation

Regulation or self-regulation is a standard of personal skill health behavior and it occurs when one uses personal (self) processes to monitor and control behavior and the environment to avoid risk or sickness (Bandura, 1986, 1994; Fleury, 1998; Hallam & Petosa, 2004; Ley & Young, 1998; Miller, Toscova, Miller, & Sanchez, 2000; Nezami, Sussman, & Penz, 2003; Patock-Peckham, Cheong, Balhorn, & Nagoshi, 2001; Scisney-Maltlock, Watkins, & Colling, 2001; Shearer & Wingo, 2002; Svenson, 2002). Condom use is a norm for protecting people from STDs, HIV infection, and unwanted pregnancy. Maintaining consistent condom use overtime is the best way to protect female adolescent from sexual health problems (Ann, Richard, Robert, William, Jeffrey, & Susan, 2005; Furby, Let & Young, 1998; Hallam & Petosa, 2004; Thomas & Ochs, 1995; Svenson, 2002; Zimmerman, 1986)

An adolescent is the risk group of sexual health problem (Kelly, Leasser, & Smoots, 2005), so self-regulation behavior should be performed to control the risk of sexual health problem (Nezami, Sussman, & Penz, 2003). Moreover, many research studies supported that abstinence and/or postponement of sexual intercourse is an important behavioral strategy for preventing sexual health risk among adolescents (Stammers, 2005; Stammers, 2005; Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006; Villaruel, 1998;). Therefore, maintenance of consistent condom uses overtime

and consistent abstinence and/or postponement of sexual intercourse is self-regulation behavior which is important strategy for sexual health protection.

From literature reviews, it is found that there are a few research studies used the self-regulation to conduct in STDs and HIV protection. The Self-regulation always has shown to be useful predictor in the area of public health, including alcohol and drug (Miller, Toscova, Miller, & Sanchez, 2000; Patock-Peckham, Cheong, Balhorn, & Nagoshi, 2001), smoking (Nezami, Sussman, & Pentz, 2003), and exercise (Hallam & Petosa, 2004). However, self-regulation can be applied for sexual health protection for female adolescents. Self-regulation in this study refers to the ability to maintenance of consistent abstinence and/or postponement of sexual intercourse, consistent use of condom over time and attention for education.

1. Maintenance of consistent condom use overtime

The effective self-protection action against AIDS infection requires self-regulative skills and a sense of personal power to exercise control over sexual activities (Bandura, 1994). Thus, self-regulation can measure as action of consistence control behavior (Hallam & Petosa, 2004; Ley & Young, 1998; Svenson, 2002). In order to protect female adolescents from STD and HIV infection, the maintenance of consistent use of condoms overtime with several partners is challenging. Svenson (2002) focuses on consistent use of condoms: Action control and situational risk in the prevention of HIV and STDS the use of condoms in a university population found that the high self-regulation was predictor consistent use of condoms (OR = 17.44, 95% CI = 8.9-43.0).

2. Consistent abstinence and/or postponement of sexual intercourse sexual intercourse

Rosengard, Adler, Millstein, Gurvey, & Ellen (2005) conducted the research that focused on perceived STD risk, relationship, and health values in adolescents' delaying sexual intercourse with new partners. The study was to examine the amount of time adolescents waited to have intercourse with past partners (main and causal), and intentions to delay with future partners. To determine psychosocial factors which predict delay intensions among adolescent male and females with future parents (main and causal), data from 205 adolescent STD clinic attendees were approached. Result showed adolescents waited less time to have intercourse with most recent causal than with most recent main partners ($\chi^2 = 31.97$, $p<0.00$). Factors influencing intensions to delay intercourse with future main partner differed by sex; males were negative for the importance of sex in relationship, while female were positive influenced by importance of intimacy in relationships, perceived risk of STDs, and health values. For female, the perceived risk of contracting an STD from a main or causal partner (that is, the greater perception of risk, the longer the intended delay), the importance of health (that is the greater importance of health, the longer intended delay), and past delay behaviors with main and causal partners (that is, the longer past delays, the longer intended delays) were factors that accounted for variance in females' intentions to delay sexual intercourse with main partners. Only past delay behavior with causal and main partners, along with delay intensions with future main partners accounted for variance in females' intensions to delay sexual intercourse with causal partners. Self-regulation for sexual abstinence is clearly the most effective strategy for prevention STD. However, a

substantial proportion of adolescent do not adopt this preventive practice (DiClemente, Hansen, & Ponton, 1996).

3. Attention for education

In process of self-regulation person do have self-directed change goal adoption sets; implementation strategies convert goals into productive actions; and maintenance strategies help to sustain achieved behavioral changes (Bandura, 2005). In adolescent it is known that education goal is important for their future life. Therefore, attention or concentration for the education can change the issue of sexual relationship in adolescent and can delay or protect female adolescent from sexual risk. If the adolescents have goal setting for finishing education they can regulate themselves and have self-monitoring to meet their goals. From the study of Schvaneveldt, Miller, Berry, and Lee (2001) who examined bidirectional relationships between age at first sex, sexual intercourse and academic goals and achievement. In longitudinal data spanning 11 years, it was found that adolescents with high educational goals and achievement delay having intercourse because of the perceived risks (e.g., pregnancy and sexual transmitted diseases may jeopardize their plans for the future). Conversely, adolescents who engage in sexual intercourse at young ages might undergo a change in attitudes, including reduced interest in academic achievement and goal. The specific educational variables most strongly related to adolescent sexual intercourse in this study differed substantially by race and gender. Moreover, from the focus group of female adolescents the researcher found that the goal of graduate education can protect adolescent from sexual problems. Thai adolescents always agree with their parents that in adolescent age attention to education in order to meet academic goal was more important than focusing

on the other things such as thinking about having boyfriends or girlfriends (Konggumnerd, 2006).

Guarding against

In the model of sexual health protection, people use the barriers or devices for reducing or eliminating the threat or the risk. There are many barriers or devices that female adolescents can use for guarding against STD, HIV and unwanted pregnancy. Shearer and Wingo (2002) proposed that guarding against can be in micro level that is in the area of psychology. From literature reviewed it is found that strong bonding relationship of adolescent with family members, and teachers can be used for protection or guarding against STD, HIV, and unwanted pregnancy (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995;). From literature review it is found that there are many strategies which female adolescent can use to protect themselves from sexual risk. This study guarding against consists of communication with parents and peers about safe sex practice, avoiding drug and alcohol, hygiene care, and avoiding situation risk

1. Communication with parent and peer about safe sex practice

There are many evidences (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995;) to support that parent and peer relationships can be used for preventing sexual problems. The study of Millstein and Moscicki (1995) found that bonding strong relationship with family members, teachers, or others can have significant positive influence in a person's social network. Parents play an important role in determining adolescent involvement in risk behavior. Adolescents may learn to engage in risk-taking behavior from observing their parents' behavior. Adolescent are

less likely to abuse substances and to initiate activity when parents provide emotional support and acceptance, and have a close relationship with their children (DiClemente, Hansen, & Ponton, 1996). Then, parenting support served as a protective factor in families where the mother had her first child as a teenage. Furthermore, parental-adolescent communication, parent's education and employment influenced the children's involvement in possible sexual situations (DiLorio, Dudley, Soet, McCarty, & DiLorio, 2004).

DiClemente, Hansen, and Ponton (1996) found that the adolescents' developmental involves individualism from the family and identification with peer group. As a result parental impact on risk-taking behavior may decrease as peer influences increases throughout adolescent. Thus, peer influence has been cited as a factor in adolescent sexual behavior. Beal, Ausiello, and Perrin (2001) studied the research of social influences on health-risk behaviors among minority middle school students, to determine whether parents' social influences are associated with health-risk behaviors more than social influences among young minority adolescents. The research conducted a cross-sectional survey of seventh-grade students in a public urban magnet middle school using a survey instrument adapted from the Centers of Disease Control and Prevention Youth Risk behavior survey. The results showed 20% of respondents reported using tobacco, over 50% used alcohol in past year, 13.3% were sexually active, and 12% reported marijuana use. Parents' influences were associated with differences in alcohol use, where as peer influences were associated with difference in all measured health-risk behavior: tobacco and alcohol use, sexual activity, and marijuana use. This study suggests peers and peer group behavior may be better

predictors of adolescent health-risk behavior than parental social influences among young adolescents.

Hull, Hasmi, and Wisdyan (2004) conducted the study of "Peer" Educators initiatives for adolescent reproductive health projects in Indonesia. A total of 80 peer educators carried out small-group information session of the dangers involved in sexual life, STD, rape or the effects of drugs and alcohol in ten different districts. Over 1,300 adolescents attended. The result showed that there was great enthusiasm across a variety of communities for effort to educate young people on way to protect their reproductive health.

Peer education training curriculum for sexual risk reduction in the rural southeastern state of USA was conducted by Smith and DiCliement (2000). Students Together Against Negative Decision (STAND) is a 28-session teen peer educator training program; implemented in a rural country in a southeastern state, promoting both abstinence and sexual risk reduction. Acceptance and participant in STAND suggest that adolescents in rural communities can be accessed through community-based interventions, that they are willing to participate in such intensive programs, and that they perceived the intervention as valuable and enjoyable. Moreover, the STAND program has thieved in a relatively conservative rural environment, and has had a positive impact on adolescent' sexual risk taking. The result showed significantly greater increases in use and consistent use of condoms. Adolescent trainees also reported a sevenfold larger increase in use of condoms and decrease in unprotected intercourse.

2 .Avoiding drug and alcohol

Avoiding drug and alcohol is an important aspect of sexual activity for consideration because judgment is always impaired under the influence of drugs. If adolescents use drug and alcohol during sexual intercourse they do not have the ability to make the correct decisions about protecting them from STD, HIV/AIDS and unwanted pregnancy. Therefore drug and alcohol will make the situation very high risk for sexual health problem (Champian, 2005). Researches supported that avoiding drugs and alcohol before or during sexual intercourse can protect female adolescent from risky sexual behavior (Furby, Thomas, & Ochs, 1995; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992). Millstein and Moscicki (1995) conducted the study of sexually-transmitted disease in female adolescents, effects of psychosocial factors and high risk behaviors. The sample were 571 sexually-active female adolescent (ages 13-19 years) who were recruited from family planning clinics. The result found that female adolescents who were heavy user of alcohol and drugs, felt little control over their sexual behavior, and had a greater number of friends who engaged in risky sexual behavior (number of sexual partners, number of lifetime sexual, anal sex, condom use with partners and new partners, and history of sex with male homosexual/bisexual) and were themselves more likely to engage in risky sexual behavior. Risky sexual behavior was associated with positive STD status. Significant paths were confirmed across the adolescent, 35% of the subjects who reported having used alcohol during sex also reported having multiple sexual partners.

3. Hygiene care

Washing the genitals and hands after sexual contract can prevent the spread of STDs. Washing with soap and water, with an antibiotic soap, immediately after the

skin contract might remove some STD organism that have not penetrated the skin. (Denney & Quadagno, 1992), therefore genital hygiene care is one method for sexual health protection.

Many females have received the false message from society that their genitals are "dirty" and that they shouldn't talk about them. Because of these messages, which can come from media as well as parents, girls are under the impression that any smell or discharge from their vagina is abnormal. It is perfectly natural to have a slight sweet smell that is nonoffensive. A strong, foul odor indicates a possible infection. W ith treatment, the infection will go away and so will the strong odor. Vaginal discharge is a necessary part of the body's regular functioning. Normal discharge, usually clear to white, is part of the body's self-cleaning process. As discharge leaves the body, it takes bacteria with it, which helps keep vaginal infections at bay. Discharge is also a natural lubricant, which aids in sexual intercourse. The genitals are complex, life-giving organs with many functions. Knowledge is a key factor in developing a healthy attitude about the genitalia and realizing that the genitals are not "dirty" and are basically just other parts of the body. Understanding the normal functions of the genitals also helps a person feel more comfortable with her body and stay healthy (Anderson, McKee, Yukes, Alvarez, & Karasz, 2008; McKee, Baquero, Anderson, Alvarez, & Karasz, 2008; Turkistanli, Saydam, & Aydemir ,2003).

It is important to regularly wash the genital area, including the anus, to help ward off infections and bad odor. Since the genital area is moist and warm, bacteria can grow easily. Excretions from the vagina, perspiration, and urine can build up making it even easier for the bacteria to grow. These bacteria can cause urinary tract infections (UTI's) or vaginal infections. Cleaning the genital area with a mild soap and water on a

regular basis will help control the bacteria growth and limit infections. However, poor personal hygiene can put one at greater risk of contracting a vaginal or urinary tract infection. The following are some of the most common vaginal and urinary tract infections that can be affected by poor hygiene. (Anderson, McKee, Yukes, Alvarez, & Karasz, 2008; McKee, Baquero, Anderson, Alvarez, & Karasz, 2008; Turkistanli, Saydam, & Aydemir , 2003).

4 Avoiding situation risk

Avoiding date with their boy friends in the situation risk is a method for female adolescent's sexual health protection. From the study of Furby, Thomas, and Ochs (1995) female adolescent proposed sexual health prevention from STDs such as abstaining from certain sexual activity. Intimate situations such as stay with boyfriend in private place, alone going out with him, and having party without supervision of adult induce adolescents have chance to intimate together, and engage into unintended sexual intercourse from their uncontrolled sexual desire. Some female adolescents may be forced by their partners and friends to have sex (Norris, Masters, & Zawacki, 2004; Patel, Yoskowitz, & Kaufman, 2007; Talashek, Norr, & Dancy, 2003). The first experience is often happened at the home of partner. A resent research study (Poonsanasuwansi, 1997 cited in Pongyuen, 2004) confirmed that first premarital sexual intercourse of female adolescents was unexpected. It resulted from date with boyfriend at amusing or entertaining place and drink. The investigator set three focus group of female adolescent (n = 30) in some secondary school in Nakhron Sri Thammarat Province. The topic of a focus group was how to protect female adolescents from sexual health problems with their boyfriends. The result showed that avoiding date with their

boyfriends in the situation risk is the major strategy for female adolescents' sexual health protection (Konggumnerd, 2006).

Seeking information

Seeking information is a strategy for protecting female adolescent from sexual risk. This study was focused on seeking information of sexual health information or knowledge and sexual behavior and history of sexual health of partner.

1. Seeking sexual health information

In the Model of Protection (Shearer & Wingo, 2002), sexual health information is very important in shaping knowledge and attitudes of adolescents. Seeking sexual health information can search and learn from many resources such as education or training programs, mass media, peers, the other people or the other technology. Increasing knowledge can make female adolescent to understand more about world view. It can be said that knowledge is important for adolescent in order to protect them from sexual risk behavior.

In Thailand, public health education campaigns began after the initial cases of AIDS appeared in 1984. Television, radio program and printed media covered basic issues on the meaning, causes, symptoms, transmissions and preventions of AIDS reaching almost all of the population. AIDS education has been incorporated into the curriculum of elementary and high schools including vocational schools (Arenth, 1999). However, a resent research study (Pornchaikate, 2003) found that the topic of sexual health that female adolescents interested were safe sex practice, contraceptive use, and gender role and topics of sexuality.

Research studies in Thailand and Japan (Kitaura, 1997) have found that the most common source of HIV/AIDS information was through TV, followed by radio and newspapers, health workers, lastly friends and family members. Although TV was the most common source of information, the most trusted source of information for adolescents were the health professional and teachers (Rosenthal & Smit, 1995). Furthermore when the person presenting information is perceived as credible, the information conveyed is high in influence and credibility. Supporting Rosenthal and Smit (1995), Arenth (1999) found that all students in their study were exposed to a wide range of information sources about HIV/AIDS. Most students considered the media, especially television and video as most valuable source.

2. Assertive seeking information

Assertive seeking information is important for female sexual health protection. If female has any doubts about whether her partner has an STD or sexual health problem, she should ask him (Martyn & Martin, 2003). Assertive seeking information of sexual partner history is important for protecting female adolescents from sexual health problems; including the number of lifetime sexual partner, number of years when sexual intercourse first occurred, number of times diagnosed as having an STD, and number of pregnancies (Cobb, 1997). Moreover women should know partner's personal hygiene; they should not have sex with someone who is high risk, who has sores around their mouth, who has needle marks on their arms, limiting number of partners (Furby, Thomas, & Ochs, 1995). However, honest communication between potential sex partners is essential. If female are afraid the potential partner will be offended by her concern and question. She must take the chance of offending him. A woman who knows her partner has an STD, should avoid intimate contract while the

disease is in the contagious phase (Denney & Quadagno, 1992). The Information Seeking scale, a six-item instrument developed by Kellermann and Reynold (1990) was used to examine the extent to which young women sought general knowledge about a new sexual partner to "get to know" him. Higher scores indicate greater levels of information seeking. Reported Cronbach's alphas for the original scale ranged from 0.79 to 0.85.

Research of Cobb (1997) related with the increasing skill of seeking information, communication practices related to disease-related sexual protection was developed. He conducted the study of Communication types and Sexual Protective of College Women. His study proposed the communication practices related to sexual disease protection. The purpose of this study was to explore the relationship among different types of interpersonal communication of young women and their new sexual partners and their implementation of disease-related sexual protection. A sample of 163 young women who had experienced sexual intercourse completed the Safe Sex Behavior Questionnaire. Interpersonal communication was explored using the general-information-seeking (getting to know a partner), sexual self-disclosure, and specific-disease risk information-seeking scales. These scales were combined and factor analysis revealed three subscales closely related to the original scales. Findings suggest that young women who seek specific information about their new sexual partner's disease risk status are more likely to implement sexual protective practices. This study proposed that nurses who work with adolescent women can provide expert guidance in program development and implementation.

3. Sexual self-disclosure

Sexual self-disclosure, a strategy for seeking information, is a communication strategy used to open verbal interactions in the process of establishing a relationship. The Sexual Self-Disclosure scale (SSDS) (Herold & Way, 1988), measured personal disclosure in eight area of sexuality: views on sexual morality, premarital sexual intercourse, oral sex, masturbation, sexual thoughts and fantasies, pleasurable sexual techniques, contraceptive use, and sexual problems or difficulties. Higher scores reflect greater levels of sexual self-disclosure. The Self-Disclosure Index (SDI) (Miller, Berg, & Archer, 1983 cited by Dibble & Swanson, 2000) was used in the study of Dibble and Swanson (2000) in order to measure the extent to which an individual has revealed personal information about him or her to a same-sex stranger or same-sex friend. The scale was developed using a sample of undergraduate introductory psychology student. The internal consistency for the same-sex stranger version was .93 for the same-sex-friend version. It was 0.87 for men and o.86 for women (Dibble & Swanson, 2000).

Therefore in this study seeking information is composed of seeking sexual health information, assertive seeking information of sexual health partner, and sexual-disclosure.

Sexual health protection in Thai context

Cultural norms in regard to gender roles are important in shaping sexual patterns. In general, “gender” refers to the expectations and norms shared within a society about appropriate male and female behavior, characteristics, and roles. Each society may regulate differently gender role of male and female. Attitude, belief, and practice of people in each society are associated with gender role perception constructed

from the culture of each society. Social inequalities between the sexes serve as one of the most important factors for power difference in the sexual lives of women and men and the effects of gender power on their sexuality.

In Thai society, cultural norms based on gender inequality in sexual relations expect that women must be inexperienced and naïve in sexual matters. And they see themselves as passive receptacles of men's sexual passion, while males are nurtured to have higher status and more sexual power than females. This double standard is based on the assumption that males have a grater desire and need more sexual activity than females. "Good" women should suppress their sexual feelings and reactions, and not display sexual pleasure or sexual desire, so they will not be accused of being like a prostitute who has sexual skills (Fongkaew, 1996; Yoddumne-Atting, 2001). These aspects clearly reflect on sexual performance, negotiable power, response, power, responsibility and nonresponsibility to the consequences of the sexual act, use and non-use of contraception, and protection of themselves and their parents from STDs (Gray & Punpuing, 1999 cited in Yoddumnern-Atting, 2001).

Cultural norms are also an important obstacle of female adolescents to access reproductive health services because they are afraid that premarital sexual intercourse will be revealed. They may receive the stigma of being a bad female in society. Moreover, the attitude of reproductive health providers will often evaluate females who have reproductive health problems as promiscuous women and they often think that these problems should not occur with good women. The above mentioned causes affect to female adolescents who have less power to make self decision to increase pressure to access correct information and reproductive health services. Lack of access and lack of information puts them at risk for pregnancy and STD, including AIDS.

Gender is determining factor in sexual relationship. The context of the relationship with a partner should also be considered as gender based power. Under patriarchal social construction, males have much power in decision-making. Males are leaders of family in several dimensions, especially in the sexual dimension. These results are from the gender roles that are regulated by society. In general, "gender" refers to the expectations and norms shared within a society about appropriate male and female behavior, characteristics, and roles. In addition, gender role causes a male expression of power over females. Gender-based power inequities generally incorporate the belief that men should control women's sexuality. Gender-based power in sexual relationships is frequently unbalanced and those women usually have less power than men. Furthermore, these balances operate in the context of a nearly universal sexual double standard that gives men greater sexual freedom and rights of sexual self-determination than women (Balance, 2001). Particularly in a patriarchal society, without an equalization of power in their relationships with male partners, female adolescents are powerless in sexual negotiation. For example, in case of unintended and unsafe sexual intercourse, most of female fear to refuse to their partners and they have difficulty asking partners to use a condoms (Taylor-Seehafer & Rew, 2000). In case of females who are brave enough to negotiate they may not be successful due to lack of participation by males, and this may cause unsteady relationships.

Recently society has seen change in characteristics of sexual partnership which is causal sexual partnership. According to the study about Thai adolescent sexuality and reproductive health, it was found that sexual partnerships for male adolescents could be divided into two types: short term relationship and long term relationship. In short-term sexual relationship, boys would have sex with girls 1-2 times and then they quit the

relationship. In the long-term sexual relationship, boys felt emotionally attached to the girls and often planned to get married to the girls. The duration of this type of relationship was more than six months (Boonmongkon, Jaranasri, Thanaisawanyangkoon, & Limsumphan, 1998). The result of these studies pointed out that female adolescent who have stable, continuous, or long term sexual partnership may have unsafe or unprotected sexual behaviors because they trust their partners and believe that their partners are free from STDs. These reasons cause them to neglect safe sex. However, causal sexual partnership may also be an obstacle to use condoms especially in case of partners who have power in decision-making while they have sex; they may force unprotected sexual behavior (Crosby, 2000; Kordoutis, et al., 2000; Nerring, Wydler, & Michaud, 2000).

Factors related to sexual health protection in adolescent

In the Model of Protection (Shearer & Wingo, 2002) threat exposure or exposure risk is a context of health protection. Exposure to the risk is important because it showed that lifestyle of person may be exposed to risk factors. Therefore female adolescent who expose risk or get risk of sexual health problem, i.e., STDs and HIV infection and unwanted pregnancy, has to protect herself from the risk or diseases. This part, the risk group of sexual health problem was classified by the magnitude of adolescents who expose the risk of sexual health problem. From the literature review it is found that career status, type of residence, intimate relationship and sexual experience are related to sexual health protection in adolescents. The low risk group of sexual health problem was female adolescent who were studying in education system, living with parents, never had intimate boyfriend, and never had sexual experience. On

the other hand, the high risk group was female adolescents who had a job, did not live with parents, had intimate boyfriend, and had sexual experience (Aarons, 2000; Juarez & Martin, 2006; Lammers, Ireland, Resnick, & Blum, 2000; Nerring, Wydeler, & Michaud, 2000; Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006; Taylor-Seehafer & Rew, 2000; Villarruel, 2004).

Carrier Status of adolescents

Female adolescent who studied in the education system would expose or get risk of the sexual health less than female adolescent who have job or studied in Non-formal Education settings. Normally, Thai female adolescents who are studying in secondary school and vocational school would exposure the low risk groups of sexual problem. According to, both groups of student always study hard to meet their goal of high education so they have to concentrate more on their education than do the other things. Moreover, there are sex education programs that are provided from the school and some organizations which create various activities about sexual health prevention for students. Furthermore, sex education in school is of much beneficial to the adolescent. Normally, adolescent always spend at least 6 hours a day in a school. Schools can be socializing agents for sex education of a large number of adolescent. The ability to contribute to the socialization of adolescent makes school an ideal place for implementing intervention programs. Thus, sex education programs implemented in school have the potential to impact adolescents before they become sexually active.

Evidence from previous study (Bianca, Bettina, Michele, Christina, & Aida, 2003) supported that sex education program which are created by an organization of community addressed the role of contraceptive use in safe sex behavior and many adolescents' reported intentions to delay sex and use contraceptives. Moreover, it is

important and necessary to continue safer-sex education in college campuses. According to this study, adolescents received health information from a variety of sources such as college classes, residence halls or campus housing, student clubs and organizations, the Student Health Center, health fairs, pamphlets or brochures distributed on campus from a variety of sources, the university newspaper, and informal discussion with friends (Pavlich, Anti, Kerr, & Thompson, 2007) that effect sexual health protection among adolescents.

Conversely, female adolescents studying out of education system and female adolescents who have jobs would expose the high risk of sexual health problem. Normally, both groups already had a job and it is known that Thai female adolescents who already were working would be exposed to sexual health problem. They may easily associate with males in the workplace and they may easily engage to have sexual intercourse with men. Moreover there are fewer sex education programs in the workplace than in school so female adolescents cannot learn how to protect themselves from sexual health problem. Therefore, they learn sexual health protection by themselves, or from workers or magazines which may be not an efficient way to learn safe sex practice.

