

A CAUSAL MODEL OF SEXUAL ABSTINENCE IN THAI FEMALE ADOLESCENTS



A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy in Nursing Science

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แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย



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 ปริญญาหลัก : รศ. ดร.วราภรณ์ ชัยวัฒน์, อ.ที่ปรึกษาร่วม : รศ. ดร.จินตนา ยูนิพันธุ์

การศึกษาครั้งนี้ มีวัตถุประสงค์เพื่อพัฒนาและทดสอบแบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย โดยใช้ทฤษฎีการส่งเสริมสุขภาพของ Pender, Murdaugh and Parsons (2015) เป็นกรอบแนวคิด กลุ่มตัวอย่างคือนักศึกษาหญิงชั้นปีที่ 1 ที่กำลังศึกษาในสถาบันอุดมศึกษา 6 แห่ง และสถาบันอาชีวศึกษา 6 แห่ง ในประเทศไทย จำนวน 654 คน เก็บข้อมูลโดยใช้แบบสอบถามที่มีผู้สร้างไว้แล้ว 6 ฉบับ และผู้วิจัยพัฒนาขึ้นมาใหม่ 2 ฉบับ โดยเครื่องมือทั้งหมดได้รับการทดสอบความเที่ยงและความตรงก่อนนำไปใช้ แบบจำลองเชิงสาเหตุวิเคราะห์โดยโปรแกรม Mplus

ผลการศึกษาพบว่า แบบจำลองเชิงสาเหตุมีความสอดคล้องกับข้อมูลเชิงประจักษ์ Chi-square (χ^2) = 434.344, $p < 0.05$, degrees of freedom (df) = 173, $\chi^2/df = 2.51$, Comparative fit Index (CFI) = 0.967, Tucker-Lewis Fit Index (TLI) = 0.955, Root Mean Square Error of Approximation (RMSEA) = 0.048, Standardized Root Mean Square Residual (SRMR) = 0.041 ร้อยละ 68 ของความผันแปรของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทยสามารถอธิบายได้โดยการเลี้ยงดูของพ่อแม่ที่ส่งเสริมการละเว้นเพศสัมพันธ์ ความมุ่งมั่นต่อแผนการละเว้นเพศสัมพันธ์ การรับรู้ประโยชน์ การรับรู้ความสามารถของตน และการรับรู้อุปสรรค เมื่อเปรียบเทียบตัวแปรทั้ง 5 นี้ การเลี้ยงดูของพ่อแม่ที่ส่งเสริมการละเว้นเพศสัมพันธ์มีอิทธิพลรวมขนาดใหญ่ที่สุดต่อการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย รองลงมาคือ ความมุ่งมั่นต่อแผนการละเว้นเพศสัมพันธ์ การรับรู้ประโยชน์ การรับรู้ความสามารถของตน และการรับรู้อุปสรรค ตามลำดับ

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This study aimed to develop and test a causal model of sexual abstinence in Thai female adolescents guiding by the Health Promotion Model of Pender, Murdaugh and, Parsons (2015). Data were collected from 654 first-year female students studying in six higher education institutions and six high-vocational schools in Thailand. Validity and reliability of 6 existing measures and 2 newly developed measures were established prior to data collection. The causal model was analyzed using *Mplus* program.

It was found that the causal model of sexual abstinence fit the empirical data with Chi-square (χ^2) = 434.344, $p < 0.05$, degrees of freedom (df) = 173, χ^2/df = 2.51, Comparative fit Index (CFI) = 0.967, Tucker-Lewis Fit Index (TLI) = 0.955, Root Mean Square Error of Approximation (RMSEA) = 0.048, Standardized Root Mean Square Residual (SRMR) = 0.041. Sixty-eight percent of the variance in Thai female adolescents' sexual abstinence was explained by child-rearing promoting sexual abstinence, commitment to a plan of sexual abstinence, perceived benefits, perceived self-efficacy, and perceived barriers. Among these five variables, the child-rearing promoting sexual abstinence had the largest total effect on sexual abstinence, followed by commitment to a plan of sexual abstinence, perceived benefits, perceived self-efficacy, and perceived barriers, respectively.

This model can be used by healthcare providers to promote sexual abstinence in Thai female adolescents.

Field of Study: Nursing Science

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Student's Signature

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CHAPTER I

INTRODUCTION

Background and significance of the study

Sexual abstinence has been promoted as a health-promoting behavior for Thai- female adolescents age below 20 years old. Sexual abstinence is divided into two types: primary and secondary sexual abstinence. Specifically, this study emphasized primary sexual abstinence, which refers to the way in which Thai female adolescents conduct in never having sexual intercourse, including penile-oral, penile-anal, and penile-vaginal intercourse with males until graduating from secondary education (Centers for Disease Control and Prevention, 2017a). This behavior is significant for female adolescents' health because it helps maintain well-being and prevents health problems. One-hundred percent is effective in preventing health problems as unintended pregnancy and Sexually Transmitted Diseases (STDs). Remaining sexual abstinence, healthy female adolescents were more likely to get academic success and continue studying in higher education (Centers for Disease Control and Prevention, 2014).

Moreover, sexual abstinence is suitable for the Thai culture and education policy. Sexual abstinence for female adolescents is commonly socially-expected. There has been an inheritance of sexual abstinence's value since the past. That is, Thai women had a duty to reserve themselves and did not have sexual intercourse before marriage. By that, Thai parents have taught and encouraged their daughters to set life's goals and use sexual abstinence to maintain life security since daughters were young (Piriyasart, Songwathana, & Kools, 2018; Supametaporn, Stern, Rodcumdee, & Chaiyawat, 2010). Besides, the act of basic education in Thailand, set for adolescents, aimed to prepare them to be quality adulthood. This results in most female adolescents will spend their lives in school and then continuing higher education in university or high-vocational school (Office of the education council, 2017).

However, the number of Thai female adolescents who practice sexual abstinence has decreased (UNICEF, 2016b). The rates of engaging in sexual intercourse increased from 15.55% in 2010 to almost 20% in 2016 (Ministry of Public Health, 2017). Moreover, the adolescent pregnancy rate remained increased and unacceptably high (UNICEF, 2015b). Thailand has the top three highest teenage pregnancy rates in South East Asia. From the last report, from 2012 to 2016, approximately 14% to 25.9% of all pregnancies were among adolescents. (Areemit et al., 2012; UNICEF, 2016b; World Health Organization, 2018, 2020a).

Pregnant adolescents face numerous problems, social stigma, and the potential risk of complications from abortions or preterm delivery. An estimated 200,000–300,000 women of reproductive age seek abortions each year (Latimore et al., 2013; Liu et al., 2006; Peltzer & Pengpid, 2011; Phetsumrit, Pranee, & Hombubpha, 2015; Prasartwanakit, Songwathana, & Phetcharat, 2009). The outcomes reported adolescent abortion, 18.0% of all abortions, and adolescents gave birth to 37.2% of all preterm infants (Areemit et al., 2012). Criminal abortion is also a significant cause of infection and long-life infertility. Continuing pregnancies in school, adolescent mothers also face huge problems, the stress of being maternal role, and leaving schools (Kirchengast, 2016; World Health Organization, 2020a).

Evidence found that female adolescents who engaged in sexual intercourse got high pressure and emotional stress during school life (Ounjit, 2015; Techasrivichien et al., 2016). Immaturity and sexual relations also make young couples take ownership and control each other, causing them jealousy, lack of consciousness, or committing violence. Jealousy is usually a reaction to a feeling that the relationship is threatened by a third-party or may be lost (Perles, San Martín, & Canto, 2016; Van Ouytsel, Walrave, Ponnet, Willems, & Van Dam, 2019). A perceived threat to the relationship, whether real or imagined, usually consists of a fear that the partner is being pursued by someone else, and can make a partner unsure about the relationship (Frampton & Fox, 2018). Then jealousy is an essential predictor of dating and relationship violence in female adolescents (Manning, & Longmore, 2010). Even though there is less study on sexual violence in Thailand, the evidence in many

countries provides its consequences. For instance, Sebastian et al. (2014) analyzed violent behavior (psychological, physical, and sexual violence) among couples of adolescents (from 12- 22 years) in 579 Spanish students concerning age. This study found that young adolescents (12-17 years) perform significantly more jealous behavior than adolescents aged 18-22 years (Sebastián, Verdugo, & Ortiz, 2014).