Type of residence

Female adolescent who live with parents would expose the sexual health risk less than female adolescent who do not live with parents but live with friends, relatives, or stay alone. Many research studies supported parental-adolescent communication influenced the low risk in sexual possibility situations of child and adolescent (DiClemente, Hansen, & Ponton, 1996; DiLorio, Dudley, Soet, & McCarty,

2004) and sexual health problem (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995). Moreover, the findings of literature reported that the parental impact on adolescent sexual behavior especially on the adolescents who had a good relationship with their parents, were more likely to use condoms (Cha, Kim, & Doswell, 2007; Jaccard & Dittus, 2000). Furthermore, parents have the importance of protecting female adolescents from HIV, STD and unwanted pregnancy (Dilorio, Dudley, Wang, Wasserman, Eichler, & Berlcher, 2001).

On the contrary, a research study (Beal, Ausiello, & Perrin, 2001) suggested that peers and peer group behavior may be better predictors of adolescent health-risk behavior than parental social influences among young adolescents. Similarly, research studies (Cobb, 1997; Hull, Hasmi & Wisdyan, 2004; Millstein & Moscicki, 1995) reported that peer group can protect adolescent from reproductive ill-health and decrease sexual risk of the adolescent. The peer group also showed significantly greater increases in use and consistent use of condoms in adolescent (Hull, Hasmi & Wisdyan, 2004).

Intimate relationship

Female adolescents who never have an intimate boyfriend would expose the sexual risk less than female adolescents who have intimate boyfriends. It is possible that female adolescent who never has an intimate boyfriend will not, in the risky situation, have sexual intercourse. They may have more interest in the goal of education than having intimate boyfriends. Supporting the idea, research studies found that adolescents who believe in the importance of a good education are positively associated with abstinence or delay in sexual intercourse in adolescents (Lammers, Ireland, Resnick, &

Blum, 2000; Villarruel, 2004). In contrast, participants having an intimate boyfriend would be exposed to have sexual intercourse and sexual health problem. It is possible that all of them may allow boyfriends to touch their body such as hold hands and shoulder, hug and kiss. All of these activities made female adolescents easily to be at risk for having sexual intercourse without safe sex.

Sexual experience

Female adolescent who never have sexual experience would exposure the risk of sexual problem less than female adolescent who had sexual experience. Female adolescent who never have sexual experience would perceive that having sexual intercourse is the cause of the risk from STDS, HIV/AIDS and unwanted pregnancy so they may practice safe sex. Moreover, they may perceive susceptibility and severity of sexual health problem. A recent research of Rosengard, Adler, Millstein, Gurvey, & Ellen (2005) found the association between perceived STD risk and health values in adolescents' delaying sexual intercourse with new partners.

Furthermore, female participants may perceive that abstinence from sexual intercourse is an important behavioral strategy for preventing the risk for HIV infection, STD, and unwanted pregnancy. A literature review (Aarons, 2000) supported that postponing sexual intercourse among urban junior high school female students was more likely to report virginity and to refuse sexual involvement during the following 6 months. Similar to previous study (Aarons, 2000) a recent study (Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006) found that the effects of an abstinence intervention showed the youth who participated in the abstinence intervention were less likely to report having sexual intercourse. Villaruel (1998) and Stammers (2005) supported that

delay or postpone of onset of intercourse until they are ready in education is more practical for prevent HIV infection in adolescents.

In contrast, female adolescents who have sexual intercourse may not protect themselves from HIV infection, STD, and unwanted pregnancy. Juarez & Martin (2006) found that although female adolescents usually recognize that HIV poses a threat for young people, many of them found they did not perceive themselves at risk (Juarez & Martin, 2006). Moreover, female adolescent who had sexual experience always conflict about safe sex and romantic love. Moreover, use of condoms may mean mistrust or infidelity to some and care and love to others. Thus, in the context of a romantic relationship, condom use may be interpreted as an admission or accusation of sexual infidelity, undermine trust, and jeopardize the relationship if presented as disease prevention, although it may be welcome as a sign of concern if presented as pregnancy prevention (Juarez & Martin, 2006; Nerring, Wydeler, & Michaud, 2000; Taylor-Seehafer & Rew, 2000). Supporting the research studies above, evidence are found that higher proportion of sexual activity of female adolescent did not use contraceptive at the time of first sexual intercourse (Orji & Esimai, 2005). A reason which many female adolescents do not view themselves as being a risk for HIV/AIDS and STDs and some of them believed their partners are safe (Hutcinsons, Sosa, & Thompson, 2001).

The overview of sexual health protection Instruments

The overview of sexual health protection instrument in this section will portray the existing scales that are related with the sexual health protection which can guide the researcher to develop of sexual health protection instrument.

The Safe Sex Behavior Questionnaire (SSBQ)

The Safe Sex Behavior Questionnaire (SSBQ) was developed from Dilorio et al., 1992). The Conceptual base was concepts of safe sex which came from the literature reviewed. The attributes of safe sex were composed of; (1) protecting during intercourse, (2) avoidance of risky behaviors such as anal sex, (3) interpersonal skills to elicit history and (4) negotiate the use of safe sex practices. The SSBQ was designed to measure the frequency of use of safe sex practices and was assessed for content validity (98%). The initial scale is a 27-item 4-point Likert-type. The initial reliability of the total scale was 0.85 among 89 college freshmen. Using a second sample of 531 subjects, the SSBQ was factor-analyzed separately from males and females and five similar factors emerged for each gender. Reliability coefficients for sums of main items for each factor ranged from 0.52 to 0.85. The final scale was 24-items. Using a third sample of 174 subjects, construct validity was assessed by correlating the SSBQ with measures of general assertiveness and general risk-taking. The results of correlations were appropriate and were in the predicted directions, thus providing support for the construct validity of the instrument. There are some attributes that can be used to develop the SHPS such as interpersonal skills to elicit history and the negotiation for safe sex practices. However, this scale is limited when used for assessing the whole concept of sexual health protection. The safe sex behavior, an attribute of the SSBQ, was used to develop the Interpersonal Communication Scale and Sexual Protective Scale by Cobb (1997). Moreover, in the study of Whyte and Dawson (2001), the SSBQ was used to compare the sexual risk behaviors between heterosexual African American women living with HIV positive and women who perceived themselves having HIV negative. The result showed that the SSBQ score of the HIV-positive group was not

significantly different from the SSBQ score of HIV-negative groups. However, the mean SSBQ scores were higher in the HIV-positive group.

STD Prevention Question

STD Prevention Question was conducted by Furby, Thomas and Ochs (1995), to understand and improve adolescent decision making about STD prevention. The theory that uses to conduct the scale was decision making under uncertainty. Knowing what options adolescents already consider provides a basis for (a) identifying which additional options might profitably be brought to their attention, (b) determining which options need empirical study regarding perceived consequences, and (c) developing hypothesis concerning the shaping factors in this aspect of reality. The samples of 48 sexually active adolescents answered open-ended interview questions designed to elicit STD prevention measures considered spontaneously. These adolescents produced 119 different STD prevention measures which fell into different substantive categories. The psychometric properties were present by content validity that had CVI 88%. The result can be used for developing a sexual health protection behavior scale and it was appropriate to measure specials groups of the sexually active males and females. However, internal consistency reliability was low (0.52). As a result, no research evidence using the STD Prevention Question to measure the aspect of sexual health protection was reported.

The Interpersonal Communication Scale and Sexual Protective Practice Scale

The Interpersonal Communication Scale and Sexual Protective Practice scales were developed by Cobb (1997). The conceptual base was concepts of sexual protection

or safe sex (which came from disease-related protection research) and the concept of interpersonal communication. Both of them were developed from the SSBQ (Dilorio, Parsons, Lehr, Adame, & Carlone, 1992) and the literatures reviewed. The attributes of sexual protection concept were composed of condom use, number of sexual partners, discussion related to drugs and sexual history with a sexual partner, and getting to know a sexual partner. Interpersonal communication between sexually active adolescents was composed of three attributes; general communication practice (getting to know a partner), communication of sexual self-disclosure, and disease-related sexual protection. Interpersonal communication and sexual protection practices were combined and were developed to be the new Safe Sex Behavior Questionnaire (SSBQ). The total scale was 37-items on a 4-point Likert-type scale. Factor analysis revealed three subscales closely related to the original scale and subscales were presented as aspects of interpersonal communication. The result of testing SSBQ in sample of 163 young college women who had experienced sexual intercourse communication suggests young women who sought specific information about their new sexual partner's disease risk status were more likely to implement sexual protection practices. These scales only focus on safe sex practice and safe-sex communication so it is still needed to develop the whole concept of sexual health protection. However, no research study using the Interpersonal Communication Scale and Sexual Protective Practice Scales to measure the aspect of sexual health protection was reported.

Self-efficacy and Outcome Expectancy Tool

Self-efficacy and Outcome Expectancy Tool was developed from Dilorio, Dudley, Wang, Wasserman, Eichler, & Berlcher, 2001). The conceptual base was concepts of self-efficacy and outcome expectancy (related to discussion about sex). Both concepts came from the social cognitive theory (Bandura, 1994). Outcome expectancy was defined as the parents' expectation about the outcomes associated with talking to their adolescents about sex-related topics; self-evaluation; social; and physical. The responses of 491 mothers who participated in an HIV prevention intervention with their adolescents were used for the analysis. Assessment or reliability for both scales showed that internal consistency reliability was acceptable for total scales as well as three of the five subscales. With the exception of one item on the expectancy scale, the inter-item correlation, the mean inter-item correlation, and the item-to-total correlation met the standard criteria for scale development for both scales. Factor analysis was used to identify the understanding structure of the scale. The result of these analyses provides support for the construct validity of the scales. This scale was specific to measure the role of parents as a protector for protecting their adolescent from sexual health problems so it is limited when used for measuring sexual health protection in adolescents. Collen, Ken, Frances, Anindya, William, Dongqing Terry and et al. (2006) use concept of self-efficacy to measure sexual health protection of mothers for their adolescents.

Sexual Possibility Situations Index (SPS)

Sexual possibility situations index (SPS) and protective index were developed from DiLorio, Dudley, Soet, & McCarty (2004). The conceptual base was the concept of protective factors for sexual risk behavior and the sexual possibility situations (the risk situation) framework. The variables of the protective index was composed of educational goals, self-concept, and future time perspective, orientation to health, self-efficacy for abstinence, outcome expectations, parenting (parental involvement and parental control), parent-adolescent communication, values (personal, parental and peer), and pro-social activities. The sexual possibility situations index (the risk situation) (SPS) had component of two situations: time alone with a group and time alone with a opposite sex of the in addition of sexual behaviors and initial intercourse and in addition to items assessing SPS; intimate sexual behaviors, and initiation of sexual intercourse. The samples were 491 adolescents and their mothers. The alpha reliabilities were 0.64 and 0.68 for the SPS and protective indexes. Construct validities were demonstrated that both the SPS and the protective factors indices can predict intimate sexual behaviors and the SPS index can predict the initiation of sexual intercourse. This scale was developed the measure protective factors and the sexual risk behavior so it is very limited when used to assessing situation-specific sexual health protection. An attribute of the sexual possibility situations index, parenting (parental involvement and parental control) was used as an empirical basis for considering Types of Children's Basic Needs and Neglect in order to develop the conceptual Model of Child Neglect (Dubowitz, Newton, Litrownik, Briggs, Thompson, English, et al. (2005).

The attributes of existing instruments related to sexual health protection are presented in Table 1. The Safe Sex Behavior scale, the STD Prevention Question, and the Sexual Protective Practice scales focus on strategies that female adolescent used to protect themselves from STDs and HIV infection. The Interpersonal Communication Scale measure communication skill for seeking sexual health information from female adolescent partners. Self-efficacy and outcome expectancy tool focused on discussion between parents and female adolescent on safe sex practice. The Sexual Possibility Situations Index assessed the sexual possibility situations (risk situation). However, most instruments measured safe sex practices. At this moment, there is no instrument measure the whole concept of sexual health protection which specific to Thai female adolescent.

Table 1

Attributes of sexual health protection classified by existing instruments.

Existing instruments	Attributes
1. The Safe Sex Behavior Questionnaire (SSBQ) (Dilorio, Parsons, Lehr, Adame, & Carlone 1992)	*Safe Sex Behavior* - protecting during intercourse - avoidance of risky behaviors - interpersonal skills to elicit history - negotiate the use of safe sex practices

Table 1 (Continued)

Existing instruments	Attributes
2. STD Prevention Question (Furby, Thomas, & Ochs, 1995)	*Decision making under uncertainty* - identifying which additional options might profitably be brought to their attention - determining which options need empirical study regarding perceived consequences - developing hypothesis concerning the shaping factors in this aspect of reality
3. The Interpersonal Communication Scale and Sexual Protective Practice scales were developed by Cobb (1997)	*Sexual protective practice* - condom use - number of sexual partners - discussion related to drugs - sexual history with a sexual partner - getting to know a sexual partner

Table 1 (Continued)

Existing instruments	Attributes
	Interpersonal communication - general communication practice (getting to know a partner) - communication of sexual self-disclosure - disease-related sexual protection
4. Self-efficacy and outcome expectancy tool (Dilorio, Dudley, Wang, Wasserman, Eichler, & Berlcher (2001).	*Outcome expectancy (parents' expectation about the outcomes associated with talking to their adolescents)* - sex-related topics - self-evaluation - social and physical.
5. Sexual possibility situations index (SPS) (DiLorio, Dudley, Soet, & McCarty, 2004)	*Self-efficacy related to discussion about sex* *Protective factors for sexual risk behavior and the sexual possibility situations (the risk situation) framework* - educational goals - self-concept

Table 1 (Continued)

Existing instruments	Attributes
	- future time perspective - orientation to health - self-efficacy for abstinence - outcome expectations - parenting (parental involvement and parental control) - parent-adolescent communication - values (personal, parental and peer) - pro-social activities *Sexual possibility situations* - time alone with a group - time alone with a opposite sex of the in addition of sexual behaviors and initial intercourse - intimate sexual behaviors - initiation of sexual intercourse

Psychometric measurement

This review of psychometric measurement consists of: (1) perspectives on measurement in nursing science, (2) procedures and step in instrument development, (3) testing psychometric properties.

Perspective on measurement in nursing science

Measurement refers to the process of assigning the symbolic to object, event or situations according to rules. It consists of two concepts: (1) scaling, representing quantities of attributes numerically, and (2) classification, defining whether the objects fall into the same or different categories with respect to a given attribute. Instrumentation, a component of measurement, refers to developing a measurement device by specific rules. The term "rule implies that" there are explicit states for the number assignment (Burns & Grove, 2001; Netemeyer, Bearden, & Sharma, 2003; Nunnally & Bernstein, 1994).

Nursing confronts both direct and indirect measurement for gathering attribute variables. Nursing phenomena deal with human beings. Often, the characteristic to be measured is an abstract concept, such as stress, caring, anxiety, or pain. Achieving clarification can be done by conceptual definition. When measuring the abstract concept, the concept is an indirect measurement. Instead, indicator or attributes of the concept are used to represent the abstraction. Burn and Grove (2001) give an example of coping indicators, which can be measured by varying aspects such as the frequency or accuracy of problem identification, the speed or effectiveness of problem solution. Level of strategy is rarely a complete measurement of all aspects of an abstract concept.

Procedures and steps in instrument development

Developing a concept measurement is the major important process in the structure of a scientific investigation. The strength of a study's finding is based on research design, sampling, and other means of controlling conceptual and extraneous variables. The instrument should indicate the concepts with precision, accuracy and sensitivity. Precision refers to the way the measurement can define the concept exactly. Accuracy refers to way the instrument can report the concept's correctness or honesty. The ability of the instrument to discriminate levels of the concept is sensitivity (Mishel, 1998).

There are numerous authors who advocate procedures and steps to develop a measurement (Devllis, 1991; Mishel, 1998; Waltz, Strickland, & Lenz, 2005). For the following, a brief overview of each step in instrument development is presented by Waltz, Strickland and Lenz (2005). They proposed essential steps in the design of a norm-referenced, they are: (1) selection of a conceptual model for defining the nursing aspects of the measurement process, (2) explication objective for the measure, (3) development of a blueprint, (4) construction of the measure, including administration procedures, an item set, and scoring rules and procedures. De Velli (1991) also presented guidelines for developing measurement scales in 8 steps (1) Determine clearly what it is author want to measure, (2) Generate an item pool, (3) Determine the format for measurement, (4) Have initial item pool revised by experts, (5) Consider inclusion of validation items, (6) Administer items to a development sample, (7) Evaluate the items, (8) Optimize scale length. Based on guideline of De Velli (1991) and Waltz, Strickland, and Lenz (2005) the researcher will use these processes to develop SHPS as following.

Concept clarification, theoretical definition and operationalization

The first and most important step in instrument development is clearly construct definition or clarifies the concept to be measured. After defining the concept, the theoretical definition and specific dimensions of the concept are approached by reviewing literature, using an inductive qualitative study, or deriving a concept from a new field of interest. Relational statements should be provided for testing construct validity of an instrument (Mishel, 1998).

Operationalization is the process of determining and defining how to measure the concept, and specifying the empirical indicators and procedures that should be applied to measure it. The transition from a theoretical to an operational definition implicates a principal component of validity of the instrument. Conceptual and operational variable relation is the measurement assumption. It can be supported by validity testing (Mishel, 1998).

Item construction

Once the purpose of an instrument has been clearly obvious, the instrument should be constructed. In generating an item pool, the major issue that should be kept in mind is relating of scale items and content domain of the construct and manifestation of content validity (Netemeyer, Bearden, & Sharma, 2003). In addition, items should be created for each dimension of an instrument in order so that items in each dimension will be homogeneous (Mishel, 1998). There are many approaches to generate items such as: (1) review literature, (2) combination of review literature, interview experts or patients, (3) selection of items from existing instruments, (4) qualitative study within the target group, and data from interviews will be categorized according to similar themes. Then, these themes turn into scale dimension and data are created to items.

There are three issues relevant to generating an item pool. First, the larger the initial pool, the better it is. The developments should create as many items as they can to capture the phenomena of interest. Then, eliminate some items based on criteria such as: relevance, clarity, or similarity to other items (DeVellis, 1991).

Second, characteristics of good items should be clarity of meaning, keeping sentences short and simple, regardless of the target population, using conversational structure, limiting each item one idea, minimizing the effect of social desirability by avoiding derogatory, emotionally laden or trigger biased response terms, and using adjective forms instead of noun forms (DeVellis, 1991; Mishel, 1998; & Waltz, Strickland, & Lenz, 2005).

The last issue is sequence of the items. The issue to be concerned with is those items should be organized by: 1) keeping a minimum numbers of items, 2) keeping sensitive items that may be difficult to answer at the end, and 3) making sense to the respondents by arranging items in a logical and realistic fashion. However, sensitive questionnaires require items to be randomly ordered to increase response rates and eliminate bias due to evasive responses to emotionally disturbing items (Waltz, Strickland & Lenz, 2005). Sensitive issues such as stigma, fear, abortion, and sex are examples of topics to be concerned about. The researchers should be aware of emotional distress of participation when they respond to the questionnaire and know how to support them while conducting the measurement. Maintaining confidentiality, anonymous, ethical concern and research detachment are very important approaches, as above, to increase reliability and validity of the measurement (Waltz, Strickland, & Lenz, 2005).

Determine scaling format

The researcher should consider the format simultaneously with the generation of items in order to be compatible. The most common types of scoring method that is used in nursing research will be presented. First of them is the differential scale. The mast common example of this type is Thurston scale. It's method of organizing the items into approximately equal-appearing intervals and generating for comparisons of changes in a respondent's position on the dimension or for distinction between differences of respondents relative to the dimension (Mishel, 1998).

Second is the summertime scale. The most common type is the Likert scale. The purpose of this method is scaling of participants, not the scaling of the dimension. It's widely used for getting opinion, belief, attitude or other construct under study (DeVellis, 1991). Third, is cumulative scale, the Guttman scale is the example of this type.

Pretesting

After the stage of assessing content validity by professional experts, the questionnaire will be pre-tested with representative samples of people on whom the final instrument will be used. The researcher will conduct pre-testing to judge the feasibility before using the instrument in a formal study (Mishel, 1998). The small target participant will be asked to give feedback the appropriateness and clarity of item wording. After that, some items will be re-worded and the revised instrument will be re-worded and the revised instrument will be conducted with similar participants. In the next step, the researcher will use item analysis to estimate the reliability and validity of the instrument (Mishel, 1998; Waltz,Strickland, & Lenz, 2005).

Testing Psychometric Properties

There are important psychometric properties, i.e., reliability and validity of the measure that should be examined.

Reliability

The reliability of an instrument concerns its dependability, consistency, stability, and accuracy. All terms refer to the instrument's ability to produce the same results on repeated measures. The degree of reliability is usually determined by using correlation procedures (Knapp, 1991). Correlation coefficients can range between -1.00 and +1.00. Positive correlation of reliability is expected. A correlation coefficient above 0.70 is considered satisfactory for a newly developed instrument (Lyn, 1986; Burn & Grove, 2001). In addition, the percentage and rate of agreement may also be used to determine the reliability when observers and raters are used in a study (Knapp & Brown, 1995; Waltz, & Strickland, & Lenz, 2005).

1. Test-retest

The test-retest or stability procedure is appropriate for determining the quality of measures and other devices designed to assess characteristics known to be relatively stable over the time period under investigation. For this reason, test-retest procedures are usually employed for determining the reliability of affective measurement. Since cognitive measures assess characteristics that tend to change rapidly, this procedure is not usually appropriate for estimating their reliability.

When a test-retest procedure is employed, the concern is the consistency of performance one measure elicits from one group of subjects on two separate measurement occasions (Waltz, Strickland, & Lenz, 2005). Stability of the scale over

time will be measured with test-retest technique. A Pearson correlation will be performed by using correlating the scores of each factor of the SHPS from the first time of data collection with the score on the retest, two week later. The expected correlation coefficient is above .70 (Polit & Hungler, 1999)

2 Internal consistency

Internal inconsistency addressed the extent to which all items on an instrument measure the same variable (DeVellis, 1991). This type of reliability is appropriate only when the instrument is examining one concept or construct at a time. A homogenous instrument contains items that are closely correlated with each other and has high inter-correlations among the items, which show greater internal consistency of the instrument (DeVellis, 1991; Waltz, Strickland, & Lenz, 2005).

Several procedures can be used to measure the internal consistency of an instrument. A common type of internal consistency procedure used today is the coefficient alpha or Cronbach's alpha, which provides an estimate of the reliability of all possible ways of dividing an instrument into two halves. It is based on the strength of in-correlations of all items in the instrument as well as the number of item used. Furthermore, Cronbach's alpha is widely used as a measure of reliability, less self-evident than the case for other measures of reliability, and sound basis for comparing how other capture the essence or reliability (DeVellis, 1991). Its acceptable value is considered when the estimate is grater than or equal to 0.70. In this study, the Cronbach's alpha was used to evaluate the internal consistency of SHPS.

Validity

Validity of an instrument relates to the effects of non-random or systematic random. The validity of an instrument is the extent to which a measure reflects a concept that it is intended to measure. The instrument necessarily retains its level of validity when it is used with other subjects or in other environment settings (Waltz, Strickland & Lenz, 2005). There are essentially three basic types of validity, i.e., content, construct, and criterion (DeVellis, 1991). In this operation, two significant types were conducted, i.e., content validity and construct validity.

1. Content validity

To determine how well the specific items will be useful, the author will approach experts to review the items. For the number of experts, Lyn (1986) suggested a minimum of three experts should be used but others recommend from 2 to 20 panel members (Waltz, 1991). The experts will be asked to identify:

(1) The relevance of items to the content addressed by the objectives using the following four-point scale: 1 = Not relevant, 2 = somewhat relevant, 3 = Quite relevant, 4 = very relevant. Scores from the relevance scale will be computed for the Content Validity Index (CVI) using a formula described by Waltz, Strickland, & Lenz (1991). Grant and Davis (1997) who said that a new content valid instrument should have a minimum content validity index of .80;

(2) Clarity and conciseness of items using “yes” and “no” responses. In addition, the experts ask to suggest alternatives for items that are “not relevant”, “somewhat relevant”, “not clear”, and “not concise.” After items were considered for both clarity and conciseness by experts.

2. Construct Validity

Construct validity is directly concerned with the theoretical relationship of variable to other variables. It is the extent to which a measure behaves the way that the construct it purport to measure (DeVellis, 1991). A construct is a concept or abstraction that is created by the researcher. Construct validity involves the measurement of a variable that is not directly observable. It is derived from the underlying theory that is used to describe or explain the construct (DeVellis, 1991; Waltz, Strickland, & Lenz ,1991). Several methods are used to test construct validity of the instrument such as item analysis, know group technique, Factor Analysis, etc. In this study, item analysis, Factor analysis, and contrast group approach were used to test construct validity of the SHPS.

2.1 Item analysis. Item analysis was determined before factor analysis was carried out. Item analysis included to evaluate univariate and multivariate characteristics of each item. Then, the correlation matrix of the SHPS was examined in order to gather rough information as to whether it was appropriate to use factor analysis with this dataset. Moreover, the item to item correlation, item to subtotal correlation, subtotal to subtotal correlation and subtotal to the total scale correlation will be evaluated. The alpha correlation of item analysis sores range from -1.00 to + 1.00. Positive scores are desirable and indicate that the item is really measured in the desired direction (Monro, 2001; Tabachnick & Fidell, 2001; Waltz, Strickland, & Lenz, 1991).

Those items tend to do well on the test or to have a large amount of the measured attribute. An alpha correlation score near zero alpha correlation means that the item is discriminating between items, or subtotals scores of $r \geq 0.30$ are generally accepted as adequate (Monro, 2001; Tabachnick & Fidell, 2001; Waltz, Strickland, &

Lenz, 1991). The degree between high and low of items' correlation are achievers on the test. The moderate to high which are performed on any item predicts performance between items and sub-total, and items-total. The alpha correlation of the items among items and among sub-total items has to be low ($r \leq 0.30$) (Nunnally & Bernstein, 1994).