Moreover, Thailand is facing a new rise in Human Immunodeficiency Virus infection (HIV) and STDs cases among adolescents; 70% were new cases (UNICEF, 2015a). These issues affect academic performance and their long lives. The CDC reported that early sexual intercourse was correlated with the lower grades and test scores, and lower educational attainment (Centers for Disease Control and Prevention, 2017a). In contrast, evidence has confirmed that adolescent's sexual abstinence predicts better adult mental health (Bogart, Collins, Ellickson, & Klein, 2007). Therefore, sexual abstinence is crucial for female adolescents in Thai culture to prevent health problems and help them get well prepared to be robust adults (Brewin, Koren, Morgan, Shipley, & Hardy, 2013).

World Health Organization (WHO) and healthcare providers define adolescence as a vulnerability group. Nursing roles have to focus on adolescents' growth and development and preparing adolescents to be well-being adulthood concerning diverse cultures (Hockenberry, Wilson, & Rodgers, 2017; Potts & Mandleco, 2012; World Health Organization, 2016). Thus, nurses are crucial in promoting sexual abstinence, mainly organizing sexual abstinence intervention in school, clinic, and community (Smith, Panisch, Malespin, & Pereira, 2017; World Health Organization, 2018). However, previous interventions were ineffective in increasing sexual abstinence (Fonner, Armstrong, Kennedy, O'Reilly, & Sweat, 2014; Santelli et al., 2006). The meta-analysis studies presented that existing sexual abstinence interventions were not statistically significant to increase sexual abstinence behavior (Silva, 2002; Smith, Atar, Ferreira, Valentine, & Pereira, 2015; Smith et al., 2017). The less effective was due to causal factors, and relationships among them need to be studied (Ullman, 2006). Therefore, developing and testing a

causal model of sexual abstinence is an appropriate step to fill this gap of knowledge.

Evidence related to sexual abstinence points out the Health Promotion Model (HPM) of Pender, Murdaugh, and Parsons (2015) have described sexual abstinence in Thai female adolescents (Panurat, 2009; Wongchalee & Chaiyawat, 2016). The HPM is suitable for the context of female adolescents since it focuses on one's decision to adopt health-promoting behavior concerning the desire to get outcomes of life's success (Park & Kim, 2008; Pender, Murdaugh, & Parsons, 2015). The HPM also sets importance for nurses to consider the complexity of health promotion in individuals, families, or communities, covering all influences on sexual abstinence in Thai female adolescents (World Health Organization, 2004). Hence, the researcher used the HPM to guide in developing a causal model in this study.

The HPM and literature emphasized examining some of the behavior-specific cognitions and affect factors that can be modified and adapted by nurses to promote sexual abstinence. After substruction of the HPM, there were factors related to sexual abstinence, such as perceived self-efficacy of sexual abstinence, perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, sexual abstinence-related affect, interpersonal influence (parents and peers), and commitment to a plan of sexual abstinence (Buhi, Goodson, Neilands, & Blunt, 2011; Eggers et al., 2017; Mokwena & Morabe, 2016; Oladepo & Fayemi, 2011; Panurat, 2009). However, the effect of these factors and complex relationships among them were inconclusive. For example, in Thailand, Panurat (2009) found that parental influence predicted sexual abstinence in a negative direction. However, the others illustrated this factor predicted commitment to a plan of sexual abstinence, and sexual abstinence in the positive direction (Chareonsuk, Phuphaibul, Sinsuksai, Viwatwongkasem, & Villarruel, 2013; Isaro, Toonsiri, & Srisuriyawet, 2016; Rhucharoenpornpanich et al., 2010; Roojanavech, Badr, & Doyle, 2016; Wongchalee & Chaiyawat, 2016). The HPM and literature supported that parents had a necessary action in promoting sexual abstinence by transferring the attitudes, knowledge, and sexual abstinence behavior to female adolescents, especially in Thailand. Child-

rearing seemed to be crucial for shaping female adolescents' attitudes, beliefs, and decision-making on sexual abstinence in a positive way (Supametaporn et al., 2010; Wight & Fullerton, 2013). Therefore, from the above incongruence, the interpersonal influence of parents needs to be reinvestigated and confirmed its affection and direction.

Furthermore, remaining sexual abstinence until graduation from high school is complicated. Even though research evidence explains relationships between behavior-specific cognitions and affect and sexual abstinence, a clear picture of sexual abstinence in Thai-female adolescents is still needed. The HPM and literature pointed out behavior-specific cognitions and affect seemed to have both direct effect and indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence (Shin, Yun, Pender, & Jang, 2005; Taymoori, Lubans, & Berry, 2010; Taymoori & Lubans, 2008). Nevertheless, previous evidence reported only the direct effect of some factors (e.g., perceived self-efficacy of sexual abstinence) on a commitment to a plan of sexual abstinence or sexual abstinence in the separated study (Buhi et al., 2011; Eggers et al., 2017; Panurat, 2009). Notably, a causal model or structural equation modeling (SEM) is designed to test the complicated model in a single analysis instead of testing regression analyses separately. The SEM provides model fit information, which confirms the hypothesized model's consistency to the empirical data. SEM software packages offer indirect effect tests using approaches to determine significance. Therefore, conducting and testing a causal model will help the researcher investigate a direct effect, indirect effect, and total effects of factors in this study. That helps nurses successfully identify factors and mechanisms among them and then apply in organizing an intervention improving sexual abstinence outcomes (Lubans, Foster, & Biddle, 2008; Taymoori & Lubans, 2008).

From the above reasons, developing and testing a causal model of sexual abstinence will allow the researcher to find causal factors and complex relationships among them. Researching in Thai female adolescents with continuing study in higher education will provide nurses knowledge about the significant causal factors that affect sexual abstinence until graduation from high school. It is advantageous to gain

knowledge for nurses, parents, teachers, and healthcare providers to get insight into which factors have an exact effect on Thai female adolescent's sexual abstinence. All of which can contribute this knowledge to develop an intervention promoting sexual abstinence in Thai female adolescents.

Objectives of the study

1. To develop a causal model to explain sexual abstinence in Thai female adolescents.
2. To examine the fit of the causal model to the empirical data of sexual abstinence in Thai female adolescents.
3. To examine causal relationships among perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, commitment to a plan of sexual abstinence, and sexual abstinence in Thai female adolescents.

Research hypotheses with rationales

The researcher developed the casual model of sexual abstinence in Thai female adolescents by using the HPM of Pender, Murdaugh, and Parsons (2015). The HPM is composed of (1) individual characteristics and experiences, (2) behavior-specific cognitions and affect, (3) commitment to a plan of action, (4) immediate competing demands and preferences, and (5) behavioral outcomes or health-promoting behavior. Within the HPM, behavior-specific cognitions and affect variables have been considered major motivational and amenable significance to nursing intervention. Hence, the factors under behavior-specific cognitions and affect and commitment to a plan of action are necessary to consider as specific determinants of a causal model of sexual abstinence.

Conducting theoretical substruction, the researcher came up with the feasible predicting factors that influence sexual abstinence. The details of the theoretical substruction were shown in the part of the literature review. The variables included

in the model were perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence. The hypothesized relationships among variables were presented in the hypothesized causal model (Figure 3).

Research hypotheses with rationales were provided as followed statements according to the HPM propositions and research evidence.

1. The causal model of sexual abstinence in Thai female adolescents fits the empirical data.

2. Perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence have significant effects on sexual abstinence in both direct effect and indirect effect.

2.1 Perceived benefit of sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It also has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

Perceived benefits of action are mental representations of the positive or reinforcing consequences of behavior. Perceived benefits of action allow individuals to perform health-promoting behavior through the motivation of anticipated benefits, which are intrinsic (e.g., pleasure) and extrinsic (e.g., life enhancement) (Brown, 2005; Lovell, El Ansari, & Parker, 2010).

Supamethaporn et al. (2010) and Blinn-Pike et al. (2004) found that female adolescents perform sexual abstinence because they perceive anticipated benefits of sexual abstinence such as getting healthy, learning achievement, or having a successful future career (Blinn-Pike, Berger, Hewett, & Oleson, 2004). Female adolescents who perceive benefits of sexual abstinence demonstrate their sexual abstinence intention and identifying strategies of sexual abstinence (e.g., staying in a

private place with a male) (Asuzu, 2013; Norris, Clark, & Magnus, 2003; Wongchalee, 2011). These are supported by Buhi et al. (2011) and others, who found that female adolescents with greater perceived benefits demonstrated a higher sexual abstinence intention (Buhi et al., 2011; Spears, Jemmott, & Heeren, 2017).