2.2. Factor analysis

Factor analysis will be used to assess construct validity. On the basis of a conceptual framework, a measure to assess various dimensions of subcomponents of phenomenon of interest and wishes, to empirically justify these dimensions or factors (Waltz, Strickland, & Lenz, 1991). Explicating constructs mainly consists of determining (a) the internal statistical structure of a set variables said to measure a construct and (b) the cross structures between the different measures of one construct and those of other construct. Factor analysis plays an important part in all types of validity. First, factor mainly is important to predictive validity in suggesting predictors that will work well in practice. Second, it is important to content validity in suggesting how to revise instrument. And the third, factor analysis provides some of the tools needed to define internal structures and cross structures for set of variables in construct validity (Nunnally & Bernstein, 1994). In this study, at first, Exploratory Factor Analysis (EFA) was conducted; then Confirmatory Factory Analysis (CFA) was used to confirm each factors of the scale.

Exploratory Factor Analysis (EFA). Two statistic techniques were used to confirm the appropriateness of applying factor analysis, they are: Batlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO).

Anti-image correlation matrix represents the negative value of the partial correlation among variables after factor analysis was performed. This matrix

demonstrates the degree to which the factor can explain each variable. Partial correlation coefficient should have mostly small values to represent unique covariance. When negative partial correlation was above zero, it revealed that variables are partially correlated. Therefore, those variables were not suitable for factor analysis (Dixon, 2001). When evaluating the off-diagonal values of anti-image correlation matrix represented partial correlation among variables.

Measure of sampling adequacy (MSA) was another way to assess the appropriateness of applying factor analysis by examining the entire correlation matrix and each individual variable. Represented value of .80 or above is worthy, .70 or above is middling, .60 or above is fair, .50 or above is miserable, and below .50 is unacceptable (Kaiser, cited in Hair, Anderson, Tatham, & Black, 1998).

Bartett test of sampling adequacy (MSA) was statistic testing to examine the overall correlation matrix and is appropriate for factor analysis by testing the hypothesis that matrix was an identity matrix, and also providing determination of multivariate normal distribution (Dixon, 2001; Hair, Anderson, Tatham, & Black, 1998).

Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was a ratio of sum of squared correlation to the sum of squared correlation plus of squared partial correlation. It can indicate variables share common factors by comparing the zero-order correlation to the partial correlation. When KMO was .60 and above, it reveals that using factor analysis is suitable.

Exploratory Factor Analysis (EFA) of SHPS would be determined by principal components analysis. Principal components analysis will be selected as the factor analysis extraction technique, as recommended by Nunnally and Bernstein (1994) and using Varimax orthogonal rotation. According to the suggestion of Tabachnick (1996), the

criteria for treatment factor analysis consists of : (a) the factors with Eigenvalues greater than 1, (b) the Scree plot test of Eigenvalues plotted against factor, (c) an item-factor loading of at least .30 (Waltz, Strickland & Lenz, 2005) or at least .40 (Nunnally & Bernstein, 1994), (d) a difference of at least .20 between an item's loading and any other factor will be used to determine item retention (Nunnally & Bernstein, 1994), and (e) factors fit in the hierarchy of "explanations" about the sexual health protection behavior. The resulting factor structure that best confirm to parsimonious will be selected from the various rotations (Nunnally & Bernstein, 1994; Waltz, Strickland, & Lenz, 2005).

Confirmatory exploratory factor analysis (CFA). According to the result of EFA, the various factor solutions were obtained. In this part to contribution of each factor was assessed by examining fit indices. Three major steps were involved: (1) assessment of parameter estimate, (2) assessment of measurement model, and (3) assessment of fit of the overall model. The model was tested through Confirmatory Factor Analysis (CFA) using RISREL 8.8.

Assessment of parameter estimate, before each factor was assessed for model fit, all factors were tested whether each factor had adequate information to use for estimation of parameter specified in the model. Maximum likelihood method was used to estimate parameters of the model (Byrne, 1998. If the result shows that all parameter estimates were in the possible range with no excessively large standard errors, no negative variance, and no covariance matrices that were not positive definite. This provided evidence for the accuracy and adequacy of the input specification of the model.

Assessment of measurement model, the focus on evaluating the relationship between latent variables and indicator loadings (factor loadings) were examined.

Indicators loading of all factors were relatively high if it was indicated by significant *t*-values which were greater than 1.96. However, if the relationship between latent variables and indicator loadings (factor loadings) was low and not significant, indicating that they were not sufficiently represented by their latent variables or, in other words, they were not good indicators of the underlying constructs.

Assessment of fit, in this step, the overall hypothesized model was assessed to see how well it fitted with data of the Thai sample. Because no one index can serve as a definite criterion for evaluating the fit of a hypothesized model, a combination of fit indices is suggested and the consensus of acceptable fit across all fit indices is used to determine the model fit. The processes which were used to evaluate fit of the model were presented below.

First, absolute fit indices address the question: is the residual or unexplained variance remaining after model fitting appreciable? Fit indices falling in this category are chi-square (X^2), X^2/df ratio index, and root mean square error of approximation – RMSEA, statistic significantly different. The recommended minimum accepted significance level is greater than .05 (Hair et al, 1998). Nonsignificant Chi-square values showed in the actual and predicted input matrices are not statistic different. Zero X^2 corresponds to a perfect fit. A small X^2 with a high p value (insignificant value) indicates a good fit and a large X^2 with low p value indicates a poor fit (Hair et al, 1998). However, Chi-quare is too sensitive to the sample size, especially for cases in which the sample size exceeds 200 respondents (Hair et al, 1998). Chi-square is appropriate for sample size between 100 and 200, with the significantly less reliable with sample sizes outside this range. Therefore, this study was not used non-significant large X^2 as the critical fit indices because of the large sample size (n = 450).

The norm Chi-square, which is the ratio of Chi-square divided by its degree of freedom (X^2/df), will also use to evaluate if the model is truly representative of the observed data. Ideally, the X^2/df ratio of 1.0 indicates an absolute fit. The values of 2.0-3.0 are good and values greater than 5.0 are unacceptable (Hair et al, 1998).

Other fit indices of the first category, RMSEA, were used in this study. The RMSEA is a measure that attempts to correct for the tendency of the Chi-square statistic to reject any model with a sufficiently large sample. The RMSEA value indicates the discrepancy per degree of freedom. The value represents the goodness-of-fit that could be expected if the model was estimated in the population, not just the sample drawn for the estimate. The RMSEA values less than 0.05 indicate good fit, value between 0.05 and 0.08 indicate moderate fit, value 0.08 to 0.10 indicate mediocre (fair), and values greater than 0.10 indicate poor fit (Byrne, 1998; Waltz, Strickland, & Lenz, 2005).

Second, relative fit indices address the question: how well does the particular model do in explaining a set of observed data compared with the other model? There are several measures in this category including the goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), the comparative fit index (CFI), the normed fit index (NFI), and the non-normed fit index (NNFI). This study used GFI, AGFI, CFI, NFI, and NNFI as the major fit indices.

The GFI is the squared residuals of the prediction and actual data comparison reflecting the overall degree of fit. Its value ranges from 0 poor fit to 1 perfect fit. According to Hair, Anderson, Tatham, & Black (1998), higher values of GFI indicate better, but no absolute acceptable threshold level has been established. However, values of 0.90 or above usually indices good model fit (Tabachnick & Fidell, 2001). The CFI provides an index of the relative reduction in lack of fit as estimated by the non central

of a target model compared to the baseline model. The CFI's value of greater than 0.90 indicates an acceptable fit to the data. Bentler (1992) suggested that CFI is less influenced by sample size and should be the index of choice. It is more appropriate in a model development strategy or when a small sample is available. The NFI and NNFI evaluate the estimated model by comparing the X^2 value of the model to the X^2 value of the independence model. High values of NFI and NNFI (greater than 0.90) are indicative of good-fitting model (Bentler, 1992).

Third, the parsimonious fit indices address the question: how does the model combine fit and parsimony? These fit indices assess parsimony of the models being compared. RMSEA was used in this study. A model that has the smallest RMSEA value, not only represents absolute fit, but is also the most parsimonious because the RMSEA was used in this study. A model that has the smallest RMSEA value, not only represents absolute fit, but also the most parsimonious because the RMSEA is expressed per degree of freedom, thus making it sensitive to the number of estimated parameters in the model (Hair et al, 1998).

3. Contrasting group validity

In the contrasted group approach (know-group approach), the investigator identifies two groups of individuals who are known to extremely high and extremely low in the characteristic being measured by the instrument. The instrument is then administered to both the high and low groups, and the differences in the scores obtained by each are examined. If the instrument is sensitive to individual differences in the trait being measured, the mean preference of these two groups should differ significantly. Whether or not the two groups differ, is assessed by use of an appropriate statistical procedure such as the t test or an analysis-of-variance test. If a significant difference is

found between the mean scores of the two groups, the investigator may claim some evidence for construct validity, that is, the instrument measures the attribute of interest. If no significant difference is found between the means of the high and low groups, three possibilities exist: (1) the test is unreliable; (2) the test is reliable, but not a valid measure of the characteristic; or (3) the construct's conception of the construct interest is faulty and needs reformulation (Waltz, Strickland, & Lenz, 2005).

Summary

Sexual health is important for female adolescents. In order to promote growth and development of adolescent's sexual health problems should be eliminated. The existing research reflects that scholars perceive the importance of adolescent's sexual health problems and attempt to explore and understand the sexual health problem and its impact. Research in nursing provides knowledge by using the research to measure sexual health behaviors. Many measures are developing to be the tool to answer these questions. However, there is not any instrument that measures sexual health protection for female adolescents.

There were many theoretical bases to develop the SHPS. At this moment, the protection model was considered the most appropriate to be a theoretical base to study the sexual health protecting scale. Literature review provides important scientific knowledge base to develop the SHPS. Psychometric testing would be examined to support evidence of validity and reliability.

CHAPTER 3

METHODOLOGY

The presentation of this chapter is organized in two parts. The first part is the development of the Sexual Health Protection Scale (SHPS). The second part is the psychometric testing with the SHPS. Moreover, the research design, population and sampling technique, setting, instrumentation, data collection, protection of human subjects and data analysis are described.

Part I: Development of the Sexual Health Protection Scale

The first step of the scale development was reviewing literature to determine how the empirical and theoretical evidence pertained to the concept of sexual health protection. The literature review was developed within pre-specified domains of sexual health protection behavior and then constructed into an interview guideline. In-depth interviews were conducted in order to identify specified domains of SHPS in Thai culture. The second step was items generation from the domain specification.

Step 1: Domain identification

At this step, the attribute of sexual health protection was explored. The sexual health protection behavior was conducted by female adolescents wherein data was obtained within the interview guidelines.

1. Participants

The participants were 20 Thai female adolescent students from four groups of the population composing 1) six secondary schools students; 2) four vocational school

students; 3) four students who studied in Non-formal Education settings and 4) six factory who were adolescents. Volunteer participants were used to recruit the participants. The inclusion criteria for recruitment of the participants consisted of the following age between 15-19 years, ability to use verbal communication and willingness to participate in this study.

2. Instrument

The in-depth interview guideline was developed from the pre-specified domains of the concept of sexual health protection synthesized from the extensive literature review and numerous theories including the Model of Protection (Shearer & Wingo, 2002), the Theory of Planned Behavior (Ajzen, 1991), the Health Belief Model (Rosenstosk, 1974 cited in Jan, Champion, & Strecher, 2002) and the Social Cognitive Theory (Bandura, 1986).

3. Data collection

After the permission from the schools and factory were obtained, in-depth interviews by telephone were conducted with in-depth interview guidelines. The data from the interviews was then analyzed by using content analysis. At this step, it was necessary to maintain the confidentiality of participant information; therefore, a code number was assigned to each participant and all data was destroyed after the investigator had completed the content analysis. After that, the domain of sexual health protection was developed. Then, pre-specific domains from the extensive literature review and specified domains from the in-depth interview with participants were compared. The results of the content analysis were used to develop the concept of sexual health protection for Thai female adolescents by integrating with the pre-specified domain to item generation.

Step 2: Item generation

This step aimed to generate the items for SHPS. After the items were generated, the first draft of SHPS was formed and the measurement format was determined. The items of SHPS were developed from domains of sexual health protection wherein items reflecting the scale's purpose were selected. Redundancy of items, characteristics of good and bad items and positively and negatively worded items were determined. After determining the format of the scale, the scale of SHPS was designed in a rating four-point Likert scale: strongly agree, agree, disagree, and strongly disagree. With scoring ranging was from "1" to "4".

Part II: Psychometric evaluation

In this part, the validity and reliability of SHPS were evaluated. The validity of the SHPS was evaluated for content and construct validity. Moreover, the reliability of SHPS was assessed for internal consistency and test-retest reliability. The validity and reliability will be presented as follows.

Participants

There were three groups of participants in the psychometric evaluation as follows:

1. Three experts in the area of sexual health, obstetrics and gynecology, adolescent psychiatry, and one director of the PATH (Program for Appropriate Technology in Health) organization in Thailand, dealing with sexual health protection in adolescents were purposively recruited to represent the experts on sexual health in order to examine the content validity of the SHPS.

2. Thirty female adolescents similar to the target population of this study were used to test reliability, i.e., internal consistency and test-retesting in the pre-testing of the SHPS.

3. The target population of this study was Thai female adolescents. According to testing validity and reliability of evidence to support the SHPS, purposive samplings was used for this investigation. Polit and Hungler (1999) suggested that a purposive sample of various types of participants can be effective when the investigator utilize pre-tests and evaluates a newly developed instrument. Therefore, it is suitable to use purposive sampling in this study. From Munro (2001), the number of subjects needed is usually assessed in relation to the number of variables being measured. A ratio of at least 10 subjects for each variable is desirable to generate from the sample to wider population. In smaller ratios, the influence of relationship based on random patterns within the data becomes more pronounced. One perspective on sample size is that because it is based on correlation, 100 to 200 subjects are enough for most purpose. Another perspective, Knapp & Brown (1995) suggested three subjects for each variable were occasionally acceptable. Comrey and Lee (cited in Tabachnic, 1996) gave a guideline of sample size; 50 cases as very poor, 100 cases as poor, 200 cases as fair, 300 cases as good, 500 cases as very good, and 1000 cases as excellent. When considering a rule of thumb, sample size for factor analysis should have at least 300 cases.

Purposive sample were recruited from four group of female adolescents who living in the south of Thailand. The method which used to select the participant and the number of participant s in this psychometric testing was as following.

1) Participants who were studying in Mathayom 3 to 6 were selected from a

secondary school in Nakhorn Si Thammarat province. Simple random sampling of eight class rooms from 48 class rooms of Mathayom 3 to 6 was conducted for data collection. Because the SHPS was sensitive issue for female adolescent so all of students in the eight class rooms were participants. As a result there were 160 secondary school students participated in this step.

2) Participants who were studying in the vocational school were selected from a vocational school at Nakhorn Si Thammarat province were selected. Simple random sampling of 6 class rooms from 36 class rooms of this school was conducted for data collection. Because the SHPS was sensitive issue so every students in the six class rooms participated in this step. As a result participants in this group were 130.

3) Non-formal education settings of Nakhornsithammarat province had two settings so all of female adolescents were selected for collecting data. The participants in this group were 105.

4) There were many factories in Songkha province so all of female adolescents who were working in two factories were included for data collection. The participants in this group were 105.

The inclusion criteria for data collection criteria: 1) aged between 15-19 years old, 2) ability for verbal communication and 3) willingness to participate in this study. A sample of 500 Thai female adolescents were conducted for data collection. There were 450 (90%) of questionnaires completed for data analysis included questionnaires from 150 secondary schools students, 100 of vocational students, 100 of adolescents who studied in Non-formal Education settings, and 100 female adolescents who were factory workers.

Instruments

The Demographic Data Form, The Sexual Health Protection Scale and The Marlowe-Crown Social Desirability Scale were used.

1) The Demographic Data Form was designed to provide a description of the subjects in term of their age, status, living arrangements, sexual relationships, experience of sexual intercourse, first sexual intercourse, age at first sexual intercourse, and safe sex practice.

2) The SHPS is a newly developed instrument which asks about sexual health behavior. This scale consists of perceived threats of STDs, HIV/AIDS, unwanted pregnancy, perceived behavioral control, self regulation, guarding against, seeking information and attitudes toward sexual health protection.

3) The Marlowe-Crown Social Desirability Scale (MCSDS) (Crowne & Marlowe, 1960) is the instrument used to determine the degree to which the participants answered the questions of the SHPS in a socially desirable manner. The 20-item short form of the Marlowe-Crown Social Desirability Scale was used to measure participants' social desirability response bias.

Data collection

Data collection and analysis in this part were based on procedure, i.e., validity and reliability evaluation. The process of construct validity composed of collecting data and data analysis. The process of collecting data included the preparation operational phase, and operational phase.

1. Preparation phase

In this phase started after the investigator had received permission from the committee of the Faculty of Nursing, Prince of Songkla University of human subject research. Before the investigator commenced data collection, the investigator met with the directors of secondary schools, vocational schools, and the director of Non-formal Education settings and the directors of the factories to present an introduction letter from Prince of Songkla University and requested permission to collect data in their respective schools and factories. After receiving written permission from the schools, the investigator went to various classes to recruit participants. Similar to the school, after receiving permission from the factories, the investigator went to the factories and met with female adolescent factory workers to recruit participants.

The investigator informed the participants about the objectives, requirements, confidentiality, and participants' rights to discontinue participation at any time. Anonymity was emphasized and a package of questionnaires was given to the adolescents interested in participation the study. The participants asked some questions of the investigator before they made a decision. For the factory workers the investigator performed the same process.

For a random subset of the sample (n = 30), information about a second data collection (two weeks later) for test-retest reliability was provided at the first meeting for data collection. Students interested in participating in the second data collection selected times and location that were convenient for them. The investigator gave a small number card to each of the participants and told them to write only their number on the top of the questionnaires. Then, the investigator told the participants to keep the small number cards and bring them on the day they met with the investigator two weeks later.

Participants wrote the same number on the top of questionnaires for the first time and second session for data collection.

2. Operational phase

After a week, the investigator met with the participants and participants who filled out questionnaires and gave them to the investigator. Participants who were involved in data collection received small gifts in appreciation of their time.

Two weeks later, the investigator met the participants for a test-retest wherein, 30 participants met with the investigator. These adolescents were asked to bring the card to the investigator when they handed in their questionnaires. The purpose of using the appointment card was clearly explained and anonymity was ensured. After participants returned the questionnaire packet, they received a gift in appreciation for their time and effort to complete the study.

Data analysis

This step data analysis was conducted to assess validity and reliability of SHPS.

Validity evaluation

In this step, content and construct validity were evaluated. The content validity was tested by three experts on sexual health protection behavior whereas the construct validity was evaluated by a sample of 450 Thai female adolescents.

Content validity

The Content Validity Index (CVI) was established by three experts' evaluation. Then, face validity was assessed by twelve participants. The results of this part formed the second draft of SHPS.

The SHPS was sent to three experts in the area of sexual health who were asked to determine the accuracy and relevance of each item in the SHPS content including its relevancy, clarity and conciseness. The Content Validity Form which was sent to experts included 1) the relevance of items based on the construct validity and content domain using the four-point scale: 1 = Not relevant, 2 = somewhat relevant, 3 = Quite relevant, 4 = very relevant and 2) the clarity of items using the four-point scale: 1= unclear, 2 = somewhat clear, 3 = quite clear, 4= clear. In addition, the experts provided recommendations and suggestions for each item. The content validity index (CVI) was then calculated.

Then, face validity was considered in term of whether or not the SHPS was appropriate for measuring sexual health protection behavior for Thai female adolescents. Face validity was conducted by twelve participants. After receiving the permission of the school, the version of SHPS had been revised based on the expert's recommendations and suggestions was evaluated by twelve participants. In this step the second draft of SHPS was developed.

Reliability evaluation

The reliability of the SHPS was assessed with internal consistency and test-retest reliability. Reliability was tested in the pre-test study and the final version of SHPS. In the pre-testing study test-retest reliability was tested as well.

Pre-test study

The pre-test involved 30 female adolescents who completed the questionnaire (SHPS) after content validity and face validity evaluation. This step was conducted to

determine reliability: test-retest reliability and internal consistency of the instrument before using it in the construct validity evaluation.

1. The test-retest reliability of the SHPS was examined through repeated administrations that might yield consistent results. At the first meeting for data collection participants were informed about a second data collection at two weeks later for test-retest reliability. Female adolescents who volunteered in participating the second data collection selected times and location that were convenient for them. A small number card was given to each of the participants. The investigator told them to write only their number on the top of the questionnaires. Then, the investigator told participants to keep the small number cards and bring them on the day they met with the investigator two weeks later. Participants were informed to write the same number on the top of questionnaires for the first time and second session for data collection. After that the percentage of agreement was used to analyze the two sets of hose data. The first time, 25 (83.33%) participants completed. The second time, 20 (66.67%) participants completed. After that, the percentage of agreement was used to analyze these data sets.

2. Internal consistency reliability was conducted to ensure that the items contained each factor of the SHPS. The internal consistency reliability of SHPS was tested by using Cronbach's alpha coefficients. The reliability of the subscale and the reliability of the total scale of SHPS were also evaluated.

Construct validity

The evaluation consisted of item analysis, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and a contrasting group approach. All participants were used to test the construct of the testing version of the SHPS.

Item analysis

After the questionnaires were returned, the investigator examined the completeness of the data. Questionnaires were excluded from data analysis under the following criteria; 1) the participants had sexual experience but didn't interpret those behaviors as sexual experience; 2) the participants did not rate information provided about the sexual behavior even though they responded to the SHPS; and 3) a questionnaire was missing data of more than 10% for each instrument. A software package was then used for data processing and data analysis. Then, analysis descriptive statistics including frequency and percentage was used to describe the characteristics of the participants. The procedures of the item analysis will be presented as follows.

Item analysis was determined before factor analysis was carried out. Item analysis included evaluation of the univariate and multivariate characteristics of each item. Then, the correlation matrix of the SHPS was examined in order to gather rough information as to whether it was appropriate to use factor analysis with this dataset. Moreover, the item-to-item correlation, item-to-subtotal correlation, subtotal-to-subtotal correlation and subtotal to the total scale correlation were evaluated.

Exploratory Factor Analysis (EFA)

In this study, the Exploratory Factor Analysis (EFA) was used to evaluate the construct of the SHPS. Many statistic techniques were used to confirm the appropriateness of applying factor analysis.

Anti-image correlation matrix. Anti-image correlation matrix represented the negative value of the partial correlation among variables after factor analysis was performed. This matrix demonstrates the degree to which the factor can explain each

variable. Partial correlation coefficients, however, should be mostly small values to represent unique covariance. When negative partial correlation was above zero, it was revealed that variables were partially correlated.

Measure of sampling adequacy (MSA). MAS was another way to assess the suitability of applying factor analysis by examining the entire correlation matrix and each individual variable.

Bartlett test of sampling adequacy (MSA). MSA involved statistic testing to examine the overall correlation matrix and is appropriate for factor analysis by testing the hypothesis that the matrix was an identity matrix, and also providing determination of multivariate normal distribution. In this study Barlett test of sphericity were test.

The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). KMO was a ratio of the sum of squared correlations to the sum of squared correlations plus that of squared partial correlations. Thus, this measure can indicate that variables share common factors by comparing the zero-order correlation to the partial correlation.

Principle component analysis (PCA). In this study, the principle component analysis (PCA) with oblique and varimax rotations was performed to examine construct validity evidence belonging to the third draft of SHPS. The criteria for treatment factor analysis consists of (1) the factor with the eigenvalues greater than 1, (2) determining the scree test of eigenvalues plotted against factors, (3) an item loading cutoff point of .30 and above was interpreted, and (4) factors fit into the hierarchy of "explanations" about sexual health protection.

Confirmatory exploratory factor analysis (CFA)

According to the results of the EFA, various factor solutions were obtained. In this part, the contribution of each factor was assessed by examining fit indices. Three major steps were involved: (1) assessment of the parameter estimate; (2) assessment of the measurement model; and (3) assessment of the fit model. The model was tested through Confirmatory Factor Analysis (CFA) using RISREL 8.8.

Assessment of parameter estimate. Before eight factors were assessed for a model fit, all factors were tested as to whether each factor had adequate information to use for estimation of parameter specified in the model. Maximum likelihood method was used to estimate the parameters of the model. If the result shows that all parameter estimates were in the possible range with no excessively large standard errors, no negative variance, and no covariance matrices that were not positively definite. This provided evidence for the accuracy and adequacy of the input specification of the model.

Assessment of measurement model. In this step, the focus was on evaluating the relationship between latent variables and indicator loadings (factor loadings) was examined. The indicator loading of all factors were relatively high when indicated by significant *t*-values which were greater than 1.96. However, if the relationship between the latent variables and indicator loadings (factor loadings) was low and not significant, the indication was that they were not sufficiently represented by their latent variables or, in other words, they were not good indicators of the underlying constructs.

Assessment of fit model. The assessment of model fit was based on multiple criteria including (1) the Chi-square statistic, (2) the X^2/df ratio, (3) goodness of fit index (GFI), the adjusted goodness of fit index (AGFI), root mean square error

residual (RMSER), the comparative fit index (CFI), the normed fit index (NFI), and the non-normed fit index (NNFI).

Contrast group approach

In this step, testing construct-related evidence of validity by a contrasting group was approached. This procedure used the Independent Samples t-test to examine the difference among the risk groups in terms of sexual protection behavior. In this study, the female adolescents who are the high risk group should have lower scores of sexual health protection than the low risk group. The criteria to determine the risk of sexual behavior in female adolescents included the status of the adolescents, living with parents, having intimate boyfriends, and having sexual intercourse.

Desirability testing

In this study, sexual health protection behaviors were the sensitive issue of Thai female adolescents. In order to confirm that participants did not answer questions based upon the social desirability response, the Marlowe-Crowne Social Desirability Scale (MCSD) was used. The 20-item short form of the MCSD Scale was used to measure participants' social desirability response bias (Crowne & Marlowe, 1960). The scale included items such as "I have never intensely disliked anyone." Participants considered whether each statement was true or false as it pertained to them personally. The ranges of scores were from 0 to 20 with higher scores indicating greater social desirability response bias. The Pearson's product moment coefficient was used to analyze the correlation of the SHPS scores and the Marlowe-Crowne Social Desirability Scale. The non significant correlations or negative significant correlation between those scales

indicated that the participants were in a real situation i.e. they were not influenced by someone or something to answer the questionnaires.

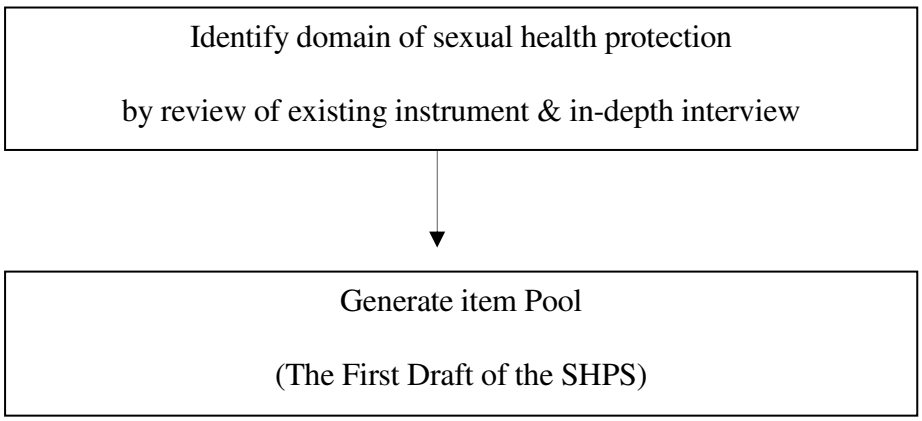
Protection of Human Subjects

The proposal of the study and consent forms was approved by the Ethical Committee of the Faculty of Nursing, Prince of Songkla University. All participants were contracted for their permission to take part in the study. The protection of their rights was assured by providing the objective of the study, the assurance of subjects' anonymity, the assurance of voluntary participation and possible withdrawal from the study at any time. Moreover, participants were informed that all questionnaires with data would be destroyed after analysis.

Summary

The Sexual Health Protection Scale (SHPS) was developed and its scale was evaluated follows: First, interview guidelines were developed from pre-specified domains which were derived from the literature review. The data from the interviews with the female adolescents were analyzed by using content analysis. Then pre-specified domain and themes of content analysis were used to develop the specified domains. After that, the item pool was generated by the investigators. Next, item generation and item examination processes were conducted by using the suggestions of sexual health experts. Second, the psychometric testing of SHPS was conducted. The content validity and face validity was evaluated and then its reliability was tested. The internal consistency and stability were evaluated. Then, construct validity and social desirability were tested. The item analysis, EFA, CFA, and contrast group approach were used to evaluate the construct validity. The steps of the SHPS development and its psychometric testing used in this study have been summarized in Figure 2.

Phase I: Developing the Sexual Health Protection Scale



Phase II: Psychometric Evaluation

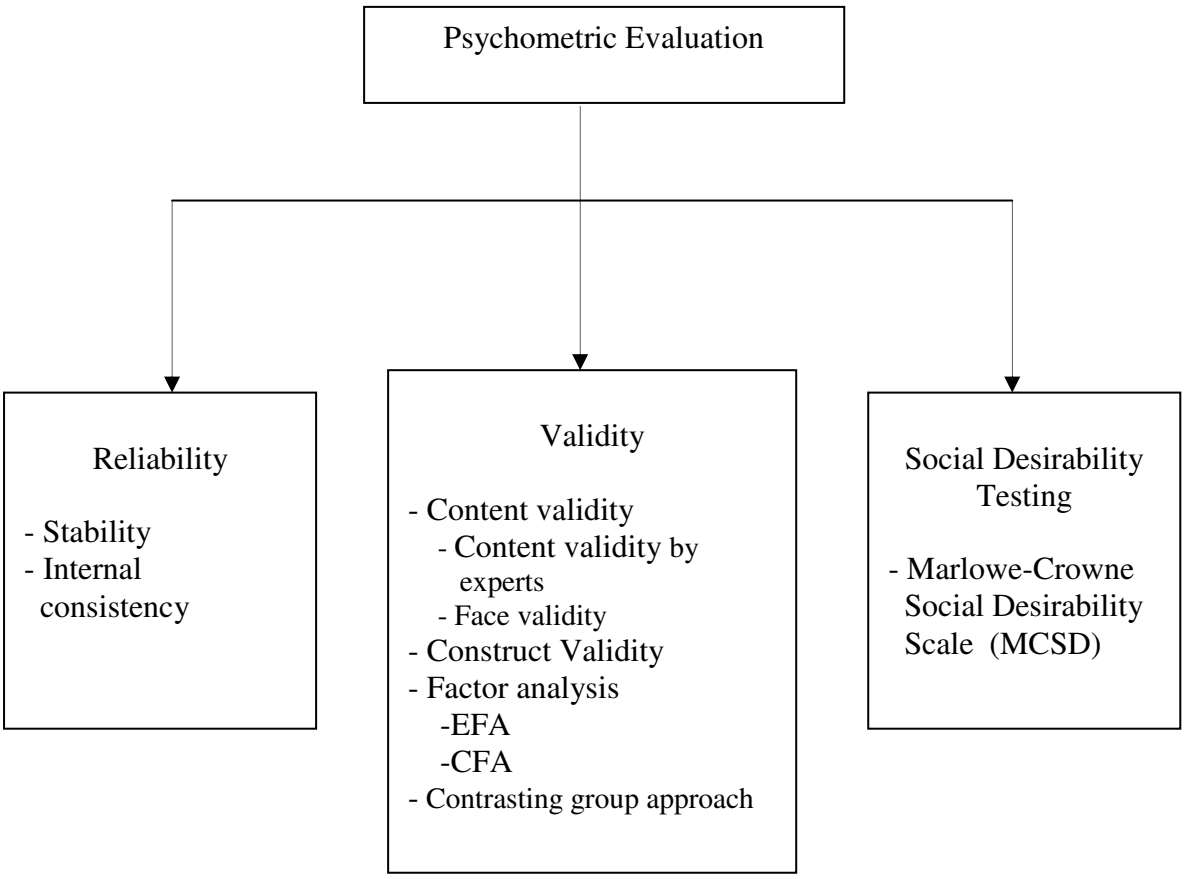


Figure 2 Development of Sexual Health Protection Scale (SHPS) for Thai female adolescents

CHAPTER 4

RESULTS AND DISCUSSION

The main purpose of this study was to develop the Sexual Health Protection Scale (SHPS) for Thai female adolescent and evaluate its psychometric properties. This chapter consists of the results and the discussion. The results are organized into two parts. Part I is the development of the Sexual Health Protection Scale (SHPS) including domain identification, and generation an item pool. Part II is the psychometric testing of the SHPS including evaluating validity by (1) content validity, (2) construct validity with Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), (3) identification the component of SHPS, (4) correlation among eight factor of the SHPS, and (5) evaluation contrast group approach; evaluating reliability by internal consistency reliability and test-retest reliability; and evaluating Marlow-Crown Social Desirability Scale (MCSD).

Part I: Developing of the Sexual Health Protection Scale

The purpose of part I was to identify domains of sexual health protection and generate an item pool. The results of this part will be presented as followings.

Domain identification

Prior to the domain identification was extensive literature review. The investigator extensively reviewed the literature providing empirical and theoretical evidence pertaining to the concept of sexual health protection. Based on the model of protection (Shearer & Wingo, 2002), the concept of sexual health protection was

developed. The attribute of model of protection comprises six attributes including appraisal of threat, controlling, regulation, guarding against, seeking information persuading and alter perception. The investigator extensive literature reviewed all of attributes in the model of protection and searched evidences support these attributes. Then, five attribute (appraisal of threat, controlling, regulation, guarding against, and seeking information) were selected to develop the model of sexual health protection except persuading and alter perception because they was not fit to the model.

The concepts appraisal of threat, controlling and regulating are important for sexual health protection behavior. These three concepts have been used in different terms but were the same meaning of concepts in other theories. Appraisal of threat was similar to perceived threat in Health Belief Model (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002), control was similar to perceived behavioral control in theory of Planned Behavior (Ajzen, 1991) and regulation was similar to self-regulation in Social Cognitive Theory (Bandura, 1986). The extensive literatures review found that terms of appraisal of threat, perceived behavioral control, and self-regulation were used to study issues of sexual health protection. All these terms are analyzed in the present research. According to there were evidences support guarding against, and seeking information which were attributes of the Model of Protection, so both of attributes were selected to developed the concept of sexual health protection. Therefore, sexual health protection composed of five attributes included appraising of threat, perceived behavioral control, self regulation, guarding against, and seeking information.

Then, in-depth interviews were conducted in order to identify specified domains of SHPS in Thai culture. Firstly, the in-depth interview guideline was developed from

the reviewed literature. Secondly, twenty female adolescents were in-depth interviewed. Thirdly, the interviewed data were analyzed and formed item an pool of SHPS in Thai context. The results from in-depth interviews showed that there were six themes of sexual health protection which five themes were congruent with the existing domain. The additional theme, attitude toward of sexual health protection was added in.

Most of attributes within each domain were similar to attributes which reflect from participants. The difference of the Domain I: appraisal of threat was participants reflected perceived severity and susceptibility of pregnancy but the literature was not mentioned. Both of the attributes of the Domain II: perceived behavioral control and the Domain III: Self-regulation, participants reflected attributes the same meaning as the literature review. The difference between the attributes of the Domain IV: guarding against was participants reflected communication with family about abstinence and safe sex practice but only safe sex practice was mentioned from the literature. Moreover, participant reflected communication with peer about safe sex practice including selecting a good intimate boyfriend, abstinence and safe sex but only safe sex practice by condom use was mentioned from the literature review. The attributes of the Domain V: Seeking information, participants did not reflect about sexual self-disclose because in Thai cultural sexual issue is not appropriate to reveal to the others. The Domain VI: attitude toward of sexual health protection was reflected by participants but it was mentioned in the literature. In the Domain VI, participants mentioned about attitude of sexual intercourse and attitude of safe sex practice. Pre-specific domains and specified domain of sexual health protection behavior will be presented in Table 2.

Table 2

Pre-specified domain and specified domains of sexual health protection behavior.

Pre-specified domains	Specified domains
Domain #1 Appraisal of threat	Domain #1 Appraisal of threat
- perceived severity	- perceived severity
HIV infection	HIV infection
STD infection	STD infection
	Pregnancy
- perceived susceptibility	- perceived susceptibility
HIV infection	HIV infection
STD infection	STD infection
pregnancy	Pregnancy
Domain # 2 Perceived behavioral control	*Domain # 2 Perceived behavioral control*
- negotiation to abstinence or postpone sexual intercourse	- negotiate for abstinence or postpone sexual intercourse
- negotiating condom use	- negotiating condom use
- skill in condom use	- skill in condom use
- availability of condoms	- availability of condoms
Domain # 3 Self-regulation	*Domain # 3 Self-regulation*
- abstinence and/or postponement of sexual intercourse	- abstinence and/or postponement of sexual intercourse
- maintenance of consistent condom use over time	- maintenance of consistent condom use over time

Table 2 (continue)

Pre-specified domains	Specified domains
- attention for education	- attention for education
Domain # 4 Guarding against	*Domain # 4 Guarding against*
- communication with parent about safe sex practice	- communication with family about abstinence and safe sex practice
- communicate with peer about safe sex practice (condom use)	- communicate with peer about safe sex practice (select good intimate boyfriend, abstinence and safe sex)
- avoiding drug and alcohol	- avoiding drug and alcohol
- hygiene care	- hygiene care
- avoiding risky situation risk.	- avoiding risky situation risk.
Domain # 5 Seeking information	*Domain # 5 Seeking information*
- seeking sexual health information	- seeking sexual health information
- assertive information seeking	- assertive information seeking
- sexual self-disclose	
	Domain # 6 Attitude toward sexual health protection
	- attitude of sexual intercourse
	- attitude of safe sex practice

Domain 1: Appraisal of threat

In the Model of Protection (Shearer & Wingo, 2002), appraisal of threat means the ability of person to identify the threat or risk in life event. If people lack of accuracy in appraisal of threat of risk they will confront with life threatening. Perceived threat, a component in Health Belief Model (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002) can apply to explain appraisal of threat. According to the Health Belief Model, when a person is confronted with a health threat, a cognitive process, the threat appraisal is initiated (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002). Two factors are considered within the threat appraisal process; one has to do with perceived severity, or perceived susceptibility to the threat (Ethier, Kershaw, Niccolai, Lewis, & Lckovics, 2003). Therefore, it is the necessary of female adolescents for appraisal of threat from sexual risk because adolescents are physically and psychologically immature (Patricia, Lesser, & Alexandia, 2005). Moreover, adolescents are at significant risk for STD and HIV infection because adolescents may not accurately incorporate indicators of risk into perception of susceptibility. Many research studies supported the postulate that perceived susceptibility and severity of HIV/AIDS were associated with changes of sexual behavior of adolescents including increased condom use, having fewer sexual partners, and decreasing to engage in sexual intercourse (Bryan, Aiken, & West, 1997; Jan, Champion, & Strecher, 2002; Lollis, Jhonson, & Antoni, 1997; Manzini, 2001; Rock, Ireland, & Resnick, 2003; Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005; Zagumny & Brady, 1998).

The attribute of domain was supported by participants reflected that Thai female adolescents perceived severity and susceptibility of STDs (i.e., gonorrhea, syphilis, and cervical cancer) and HIV/AIDS infection. Participants also perceived severity and

susceptibility perceived of unwanted pregnancy as well. According to, pregnant in adolescent is not accept in Thai society. In case female adolescent became pregnant they would have to drop out of the school and will be blamed by the society as a bad woman (Gray & Punpuing, 1999 cited in Yoddumnern-Atting, 2001).

Domain 2: Perceived behavioral control

In Theory of Planned behavior (Ajzen, 1991), perceived behavioral control reflects the perception that a person has sufficient resources and skills to perform the behavior and the confidence that he or she can adequately perform the behavior. Female adolescents have to perceived behavior control about STD, HIV, and unwanted pregnancy because it known that adolescent is the risk group of sexual health problem. In order to protect themselves from STD, HIV, and unwanted pregnancy female adolescent have to perceive behavior control to negotiate for abstinence or postpone sexual intercourse, negotiate condom use, skill in condom use, and have availability of condoms (Ajzen, 1991; Cobb, 1997; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; Jemmott, Jemmott, & Fong, 1998; Montano & Kasprzyk, 2002; Villarruel, 2001; Williams, 2001). In this study participants reflected the meaning of attributes in the Domain II the same as the literature review.

Domain 3: Self-regulation

In Social Cognitive theory (Bandura, 1986), self-regulation means person exercise to bring their attention effort control and the ability to act or attempting to sustain health behavior change. If people perceived threat in life event the will be motivate self-regulation to control the threat. (Nezami, Sussman, & Penz, 2003). In

process of self-regulation person do have self-directed change her goal adoption sets; implementation strategies convert goals into productive actions; and maintenance strategies help to sustain achieved behavioral changes (Bandura, 2005). In this study self-regulation by performing the ability to maintain of consistent abstinence and/or postponement of sexual intercourse, consistent condom use over time and attention for education can protection female adolescent from STDs, HIV, and unwanted pregnancy.

Many research studies support that maintaining consistent condom use over time with sexual partner can protect people from STD and HIV infection (Ann, Richard, Robert, William, Jeffrey, & Susan, 2005; Svenson, 2002). Moreover, sexual abstinence is clearly the most effective strategy for prevention of STD (DiClemente, Hansen, & Ponton, 1996; Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005). Furthermore, attention to education can delay and protect female adolescents from sexual risk because if the adolescents have goal setting for finishing the education adolescent could regulate themselves and have self-monitoring to meet their goal. In this study participants supported the literature review.

Domain 4: Guarding against

The Model of Protection (Shearer & Wingo, 2002) proposes that people should use protective barriers or devices to reduce or eliminate the threat or the risk. In order to reduce the sexual health risk, female adolescents have to guard themselves against STDs, HIV, and unwanted pregnancy by communication with parents and peers about safe sex practice, avoiding drug and alcohol, hygiene care, and avoiding risky situation risk (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995; Martyn & Martin, 2003).

A strong relationship of the adolescent with parents and peers can be used to guard adolescents against initiate sex and STD and HIV infection. Research studies showed the communication between parents or peers can protect one's sexual health from risk, and delay sexual activity (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995; Martyn & Martin, 2003). Moreover, if adolescents use drugs and alcohol during sexual intercourse, they do not have the capacity protect themselves from STDs and HIV/AIDS infection, and unwanted pregnancy (Dilorio, Parsons, Lehr, Adame, & Carlone 1992; Champian, 2005; Furby; Millstein & Moscicki, 1995; Thomas & Ochs, 1995). Furthermore, Hygiene care of sexual organ after sexual contract can prevent the spread of STDs fection (Denney & Quadagno, 1992). The last, avoiding date with the boy friend in the situation risk is a method for female adolescent's sexual health protection (Furby, Thomas & Ochs, 1995; Poonsanasuwansi, 1997 cited in Pongyuen, 2004).

Participants supported every attributes of the Domain IV in the literature but there are some details of some attributes were different. Much evidence in the literature review showed that parents communicated how to use a condom, how to use birth control pills, where to buy or obtain condoms use, and pregnancy prevention, etc (Cobb, 1997; Hull, Hasmi, & Wisdyan, 2004; Millstein & Moscicki, 1995; Martyn & Martin, 2003). On the contrary, many Thai parents forbid their children to have an intimate boyfriend, or to have sexual intercourse, and or go anywhere with boys. Similar to the information obtained from this literature review, peers have a big influence for Thai female adolescents.

Domain 5: Seeking information

In the Model of Protection (Shearer & Wingo, 2002), seeking information is accurate and cautious giving and receiving information. People have to seek or search information in order to decision making or act health behavior. Moreover, seeking information makes person has knowledge which is a variable that moderated the quality of protection. From literature review, three methods were used to seek information which can protect female adolescent from sexual health problem. There were seeking sexual health information, assertive information seeking, and sexual-disclosure (Arenth, 1999; Cobb, 1997; Dibble & Swanson, 2000; Kitaura, 1997; Martyn & Martin, 2003).

Many studies supported that sexual health information is very important in shaping knowledge and attitudes of adolescents in order to protect them from STD and HIV/AIDS infection and unwanted pregnancy (Arenth, 1999; Kitaura, 1997; Mann, 1992; Rosenthal & Smit, 1995). Moreover, assertive information seeking of the sexual partner's history i.e., the number of sexual partners and history of STD infection is important for protecting female adolescents from sexual health problems (Cobb, 1997; Denney & Nancy, 1992; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; Furby, Thomas, & Ochs, 1995; Kellermann & Reynold, 1990; Martyn & Martin, 2003). Sexual self-disclosure is also a strategy for seeking information, including personal disclosure in sexuality issues such as premarital sexual intercourse, oral sex, masturbation, pleasurable sexual techniques, contraceptive use, and sexual problems (Herold & Way, 1988; Miller, Berg & Archer, 1983 cited by Dibble & Swanson, 2000).

Participants supported attributes in the Domain V except an attribute of sexual self-disclosure. In Thai culture it is not appropriate and shame to discuss or reveal

about sexual issue to the other. In case of participants ask the sexual history of an intimate boyfriend or a partner, participant may be suspected to have sexual experience.

Domain 6: Attitude toward of sexual health protection

The attitude of sexual health protection was added from in-depth interview participant. Participant reflected attitudes toward of sexual health protection including attitude of sexual intercourse and attitude of safe sex practice. In the attitudes of sexual intercourse, participants reflected that having sexual intercourse in the normal behavior of adolescent and adolescent can have sexual intercourse in school age. In contrary, participants reflected goal of adolescent was education and sexual intercourse was the barrier of education goal. In the attitude to use condom, participants reflected that condom use is upon male. Therefore, safe sex practice was upon the positive or negative of male about condom use.

Participants supported by the attitude toward behavior, a core attribute of the theory of planned behavior (Ajzen, 1991). Ajzen and Fishbein (1980) define attitude as "a person's general feeling of favorableness or unfavorableness for that concept as "a person's judgment that performing the behavior is good or bad, that he or she is in favor of or against performing the behavior" (Ajzen & Fishbein, 1980). Attitude toward behavior is seen as reflecting an individual's beliefs about performing the behavior and the positive or negative consequences associated with engaging in the behavior. A positive consequence of abstinence and condom use is that pregnancy, sexually transmitted disease, and HIV infection is avoided (Jemmott, Jemmott, & Fong, 1998; Jemmott, 1992). Attitude toward sexual health protection associated with engaging in intercourse and condom use However, attitude toward sexual health protection will be

interfered with education or school goals. Supported the idea, research studies found that an attitude in the importance of a good education are positively associated with abstinence or delay in sexual intercourse in adolescent. (Lammers, Ireland, Resnick, & Blum, 2000; Villarruel, Jemmott, Jemmott, & Ronis, 2004).

Attitude about the consequences of condom use for sexual enjoyment are viewed as negative consequences of condom use. Literature review found that individual believe that attitude about condom use of their partners have been predictive of condom use (Ann, Richard, Robert, William, Jeffrey, Susan 2005; Jemmott, 1992; Villarruel, Jemmott, Jemmott, & Ronis, 2004). For Thai adolescent, attitude toward sexual health protection play a significant role in delay sexual intercourse or condom use.

Generating an item pool

In this step an item pool was generated. The first draft of SHPS was formed. Determination of the format for measurement is also chosen (Appendix C). The items of SHPS were developed from six domains of sexual health protection including appraisal of threat, perceived behavioral control, guarding against, seeking information and attitude toward of sexual health protection. Items reflecting the scale's purpose were selected. Redundancy of items, characteristics of good and bad items and positively and negatively worded items were determined. The result of generation of an item pool formed the first draft of 170-items SHPS. After determining the format of the scale, the scale of 170-items SHPS was designed to measure frequency of sexual health protection using four-point Likert scale: strongly agree, agree, disagree, and strongly disagree.

Part II: Psychometric evaluation

The purpose of part II was to evaluate psychometric of the SHPS. In this part The validity and reliability evaluation and discussion will be presented as the following.

Validity

Two part of validity were evaluated, i.e., content validity and construct validity. The results of each validity evaluation will be presented and discussed as the followings.

Content validity

Content Validity Index (CVI) was established by three experts' evaluation. Face validity was assessed by twelve participants. The output result of this part formed the second draft of SHPS. Three experts in the area of sexual health considered which items should be included. All experts suggested that the SHPS had a large number of items and that some items were redundant, i.e., attitude for sexual intercourse, methods of negotiation for abstinence or postpone sexual intercourse, and skill to use condom etc. Forty five items were deleted, i.e., I think that adolescent should not have sexual intercourse in school age, I will associate with boy as friend, I will reward the goodness of intimate boyfriend by the other way that do not agree to have sexual intercourse with him, I am shy if I have to wear condom to my intimate boyfriend, and I am shy to carry condom use with me this part the scale remained 125 items. Then, the content validity index (CVI) was calculated. The CVI of the SHPS was .74 which is accepted for a new instrument.

After that, face validity was conducted by twelve participants. Face validity was considered which the SHPS appropriate to measure sexual health protection behavior for Thai female adolescent. In this part five items were deleted because these items were low reliable to measure sexual health protection behavior for Thai female adolescent.

The result showed that all items of the SHPS represented Thai female sexual health protection behaviors. The scale was attractiveness and appropriateness of the SHPS. However, there were five items had low reliable. Participant reflected that two items which related with hygiene care of body i.e., "I will clean my sexual organ before and after having sexual intercourse" were the habit of the lifestyle of everybody. Moreover, three items, i.e., "I will clean my body everyday" which related with hygiene of genital area were the habit that women have to do. Therefore these five items had reliable and not necessary to measure. As a reason, five items were deleted. In this step the second draft of SHPS was developed, which had 120 items.

Construct validity

Item analysis, exploratory factor analysis, confirmatory factor analysis and contrast group approach were used to test the construct validity of SHPS. The results will be presented in the following order: (1) participants characteristics, (2) item analysis, (3) EFA, (4) CFA, and contrast group approach.

Characteristics of the participants

In the process of item analysis, EFA, and CFA, participants were the sample group of 450 female adolescents. The participant1s in this study were comprise of four

groups; 1) 33 % of secondary school students; 2) 22 % of vocational school students, 3) 22 % of students who was studying in out of general education system, and 4) 22 % of factory workers. Age of participants ranged from 15 to 19 years, with a mean of 16.81 years (SD = 1.29). The majority (64.22 %) of participants stayed with the parents. The demographic characteristics of the female adolescents are presented in Table 3.

Table 3

Frequency and percentage of participants classify by demographic characteristics (N= 450).

Demographic characteristics	Frequency	Percentage
Age (Mean = 16.81, SD = 1.29)		
15	96	21.33
16	90	20.00
17	113	25.11
18	104	23.11
19	47	10.44
Status		
Secondary school student	150	33.33
Vocational school student	100	22.22
Studying in Non-formal education settings	100	22.22
Factory worker	100	22.22

Table 3 (continued)

Demographic characteristics	Frequency	Percentage
Living arrangement		
Alone	10	2.22
Parent	289	64.22
Intimate boyfriend	66	14.66
Friend	26	5.77
Relatives	43	9.55
Others (teacher, employer, co-worker, etc.)	16	3.55

From Table 4, the average age of participants at first sexual intercourse was 16.13 years (SD = 1.51). Most participants (77.77 %) had an intimate boyfriend. One-third (35.55 %) of female adolescents ever had experience of sexual intercourse and most of them had their first sexual intercourse with a friend (34.44 %).