Pender et al. (2011) guided that persons commit to engaging in behavior from which they anticipate deriving personally valued benefits. Then one who perceives the benefit of health-promoting behavior demonstrates a high chance of performing the behavior. Previous literature also provided a perceived benefit of behavior had a direct effect on health-promoting behavior. Lusk et al. (1997) found that the value of use had a positive direct effect on the use of hearing protection in construction workers ($\beta=0.17$, $p<0.05$) (Lusk, Ronis, & Hogan, 1997).

For the indirect effect, the HPM proposed that perceived benefits of action had an indirect effect on behavior through a commitment to a plan of action, a mediator of behavior (Pender et al., 2015). In other words, commitment to a plan of action mediates the association between perceived benefits of action and health-promoting behavior. The review of Lubans et al. (2008) found that commitment to a plan of physical activity was associated with physical activity and the criteria for mediation in physical activity intervention. That is, commitment to a plan of physical activity mediates the association between intervention focusing on perceived benefits of physical activity education and physical activity (Lubans et al., 2008; Taymoori & Lubans, 2008).

Therefore, the perceived benefit of sexual abstinence has a positive direct effect on sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.2 Perceived barrier to sexual abstinence has a negative direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It also has a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

A perceived barrier to action is a perception about the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a particular action.

Barriers are often viewed as mental blocks, hurdles, and personal costs of undertaking behavior (Pender et al., 2015). A perceived barrier to sexual abstinence were perceptions about the obstacles of sexual abstinence, which may be real or imagined. It comprised pressure from boyfriend, peer pressure, risk situation, and lack of family support (Panurat, 2009).

The HPM and evidence proposed anticipated barriers have been repeatedly found to affect intentions to engage in a particular behavior in a negative direction (Fila & Smith, 2006; Pender et al., 2015). Also, higher perceived barriers to behavior are likely to affect lower commitment to a plan of behavior. Evidence showed that female adolescents who perceive barriers to sexual abstinence demonstrate a low commitment to a plan of sexual abstinence (Isaro et al., 2016; Landry, Turner, Vyas, & Wood, 2017; Panurat, 2009; Wongchalee & Chaiyawat, 2016).

Perceived barriers of health-promoting behavior usually arouse motives of avoidance to perform behaviors (Khodaveisi, Omid, Farokhi, & Soltanian, 2017; Kholifah, Yumni, Minarti, & Susanto, 2017; Lovell et al., 2010; Lusk et al., 1997; Mohamadian & Ghannae Arani, 2014). Barriers make it difficult for adolescents to abstain from sex, despite the acknowledged advantages of abstinence (Mokwena & Morabe, 2016). Previous studies provided that female adolescents with perceiving barriers to sexual abstinence could not remain sexual abstinence (Mokwena & Morabe, 2016; Oladepo & Fayemi, 2011; Rasberry & Goodson, 2009).

The HPM proposed that perceived barriers to action affect health-promoting behavior indirectly through decreasing commitment to a plan of action, a mediator of behavior (Pender et al., 2011). The study of Taymoori and Lubans (2008) found that commitment to a plan of physical activity mediates the association between intervention focused on perceived barriers to physical activity education and physical activity (Lubans et al., 2008; Taymoori & Lubans, 2008).

Therefore, the perceived barrier to sexual abstinence has a negative direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.3 Perceived self-efficacy of sexual abstinence has a negative direct effect on perceived barriers to sexual abstinence, but it has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. Moreover, it has a positive indirect effect on sexual abstinence through perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence.

In the HPM, perceived self-efficacy refers to a judgment of personal capability to organize and execute a particular health behavior. Perceived self-efficacy of sexual abstinence is the judgment of female adolescents in their capability to perform sexual abstinence. According to Bandura's and sexual abstinence literature, perceived self-efficacy of sexual abstinence included the ability to negotiate, deny sex, assure to sexual abstinence, and control situations leading to premature sexual intercourse, such as boyfriend's pressure (Bandura, 1977; Carlsson, Breding, & Larsson, 2018; Haglund, 2006).

The HPM proposed that greater perceived self-efficacy results in fewer perceived barriers to a specific health behavior (Pender et al., 2015). Previous studies proposed that higher perceived self-efficacy of physical activity results in fewer perceived barriers to physical activity in adolescents (Ayotte, Margrett, & Hicks-Patrick, 2010; Mohamadian & Ghannae Arani, 2014). Female adolescents with high perceiving self-efficacy of sexual abstinence can overcome sexual abstinence barriers, such as the boyfriend's pressure (Haglund, 2006). Also, Abbott and Dalla (2008) and Rasberry and Goodson (2009) found female adolescents who perceive the high ability of sexual abstinence get low perceptions of barriers to sexual abstinence (Abbott & Dalla, 2008; Rasberry & Goodson, 2009).

Literature guided by the HPM proposed perceived self-efficacy of behavior increases the likelihood of commitment to a plan of action such as the reproductive health behavior and exercise (Kholifah et al., 2017; Shin et al., 2005). Evidence supported that female adolescent with a high perceived self-efficacy of sexual abstinence also have a high commitment to a plan of sexual abstinence (Buhi et al., 2011; Rasberry & Goodson, 2009; Wongchalee & Chaiyawat, 2016). Moreover, self-

efficacy motivates health-promoting behavior directly by efficacy expectations. Female adolescents with a perceived self-efficacy of sexual abstinence were more likely to maintain sexual abstinence (Asuzu, 2013; Childs, Moneyham, & Felton, 2008; Goodson, Pruitt, Suther, Wilson, & Buhi, 2006; Panurat, 2009; Wang, Cheng, & Chou, 2009; Wang & Hsu, 2006).

For the indirect effect, the theoretical proposition of the HPM provided that perceived self-efficacy of action has an effect on health-promoting behavior indirectly through a commitment to a plan of action (Pender et al., 2011). Buhi et al. (2011) found self-efficacy of sexual abstinence had a positive indirect effect on sexual abstinence through sexual abstinence intention (Buhi et al., 2011). Also, Zhang, Jemmott, and Jemmott (2015) found that sexual abstinence intention was a mediator of the sexual abstinence intervention focusing on efficacy (Zhang, Jemmott, & Jemmott, 2015).

Therefore, perceived self-efficacy of sexual abstinence has a negative direct effect on perceived barriers to sexual abstinence, and it has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.4 Sexual abstinence-related affect has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

According to the HPM, activity-related affect refers to subjective feeling states or emotions occurring before, during, and following a specific health-behavior. Activity-related affect enables individuals to perform behavior through positive feelings regarding behavior, self-related behavior, or context-related behavior (Pender et al., 2015). Sexual abstinence-related affect consists of feeling good, happy, being a good girl, or feeling like they are doing the right thing (Brady & Halpern-Felsher, 2008; Buhi et al., 2011; Haglund, 2006).

Evidence also indicates that activity-related affect will result in commitment to a plan of behavior and actual behavior (Dehdari, Rahimi, Aryaeian, & Gohari, 2014; Mohamadian & Ghannaee Arani, 2014; Motl et al., 2001; Robbins, Pis, Pender, & Kazanis, 2004; Taymoori et al., 2010). Besides, evidence of sexual abstinence provided adolescents with sexual abstinence-related affect will have a high possibility of having a sexual abstinence intention (Buhi & Goodson, 2007; Collazo, 2005). For an indirect effect, the HPM provided that activity-related affect has an effect on health-promoting behavior indirectly through commitment to a plan of action (Pender et al., 2011).

Therefore, sexual abstinence-related affect has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.5 Child-rearing promoting sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

Pender et al. (2015) proposed that the interpersonal influences are cognitions involving the behaviors, beliefs, or attitudes of others. Parents are primary sources of interpersonal influence on health-promoting behaviors in adolescents through norms, support, and modeling (Pender et al., 2015). For sexual abstinence, parents have been the first learning source of sexual abstinence for female adolescents. Usually, they raised daughters to maintain sexual abstinence. That is, child-rearing plays a crucial role in promoting sexual abstinence (Chareonsuk et al., 2013; Haglund, 2006; Macintyre, Montero Vega, & Sagbakken, 2015; Morrison-Beedy, Carey, Cote-Arsenault, Seibold-Simpson, & Robinson, 2008; Supametakorn et al., 2010).