Item analysis

Item analysis was determined before factor analysis was carried out. The correlation matrix of the 120 items of SHPS was examined in order to gather rough information as to whether it was appropriate to use factor analysis with this dataset. The result showed the item to item correlation ranged from .00-.83. Item to subtotal correlation ranged from .00-.68. Many of these correlations exceeded .3, so the data set of SHPS was appropriate to use factor analysis. Item analysis will be present in Table 5 and 6.

Table 4

Frequency and percentage of participants classified by sexual behavior (N= 450).

Sexual behavior	Frequency	Percentage
Sexual relationship		
No intimate boyfriend	100	22.22
Ever had intimate boyfriend	106	23.55
Have intimate boyfriend	244	54.22
Experience of sexual intercourse (N = 160)		
Yes	160	35.55
No	290	64.44
First sexual intercourse with		
Friend	155	34.44
Intimate boyfriend	4	0.89
Other (relative)	1	0.22
Age at first sexual intercourse (N = 160, Mean = 16.13, SD =1.51)		
12	1	0.63
13	6	3.75
14	12	7.50
15	40	25.00
16	29	18.13
17	41	25.63
18	27	16.88
19	4	2.50

Table 5

Correlation coefficients of item-item and item-subtotal scores of SHPS classified by six domains of the SHPS (N=450).

Domain	Item – Item (Min - Max)	Item – Subtotal (Min - Max)
Appraisal of threat (15 items)	.09 -.62	.32-.60
Perceived behavioral control (27 items)	.00-.67	.03-.55
Self-regulation (8 items)	00-.60	.16-.58
Guarding against (35 items)	.00-.65	.03-.58
Seeking health information (26 items)	.00-.83	.00-.68
Attitude toward sexual health (9 items)	.00-.67	.07-.63

Table 6

Correlation of subtotal to subtotal and subtotal to total scale of SHPS.

Subtotal	1	2	3	4	5	6	Total
1. Appraisal of threat	1	.31**	.24**	.39**	.33**	.03	.59**
2. Perceived behavioral Control		1	.61**	.54**	.39**	.30**	.75**
3. Self-regulation			1	.48**	.19**	.39**	.74**
4. Guarding				1	.55**	.24**	.77**
5. Seeking health Information					1	.06	.61**
6. Attitude toward sexual protection						1	.53**

Exploratory factor analysis (EFA)

In this part, EFA was perform on the 120 items of SHPS which completed by 450 female adolescents. The result of exploratory factor analysis (EFA) will be presented. Two statistic techniques were also used to confirm the appropriateness of applying factor analysis. Batlett's test of sphericity and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO). It was found that Batlett's test of sphericity ($\chi^2 = 27863.42$, $p < .01$). Furthermore, the KMO value was .86, indicating that this data set was a "very good" set on which to use factor analysis. Evaluate the underlying dimension structure of the SHPS, A principal components analysis was

selected as the factor analysis extraction technique. Varimax orthogonal rotation was used to maximize the variance among the loading on each factor. For analyzing and interpreting the factor analysis, four criteria were applied including: (1) the factor loading greater than 1, (2) the Scree plot, (3) an loading cutoff point at least .30, and (4) theoretical congruence in each factor. An examination of the Scree plot (Figure 1) indicated that 6, 7, and 8 factors should be examined. Thus several runs of the analysis with six to eight factors extraction were executed in an explore to find a factor solution. The scores of SHPS were again submitted to principal-axis factoring with Varimax orthogonal rotation which a request for six to eight factors extraction. The major difference between the six, seven and eight solution was emerged. The six and seven factors showed low-level factors and to be less meaningful to the overall analysis. Finally, the 8 factors was proposed to be most meaningful, parsimonious, and theoretically consistent.

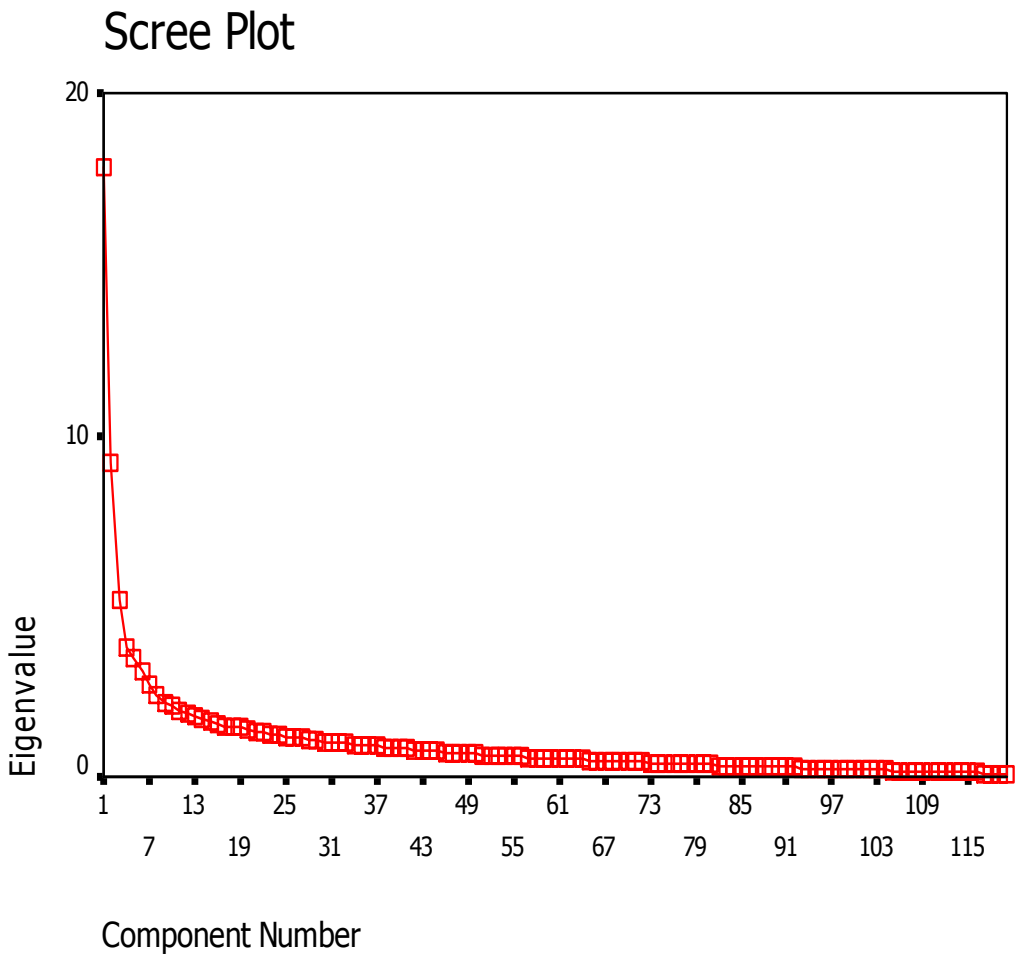


Figure 3 Scree Plot for Principal Components Analysis

The eight-factor solution was obtained and only items having factors loadings greater than .30 were retained. When items loaded high on more than one factor, they were retained on the factor where they loaded highest. As a result, 9 items were dropped out from the scale. Item 30, 32, 34, 49, 84, 116, 117, 118, and 119 were deleted because factor loading was less than .30. Items which were deleted were showed in Appendix C. The final draft of the SHPS was composed of 8 factors, 111 items and explained a total of 39.72 % of variance and magnitudes of eigenvalues greater than 2.

Confirmatory factor analysis (CFA)

A confirmatory factor analysis with maximum likehood estimation was conducted using LISREAL 8.8 to evaluate the construct validity of the SHPS after each eight factor composite scores were created by EFA. From Monro (2001), after test EFA, CFA can be used to test the hypothesized configuration of the factor structure and can be used to assess measurement errors in detail.

Before eight factors were assessed for model fit, eight factors were tested whether each factor had adequate information to use for estimation of parameter specified in the model. The Maximum likelihood method was used to estimate parameters of the model. The result showed that all parameter estimates were in the possible range with no excessively large standard errors, no negative variance, and no covariance matrices that were not positive definite. This provided evidence for the accuracy and adequacy of the input specification of the model.

Next, the focus is on evaluating the relationship between latent variables (Factor I, II, III, IV, V, VI, VII and VIII) and their indicators (items). Indicator loadings (factor loadings) were examined. Indicator loading of factor I, II, III, IV, V, VI and VII were relatively high as indicated by significant *t*-values which were greater than 1.96. This means that these indicators represented the Factor I, II, III, IV, V, VI and VII. However, the loading of four indicators in the Factor VIII, " I dare to buy condom " (Item 41), "Having an intimate boyfriend makes me lose concentration for study" (Item 47), "I may not intend to study enough if I have an intimate boyfriend" (Item 48), and "My family forbids me to associate with a boy as an intimate boyfriend" (Item 53), were low and not significant, indicating that they were not sufficiently represented by their latent variables or, in other words, they were not good indicators of the underlying constructs. Items which were deleted were showed in Appendix C. Thus, the investigator decided

to delete these four items. As a result, there were three items in Factor VIII. Then, the relationship between a latent variable (Factor 8) and all of three items were evaluated again. The result showed that all of three indicator loadings (factor loadings) of factor VIII were relatively high as indicated by significant *t*-values which were greater than 1.96.

Moreover, assessment of fit the overall model was assessed to see how well it fitted with data of the Thai sample. This part, each factor was assessed by examining fit indices including, 1) the X^2 / df ratio, 2) the root mean square error of approximation (RMSEA), 3) goodness of fit index (GFI), 4) the comparative fit index (CFI), 5) the adjusted goodness of fit index (AGFI), 6) the normed fit index (NFI), and 7) the non-normed fit index (NNFI). The result showed the value the X^2 / df ratio of each factor of SHPS ranged from 1.92-3.08 and the RMSEA of each factor ranged from .00-.06 indicating each factor was a good model fit. Moreover, the GFI, CFI, NFI, and NNFI's value of greater than .90 (GFI = .92-.99, AGFI = .90 - .95, CFI = .94 - .99, NFI = .91 - .99, and NNFI = .90 - .99) indicated that each factor was acceptable fit to the data. The criteria assessment the model fit of each factor and the result of CFA of eight 8 factor was present in Appendix D.

Components of SHPS

The identified factors emerged as follows: 1) alerting to search information of sexual health, 2) guarding against for having sexual intercourse, 3) perceiving vulnerability of safe sex practice, 4) perceiving threat of AIDS, STDs, and unwanted pregnancy, 5) communication with parent and peer about safe sex, 6) abstinence from sexual activity, 7) assertiveness information seeking, and 8) self- protection. The details of identified components of SHPS from the factor analysis will be presented as followings.

Factor 1: Alerting to search information of sexual health

The first factor contained of 15 items with factor loading from .42 to .80 with egienvalue 17.82 and accounted for 14.85 % of variance. This factor features characteristic of alert to search information of sexual health. All loading items revealed in the factor was relevant with female adolescent were interested searching for knowledge of sexual health information including AIDS, STDs, cervical cancer, and birth control including studies on training courses in AIDS, STDs, and safe sex. Moreover, the resources of sexual health information comprised TV, radio, the internet and books or health magazines.

The factor supported seeking information, an attribute of the Model of Protection (Shearer & Wingo, 2002). In this model seeking information is accurate and cautious giving and receiving information. Seeking information makes person has knowledge which is a variable that moderated the quality of protection (Shearer and Wingo, 2002). Research studies supported that seeking sexual health information sexual health Information is very important in shaping knowledge and attitudes of adolescents. Adolescents can search and learn about sexual health from many resources such as TV, CD, video, education or training program, mass media, peers, other people or the internet (Arenth, 1999; Cobb, 1997; Dibble & Swanson, 2000; Kitaura, 1997; Martyn & Martin, 2003). Moreover, research studies (Arenth, 1999 & Pornchaikate, 2003) found that the topic of sexual health that female adolescents interested were safe sex practice, contraceptive use, and gender role and STD, and AID infection topics. All of items in factor I will be presented in Table 7 as following.

Table 7

Factor loading and communalities of items within Factor I: Alerting to search information of sexual health

Items	Items statement	Factor loading	Communalities
1	I am interested in searching for knowledge's of AIDS prevention from TV or radio.	.80	.69
2	I am interested in searching for knowledge's of AIDS prevention from internet.	.78	.66
3	I interested in searching knowledge's of pregnancy prevention from internet	.78	.66
4	I am interested in searching for knowledge's of pregnancy prevention from TV or radio	.77	.64
5	I am interested in searching for knowledge's of STDs prevention from internet	.75	.60
6	I am interested in searching for knowledge's of STDs prevention from TV or radio	.75	.62
7	I am interested in searching for knowledge's of pregnancy prevention	.69	.56
8	I am interested in searching for knowledge's of STDs infection	.69	.61
9	I am interested in searching for knowledge's pregnancy prevention from book or health magazine.	.67	.55

Table 7 (continue)

Items	Items statement	Factor loading	Communalities
10	I am interested in searching for knowledge's of STDs prevention from book or health magazine.	.67	.54
11	I am interested in searching for knowledge's of AIDS prevention from book or health magazine.	.67	.59
12	I am interested in searching for knowledge's of AIDS prevention.	.64	.53
13	I am interested in searching for knowledge's of cervical cancer prevention	.63	.54
14	I am interested in studying of training course of AIDS, STDs and safe sex.	.59	.39
15	I received knowledge of sexual education from school enough.	.42	.33
14	I am interested in studying of training course of AIDS, STDs and safe sex.	.59	.39
15	I received knowledge of sexual education from school enough.	.42	.33

Egienvalue 17.82, Percent of variance = 14.85 %

Factor 2: Guarding against for having sexual intercourse

The second factor included contained of 25 items with factor loading from .34 to .61 with egienvalue 9.19 and accounted for 7.66 % of the variance. The factor features characteristics of participants use many methods to guard themselves against having sexual intercourse. The factor showed that thirteen items manifested in the category of avoiding situation risk. Seven items were manifested as guarding against from parent and peer. Moreover, seven items were manifested as guarding against from parent and peer.

Factor 2 supported by the Model of Protection (Shearer & Wingo, 2002) proposes that people should use protective barriers or devices to reduce or guard themselves against themselves from the threat or the risk. In order to reduce the sexual health risk, female adolescents have to guard themselves against STDs, HIV, and unwanted pregnancy by communication with parents and peers about safe sex practice, avoiding drug and alcohol, hygiene care, and avoiding risky situation risk (Cobb, 1997 Millstein & Moscicki, 1995; Hull, Hasmi, & Wisdyan, 2004; Martyn & Martin, 2003).

Researches studies supported the postulate that avoiding drugs and alcohol before or during sexual intercourse can protect a female adolescent from STD, HIV/AIDS and unwanted pregnancy (Champian, 2005; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; Furby, Thomas, & Ochs, 1995; Millstein and Moscicki 1995). From the study of Furby, Thomas, and Ochs (1995), avoiding date with their female adolescent's boy friend in the situation risk such as stay with boyfriend in private place, alone going out with boyfriend, and having party without supervision by adult induce adolescents have chance to intimate together are method for female adolescent's sexual health protection. In the sexual risk situation, in order to avoid the

risk many reports in the literature presented strategies of negotiation. Negotiating the use safe sex practice is a strategy for protecting this adolescent from sexual risk behavior (Cobb, 1997; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; Williams, 2001). All of items in factor I will be presented in Table 8 as following.

Table 8

Factor loading and communalities of items within Factor 2: Guarding against for having sexual intercourse.

Items	Items statement	Factor loading	Communalities
1	If I will go to anywhere with boys I will persuade my close friend to go with me.	.61	.42
2	My close friend reminds me not to have sexual intercourse while we are still at school age.	.60	.48
3	I refuse drinking alcohol when I stay alone with my intimate boyfriend.	.58	.44
4	My friend reminds me not to go anywhere alone with a male.	.58	.45
5	I refuse drinking alcohol if I go to anywhere with intimate boyfriend.	.56	.38
6	My friend told me that if I will go to anywhere I have to take my close friend to go with me.	.54	.38

Table 8 (continued)

Items	Items statement	Factor loading	Communalities
7	I can refuse having sexual intercourse with my intimate boyfriend by telling him that it is not appropriate that we will have sexual intercourse at school age	.53	.47
8	I can avoid drinking alcohol when I have a party with friends	.53	.34
9	My family reminds me that I should not go to anywhere alone with a male because we may easily have a chance to have sexual intercourse.	.52	.31
10	I surely don't use any kind of habit-forming drug.	.51	.34
11	I avoid staying alone with a male especially in the place that is out of sight.	.51	.37
12	I can refuse having sexual intercourse with intimate boyfriend by telling him that if he really loves me he has to wait for me to graduate.	.49	.45
13	My family reminds me that I should not have sexual intercourse before I get married.	.48	.31
14	I will not go to a birthday party or other party with friends who are not my close friends.	.48	.29

Table 8 (continued)

Items	Items statement	Factor loading	Communalities
15	I will not have sexual intercourse with any intimate boyfriend by telling him that we should study the personality of each other before.	.46	.32
16	My friend told me to choose a good man to associate with me as an intimate boyfriend.	.45	.34
17	My friend forbids me to drink alcohol which is mixes by others because it is risk to have sexual intercourse with male easily.	.45	.35
18	If intimate boyfriend asks me to have sexual intercourse I can find the way to fast escape from the place that we stay alone.	.44	.35
19	My family forbids me to have sexual intercourse with any intimate boyfriend.	.44	.26
20	If my intimate boyfriend asks me to have sexual intercourse I will tell him that I have menstruation.	.41	.32
21	If my friend asks me to have sexual intercourse I will evade by speaking other topic such as education or working.	.41	.28

Table 8 (continued)

Items	Items statement	Factor loading	Communalities
22	I can change the topic of communication if my intimate boyfriend asks me to have sexual intercourse.	.40	.30
23	I can prevent myself having sexual intercourse with any intimate boy friend if I do not agree yet.	.37	.31
24	My friend reminds me that I should not have associate with many intimate boyfriends in the same time.	.37	.31
25	My family taught me that if I want to have intimate boy friend I have to graduate and get a job before.	.34	.20

Egienvalue 9.19, Percent of Variance = 7.76 %

Factor 3: Perceiving vulnerability of safe sex practice

The third factor included contained of 17 items with factor loading from .34 to .76 with egienvalue 5.20 and accounted for 4.33 % of variance (Table 9). When examining the content of this factor, all of the items showed the female adolescents perceived vulnerability of safe sex practice. Five items showed female adolescent could not negotiate their partner to use the condom. Moreover, four items showed female adolescent have shy to ask their intimate boyfriend

about sexual history or sexual behavior. Furthermore, six items showed that female adolescents had a positive attitude forward sexual intercourse and had passive behavior with their intimate boyfriend.

From the Model of Protection (Shearer & Wingo, 2002), if people confront with the risk or exposure the threat of their life, without health protection, the risk can lead them receive consequences of the vulnerability. Perceived vulnerable everyone has perceived powerless or unable to exert personal control in various situations (Jack , DiCenso, & Lohfeld, 2005; Erlen, 2006). Many of the literature reviewed supported the postulate that the female was powerless for safe sex practice (Gray & Punpuing, 1999 cited in Yoddumnern-Atting, 2001; Boonmongkon, 2000; Crosby, 2000; Kordoutis, Loumakou, & Sarafidou, 2000).

In Thai society, cultural norms are based on gender inequality in sexual relations women as passive receptacles of men's sexual passion, while males are nurtured to have higher status and sexual power than females. (Fongkaew, 1996; Yoddumne-Atting, 2001). Because this gender based power in sexual relationship males have much more power in decision-making. Males are leaders of females in several dimensions, especially in the sexual dimension. In addition, gender roles cause a male expression of power over females. Gender-based power inequities generally incorporate the belief that men should control women's sexuality. Gender-based power in sexual relationships is frequently unbalanced and those women usually have less power than men. Furthermore, these imbalances operate in the context of a nearly universal sexual double standard that gives men greater sexual freedom and rights of sexual self-determination than women enjoy (Balance, 2001). Particularly in a patriarchal society, without an equalization of power in their relationships with male partners, female adolescents are powerless in sexual negotiation. For example, in case of unintended and unsafe sexual intercourse, most females fear to say no to their partners and they have difficulty asking partners to use a condom (Taylor-Seehafer & Rew, 2000). In case of females who are brave enough to negotiate they may not be successful due to lack of

participation by males, and this may be a cause of unsteady relationships. Items in Factor III will be presented in Table 9 as following.

Table 9

Factor loading and communalities of items within Factor 3: Perceiving vulnerability of safe sex practice.

Items	Items statement	Factor loading	Communalities
1	I cannot tell my intimate boy friend to use a condom because using condom is up to the male.	.76	.64
2	I don't dare to tell my intimate boyfriend to use a condom because he may think that I do not trust him.	.67	.53
3	I am shy to tell my intimate boyfriend to use a condom.	.67	.51
4	I think that to use or to not use a condom is the decision making of the male.	.66	.49
5	I am shy to ask my intimate boyfriend how many people he has ever had sexual intercourse with.	.66	.46
6	I am shy to ask my intimate boyfriend if he has ever had STDs.	.61	.43
7	It is difficult to tell my intimate boyfriend to a use condom every time before having sexual intercourse.	.57	.40

Table 9 (continued)

Items	Items statement	Factor loading	Communalities
8	I think that it is normal that adolescents will have sexual intercourse at school age.	.50	.45
9	Prevention myself having sexual intercourse with intimate boyfriend is difficult for me.	.50	.37
10	I will reward the goodness of intimate boyfriend by agreeing to have sexual intercourse with him.	.50	47
11	I think that it is normal that adolescents will have sexual intercourse with this intimate boyfriend.	.48	.55
12	I don't dare refuse when my intimate boyfriend persuades me to go to anywhere because I am afraid that he may think I do not trust him.	.44	23
13	I think that having sexual intercourse at school age is not wrong.	.43	. 52
14	If my intimate boyfriend asks me to have sexual intercourse I will agree with him.	.43	.40
15	I am shy to ask my intimate boyfriend if he has any sexuality problems.	.42	.19

Table 9 (continued)

Items	Items statement	Factor loading	Communalities
16	If I stay alone with my intimate boyfriend, it is difficult to suppress myself from agreeing with his demand.	.42	.29
17	I think that having sexual intercourse by ejaculating outside is the good prevention for pregnancy.	.34	.34

Egienvalue 5.20, Percent of Variance = 4.33 %

Factor 4: Perceiving threat of AIDS, STDs and unwanted pregnancy

The fourth factor included contained of 15 items with factor loading from .34 to .64 with egienvalue 3.82 and accounted for 3.18 % of variance. This factor all items showed features characteristics of perceived threat of AIDS, STDs, and unwanted pregnancy.

The finding is supported by the Model of Protection (Shearer & Wingo, 2002), perceived threat or appraisal of threat means the ability of person to identify the threat or risk in life event. If people lack of accuracy in appraisal of threat of risk they will confront with life threatening. According to the Health Belief Model (Rosenstosk, 1974 cite in Jan, Champion, & Strecher, 2002) when a person confronted with a health threat, the threat appraisal is initiated.

A research studies supported that (Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005) perceived STD risk, related with female adolescent delay sexual intercourse with new partners and adolescents waited to have intercourse with past partners, and also intentions to

delay with future partners. Supporting the study of Rosengard, Adler, Millstein, Gurvey, & Ellen (2005), many evidences support that perceived susceptibility and severity to HIV/AIDS being associated with increased condom use, fewer sex partners, and decreased number of sexual encounters (Jan, Champion, & Strecher, 2002; ManZini, 2001; Rock, Ireland, & Resnick, 2003). However, the study of Ethier, Kershaw, Niccolai, Lewis, & Lckovics (2003) found that adolescent females at high risk for STI do not accurately incorporate indicators of risk into their perceptions of susceptibility for disease outcomes. Items of Factor I will be presented in Table 10.

Table 10

Factor loading and communalities of Factor 4: Perceived threat of AIDS, STDS and unwanted pregnancy.

Items	Items statement	Factor loading	Communalities
1	If I have sexual intercourse I may have risk to have STDs.	.64	.47
2	I may easily have a chance to have AIDS if I have multiple sexual partners.	.61	.49
3	I easily have a chance to get AIDS if my intimate boyfriends have sexual intercourse with other women.	.60	.41
4	If I have sexual intercourse I may get risk to have AIDS.	.59	.43
5	I easily have a chance to have AIDS if I have sexual intercourse with no prevention.	.59	.52

Table 10 (continue)

Items	Items statement	Factor loading	Communalities
6	I have a chance to have AIDS if I have sexual intercourse with a man who is infected with AIDS.	.57	.39
7	I easily have a chance to have cervical cancer if I have sign of pain during sexual intercourse.	.56	.41
8	If I have sexual intercourse I may have a chance to become pregnancy.	.55	.39
9	If I get pregnant I may not finishing my education.	.55	.38
10	I easily have a chance to have cervical cancer if I have sign of leucorrhea.	.53	.38
11	I easily have a chance to have cervical cancer if I have sexual intercourse with men.	.50	.34
12	I think that cervical cancer is a severe disease.	.49	.27
13	I have a chance to have cervical cancer.	.48	.32
14	If I get pregnant my future life may be damaged.	.48	.31
15	I may die from AIDS.	.34	.24

Egienvalue 3.82, Percent of Variance = 3.18 %

Factor 5: Communication with parent and peer about safe sex

The fifth factor included contained 15 items with factor loadings from .31 to .65 with egienvalue 3.47 and accounted for 2.89 % of variance. This factor features characteristics of communication with parent and peer about safe sex. The fifth factor consisted of communication with parents i.e. such as consulting parents about having intimate boyfriends, condom use and pregnancy. This factor also included communicating with peers about safe sex methods such as condoms use and contraceptives Thus, factor 5 could be labeled as communication with parent and peer about safe sex.

Many researches supported Factor 5, (Millstein & Moscicki, 1995; Cobb, 1997; & Hull, Hasmi, & Wisdyan, 2004), parent and peer communication about safe sex can protect female adolescents from sexual health problem. Parental-adolescent communication influenced the child's' involvement in sexual possibility situations (DiClemente, Hansen, & Ponton, 1996; DiLorio, Dudley, Soet & McCarty, 2004). On the contrary, a research study (Beal, Ausiello,& Perrin, 2001) suggested that peers and peer group behavior may be better predictors of adolescent health-risk behavior than parental social influences among young adolescents. Similarly, recent studies (DiCliement, 2000; Hull, Hasmi, & Wisdyan , 2004) supported the concept that peer group can protect adolescent from reproductive ill-health and decrease sexual risk of the adolescent. Moreover, the peer group also showed significantly greater increases in condom use self-efficacy and in consistent condom use of adolescent (Hull, Hasmi, & Wisdyan, 2004). Items of Factor 5 will be presented in Table 11 as following.

Table 11

Factor loading and communalities of Factor 5: Communication with parents and peers about safe sex.

Items	Items statement	Factor loading	Communalities
1	My friend advises me to tell my intimate boyfriend to use condom before having sexual intercourse.	.65	.51
2	My friend advises me about AIDS prevention.	.65	.51
3	My friend advises me about STDs prevention.	.58	.51
4	I consult my friend about safe sex method.	.56	.42
5	My family advises me about condom use for AIDS and STDs prevention.	.52	.35
6	My family tells me not to keep silent if I get pregnant because they can help me.	.49	.37
7	My friend advises me about talking contraceptive drug after having sexual intercourse.	.49	.40
8	My family reminds me that if I get pregnant, I should not abort myself because it may be harmful to my life.	.47	.38
9	I f get pregnant I will consult my family.	.41	.32
10	My friend advises me about using contraceptive injection drug for pregnancy prevention.	.41	.35

Table 11 (continue)

Items	Items statement	Factor loading	Communalities
11	I can remind my intimate boyfriend to use a condom every time that we have sexual intercourse.	.40	.34
12	I dare to carry a condom in hand when I am necessary to use it.	.37	.37
13	If I have intimate a boyfriend I will consult my family.	.37	.29
14	I am confident that I can wear condom to my intimate boyfriend	.32	.32
15	My family tells me to persuade my intimate boyfriend to visit home in order to help me check that he is a good person	.31	.13

Egienvalue 3.47, Percent of Variance = 2.89 %

Factor 6: Abstinence from sexual activity

The sixth factor included contained of 9 items with factor loading from .36 to .69 with egienvalue3.01 and accounted for 2.56 % of variance. Factor VI consisted of abstinence from sexual intercourse in two types including refusing to have sexual intercourse at school age and refusing to have unsafe sex. The loading items in factor 6 supported the evidences of sexual health protection behaviors as these researchers. Abstinence from sexual intercourse is an important behavioral strategy for preventing HIV infection, STD, and unwanted pregnancy among adolescents (Santelli, Ott, Lyon, Rogers,

Summers, & Schleifer, 2006). Using a randomized-controlled trial, Jemmott, Jemmott, and Fong (1998) evaluated the effects of an abstinence intervention that focused on the initiation and frequency of sexual intercourse. The result showed that the youth who participated in the abstinence intervention were less likely to report having sexual intercourse. However, abstinence is not sufficient to promote sexual behavior in adolescent (Villaruel, 1998; Stammers, 2005). Delay or postponement of the onset of intercourse until they are ready is more practical than abstinence. A recent study of Aarons et al. (2000) conducted postponing sexual intercourse among urban junior high school students. The result showed that intervention-group females were more likely to report virginity, refuse sexual involvement during the following 6 months. Thus, for delaying sexual intercourse adolescent should be taught communication skills that will help postpone sex until they are ready. They must be able to say with confidence "Not yet, not now." Adolescent also must taught how avoid situations in which it will be difficult to "just say no" (Villaruel, 1998).

Table 12

Factor loading and communalities of items within Factor 6: Abstinence with sexual activity.

Items	Items statement	Factor loading	Communalities
1	I will not have sexual intercourse with my intimate boyfriend until I graduate as I intend.	.69	.63
2	I surely would not have sexual intercourse at school age although I have an intimate boyfriend.	.65	.62
3	I let my intimate boyfriend to touch my body such as hand, and shoulder but don't have sexual intercourse.	.64	.46

Table 12 Continued)

Items	Items statement	Factor loading	Communalities
4	Anyhow I will refuse having sexual intercourse with my intimate boyfriend.	.60	.51
5	I will absolutely have not sexual intercourse if my intimate boyfriend does not use a condom.	.50	.36
6	I dare to refuse sexual intercourse if my intimate boyfriend will not use condom.	.49	.38
7	It is difficult to refuse having sexual intercourse with intimate boyfriend every time.	.45	.40
8	I will get my intimate boyfriend use condom every time before having sexual intercourse surely.	.44	.43
9	I will refuse to have sexual intercourse with my intimate boyfriend by telling him that it may make my education worse.	.36	.32

Egienvalue 3.01, Percent of Variance = 2.56 %

Factor 7: Assertiveness information seeking

The seventh factor included contained of 8 items with factor loading from .45 to .68 with egienvalue 2.69 and accounted for 2.24 % of variance. All of these items showed female adolescents are alert to seeking sexual behavior and sexual history of their intimate boyfriend. Thus, this item was labeled as assertiveness information seeking. Many aspects in the literature supported the postulate that assertive information seeking is important

for female sexual health protection (Cobb, 1997; Dilorio, Parsons, Lehr, Adame, & Carlone, 1992; Furby, Thomas, & Ochs, 1995; Martyn & Martin, 2003). If a female have any doubts about whether her partner has an STD or sexual health problem, she should ask him (Martyn & Martin, 2003). A study by Cobb (1997) also reported that young women who seek specific information about their new sexual partner's disease risk status are more likely to implement sexual protective practices. Moreover, a previous research study found that most sexual active women know they should be practicing safer sex (Hutchinson, 2001). Similar to those research study, a resent research study (Boyce, Doherty-Poirier, & Macinnin, 2006) found that high percentage (68-78%) of female adolescent agree that they would ask a partner about condom use before having sexual intercourse and it was the responsibility of both partners to be sure a condom was a available (83-85%). Items in Factor 7 will be presented in Table 13 as following.

Table 13

Factor loading and communalities of items within Factor 7: Assertiveness seeking information.

Items	Items statement	Factor loading	Communalities
1	I ask others if my intimate boyfriend has ever had STDs.	.68	.52
2	I dare to ask my intimate boyfriend if he has sexuality problems.	.65	.49
3	I ask others that how many people my intimate boyfriend has ever had sexual intercourse with.	.64	.50
4	I dare to ask my intimate boyfriend if he has ever had STDs.	.59	.47

Table 13 (Continued)

Items	Items statement	Factor loading	Communalities
5	I dare to ask my intimate boyfriend if he has ever had condom use.	.55	.42
6	I ask other that how many intimate girlfriends my intimate boyfriend has.	.54	.50
7	I dare to ask my intimate boyfriend that how many persons he has ever had sexual intercourse with.	.51	.43
8	I am shy to ask my intimate boyfriend if he has ever got STDs.	.45	.46

Egienvalue 2.69, Percent of Variance = 2.24 %

Factor 8: Self-protection

The last factor included contained of 3 items with factor loading from .34 to .42 with egienvalue 2.41 and accounted for 2.01 % of variance. The eighth factor refers to practice self- protection by using safe sex practices such as contraceptive drugs, condoms use and known partners for a long time before engaging in sexual intercourse.

A recent study supported that the self protection from sexual intercourse from STDs, HIV, and unwanted protection were important of adolescent. Adolescents were less likely to have had sexual intercourse and all students were significantly more likely to believe they could protect themselves from HIV/AIDS. In the same research study in order to protect themselves, high percentages (68-78%) of female agreed that they would ask a partner about condom use before

having sexual intercourse. (Boyce, Doherty-Poirier, Langen, & Macinnin, 2006). A previous study (Poppen & Reisen, 2000) found that female adolescents use of self-protective measures, i.e., simultaneous use of condoms for disease prevention and birth control pills for contraception in newer relationships and they perceived their partners as more likely to have HIV or other STDs. Similar to Poppen and Reisen (2000) self-protection by condom use was associated with sexual health protection of the partner. (Bell, Trevino, Atkinson & Carlson, 2003). However, Gender power imbalance affected on women's capacity to negotiate self-protection against HIV/AIDS in Botswana and South Africa. Gender power imbalance in sexual interactions, is increasingly being recognized as a factor in fueling the spread of HIV/AIDS by increasing the number of unsafe sexual encounters (Langen, 2005). Items in Factor 8 will be presented in Table 14 as following.

Table 14

Factor loading and communalities of items within Factor 8: Self- protection.

Items	Items Statement	Factor Loading	Communalities
1	If my intimate boyfriend will not use condom I will take contraceptive drug for pregnancy prevention.	.42	.30
2	I take long time to associate with my intimate boyfriend before I decide to have sexual intercourse with him.	.35	.24
3	If I have sexual intercourse I will use many prevention methods in order to not became pregnant such as use a condom, calculate the safe period, and take contraceptive pill.	.34	.33

Egienvalue 2.41, Percent of Variance = 2.01 %

Correlation of factors

The eight subscales were examined for their correlations using Pearson product moment. As shown in Table 15, there was statistically significant correlation at a level of .01 between Factors I, II, III, IV, V, VI, VII, and VIII. The result showed that the subfactor to subfactor correlation was -.03 - .53 and many of them had correlation more than .30. The correlation of subsfactor and total score were ranged from .32 to .77. Thus, the correlation among the resulting eight factors of the SHPS was appropriate.

Table 15

Correlations among the Resulting eight factor of the SHPS.

Factor	II	III	IV	V	VI	VII	VIII	Total Scale
Factor I	.41*	-.03	.34*	.53*	.14	.43*	.24*	.62*
Factor II		.27*	.44*	.44*	.55*	.32*	.28*	.77*
Factor III			-.03	-.04	.39*	-.02	-.05	.32*
Factor IV				.26*	.27*	.21*	.27*	.56*
Factor V					.23*	.37*	.31*	.63*
Factor VI						.12	.18*	.61*
Factor VII							.27*	.55*
Factor VIII								.32*

* $p < .001$

Contrast group approach

Independent samples t-test was conducted to determine differences in the high risk group and the low risk group of sexual health. In the Model of Protection (Shearer & Wingo, 2002) threatening exposure or risk exposure is a context of health protection. Risk Exposure is important because it showed that lifestyle of person may be exposed to risk factors. Therefore female adolescent who exposed risks of sexual health problem, i.e., STDs and HIV infection and unwanted pregnancy, has to protect herself from the risk or diseases. For this part, the group at risk for sexual health problems was classified by the magnitude of adolescents who were exposed to sexual health risks. According to the literature, career status, type of residence, intimate relationships and sexual experience are related to sexual health protection in adolescents.

Carrier status of adolescents. Normally, Thai female adolescents who are studying in secondary school and vocational school have low level of exposure to sexual health risk groups as both groups of students always study hard to meet their goals of high education. Therefore, they have to concentrate more on their education than do the other things. Moreover, sex education programs are provided by the school and organizations which organize various activities about sexual health risk prevention for students (Bianca, Bettina, Michele, Christina, & Aida, 2003; Pavlich, Anti, Kerr, & Thompson, 2007). Conversely, female adolescents studying out of the education system and female adolescents who have jobs are exposed to high levels sexual health risks. Normally, both groups already have jobs and it is known that Thai female adolescents who are already working will be exposed to sexual health risks as they can easily associate with males in the workplace and easily engage in sexual intercourse with men. Moreover, there are fewer sex education programs in the workplace than in school, so female adolescents in the workplace cannot learn how to protect themselves

from sexual health problems. Therefore, they learn sexual health protection by themselves, or from co-workers or from magazines which may be not an efficient way to learn safe sex practice.

Type of residence. Female adolescents who live with parents are exposed to lower level of sexual health risks than female adolescents who do not live with their parents but live with friends, relatives, or stay alone. Adolescents who live with parents have many chances to communicate or discuss safe sex practice. Many research studies have indicated that communication between adolescents and parents is a significant factor in protecting female adolescents from HIV, STD and unwanted pregnancy (Cha, Kim, & Doswell, 2007; DiLorio, Dudley, Wang, Wasserman, Eichler, & Berlcher, 2001; DiLorio, Dudley, Soet, & McCarty, 2004; Hull, Hasmi, & Wisdyan, 2004; Jaccard & Dittus, 2000).

*Intimate relationship*s. Female adolescents who have never had an intimate boyfriend are exposed to lower levels of sexual risk than female adolescents who have intimate boyfriends as these adolescents may have more interest in the goal of education than having intimate boyfriends. Research studies have found that adolescents who believe in the importance of a good education are positively associated with abstinence or delay in sexual intercourse (Lammers, Ireland, Resnick, & Blum, 2000; Villarruel, 2004). In contrast, the participants who had had an intimate boyfriend are exposed to both sexual intercourse and sexual health problems on a higher level. It is possible that all of these female adolescents allow boyfriends to physical contract e.g. holding hands and kissing. All of these activities put female adolescents at greater risk for having sexual intercourse without safe sex.

Sexual experience. Female adolescents who have never had sexual experience are exposured to less risk for sexual problems than female adolescents who have sexual

experience. Female adolescents who have never had sexual experience would perceive sexual intercourse as the cause of the risks for STDS, HIV/AIDS and unwanted pregnancy so they may practice safe sex. Moreover, they may perceive their susceptibility and the severity of sexual health problems (Aarons, 2000; Rosengard, Adler, Millstein, Gurvey, & Elle, 2005; Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006; Stammers, 2005). In contrast, female adolescents who have had sexual intercourse may not protect themselves from HIV infection, STDs and unwanted pregnancy. Juarez & Martin (2006) found that, although female adolescents usually recognize that HIV poses a threat for young people, many of them did not perceive themselves as being at risk. Moreover, female adolescents who have had sexual experience always conflict over safe sex and romantic love wherein condom use may mean mistrust or infidelity to some, but care and love to others (Juarez & Martin, 2006; Nerring, Wydeler, & Michaud, 2000; Taylor-Seehafer & Rew, 2000; (Orji & Esimai, 2005).

Therefore, the low risk group for sexual health problems comprised the groups of female adolescents who were studying in the education system, living with parents, had never had intimate boyfriends, and had never had sexual experience. On the other hand, the high risk group comprised the groups of female adolescents who had jobs, did not live with parents, had intimate boyfriends, and had had sexual experience.

The independent samples t-test was used to examine the difference between the four low risk and high groups of female adolescents including, 1) never have intimate boy friend and have been had intimate boyfriend, 2) study in education system and getting a job, 3) never have sexual experience and have been had sexual intercourse, and 4) live with their parents and did not live with parents. Most of SHPS scores were

significantly different between the high risk and the low risk group. However, the SHPS score of participants staying with parent was not significantly different from the SHPS score of participants did not live with participants. The results of construct validity with contrast group approach will be presented as the following.

1. Participants in the education system had significantly higher score of SHPS than participants in working sector (see Table 16).

In this study participant who was studying in the education system were the secondary school student and vocational school student. Participants who got a job were participants who were factories worker and participants who were working in various places such a gift shop, a food shop or a store at the same time were studying in Non-formal Education settings. Reasons that supported participants studying in the education system had significantly higher score of SHPS than participants getting a job included the sex education program and the sexual health risk exposure.

First, participants who were studying in the education system received sexual health protection knowledge than the other groups. In Thailand, sex education is a topic that every secondary educational school adds in the course syllabus and there many organizations support or set sexual health activities in the school. Therefore, all students can learn how to have sexual health protection behavior. A research study (Bianca, Bettina, Michele, Christina, & Aida, 2003) found that sex education program addressed the role of contraceptive use in safe sex behavior and increased adolescents' reported intentions to delay sex and use contraceptives. Moreover, recent studies (Bianca, Bettina, Michele, Christina, & Aida, 2003; Pavlich, Anti, Kerr, & Thompson, 2007) supported that found that it is important and necessary to continue safer-sex education on school because adolescents had received information from a variety of sources including classes, student clubs and organizations, the Student Health Center,

pamphlets or brochures distributed on campus from a variety of sources, the university newspaper, and informal discussion with friends.

Conversely, the participants who already had a job receive the knowledge of sexual health protection less than the group of students. In normally, there are fewer sex education programs in the workplace. Thus, participant these groups may learn sexual health protection by themselves, or from workers or magazines which may be not an efficient way to learn safe sex practice.

Second, participants who study in education system would exposure the sexual health risk less than participants who work in factories or the other places. Normally, the environment in the school is safe for sexual health problem because students have to concentrate about their education. There were also many laws or regulations of schools with protect adolescent from sexual risk. In contrast, participants already working would exposure the sexual health risk than the group of student. Participants would easily associate with males in the workplace and they may easily engage to have sexual intercourse with men.

2. Participants who had no intimate boyfriend had significantly higher score of SHPS than participants who had intimate boyfriend (see Table 16).

The reason that supported participants who never have an intimate boyfriend had significantly higher score of SHPS than participants who have been had intimate boyfriend was the goal of education. Participants who were students always have a goal of education so participants have to work hard success in high education. Therefore, participants in this group did not have so much time to associate with boy or male. Supporting this idea research studies found that adolescents who believe in the importance of a good education are positively associated with abstinence or delay in sexual intercourse in adolescents (Lammers, Ireland, Resnick, & Blum, 2000;

Villarruel, Jemmott, Jemmott, & Ronis, 2004). In contrast, adolescents having an intimate boyfriend were exposed to have sexual intercourse with in the lover (Pornchaikate, 2003). In this study, results supported the literature, participants who have not intimate boyfriend perceived that having intimate boyfriend made them loss their concentrate about education. However, participants perceived positive to have intimate boyfriend. Moreover, participant in this group would allow boyfriends to touch their body such as hold hands and shoulder, hug and kiss. These made participants loss concentrate for study hard and get risk of sexual health problem.

3. Participants who had no sexual experience had significantly higher scores on sexual health protection than participants who had sexual experience (see Table 16).

The reason that participant who never have sexual experience had significantly higher scores on sexual health protection than participants who have been had sexual experience were perceived threat or risk of sexual health problem. In this group Participants never having sexual experience had higher score of SHPS because they may perceive that having sexual intercourse cause is the cause of the risk from STDS, HIV/AIDS and unwanted pregnancy so they find how to practice safe sex. Moreover, they may perceive susceptibility and severity of sexual health problem. A recent research of Rosengard, Adler, Millstein, Gurvey, & Ellen, 2005) found the association between perceived STD risk and health values in adolescents' delaying sexual intercourse with new partners. Furthermore, participant may perceive that abstinence from sexual intercourse is an important behavioral strategy for preventing HIV infection, STD, and unwanted pregnancy among adolescents. A literature review (Aarons, 2000) conducted postponing sexual intercourse among urban junior high school students. The result showed that intervention-group female were more likely to

report virginity, self -efficacy to refuse sexual involvement during the following 6 months. Similar to previous study (Aarons et al., 2000) a recent study (Santelli, Ott, Lyon, Rogers, Summers, & Schleifer, 2006) found that the effects of an abstinence intervention showed the youth who participated in the abstinence intervention were less likely to report having sexual intercourse short-term (three months following the intervention). Villaruel (1998) and Stammers (2005) supported that delay or postpone of onset of intercourse until they are ready is more practical for prevent HIV infection in adolescents

In contrast, participants having sexual intercourse may not protect themselves from HIV infection, STD, and unwanted pregnancy. Although participants usually recognize that HIV poses a threat for young people, many find it was difficult to perceive themselves at risk (Juarez & Martin, 2006). Difficulties to personalize risk might be even greater when involved in a steady relationship, because the conflicting narratives of safe sex and romantic love. Moreover, condom use may mean mistrust or infidelity to some and care and love others. Thus, in the context of a romantic relationship, proposing condom use may be interpreted as an admission or accusation of sexual infidelity, undermine trust, and jeopardize the relationship if presented as disease prevention, although it may be welcome as a sign of concern if presented as pregnancy prevention (Nerring, Wydeler & Michaud, 2000; Taylor-Seehafer & Rew, 2000; & Juarez & Martin, 2006). Support the research studies above, evidence found that higher proportion of sexual active of female adolescent did not use contraceptive at the time of first sexual intercourse (Orji & Esimai, 2005). A reason which many female adolescents do not view themselves as being a risk for HIV/AIDS and STDs and some of them believed their partners are safe (Hutcinsons, Sosa & Thompson, 2001).

4. Participants who lived with parents did not have significantly higher scores on SHPS than participants who did not live with parent (live with friends, relative, stay alone and live in dormitory) (see Table 16).

The results of this part were supported by relationship of participants and parents. The findings of previous literature supported that adolescent and parents relationship impacted on adolescent sexual behavior (Jaccard & Dittus, 2000; Cha, Kim, & Doswell, 2007). When adolescents had a good relationship with their parents, they were more likely to intend to use condoms and actually use condoms and contraceptive methods (DiClemente, 2001).

In contrast, some participants who did not live with parents (live with friends, relative, stay alone and live in dormitory) may have a chance to learn sexual health protection information from many resources such as peers, magazine, TV and radio than when they lived with parents. In Thai culture, it known that parents can not talk and teach female adolescent how to safe sex because they feel embarrass to say the sexual topic. Parents think that it may lead their daughter initiate sexual intercourse. Thus, in home, female adolescents may lack a chance to learn sexual health protection from parent, TV, magazine and other media. In case of saying, seeing movie or read magazine they will be blame as not bad adolescent. In case of female adolescents have sexual experience, they will be blamed as not good women and most of female adolescent fear to consult their partners and they have difficulty asking parent about safe sex (Fongkaew, 1996; Balance, 2001; Yaddumne-Atting, 2001).

In this study whether or not female adolescents lived with parents or didn't live with parents, they can learn how to protect themselves from STD, HIV and unwanted pregnancy. Therefore, there were not significantly higher scores on SHPS between participants who lived with parents and participants who did not live with

parents. The differences on SHPS score among difference groups of female adolescents will be present in Table 16.

Table 16

Differences of SHPS scores among different groups of female adolescents (N = 450).

Group of female adolescents	N	Mean	S. D	t	*p*
Sexual relationship					
Have no intimate boyfriend	100	3.20	.30	3.46	.000**
Have intimate boyfriend	350	3.06	.29	3.02	
Sexual experience					
Never	290	3.15	.29	5.55	.000**
Have	160	2.98	.30	6.63	
Status					
Study	250	3.14	.31	3.46	.001**
Work	200	3.04	.29	3.48	
Staying with					
Parent	289	3.11	.31	-1.93	.054
Other	161	3.05	.29	-1.89	

Reliability

The purpose in this step was to evaluate the reliability of SHPS. Reliability of the SHPS was assessed by internal consistency and test-retest reliability.

Internal consistency reliability

Internal consistency of SHPS was tested by using Cronbach's alpha coefficients (Table 14). The alpha coefficients of the SHPS subscale ranged from .81 to .94. Almost subscales of the SHPS showed high alpha coefficients except the eighth factor which was at low level (α =.54) however, the internal consistency on the total scale was .93.

Test-retest reliability

Test-retest reliability using two week interval between two testing times was assessed by asking twenty participants to complete the SHPS twice. Percentage agreement of the questionnaire twice was calculated and classified by each of factor of SHPS. As shown in Table 17, percentage agreement of the total score was 83 %. For each factor the percentages of agreement rage from 76.67 % to 85.6 % so test-retest reliability of SHPS was acceptable.

Social desirability evaluation

According to evaluation the social Desirability of the SHPS among participants, Marlow-Crown Social Desirability Scale (MCSD) was use to conduct. 450 participants considered whether each statement was true or false as it pertained to their perception. Pearson Correlation was conducted to examine the difference of sexual health protection score and the score of the Marlow-Crown Social Desirability Scale (MCSD). The result indicated that there was no relationship between the SHPS score and MCSD scale. It means SHPS do not have participants' social desirability bias.

Table 17

Number of items, Cronbach's alpha coefficient, and percentage of agreement classify by factor of SHPS.

Factor	Number of items	Alpha	Percent of agreement (test-retest)
1. Altering to search information of sexual health	15	.94	85.6
2. Guarding against for having sexual intercourse	26	.90	78.24
3. Perceiving vulnerability of safe sex practice	17	.87	80.07
4. Perceiving threat of AIDS, STDs, , and unwanted pregnancy	15	.85	82.00
5. Communication with parents and peers	15	.82	76.67
6. Abstinence from sexual Activity	9	.82	81.25
7. Assertiveness information seeking	8	.81	81.25
8. Self protection	3	.54	80.00
Total	107	.93	83.00

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter consisted of three parts. The first part focuses on the conclusions based on the research results while the second part shows the limitations of this study. Finally, the third part looks at some implications that can be derived from the study.

Conclusion

The main purpose of this study was to develop the Sexual Health Protection Scale (SHPS) for Thai female adolescent and evaluate its psychometric properties. The process of development and psychometric of the SHPS will be presented as following.

1. An extensive literature review search provided the overview of sexual health protection. The Model of Protection was the theoretical base to conceptualize the concept of sexual health protection. In-depth interviewed 20 female adolescents were conducted to reveal sexual health protection behavior among Thai female adolescents. Six domain of sexual health protection were present as 1) Appraisal of threat, 2) Perceived behavioral control, 3) Self-regulation, 4) Guarding against, 5) Seeking information and 6) Attitude toward sexual health protection.

2. The items were generated following each domain. The first draft of the SHPS consisted of 170 items.

3. The first draft of the SHPS was reviewed by content experts who were specialist and conducted researches in sexual health problem and sexual health protection. The second draft of the SHPS consisted of 125 items. Content Validity Index was .74 which was accepted for a new scale. The face validity was conducted by

twelve participants and five items were dropped so the second draft of SHPS remained 120 items.