Supametakorn et al. (2010) found that parents have taught female adolescents proper sexual behaviors; then, female adolescents can think that sexual abstinence is suitable for their lives and decide on sexual abstinence. Previous evidence found that child-rearing promoting sexual abstinence was a predictor of

female adolescent's commitment to a plan of sexual abstinence via norms, support and modeling (e.g., Buhi et al., 2011; Macintyre et al., 2015; Wongchalee & Chaiyawat, 2016).

The HPM proposes that the interpersonal influences of parents directly affect health-promoting behaviors. The evidence supported female adolescents with child-rearing promoting sexual abstinence were more likely to maintain sexual abstinence (Kao, Loveland-Cherry, & Guthrie, 2010; Parkes, Henderson, Wight, & Nixon, 2011; Tolma et al., 2011). Also, the theoretical proposition of the HPM provided that parental influence affect health-promoting behavior indirectly through commitment to a plan of action, a mediator of behavior (Pender et al., 2015).

Therefore, child-rearing promoting sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.6 Peer influence on sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

In the HPM, a peer is one of the primary sources of interpersonal influences on health-promoting behaviors (Pender et al., 2015). A peer is an important person who influences behaviors, including sexual behavior during adolescence (Leatherdale, Cameron, Brown, Jolin, & Kroeker, 2006; Padilla-Walker & Bean, 2009).

Literature supported that peer influence was correlated with commitment to a plan of sexual abstinence (Wongchalee & Chaiyawat, 2016). Eggers et al. (2017) found norms of friends, for instance, most of my friends think that they should wait until they are older before having sex had a direct effect on sexual abstinence intention. Also, evidence found that friends' sexual activity was associated with an adolescent's sexual activity (Bauermeister, Elkington, Brackis-Cott, Dolezal, & Mellins, 2009; van de Bongardt, Reitz, Sandfort, & Deković, 2014). Literature also supported peer influence predicted sexual abstinence in female adolescents (Eggers et al.,

2017; Panurat, 2009). For an indirect effect, the HPM proposed that peer influence on sexual abstinence had an indirect effect on health-promoting behavior through commitment to a plan of sexual abstinence.

Therefore, peer influence on sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

2.7 Commitment to a plan of sexual abstinence has a positive direct effect on sexual abstinence.

In the HPM, commitment to a plan of action is an intention to carry out a particular health behavior, including the identification of specific strategies to do so successfully (Pender et al., 2015). The literature presented the commitment to a specific plan of action had a direct effect on health-promoting behaviors (Kholifah et al., 2017). In Thai society, Supamethaporn et al. (2010) found that female adolescents set goals for life security and remain sexual abstinence during school in order to achieve their goals. Then they have decision-making in maintaining sexual abstinence and follow the strategy of sexual abstinence. Female adolescents will do an activity specific to sexual abstinence; avoid being a private area with a male, kissing or touching genital organs, and drinking alcohol (e.g., Norris et al., 2003, Oladepo, 2011; Siebenbruner, 2007; Buhi et al., 2011; Mokwena & Morabe, 2016). Also, those female adolescents who had a commitment to a plan of sexual abstinence would successfully remain sexual abstinence until graduation from school (Blinn-Pike et al., 2004; Oladepo & Fayemi, 2011; Panurat, 2009; Rasberry & Goodson, 2009). Therefore, commitment to a plan of sexual abstinence has a positive direct effect on sexual abstinence.

Scope of the study

This study was to develop and test a causal model of sexual abstinence in Thai-female adolescents studying in universities and high-vocational schools. Variables were selected from the HPM of Pender et al. (2015). There were perceived

benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence.

The target populations were first-year female adolescents studying in universities and high-vocational schools, six main regions, Thailand, Northern, North-eastern, Eastern, Central, Western, and Southern. Research data was collected in the second semester of the academic year 2019.

Operational definitions

Sexual abstinence refers to the way in which Thai female adolescents conduct in never having sexual intercourse, including penile-oral, penile-anal, and penile-vaginal intercourse with males until graduating from secondary education. It can be measured by the three items in the Sexual abstinence scale (SAS) of Panurat (2009), which was modified by the researcher.

Commitment to a plan of sexual abstinence refers to Thai female adolescent's intention of sexual abstinence and specific strategies they use to carry out sexual abstinence. Intention includes decision-making in sexual abstinence, setting aim, and promising to be sexually abstinent. It can be measured by the Commitment to a plan of sexual abstinence Scale (CSAS) of Panurat (2009), which was modified by the researcher.

Perceived benefits of sexual abstinence refer to the positive consequences of sexual abstinence perceived by Thai female adolescents. It consists of extrinsic benefits and intrinsic benefits. The extrinsic benefits include getting the benefit of healthy, learning achievement, having a successful career in the future, and having a proper couple in a future marriage. The intrinsic benefits included self-value, having a sense of social acceptance, and accepting from others. It can be measured by the perceived benefit of the sexual abstinence scale (BeSAS) of Panurat (2009), which was modified by the researcher.

Perceived barriers to sexual abstinence refer to the blocks or obstruct of undertaking sexual abstinence. The blocks or obstructs of sexual abstinence may be imagined or the real thing. It includes boyfriend pressure; boyfriend requests sexual intercourse, friend pressure, risk situations, and family problem. It can be measured by the perceived barrier to sexual abstinence scale (BaSAS) of Panurat (2009), which was modified by the researcher.

Perceived sexual abstinence self-efficacy refers to the judgment of Thai female adolescents in their ability to perform sexual abstinence and overcome the barriers of sexual abstinence during the school year. It is composed of believing in their capacity to negotiate not to have sex, deny having sexual intercourse, assuring sexual abstinence, and control situation leading to sexual intercourse. It can be measured by the Perceived sexual abstinence self-efficacy scale (SASES) of Panurat (2009), which was modified by the researcher.

Sexual abstinence-related affect refers to Thai female adolescent's feelings regarding sexual abstinence. Sexual abstinence-related affect is composed of feeling regarding sexual abstinence behavior and feeling regarding oneself when remaining sexual abstinence. It can be measured by using the sexual abstinence-related affect scale, which is developed by the researcher.

Child-rearing promoting sexual abstinence refers to acts of parents toward Thai female adolescents in assuring daughter to recognize parental love, teaching daughter sexual abstinence, convincing the daughter to recognize parent's expectations of sexual abstinence, and encouraging daughter sexual abstinence. It can be measured by the Child-rearing promoting sexual abstinence scale, which is developed by the researcher.

Peer influence on sexual abstinence refers to Thai female adolescents as perceiving on peer's norm, support, and modeling in maintaining sexual abstinence. It can be measured by the Peer influence scale (PeINS) of Panurat (2009), which was modified by the researcher.

Expected outcomes and benefits

1. The causal model of sexual abstinence in Thai female adolescents will help nurses identify causal factors of sexual abstinence and their relationships. Then it can be applied to guide nurses to develop sexual abstinence intervention in Thai female adolescents.

2. Research findings can encourage healthcare professionals and policymakers to further use this knowledge in promoting sexual abstinence in school, clinic, and society.

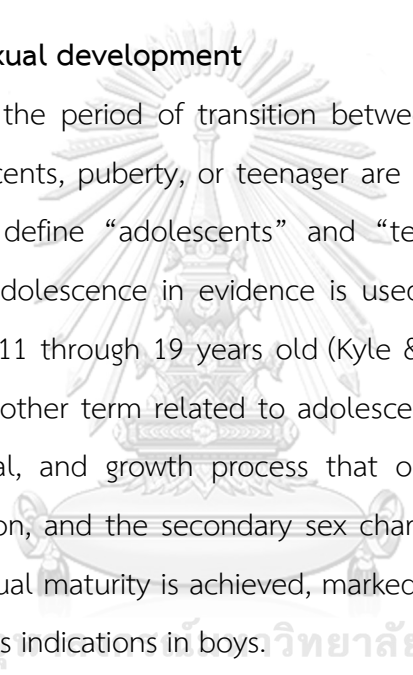


CHAPTER II

LITERATURE REVIEW

This literature review was divided into subsections related to 1) Adolescent and sexual development, 2) Sexual abstinence in female adolescents, 3) The Health Promotion Model and theoretical substruction, and 4) Factors influencing sexual abstinence.

1. Adolescent and sexual development

Adolescence is the period of transition between childhood and adulthood. Terms such as adolescents, puberty, or teenager are used to refer to adolescence. WHO and academics define “adolescents” and “teenagers” as individuals aged below 20. The term adolescence in evidence is used synonymously with teenage years to describe age 11 through 19 years old (Kyle & Carman, 2013; World Health Organization, 2018). Another term related to adolescents is puberty. It refers to the maturational, hormonal, and growth process that occurs when the reproductive organs begin to function, and the secondary sex characteristics develop. Puberty is the point at which sexual maturity is achieved, marked by the first menstrual flow in girls but by less obvious indications in boys. 

Adolescence is literally defined according to growth and development. It is defined as “to grow into maturity,” and generally regarded as a psychological, social, and maturational process initiated by the pubertal changes. Evidence has classified adolescents into three stages; early adolescence (age 11 to 14), middle adolescence (age 15 to 17), and late adolescence (age 18 to 20) (Hockenberry et al., 2017).

Sexual development in female adolescent

The physical changes of puberty are primarily the result of hormonal activity and are controlled by the anterior pituitary gland in response to a stimulus from the hypothalamus. The obvious physical changes are noted in increased physical growth and the appearance development of secondary sex characteristics. In most girls, the

initial indication of puberty is the appearance of breast buds, an event known as thelarche, which occurs between 8 to 13 years old.

The rapid changes in structure and the function of many parts of the body are significant signs of early adolescence. Evidence pointed out that girls are developing secondary sex characteristics at a younger age. The explanation for this appears to be influenced by being overweight, environmental influences, and overall health status (Curtis, 2015; Steinberg, 2014). Scholars presented that the median age at menarche has remained relatively between 12 years and 13 years across well-nourished populations in developed countries (Yermachenko & Dvornyk, 2014). However, the evidence reported that girls are developing secondary sex characteristics at a younger age among various countries (Currie et al., 2012). The usual age of menarche ranges from 10 years six months to 15 years, with the average age being 12 years, eight months for Caucasian girls, and 12 years two months for African-American girls (Cabrera, Bright, Frane, Blethen, & Lee, 2014). Bodyweight, high animal protein intake, family stressors (e.g., single parenting), and physical activity seemed to influence age at menarche in most populations (Yermachenko & Dvornyk, 2014).

The adolescent's developments and transitions also make them highly involved in a relationship that can early enhance the desire to engage in sexual debut (Walvoord, 2010). Adolescents required sexual relationships and looking for the opposite sex to share confidences and feelings. Adolescents were engaged in sexual intercourse at an early age (younger than 15 years old) (Centers for Disease Control and Prevention, 2017a). In Thailand, previous studies reported an average age of first sexual intercourse in female adolescents was 15 years, and the youngest was 11 years, respectively (Jirawatkul et al., 2011; Kanato & Saranrittichai, 2006). Engaging in sexual intercourse places that Thai female adolescents increased biological and psychosocial health problems. Break-ups in such relations are frequently the cause of tremendous and emotional pain. Liu et al. (2006) assessed among 1,725 vocational school students aged 15-21 living in northern Thailand; findings showed that Thai

female adolescents were at-risk sexual behavior health-related consequences (Liu et al., 2006).

Having sexual intercourse at an early age resulted in problems that affect the lives of female adolescents. There were at least 220,000 Thai adolescents aged 10-19 years old living with HIV (UNICEF, 2015b). Females are more vulnerable to STDs than males (Centers for Disease Control and Prevention, 2011). The Bureau of Thai Epidemiology (2013) also provided an increasing incidence of STDs, unwanted pregnancy, and abortion, childbearing in early adolescents from 1960 to 2012 (WHO, 2014). More importantly, adolescent pregnancy rates were underestimated, which lead to an under treatment in later. There were found when severe complications of abortions affected; infection and uterine perforation (Carlsson et al., 2018).

2 Sexual abstinence in Thai female adolescents

Sexual abstinence is suitable for the Thai context. Thai women have to maintain sexual abstinence until the right time, graduation from school, having a good couple, or getting married. This behavior also has been used for health problem prevention, such as adolescent pregnancy, for a long time (Supametaporn et al., 2010).

Definition of sexual abstinence

Abstinence's meaning is mostly mentioned in the dictionary, website, and research journals. The term abstinence is from Latin "abstinentia" etymologically indicates "not doing." From the dictionary, Merriam-Webster's Dictionary defined "abstinence" as "voluntary forbearance, especially from the indulgence of appetite or craving or from eating some foods." Oxford Dictionary provided "sexual abstinence" as the practice of restraining oneself from premarital intercourse. From its meaning, Sexual abstinence is the practice of voluntarily refraining from some or all aspects of sexual behavior; it includes a choice not to have any sexual intercourse. The choice is usually made for a specific purpose, for instance, for moral, religious, legal, or health reasons.

Sexual abstinence is divided into two types; primary and secondary sexual abstinence. According to the CDC (2017), sexual abstinence in adolescents is focused on the primary one concerning resulting in health outcomes of well-being and disease prevention (Centers for Disease Control and Prevention, 2017b). Many researchers have provided more details about sexual abstinence (Hans & Kimberly, 2011; Hensel, Fortenberry, O'Sullivan, & Orr, 2011). Primary sexual abstinence is used for an adolescent who never had sexual intercourse and desired sexual abstinence. Secondary sexual abstinence is used for adolescents who already engaged in sexual intercourse, but they intend to sexual abstinence at present (Loewenson, Ireland, & Resnick, 2004; Dunsmoore, 2008; Rasberry & Goodson, 2009).

Sexual abstinence is sometimes called “virgin,” but it is stricter than a virgin in practice. These two terms were found interchangeably in health literature. In detail, some provided sexual abstinence as not engage in penile-vaginal and penile-anal intercourses while virgin only counted on no penile-vaginal intercourse (Hans & Kimberly, 2011; Hensel, 2013; Barnett, 2017). For health risk prevention, CDC (2017), Eggers, et al. (2017), and Panurat (2009) defined a sexual abstinence term with including not penile-oral intercourse in its action.

Sexual abstinence is used in different health purposes.

Firstly, sexual abstinence has been found in the case of sexual desire decreases in the third trimester and postpartum period (De Judicibus & McCabe, 2002). Sexual abstinence after childbirth is a common practice in some countries such as Africa, one of the potential preventions of the sexual spread of HIV. Also, African women are expected to abstain from sex after childbirth in order to ensure the survival of the mother and child (Shabangu & Madiba, 2019; Sule-Odu et al., 2008). Secondly, sexual abstinence for maintaining sperm quality in men: Sexual abstinence is a potential strategy for improving sperm quality in fertility preservation (Agarwal et al., 2016). Prolonged sexual abstinence has also been reported to increase semen volume, sperm concentration, and the total sperm count. Researchers provided a wide range of abstinence duration 1–18 days in keeping

sperm quality (Mayorga-Torres et al., 2015; Sunanda, Panda, Dash, Padhy, & Routray, 2014).

Consequences of sexual abstinence

1. Academic graduation: Female adolescents who maintain sexual abstinence get more confidence, more focused, and had a greater determination on their graduations than female adolescents who are not (Ankomah, Mamman-Daura, Omoregie, & Anyanti, 2011). Remaining sexual abstinence will bring female adolescents to have less difficulty, and they can stick to the plan of studying and graduation. The CDC address that early sexual intercourse was correlated with the lower grades and test scores and lower educational attainment (CDC, 2016). Moreover, some reports showed 60% of the sexually abstinent girl were less likely to be expelled from school, 50 % less likely to drop out of high school, and almost twice as likely to graduate from college (Rector & Johnson, 2005; Sabia & Rees, 2009).

2. Physical health risk prevention: Previous studies showed sexual abstinence ensures that female adolescents will not be pregnant because there is no chance of fertilization (Jemmott, Jemmott, & Fong, 2010). Also, the previous cohort study conducted to test the abstinence program, “the Teen STAR sex education program” among 1,259 high-school female adolescents, which found that female adolescents who had enrolled in the program had a significantly lower rate of unintended adolescent pregnancy than who were not ($p < 0.05$) (Cabezón et al., 2005). Moreover, practicing sexual abstinence during the study guarantees that female adolescents have no chance of HIV infection and STIs. Providing information on sexual abstinence benefits in preventing HIV infection and STIs can significantly increase knowledge of HIV and STIs infection prevention. Akintobi et al. (2011) studied the effect of the 2 HYPE Abstinence Club, the community-campus partnership program, provided abstinence education promotion for 323 African-American adolescents (12-18 years old). Then they found the program significantly increases the understanding of abstinence benefits and sexual activity risks among participants ($p < .05$) (Akintobi et al., 2011).