4. Pretesting was conducted with 30 participants and the reliability coefficient was high (α = .93).

5. Before conducting the factor analysis, item analysis was evaluated. When employing Exploratory Factor Analysis (EFA) by component factor analysis with varimax rotation, the SHPS was composed of 8 factors with 111 items and explained 39.72 % of the variance.

6. Confirmatory Factor Analysis (CFA) was conducted to confirm all items reflecting 8 factors of SHPS. As a result, four items were dropped, and the final draft of SHPS composed of 8 factors with 107 items.

7. The identified factors emerged and were labeled as followed: 1) Alertness to search for information on sexual health, 2) Guarding against for having sexual intercourse, 3) Perceiving vulnerability of safe sex practice, 4) Perceived threats of AIDS, STDS and unwanted pregnancy, 5) Communication with parents and peers about safe sex, 6) Abstinence from sexual activity, 7) Assertiveness in seeking information and 8) Self-protection.

8. Examining the reliabilities of the resulting factors, it showed that the internal consistency on the SHPS was high reliability (α = .93). The test-retest reliability by percentage agreement was accepted (83%).

9. When testing construct-related evidence of validity by contrast group approach, it was found that most of the SHPS score were significant difference between the low risk and high risk of sexual health problem. As a result, there were sufficient empirical evidences supported for validity of the SHPS.

10. The eight subfactors were examined for correlation using Pearson's production moment where in the results showed there were statistically significant correlations at a level .01 between each of subfactor.

11. Social Desirability Testing was evaluated by the Marlowe-Crowne Social Desirability Scale (MCSD). The result shows the SHPS do not have participants' social desirability bias.

Limitation

The limitation of this study is that the SHPS contain numerous items athough it is representative of the Thai female adolescent's sexual health behavior. However, The SHPS would be useful and easy to apply in terms of reliability if this scale could be developed into a shorter than the one used in this study.

Implication

The major objective of this study was to develop the sexual health protection scale (SHPS) in the hope that, by developing a standard instrument for measuring sexual health protection behavior in Thai female adolescents, the scale would be able to assess sexual health protection behavior or sense of protection for female adolescents. Moreover, nurse practitioners and other providers of primary health care are confronted daily with adolescents who have sexual health problems but they lack of an instrument for assessing how adolescents protect themselves from sexual health problems. Thus, the SHPS can be used as an instrument for nurses to assess sexual health protection in Thai female adolescents who can be classified in to different groups of risk for health problem. However, the scale should provide the guideline of using because sexual

health is sensitive issue for female adolescent. If nursing parishioners and primary care unit staffs become aware that difference adolescent groups have different levels of sexual protection, nurses can develop health protection or health prevention programs that are appropriate for each adolescent group.

In addition**,** policy makers can use the SHPS as an instrument for assessment of sexual health protection behavior in Thai female adolescents in different adolescent groups and in different settings. Moreover, the SHPS can be used to assess sexual health protection behavior before and after nurses or health care providers establish sexual health prevention programs for Thai female adolescents.

The scale of this study can be made into a new innovation, the "Sexual Health Protection Scale (SHPS)" as a great contribution to nursing knowledge. Furthermore, it can lead nursing education to finding a way to develop nursing therapeutics as appropriate with sexual health problem in female adolescents. According to, the outcome of the study, the instrument can assess sexual health protection in Thai female adolescents in a way that can infer whether or not female Thai adolescents have sexual health protection. If the results show that they have no protection for themselves it will be the challenge of the nursing role will be develop nursing therapeutics for sexual health protection in Thai female adolescents.

Future Research Recommendations

This instrument will be helpful for researchers interested in explaining, predicting, and improving the effectiveness sexual health protection behavior in female adolescents. However, future studies are needed in order to provide evidences and strengthen support for the validity and reliability of the SHPS as follows:

1. Future testing of the SHPS in the large samples of more diverse races and religion, by including sex groups is needed to increase the generalization of the findings.

2. The SHPS can be developed into a short form to make it more useful and easier to apply in terms of reliability.

3. Gender differences in sexual health protection behavior should be further explored. Although this study highlights the sexual health protection behavior of female adolescents, issues concerning gender bias such as male and female condom usage negotiation, safe sex practice, and perceived risks of STDs, HIV/AIDS and unwanted pregnancy were not explored.

4. A prospective or longitudinal study is needed to identify how various score on the SHPS subscale may predict the outcome of condom usage or sexual abstinence on the part of female adolescent.

5. The cross-cultural studies of sexual health protection behavior should be further investigated, so that the SHPS can be provided to researchers for further measurements of sexual health protection behavior.

6. The criterion-related validating evaluation both concurrent and predictive validity should be considered for further study.

7. The result showed one out of third among the participants had sexual experiences in sexual intercourse. Sexual health protection intervention has to conduct for protection female adolescents from STDs, HIV/AIDS and unwanted pregnancy.

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APPENDICES

APPENDIX A

IN-DEPTH INTERVIEW GUIDELINE

แนวคำถามการสัมภาษณ์ระดับลึก เรื่อง การปกป้องสุขภาพทางเพศของวัยรุ่นไทย

1. ท่านมีความเข้าใจเกี่ยวกับสุขภาพทางเพศอย่างไรบ้าง
2. ปัญหาสุขภาพทางเพศมีความสำคัญต่อท่านอย่างไร
3. วัยรุ่นผู้หญิงมีความเสี่ยงต่อการเกิดปัญหาสุขภาพทางเพศอย่างไรบ้าง
4. วัยรุ่นผู้หญิงควรมีการปฏิบัติตัวอย่างไรในการปกป้องสุขภาพทางเพศ
5. วิธีใดบ้างที่วัยรุ่นผู้หญิงควรใช้ในการหลีกเลี่ยงปัญหาสุขภาพทางเพศ
6. วิธีใดบ้างที่วัยรุ่นผู้หญิงควรใช้ในการป้องกันตนเองจากการตั้งครรภ์ และ การติดเชื้อทางเพศสัมพันธ์
7. พ่อ แม่ เพื่อน และครูมีบทบาทต่อการปกป้องสุขภาพทางเพศของวัยรุ่นผู้หญิงอย่างไรบ้าง
8. วัยรุ่นผู้หญิงควรค้นคว้าหาความรู้ หรือข้อมูลที่เกี่ยวข้องกับการปกป้องสุขภาพทางเพศเรื่องใดบ้าง และอย่างไร
9. ในการคบเพื่อนชายวัยรุ่นผู้หญิงควรค้นหาข้อมูลทางสุขภาพของเพื่อนชายเรื่องใดบ้าง และอย่างไร
10. ในสถานการณ์ที่เสี่ยง เช่น การอยู่สองต่อสองกับเพื่อนชาย ท่านใช้วิธีใดในการป้องกันตนเองจากการปัญหาสุขภาพทางเพศ

APPENDIX B

CONTENT VALIDITY FORM

Content Validity Form

Instructions: Please determine relevancy of items to the constructs, clarity and conciseness. Please alternatives in the space provided for any items with relevancy of 1 or 2, not clear or not

Relevancy
1 = Not relevancy
2 = Somewhat relevancy
3 = Quite relevancy
4 = Very relevancy

Clarity
Yes = Clear
No = Not clear

Concise
Yes = Concise
No = Not concise

Item	Relevancy				Clarity		Conciseness		Other comments
Criticism	1	2	3	4	1	2	1	2	(Recommend from experts)
1. I may die from AIDS.									
2. I think that cervical cancer is a severe disease.									
3. If I get pregnant my future life may be damaged.									

APPENDIX C

QUESTIONNAIRES

ข้อมูลส่วนบุคคล

คำแนะนำ: กรุณากรอกข้อความหรือทำเครื่องหมาย √ ลงใน □ หรือเติมข้อความลงในช่องว่างที่เว้นไว้

1. ท่านอายุ……ปี

2. ท่านทำอะไรอยู่

□ กำลังศึกษาระดับมัธยมศึกษาปีที่ ..... □ กำลังศึกษาระดับอาชีวศึกษาปีที่ .....

□ กำลังศึกษาที่ศูนย์การศึกษานอกโรงเรียน □ ทำงานในโรงงาน

3. ท่านพักอาศัยอยู่กับใคร

□ คนเดียว □ พ่อ แม่ □ เพื่อน

□ แฟน □ ญาติ □ อื่น ๆ ระบุ……..

4. ท่านมีแฟน(แบบชายกับหญิง) แล้วหรือไม่

□ ยังไม่เคยมีแฟน □ เคยมีแฟนแต่เลิกไปแล้ว □ ปัจจุบันมีแฟน

5. ท่านมีประสบการณ์การมีเพศสัมพันธ์ (แบบชายกับหญิง) หรือไม่

□ มี □ เคยมีแต่ปัจจุบันไม่มี □ ไม่เคยมี (โปรดข้ามไปทำข้อ 20)

6. ท่านมีเพศสัมพันธ์ครั้งแรกกับใคร

□ แฟน □ เพื่อน □ อื่น ๆ โปรดระบุ…….

7. ท่านมีเพศสัมพันธ์ครั้งแรกเมื่ออายุ ……ปี

8. ท่านมีประสบการณ์การมีเพศสัมพันธ์ครั้งแรกด้วยเหตุใด

□ อยากรู้ อยากลอง □ รักและต้องการตามใจแฟน

□ เมา ไม่รู้สึกตัว □ ต้องการมัดใจแฟน

□ อื่น ๆ โปรดระบุ……

9. ท่านเคยตั้งท้องหรือไม่

□ ไม่เคย □ เคย จำนวน…….ครั้ง

10. ถ้าท่านตั้งท้องท่านจะปฏิบัติอย่างไร

□ อุ้มท้องจนคลอดแล้วกลับมาเรียนหนังสือให้จบการศึกษา

□ ปรึกษาพ่อแม่หาวิธีเอาเด็กออกอย่างปลอดภัย

□ ปรึกษาแฟนเพื่อหาวิธีเอาเด็กออกเอง

□ อื่น ๆ ระบุ……..

11. ที่ผ่านมาท่านมีเพศสัมพันธ์กับผู้ชายรวมทั้งสิ้น…….....คน

12. ท่านเคยมีคู่นอนในช่วงเวลาเดียวกันมากกว่า 1 คนหรือไม่

□ ไม่เคยมี □ เคยมี โปรดระบุจำนวน……..คน

13. ครั้งแรกที่มีเพศสัมพันธ์ท่านมีการดูแลตนเองอย่างไร (เลือกได้มากกว่า 1 ข้อ)

☐ ถุงยางอนามัย ☐ ยาคุมกำเนิดแบบฉุกเฉิน

☐ ผู้ชายหลั่งภายนอก ☐ ไม่ได้ใช้วิธีใด ☐ อื่น ๆ โปรดระบุ.....

14. ในช่วง 3 เดือนที่ผ่านมาท่านใช้ถุงยางอนามัย บ่อยครั้งเพียงใด

☐ ไม่ใช้เลย ☐ บางครั้ง ☐ เกือบทุกครั้ง ☐ ทุกครั้ง

15. เหตุผลที่ใช้ถุงยางอนามัย (เลือกได้มากกว่า 1 ข้อ)

☐ คู่นอนใช้ ☐ ป้องกันการตั้งครรภ์

☐ ป้องกันโรคเอดส์ ☐ ป้องกันโรคติดต่อทางเพศสัมพันธ์

☐ ไม่ใช้เลย ☐ อื่น ๆ โปรดระบุ.....

16. เหตุผลที่<u>ไม่ใช้</u>ถุงยางอนามัย (เลือกได้มากกว่า 1 ข้อ)

☐ ไม่เป็นธรรมชาติ ☐ คิดว่าตนเองไม่น่าจะติดโรค

☐ หาไม่ได้ ☐ คู่นอนไม่ใช้

☐ ใช้ยาคุมกำเนิดฉุกเฉินแล้ว ☐ อื่น ๆ โปรดระบุ.....

17. ถ้าคู่นอนไม่ต้องการใช้ถุงยางอนามัยท่านจะทำอย่างไร

☐ ตามใจเขา ☐ ยืนยันการใช้ถุงยางอนามัย

☐ งดการมีเพศสัมพันธ์ ☐ อื่น ๆ ระบุ .....

18. เมื่อท่านมีเพศสัมพันธ์กับคู่นอนคนปัจจุบันมีการดูแลตนเองอย่างไร (ตอบได้มากกว่า 1 ข้อ)

☐ ถุงยางอนามัย ☐ ยาเม็ดคุมกำเนิด

☐ หลั่งภายนอก ☐ ยาฉีดคุมกำเนิด

☐ ยาคุมฉุกเฉิน ☐ ไม่ได้ใช้วิธีใด

☐ อื่น ๆ โปรดระบุ.....

19. ท่านเคยมีโรคหรือมีอาการเหล่านี้หรือไม่ (เลือกได้มากกว่า 1 ข้อ)

☐ ตกขาวมากผิดปกติ ☐ ตกขาวมีสีเหลืองหรือมีกลิ่นเหม็น

☐ คันบริเวณอวัยวะเพศ ☐ มีเม็ดใสๆ ร่วมกับการคันที่บริเวณอวัยวะเพศ

☐ ปวดแสบเวลาปัสสาวะและมีเลือดปน ☐ เจ็บหรือมีเลือดขณะมีเพศสัมพันธ์

☐ ไม่เคยเป็นโรคใด ๆ ☐ อื่น ๆ โปรดระบุ.....

20. ในอนาคตถ้าท่านจะมีเพศสัมพันธ์ท่านจะดูแลตนเองอย่างไร (ตอบได้มากกว่า 1 ข้อ)

☐ ถุงยางอนามัย ☐ ยาเม็ดคุมกำเนิด ☐ หลั่งภายนอก

☐ ยาฉีดคุมกำเนิด ☐ ยาคุมฉุกเฉิน ☐ ไม่ได้ใช้วิธีใด

☐ อื่น ๆ โปรดระบุ.....

ขอขอบคุณในความร่วมมือของท่าน

แบบสอบถามการปกป้องสุขภาพทางเพศฉบับทดสอบคุณภาพของเครื่องมือ

คำชี้แจง แบบสอบถามนี้ใช้วัดการปกป้องสุขภาพทางเพศของวัยรุ่นสตรีไทย ขอให้ท่านตอบตามความรู้สึกที่เป็นจริงมากที่สุด โดยทำเครื่องหมาย √ ลงในช่องคำตอบที่ตรงกับความรู้สึกของท่านมากที่สุดและขอความกรุณาตอบทุกข้อ

เกณฑ์ในการตอบคำถามมีดังนี้

เห็นด้วยอย่างยิ่ง หมายถึง เห็นด้วยกับข้อความที่ระบุมากที่สุด
เห็นด้วย หมายถึง เห็นด้วยกับข้อความที่ระบุมาก
ไม่เห็นด้วย หมายถึง ไม่ค่อยเห็นด้วยกับข้อความที่ระบุ
ไม่เห็นด้วยอย่างยิ่ง หมายถึง ไม่เห็นด้วยกับข้อความที่ระบุเลย

ข้อคำถาม	เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
1. ฉันอาจเสียชีวิตจากการเป็นเอดส์				
2. ฉันคิดว่ามะเร็งปากมดลูกเป็นโรคที่ร้ายแรง				
3. ถ้าฉันตั้งท้องฉันอาจเสียอนาคต				
. . . .				
119. ฉันคิดว่าวัยรุ่นส่วนใหญ่รู้วิธีที่ถูกต้องในการใช้ยาคุมกำเนิดชนิดฉุกเฉินเพื่อป้องการตั้งท้อง				
120. ฉันคิดว่าวัยรุ่นส่วนใหญ่ใช้วิธีหลั่งภายนอกเพื่อป้องกันการตั้งท้อง				

Item which were deleted from EFA and CFA

Item	Item statement	Factor loading
30	I will have sexual intercourse with only my intimate boyfriend.	.254*
32	I can prevent myself do not pregnant.	.248*
33	If my intimate boyfriend do not use condom I will take pill for prevention pregnancy.	.416**
34	If I have sexual intercourse I will prevent pregnant by calculation the safe period.	.280*
41	I dare to buy condom	.392**
47	Having an intimate boyfriend makes me lose concentration for study	.419**
48	I may not intend to study enough if I have an intimate boyfriend	.351**
49	I can finish my education although I have intimate boyfriend.	.244*
53	My family forbids me to associate with a boy as an intimate boyfriend.	.371**
84	I can control my sexual emotion when I stay alone with my intimate boyfriend.	.271*
116	I think that most adolescent use condom when they have sexual intercourse.	.278*
117	I think that adolescent attend to finish their education before thinking for having intimate boyfriend.	.282*
118	I think that most adolescent will abort if they pregnant.	.206*
119	I think that most adolescent know the right way for using emergency pill for prevent pregnancy.	.261*

Note * Items were deleted because factor loading less than 0.3.

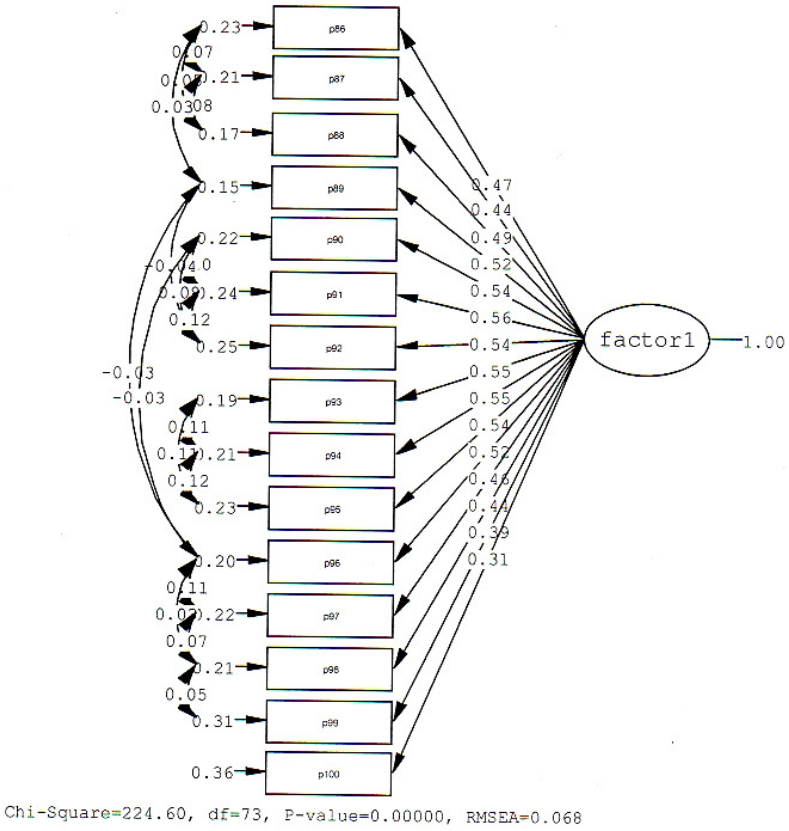
** Items were deleted after testing CFA.

APPENDIX D

THE RESULTS OF EIGHT FACTORS ON CFA

Fit Indices of CFA models

Fit Index	X^2/df	RMSEA	GFI	AGFI	CFI	NFI	NNFI
Factor	> .05 1.0 = absolute fit 2.0-3.0 = good > 5.0 = unacceptable	< 05 = good .05 -.08 = moderate .08 - .10 = fair > .10 = poor	0 = poor 1 = perfect > 0.90 = acceptable	> 0.90	> 0.90	> 0.90	> 0.90
1	3.08	.07	.94	.90	.99	.98	.98
2	1.927	.05	.92	.90	.98	.96	.97
3	2.73	.06	.93	.90	.97	.95	.96
4	2.6	.05	.95	.93	.98	.96	.97
5	2.32	.05	.95	.92	.97	.95	.97
6	1.92	.05	.98	.96	.99	.98	.98
7	2.0	.05	.99	.96	.99	.99	.98
8	0	0	.98	.95	.94	.91	.90



Factor 1 Alertness to search for information on sexual health

The figure of factor 1 showed the association between alertness to search for information on sexual health, its components, and its items. As seen in this figure, search for information on sexual health consisted of 15 items (p86-p100). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables (p86-p100) in their measurement of the underlying factors. In this model, there were

negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 15 items were used as indicators for the construct of alertness to search for information on sexual health. It should be noted that the direction of the factor loading for the factor 1 was positive.

Model of alertness to search for information on sexual health were latent variables; and 15 items (p86-p100) were the observed variables. The finding from first-order model confirmed that all items under the components of search for information on sexual health had well to excellent factor loadings. And also this factor 1 were the observed variable of the alertness to search for information on sexual health domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 224.60 (df = 73, P = 0.00), RMSEA = 0.068, GFI = 0.94, AGFI = 0.90, CFI = .99, NFI = 0.98, and NNFI = .98 were interpreted. The results indicated that the model fit the data.

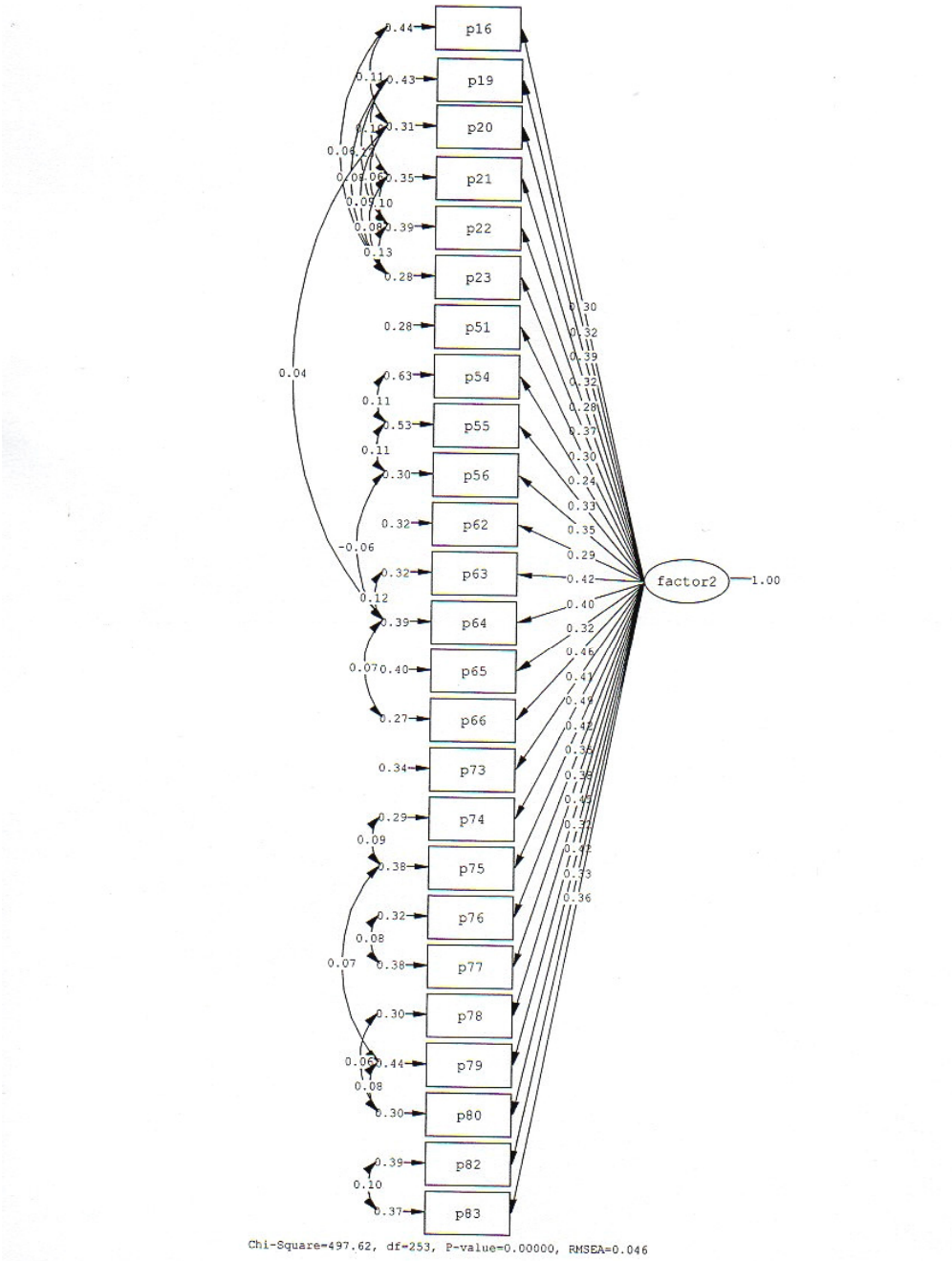


Figure 5 Factor 2 Guarding against for having sexual intercourse

The figure of factor 2 showed the association between guarding against for having sexual intercourse, its components, and its items. As seen in this figure, search for information on sexual health consisted of 25 items (p16-p83). The inter-correlations

among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables (p16-p83) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 25 items were used as indicators for the construct of guarding against for having sexual intercourse. It should be noted that the direction of the factor loading for the factor 2 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 25 items (p16-p83) were the observed variables. The finding from first-order model confirmed that all items under the components of guarding against for having sexual intercourse had well to excellent factor loadings. And also this factor 2 were the observed variable of guarding against for having sexual intercourse domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 497.62 (df = 253, P = 0.00), RMSEA = 0.046, GFI = 0.92, AGFI = 0.90, CFI = .98, NFI = 0.96, and NNFI = .97 were interpreted. The results indicated that the model fit the data.

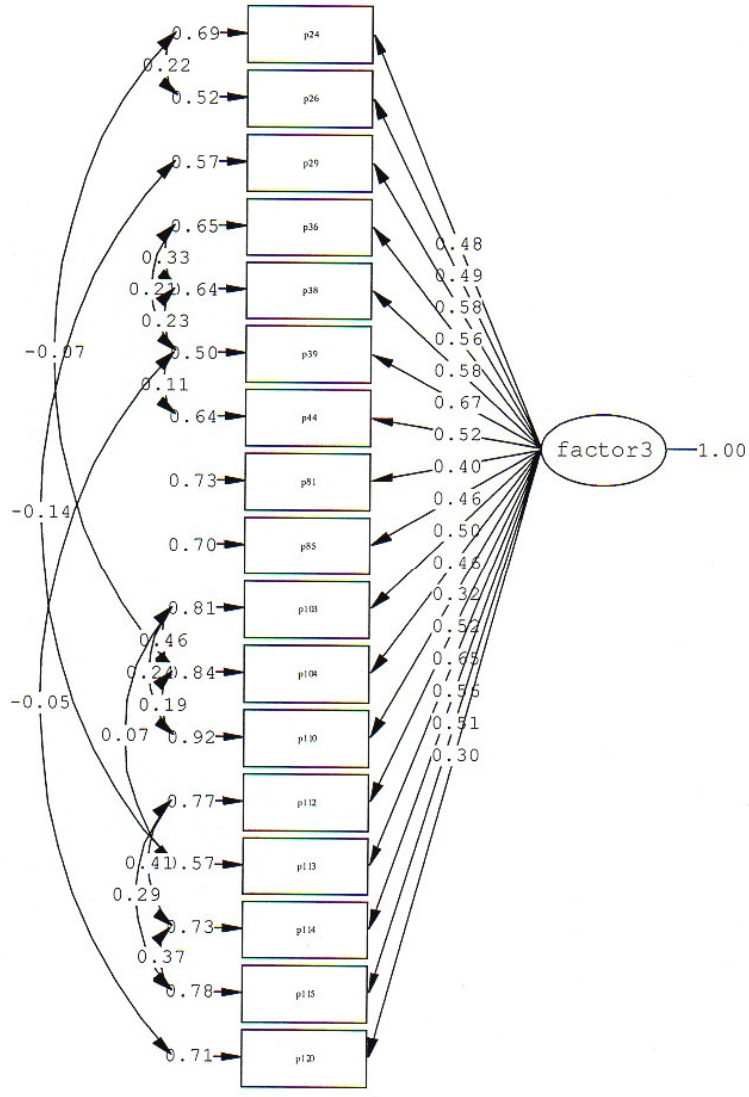
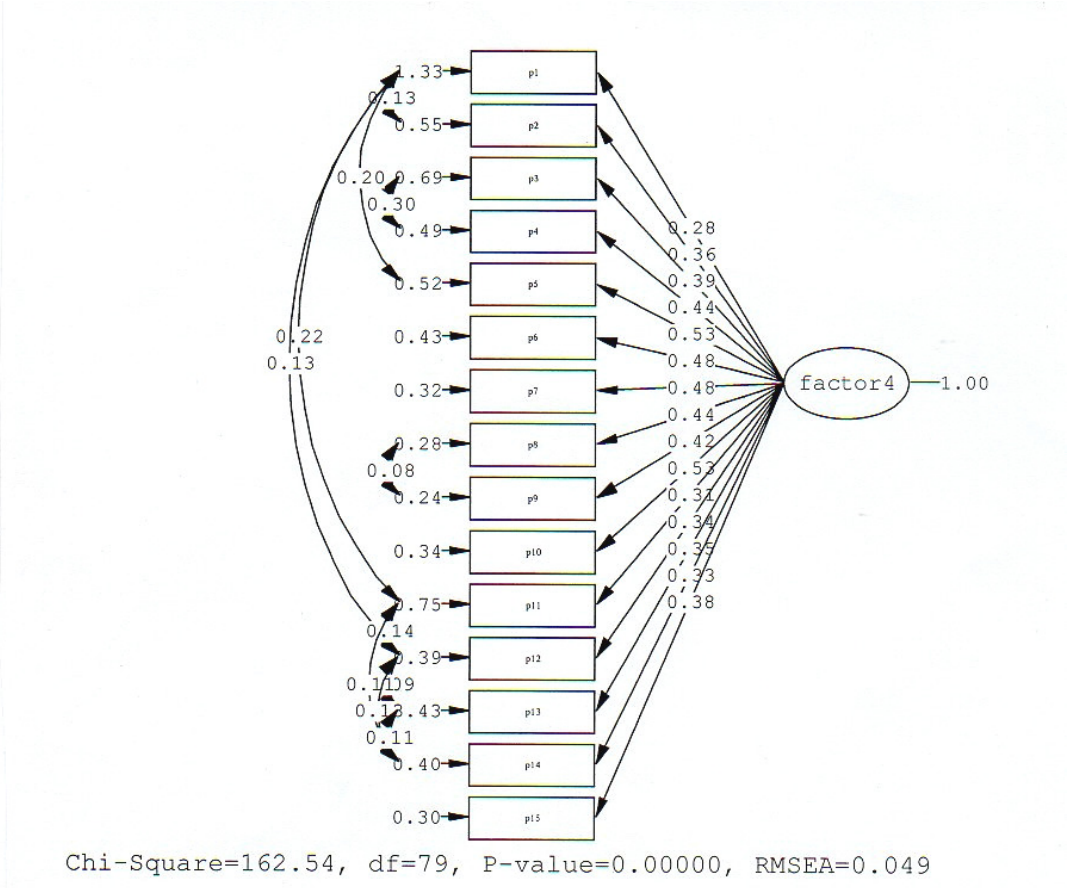


Figure 6 Factor 3 Perceiving vulnerability of safe sex practice

The figure of factor 3 showed the association between perceiving vulnerability of safe sex practice, its components, and its items. As seen in this figure, search for information on sexual health consisted of 17 items (p24-p120). The inter-correlations

among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables (p24-p120) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 17 items were used as indicators for the construct of perceiving vulnerability of safe sex practice. It should be noted that the direction of the factor loading for the factor 3 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 17 items (p24-p120) were the observed variables. The finding from first-order model confirmed that all items under the components of perceiving vulnerability of safe sex practice had well to excellent factor loadings. And also this factor 3 was the observed variable of perceiving vulnerability of safe sex practice domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 284.63 (df = 104, P = 0.00), RMSEA = 0.06, GFI = 0.93, AGFI = 0.90, CFI = .97, NFI = 0.95, and NNFI = .96 were interpreted. The results indicated that the model fit the data.

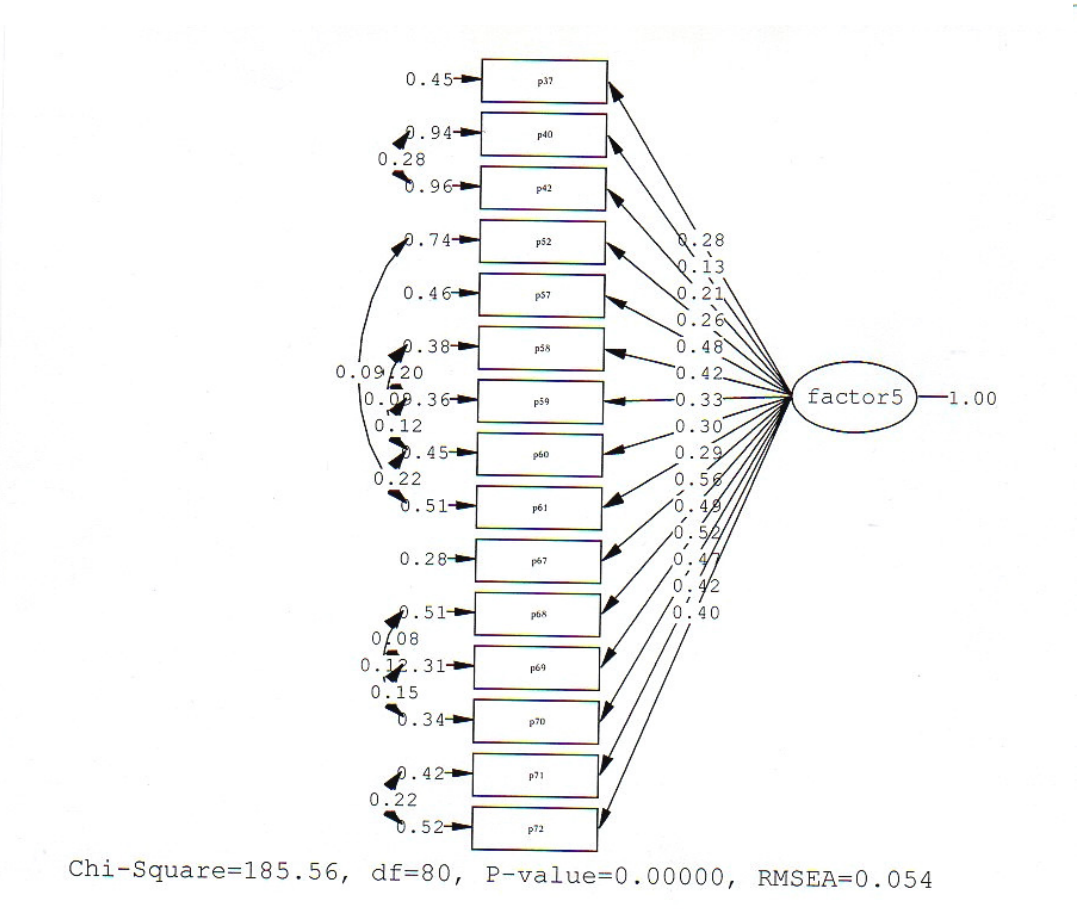


Factor 4 Perceived threats of AIDS, STDS and unwanted pregnancy

The figure of factor 4 showed the association between perceiving threats of AIDS, STDS and unwanted pregnancy, its components, and its items. As seen in this figure, search for information on sexual health consisted of 15 items (p1-p15). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables

(p1-p15) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 15 items were used as indicators for the construct of perceiving threats of AIDS, STDS and unwanted pregnancy. It should be noted that the direction of the factor loading for the factor 2 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 15 items (p1-p15) were the observed variables. The finding from first-order model confirmed that all items under the components of perceiving threats of AIDS, STDS and unwanted pregnancy had well to excellent factor loadings. And also this factor 4 were the observed variable of the perceiving threats of AIDS, STDS and unwanted pregnancy domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 162.54 (df = 79, P = 0.00), RMSEA = 0.05, GFI = 0.95, AGFI = 0.93, CFI = .98, NFI = 0.96, and NNFI = .97 were interpreted. The results indicated that the model fit the data.

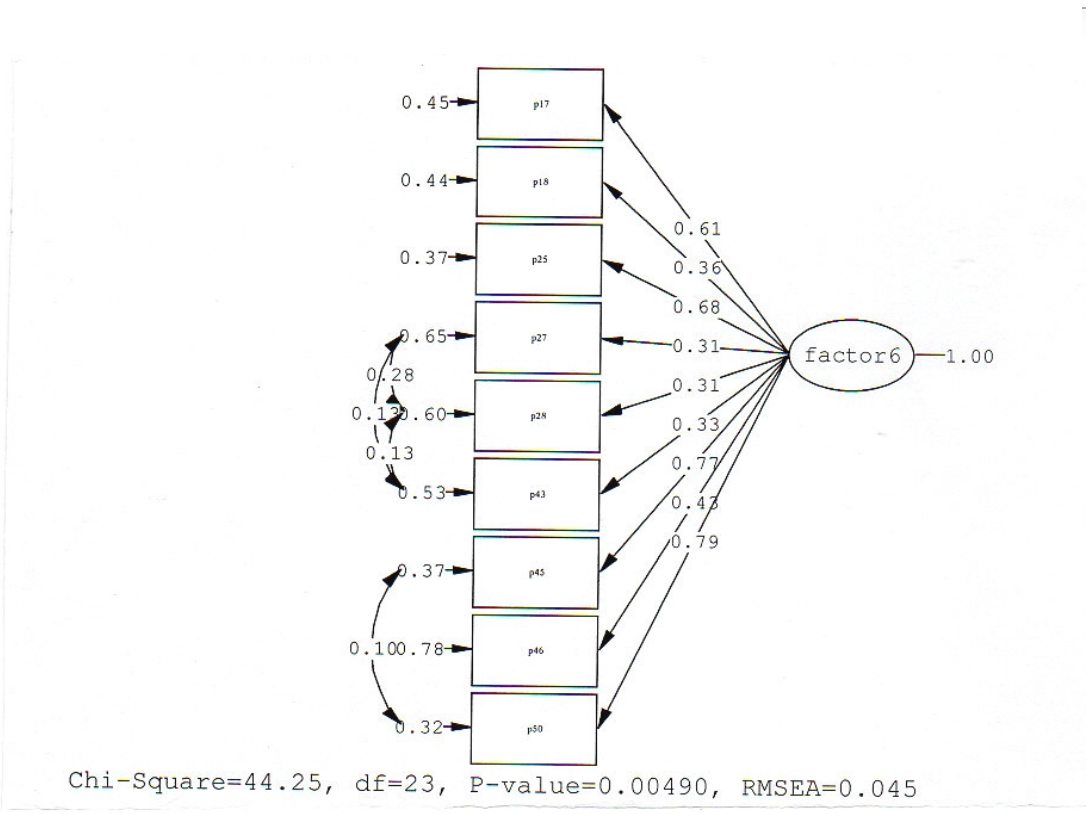


Factor 5 Communication with parents and peers about safe sex

The figure of factor 5 showed the association between communication with parents and peers about safe sex, its components, and its items. As seen in this figure, search for information on sexual health consisted of 15 items (p37-p72). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random

measurement error that had some bearing on the reliability of the observed variables (p37-p72) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 15 items were used as indicators for the construct of communication with parents and peers about safe sex. It should be noted that the direction of the factor loading for the factor 5 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 15 items (p37-p72) were the observed variables. The finding from first-order model confirmed that all items under the components of communication with parents and peers about safe sex had well to excellent factor loadings. And also this factor 5 was the observed variable of the alertness to guarding against for having sexual intercourse domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 185.56 (df = 80, P = 0.00), RMSEA = 0.05, GFI = 0.95, AGFI = 0.92, CFI = .97, NFI = 0.95, and NNFI = .97 were interpreted. The results indicated that the model fit the data.

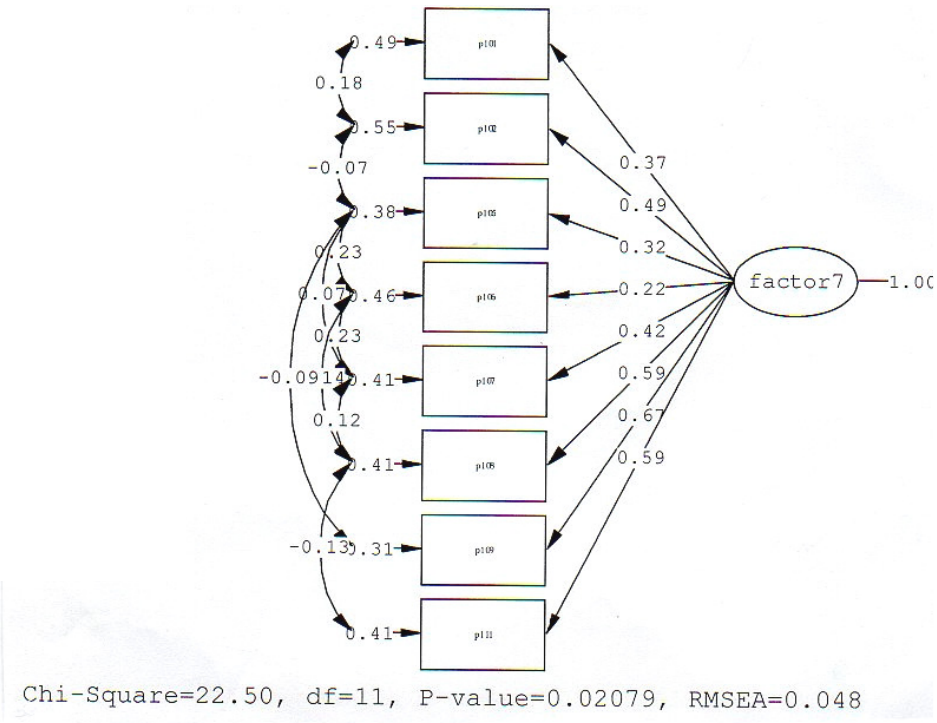


Factor 6 Abstinence from sexual activity

The figure of factor 6 showed the association between abstinence from sexual activity, its components, and its items. As seen in this figure, search for information on sexual health consisted of 9 items (p17-p50). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing

on the reliability of the observed variables (p17-p50) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 9 items were used as indicators for the construct of abstinence from sexual activity. It should be noted that the direction of the factor loading for the factor 6 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 9 items (p17-p50) were the observed variables. The finding from first-order model confirmed that all items under the components of abstinence from sexual activity had well to excellent factor loadings. And also this factor 6 were the observed variable of the alertness to abstinence from sexual activity domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 44.25 (df = 23, P = 0.00), RMSEA = 0.05, GFI = 0.98, AGFI = 0.96, CFI = .99, NFI = 0.98, and NNFI = .98 were interpreted. The results indicated that the model fit the data.

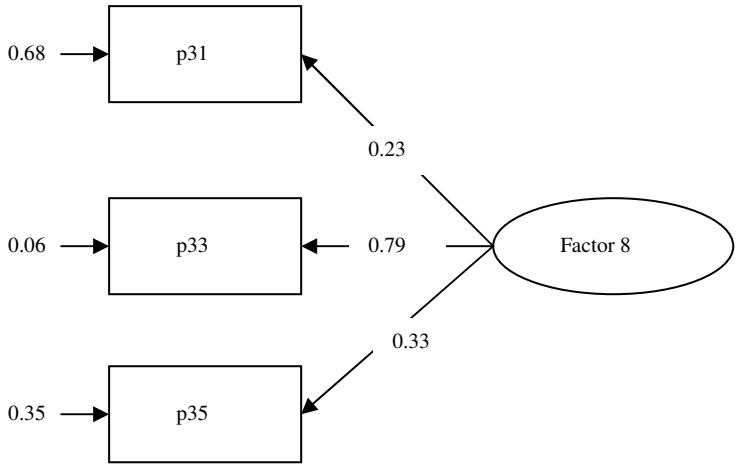


Factor 7 Assertiveness in seeking information

The figure of factor 7 showed the association between assertativeness in seeking information, its components, and its items. As seen in this figure, search for information on sexual health consisted of 8 items (p101-p111). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables (p101-p111) in their measurement of the underlying factors. In this model, there were negative intercorrelations among

measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 8 items were used as indicators for the construct of assertativeness in seeking information. It should be noted that the direction of the factor loading for the factor 7 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 8 items (p101-p111) were the observed variables. The finding from first-order model confirmed that all items under the components of assertativeness in seeking information had well to excellent factor loadings. And also this factor 7 was the observed variable of the assertativeness in seeking information domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 22.50 (df = 11, P = 0.02), RMSEA = 0.05, GFI = 0.99, AGFI = 0.96, CFI = .99, NFI = 0.99, and NNFI = .98 were interpreted. The results indicated that the model fit the data.



Chi-Square = 0.00, df = 0, P-value = 1, RMSEA = 0.000

Figure of Factor 8 Self - protection

The evaluating the relationship between latent variables (Factor VIII) and their indicators (items). Indicator loadings (factor loadings) were examined. The loading of four indicators in the Factor VIII, " I dare to buy condom " (Item 41), "Having an intimate boyfriend makes me lose concentration for study" (Item 47), "I may not intend to study enough if I have an intimate boyfriend" (Item 48), and "My family forbids me to associate with a boy as an intimate boyfriend" (Item 53), were low and not significant, indicating that they were not sufficiently represented by their latent variables or, in other words, they were not good indicators of the underlying constructs. Thus, the investigator decided to delete these four items. As a result, there were three items in Factor VIII. Then, the relationship between a latent variable (Factor 8) and all of three items were evaluated again. The result showed that all of three indicator loadings (factor loadings) of factor VIII were relatively high as indicated by significant *t*-values which were greater than 1.96. The figure of factor 8 showed the association

between Self - protection, its components, and its items. As seen in this figure, search for information on sexual health consisted of 3 items (p31-p35). The inter-correlations among items were identified by arrows; the numbers on each arrow represented the estimated correlation among them. The single-headed arrows leading from the eclipses to the boxes suggested the regression of item scores on each factor. The number on each arrow represented the estimated regression weights (factor loading) and t values. The circle with single-headed arrows indicated random measurement error that had some bearing on the reliability of the observed variables (p31-p35) in their measurement of the underlying factors. In this model, there were negative intercorrelations among measurement error. In addition, each item was explained by its factor. The fit indices of this model among the items are presented in the table of Fit Indices of CFA models above. Based on the results, the 3 items were used as indicators for the construct of Self - protection. It should be noted that the direction of the factor loading for the factor 8 was positive.

Model of alertness to guarding against for having sexual intercourse were latent variables; and 3 items (p31-p35) were the observed variables. The finding from first-order model confirmed that all items under the components of Self - protection had well to excellent factor loadings. And also this factor 8 were the observed variable of Self - protection domain in the model. The fit indices output were present after initial were conduct. Chi-Square = 0 (df = 0, P = 1.00), RMSEA = 0, GFI = 0.98, AGFI = 0.95, CFI = .94, NFI = 0.91, and NNFI = .90 were interpreted. The results indicated that the model fit the data.

APPENDIX E

PROTECTION OF HUMAN SUBJECTS' RIGHT

Protection of Subjects' Human Rights

แบบพิทักษ์สิทธิผู้เข้าร่วมวิจัย

ดิฉันนางสาวรวมพร คงกำเนิด นักศึกษาปริญญาเอก สาขาการพยาบาล คณะพยาบาลศาสตร์ มหาวิทยาลัยสงขลานครินทร์ กำลังทำวิทยานิพนธ์เรื่องการพัฒนาและทดสอบคุณภาพแบบวัดการปกป้องสุขภาพทางเพศสำหรับวัยรุ่นสตรีไทย

การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อเป็นการพัฒนาเครื่องมือการปกป้องสุขภาพทางเพศสำหรับวัยรุ่นสตรีไทย ดิฉันจะขอความร่วมมือในการตอบแบบสอบถามการวิจัยประมาณ 30 นาที กรุณาอย่าเขียนชื่อของท่านลงในแบบสอบถาม จะไม่มีใครทราบว่าแบบสอบถามและคำตอบนี้เป็นของท่าน การตอบแบบสอบถามนี้ขึ้นอยู่กับความสมัครใจของท่าน การตอบหรือไม่ตอบแบบสอบถามนี้จะไม่มีผลใดๆ คำตอบของท่านจะถือเป็นความลับ จะไม่มีใครทราบว่าท่านตอบว่าอย่างไร ข้อมูลทั้งหมดจะถูกนำเสนอในภาพรวม ฉะนั้นผู้วิจัยขอความกรุณาท่านให้ตอบตามความเป็นจริง ในแต่ละคำตอบไม่มีข้อไหนถูกและไม่มีข้อไหนผิด ผู้วิจัยสนใจเฉพาะความคิดและความรู้สึกของท่านเท่านั้น ทั้งนี้ข้อมูลที่ได้จากท่านจะเป็นประโยชน์อย่างยิ่งต่อการให้ส่งเสริมสุขภาพของวัยรุ่นสตรีไทย ให้มีคุณภาพชีวิตที่ดีต่อไป

ขอขอบคุณในความร่วมมือ

(นางสาวรวมพร คงกำเนิด)

สำหรับผู้ร่วมวิจัย

ข้าพเจ้าได้รับคำชี้แจงตามรายละเอียดข้างต้น มีความเข้าใจและยินดีเข้าร่วมการวิจัย

ลงชื่อ…….....

วันที่…….....เดือน……พ.ศ……

APPENDIX F

LIST OF EXPERTS

LIST OF CONTENT VALIDITY EXPERTS

รายชื่อผู้ทรงคุณวุฒิในการตรวจสอบความตรงตามเนื้อหาของแบบวัดการปกป้องสุขภาพทางเพศของวัยรุ่นสตรีไทย (Sexual health Protection Scale)

ดร. เอมพร รตินธร (Assistant Professor Dr.Amaporn Rathinthorn)
ผู้ช่วยศาตราจารย์ ภาควิชาการพยาบาลสูตศาสตร์-นารีเวชวิทยา
คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล

ดร. อทิตยา พรชัยเกตุ (Dr. Atitaya Pornchaikate)
อาจารย์ ภาควิชาการพยาบาลสุขภาพจิตและจิตเวชศาสตร์
คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล

คุณภาวนา เหวียนระวี (Ms Pawana Wienrawee)
ผู้อำนวยการฝ่ายวิชาการองค์แพท (PATH: Program for Appropriate Technology in Health) ประเทศไทย
องค์แพท (PATH) กรุงเทพฯ ประเทศไทย

VITAE

Name	Miss. Roumporn konggumnerd	
Student ID	4658006	
Education Attainment	**Name of Institution**	**Year of Graduation**
Bachelor of Science (Nursing and Midwifery)	Khonkhan University,	1984
Master of Art (Medical Health and Social Science)	Mahidol University	1993

Scholarship Award during Enrolment

1. Predoctoral scholarship, the Commission of Higher Education, Ministry of Education, the Royal Government of Thailand
2. The dissertation grant, the Faculty of Graduate Studies, Prince of SongklaUniversity.

Work Position and Address

Assistant Professor, Walialak University, School of Nursing, 222 Thaiburi, Thasala District, Nakhonsithammarat 80160, Tel: 0-7567-2101, E-mail: kroumpor@wu.ac.th

List of Publication

Konggumnerd, R., Isaramalai, S., Suttharangsee, W., & Villarruel, A. M. (2008). Development and Psychometric Evaluation of the Sexual Health Protection Scale (SHPS) for Thai Female Adolescents. *Journal of Health Science, 17*(5).