Furthermore, sexual abstinence during the adolescent time will also reduce cervical cancer and infertile rate. The previous study has suggested that female adolescents who abstain from sex will have a chance to limit the number of sexual partners in life, they are less likely to get STDs, which will develop cervical cancer later. In contrast, previous studies found that human papillomavirus (HPV) is ubiquitous in sexually active female adolescents, with over 50% having a positive HPV. Winner et al. found that a new sex partner is the most significant risk for acquiring HPV among American female adolescents in university (Moscicki, 2010; Winer et al., 2003).

3. Psychological health outcomes: In the Thai context as a Buddhism country, remaining sexual abstinence until married is classified as a good girl. Thus, Thai female adolescents have been cultivated value of this behavior since they were young. Not remaining sexual abstinence may bring them guilt and shame (Sridawruang, Pfeil, & Crozier, 2010). Bogart et al. studied among 1,917 adolescents recruited from middle schools at age 13, were surveyed at ages 13, 18, 23, and 29, respectively. Findings found that adolescent sexual abstinence was associated with better mental health at age 29 for females but not males (Bogart et al., 2007).

Sexual abstinence in Thai adolescents

Sexual abstinence is used for promoting well-being and prevention in Thai adolescents. Performing sexual abstinence can prevent physical, mental, and psychological health problems among female adolescents during the study. Sexual abstinence fits Thai culture. Many Thai people get highly expected that Thai women have to maintain sexual abstinence until marriage. Some of them used sexual abstinence as the key criterion that classified female adolescents who perform this behavior as a good girl (Piriyasart et al., 2018; Supametaporn et al., 2010).

The vision is for the Government of Thailand to build on and strengthen existing platforms that address the most critical issues affecting adolescents aged 10–19 years: leveraging the power of regional networks, advocating for educational reform, supporting the National Strategy to Prevent Teenage Pregnancy, taking the lead on HIV prevention among young populations most at risk and promoting

behaviors that prevent the onset of noncommunicable diseases in adulthood (UNICEF, 2016b). CDC suggested evidence-based sexual health education can improve academic success; reduce unplanned pregnancy, HIV, and other STIs. Also, evidence-based sexual health education reduces sexual risk behavior, such as sexual abstinence, thereby protecting student health (National Association of School Nurses, 2017).

However, over the past decades, sexual behavior in adolescents across countries has continued to change with earlier ages of sexual intercourse, increasing numbers of partners, or decreased condom use at sexual debut. The physical development of female adolescents' changes rapidly; hormones in the body stimulate interest in the opposite sex, driving female adolescents to have sexual desire and engage in sexual debut. The age of globalization causes a Western culture to dominate the lifestyle of many Thai female adolescents. They dress very revealingly, the shirt or pants were too exposed and tight, which attracts the opposite-sex want to have sex with them. Lastly, living in a dormitory allows them away from parents; they may have a high chance of staying with their boyfriend, which leads them to engage in sex (UNICEF, 2015a).

The previous study reported Thai female adolescents, living in both urban and rural areas of Thailand, get a high chance of not remaining sexual abstinence. Of the 65.1 million people living in Thailand, approximately 8.7 million people are adolescents aged 10–19 years old. At present, Thai female adolescents do not remain primary sexual abstinence during the school years; the age of engaging in sexual intercourse is trendy reducing. The explosive increase in adolescent pregnancies partly stems from an increase in sexual relationships outside of marriage (UNICEF, 2016).

The adolescent birth rate is rising. In 2014, adolescent mothers were giving birth to approximately 320 babies per day. Even though Thailand's 100% Condom Program began in 1991 to offer condoms free of charge nationwide, Thailand has the top three highest teenage pregnancy rates in South East Asia (UNICEF, 2016b; World Health Organization, 2018, 2020a). Pregnant adolescents face numerous barriers,

including a high degree of social stigma and the potential risk of complications from clandestine abortions. An estimated 200,000–300,000 women of reproductive age seek abortions each year (Latimore et al., 2013; Liu et al., 2006; Peltzer & Pengpid, 2011; Phetsumrit et al., 2015; Prasartwanakit et al., 2009). Moreover, 70% of all sexually transmitted HIV infections in Thailand occur among young people aged 15–24. Despite a gradual drop in overall HIV prevalence over the past two decades, new infections are rising among young people from key populations (UNICEF, 2016b; World Health Organization, 2018, 2020a).

Additionally, in terms of Thai culture value, some Thai people believe that the remaining virgin is a good girl's serious mission. Therefore, Thai female adolescents who do not maintain sexual abstinence would keep this as a secret from their parents, teachers, or other community. It may cause them to live their lives under pressure, guilty, and low self-esteem. All of this will eventually bring health problems (Sridawruang, 2010; Ounjit, 2015; Charoenthaweesub, 2011; Assanangkornchai et al., 2010; Rongluen et al., 2012).

Nursing role in promoting sexual abstinence

Nurses play a crucial role in promoting sexual abstinence in school, clinic, and community. Nurses have to work with parents and teachers in school clinics to promote sexual abstinence education and counseling. Nurses also have to find adequate knowledge to reflect health care providers to use this knowledge to promote sexual abstinence (Breuner & Mattson, 2016).

The use of theoretical nursing models could help nurses understand the health-disease complex and support nursing practice because female adolescent has bio-psychosocial complexity, rapid physical growth, and being transformed over time. Congruently, CDC recommended that school nurses support sexual health education to be accessible, inclusive, developmentally, and culturally appropriate for all students (Kemppainen, Tossavainen, & Turunen, 2012).

In the review of Kemppainen et al. (2012), the nurse should collaborate with multidisciplinary knowledge. This requires knowledge of health and development in population, incidence, and prevalence of pregnancy, disease processes, and health

promotion theories. Besides, nurses have to manage to promote sexual abstinence projects and should be able to plan, implement, and evaluate promoting sexual abstinence interventions and projects. In this case, nurses should have advanced communication skills and supervise. Therefore, nurses are essential in promoting sexual abstinence in taking care of adolescents concerned with complexity, theoretical approaching, using evidence-based, acquiring scientific knowledge, and working with multidisciplinary.

Pediatric nursing is responsible for promoting the health and well-being of the child and family. Pediatric nursing is defined as nursing of infants, children, and adolescents, which is consistent with the American Nurses Association (2010) definition of nursing as the protection, promotion, and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response, and advocacy in the care of individuals, families, and populations (Hockenberry et al., 2017). Pediatric nursing's major goal is to improve the quality of care for children throughout adolescents 10 to 19 years old and their families. Patterns of health are shaped by medical progress and societal trends. Besides, pediatric nurses have to use and integrate research findings to establish an evidence-based practice, managing the delivery of care cost-effectively to promote continuity of care and an optimal outcome for the child and family (Kyle & Carman, 2013).

More importantly, pediatric nurses often face complex situations requiring decisions that sometimes mismatch with the needs of the children they care for and their families. In conducting research, nurse researchers must appraise their research obligations when considering their participants' ethical issues. Importantly, for the principle of respect for persons, it is required that any subject needs to enter into any investigation process voluntarily and with adequate information from the researcher (Field & Behrman, 2004).

In Thailand, parental consent/permission, and children assent for children aged below 18 to participate in any research is required (Phuhaibul, 2008). However, the consent/assent form requirement may make female adolescents feel

uncomfortable reporting their sexual behavior. Besides, it will bring them not to answer the truth. Thus, researching subjects age 18 and above helps them feel free to give sexual behavior information. For these reasons, the researcher should concern this procedure and explain these reasons to institutions' human research ethics committees.

School nurse is defined as the specialized practice of professional nursing that advances the well-being, academic success, and students' life-long achievement. Thus, school nurses facilitate positive student responses to standard developments; promote health, intervene with actual and potential health problems, provide case management services, and activity collaborates with others to build student and family capacity for adaptation, self-management, self-advocacy, and learning (Potts & Mandleco, 2012).

School nursing owes its beginnings in both the United States and Europe to the field of Community and Public Health Nursing. It originated by a public nurse, investigating the number of children absent from school due to infectious diseases, who formulated the plan that led to school nursing in the United States. Lillian Wald, a pioneer in community nursing and founder of the Henry Street Settlement, was astonished by the number of children who never returned to school after being excluded for a communicable disease. Next, she convinced the New York Board of Health to try an experiment, placed a nurse in a selected school in New York City to screen for infectious diseases, provided education regarding their control, and followed up by visiting the homes of children who had been excluded. Finally, the board agreed, and in 1902 Lina Rogers became the first school nurse in The United States (Wold, 1981, cited in Potts & Mandleco, 2012). In 1974, school nurses' philosophy of practice was developed and endorsed by both the American Nurses Association (ANA) and the American School Health Association (ASHA), and guidelines for school nurses were developed. Professional nursing organizations became further involved in the educational preparation of the school nurse. Both the ANA and the ASHA recommended a minimum of a baccalaureate degree. The National Association

of School Nurses (NASN), incorporated in 1979, provided a definition of school nursing, which remains in place currently.

However, in Thailand, school nurses are only found in private schools. Most schools have a school health service or “Ngan-a-na-mai-rong-rean,” organized by teachers. School health services focused on first aid, facilitate immunization in coordination with public health departments and hospitals close to the school (Thongsri & Chiangkhong, 2018).

Sexual abstinence promotion program in Thailand

Nurses and teachers have organized sexual abstinence promoting programs in school according to the policy of the Ministry of Education. Also, some foundations such as the Thai health foundation has launched the campaign regarding sexual abstinence as follows.

1. The Comprehensive Sexuality Education (CSE) program:

The CSE has been provided in almost secondary schools in Thailand; more teaching time and better teacher training are needed to build the knowledge and skills they need to manage their sexuality and sexual lives. The Review of CSE implementation in Thailand collected data from 8,837 students and 692 teachers from 398 secondary and vocational schools nationwide from September 2015 to March 2016. The study examined CSE implementation in schools across Thailand, identifying both successes and areas in need of improvement. The study's findings found that more than half of teachers did not receive any specific training on teaching CSE. Most teachers rely on lectures as their CSE teaching method, which does not provide opportunities for students to ask questions or develop their analytic thinking skills, which is not effective in allowing students to examine and discuss the problem of sexuality. The study recommended that efforts now be made to ensure that the CSE is taught in a truly comprehensive manner by including all CSE curriculum topics and promoting critical thinking about gender and power. The study also recommends that every school allocates adequate time in the timetable; and that every teacher receives full training in the teaching of CSE (The nation Thailand, 2017; UNICEF, 2016a).

For young adolescents aged 12–14 years, sex education focused on transitioning from childhood to adolescence, sex-related anatomical and physiological information, and sexual behaviors in elementary schools. Nearly all public secondary and vocational institutions provide CSE. Diverse topics are covered in the CSE curriculum, including preventing teenage pregnancy, sexually transmitted infections and HIV, and sexual anatomy and development. However, topics related to gender, sexual abstinence, sexual rights, sexual and gender diversity, or gender inequality are less taught. Surveys also showed that adolescents have low knowledge of health promotion and prevention (The nation Thailand, 2017). Besides, Thampanichawat and Olanratmanee (2018) studied among 262 seven and eighth-graders in a secondary school in Bangkok; findings showed that more than half of the students stated that they wanted their school to increase the contents of sex education, particularly on pregnancy prevention and birth control, decision-making and refusal skills, and sexually transmitted diseases (Thampanichawat & Olanratmanee, 2018).

2. The Thai Health Foundation Campaign: In 2010, The Thai Health launched a campaign on sexual health. The target group was male and female adolescents, focus on the problem of having premature sexual intercourse. There were campaigns related to waiting to have sex until the right time, such as “true love can wait,” “thinking a lot and looking for a long term before having sex. The campaign focused on the disadvantages of having premature sex.

3. The Abstinence-based programs: In terms of sexual behaviors, two philosophical concepts were described: sexual abstinence and safe sex. The abstinence-based programs provide religious and traditional values, focusing on younger adolescents with believing that early prevention and they are less likely to have already engaged in sexual behaviors. Besides, the safe sex-based program was aimed to minimize the consequences of sexual behaviors.

For abstinence-based programs, most topics in such programs addressed the value of abstinence. Studies have shown programs focusing on interpersonal factors; perceived self-efficacy, and interpersonal factors; norms, and parental involvement. Those programs within the home and school-based sex education seemed to influence adolescents' sexual abstinence intention and sexual behavior and measured the effectiveness in the short term (2-3 months) (Hattakitpanichakul, Phuphaibul, Phumonsakul, & Viwatwongkasem, 2019; Suvarnakuta, Congkhaow, & Nichachotesalid, 2015). However, neither of these kinds of programs reported the success in preventing female adolescent's health problems (Chokprajakchad, Phuphaibul, Sieving, & Phumonsakul, 2020; Paknoi, Krungkrietch, & Homsin, 2018).

In practice, public health nurses advocate comprehensive sex education programs. One study reported a nurse-led school-based program's positive results focusing on cognitive behavioral therapy-based for adolescents with mental problems (Vuthiarpa, Sethabouppha, Soivong, & Williams, 2012). However, the no school-based sexual abstinence program was organized in Thailand, focusing on intrapersonal and interpersonal factors organized by nurses (Hattakitpanichakul et al., 2019; Suvarnakuta et al., 2015).

From the above information, even though many organizations set necessary to promote sexual abstinence, pediatric nursing have to access the program's effectiveness, including research and develop a program to help increase the sexual abstinence behavior in Thai female adolescents. Sexual abstinence program needs to be developed considering the evidence and following its effectiveness in both the short term and long term.

3. The health promotion model

The causal model of sexual abstinence in Thai female adolescents was guided by the HPM of Pender et al. (2015) because this model can be well explained sexual abstinence in Thai female adolescents. From previous studies, Thai female adolescents maintain sexual abstinence until graduation from school to get their life success (Supamethaporn et al., 2010). This congruent with the HPMs' assumption that a person will perform a behavior because that behavior serves as their goals (Pender et al., 2015). Thai female adolescents maintain sexual abstinence because they have life goals, academic achievements, career, and life success that they need to achieve after graduation, then they find the effective strategy such as sexual abstinence to achieve their goals. For these reasons, the researcher then used the HPM as a general guide for selecting the predicting factors into the causal model of this study.

3.1 Theoretical background

The HPM was initially published in 1982; it then made this theory have seven versions of editions; 1982, 1987, 1996, 2002, 2006, 2011, and 2015 (Pender et al., 2015). The HPM integrates constructs from Expectancy-value theory (Fishbein and Ajzen, 1975 cited in Pender et al., 2015) and Social cognitive theory (Bandura, 1986), within the nursing perspective of holistic human functioning.

The original version in 1982 included seven cognitive-perceptual factors, five modifying factors, and participation in health-promoting behavior. Then Pender et al. revised the model from findings of studying the health-promoting lifestyle profile in four research projects; working adults, older adults, ambulatory cancer, and cardiac. The model was subsequently revised in 1996 by adding three factors into the model; activity-related affect, commitment to a plan of action, and immediate competing demands and preferences based on empirical research findings. The HPM contained the elements as the revised model from 1996 to 2015.

The revised model was composed of: (1) Individual characteristics and experiences (prior related behavior and personal factors), the importance of which is said to vary with the target behavior, (2) Behavior-specific cognitions and affect; perceived benefits, perceived barriers, perceived self-efficacy, activity-related affect, interpersonal influences, and situational influences, (3) Commitment to a plan of action, (4) Immediate competing demands and preferences, and (5) Behavioral outcomes or health-promoting behavior. The HPM was shown in figure 1 (Pender et al., 2015).

The HPM makes four assumptions including 1) Individuals strive to control their behavior., 2) In all their biopsychosocial complexity, individuals interact with the environment, progressively transforming the environment and being transformed over time., 3) Health professionals constitute a part of the interpersonal environment, which exerts influence on people through their lifespan, and 4) Self-initiated change of individual and environmental characteristics is essential to changing behavior. Pender et al. (2015) proposed that health promotion consists of activities directed toward increasing well-being and actualizing individuals' health potential, families' communities, and society. The difference between health promotion and disease or illness prevention is the underlying motivation for the behavior of individuals and aggregates. Health promotion is behavior motivated by the desire to increase well-being and actualize human health potential. Disease prevention is called health protection. It is behavior motivated by a desire to actively avoid illness, detect it early, or maintain functioning within the constraints of illness success.

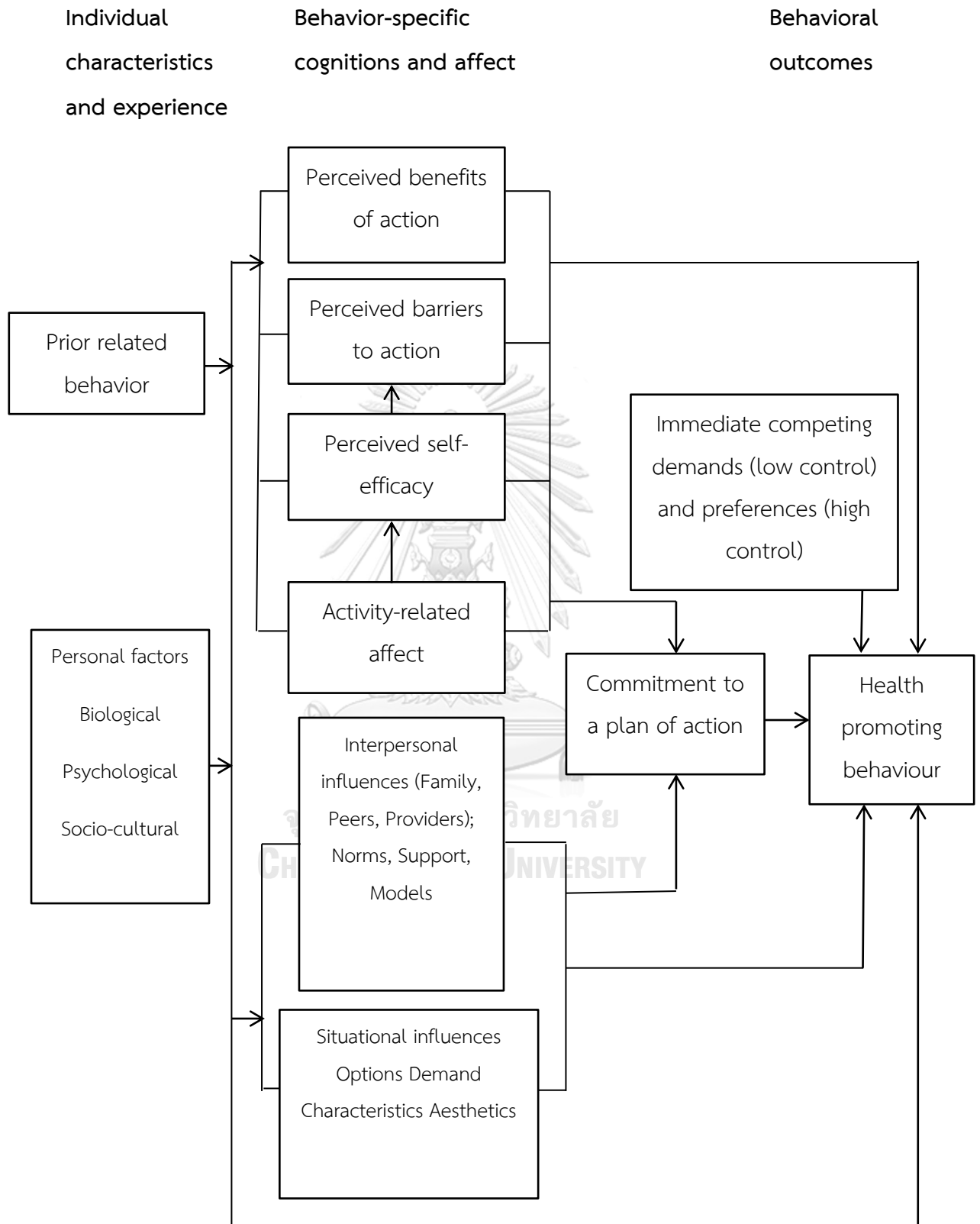


Figure 1 The Health Promotion Model (Pender et al. 2015, p.35).

The HPM focused on individual, family, community, socioeconomic, cultural, and environmental. Individuals play a critical role in determining their health status because self-care represents the dominant health care mode. Many personal decisions are made daily that shape lifestyle and social and physical environments. Health promotion at the individual level improves personal decision making and health practices. The HPM has been used to prove behaviors such as physical activity, exercise, nutrition, oral health, hearing, health-related quality of life, and sexual abstinence (Lusk et al., 1997; Wu et al., 2003; Panurat, 2009; Mohamadian et al., 2011; Mohamadian and Arani, 2014; Pender et al., 2015). Integrating those health-promoting behaviors into a healthy lifestyle will result in improved health and a better quality of life. In this study, sexual abstinence is a health-promoting behavior.

3.1.1 Individual's characteristics and experiences: Prior related behavior, the factor is proposed to have both direct and indirect effects on engaging in health-promoting behavior. Habit formation is one part of automatically engage in a behavior. Besides, personal factors, the factor categorized as biological, psychological, and sociocultural. Age, body mass index, pubertal status, self-esteem, self-motivation, and perceived health status. Sociocultural factors include race, ethnicity, acculturation, education, and socioeconomic status.

3.1.2 Behavior-specific cognitions and affect

Perceived benefits of action: In the HPM, perceived benefits are proposed to, directly and indirectly, motivate behavior through determining the extent of commitment to a plan of action to engage in the behaviors. Benefits may be intrinsic or extrinsic. Intrinsic benefits include increased alertness and energy and increased perceived attractiveness. Extrinsic benefits include monetary rewards or social interactions possible as a result of engaging in the behavior. Intrinsic benefits may be more powerful in motivating the sustainability of health behaviors.

Perceived barriers to action: Barriers consist of perceptions about the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a particular action. Barriers are often viewed as mental blocks, hurdles, and personal costs of undertaking a given behavior. Barriers usually arouse motives of avoidance

concerning a given behavior. Anticipated barriers have been repeatedly found to affect intentions to engage in a particular behavior. Loss of satisfaction from giving up health-damaging behaviors such as smoking or eating high-fat foods to adopt a healthier lifestyle may also constitute a barrier.

Perceived self-efficacy: Self-efficacy is the judgment of personal capability to organize and carry out a particular course of action. Self-efficacy influences perceived barriers to action with higher efficacy resulting in a lowered perception of barriers. Self-efficacy motivates behavior directly by efficacy expectations and indirectly by affecting perceived barriers and commitment or persistence in pursuing a plan of action.

Activity-related affect: This concept consists of three components emotional arousal to the act itself (act related), the self-acting (self-related), and the environment in which the action takes place (context-related). Feeling state will affect an individual to repeat the behavior or maintain it in the long term. Feeling states occurred prior to, during, and following activity based on the behavioral event's stimulus properties. These effective responses will be stored in memory, associated with subsequent thoughts and behavior (Motl, 2001).

Interpersonal influences: Interpersonal influences are cognitions involving the behaviors, beliefs, or attitudes of others. Primary sources of interpersonal influence on health-promoting behaviors are family, peers, and health care providers. The construct includes norms (expectations of significant others), social support (instrumental and emotional encouragement), and modeling (vicarious learning through observing others engaged in a particular behavior).

Situational influences: Situational influences are personal perceptions and cognitions of a situation or context can facilitate or impede behavior. Situational influences on health-promoting behavior include perceptions of options available, demand characteristics, and aesthetic features of the environment in which a given behavior is proposed to take place. However, sexual abstinence in this study are behaviors that occur in a very long period of time (at least 16 years). Situational influences in each situation, and each age range may be different, so it is

too difficult to identify and measure. Thus, this construct was not included in the model in this study.

3.1.3. Commitment to a plan of action: Commitment to a plan of action initiates a behavioral event. Commitment to a plan of action implies 1) a specific action at a given time and place and with specified persons or alone, irrespective of implementation intention, and 2) identifying definitive strategies for carrying out and reinforcing the behavior. Commitment alone without associated strategies often results in “good intentions” but failure to perform health behavior.

3.1.4. Immediate competing demands and preferences: This construct refers to alternative behaviors that intrude into consciousness as possible courses of action immediately prior to the intended occurrence of a planned health-promoting behavior. However, sexual abstinence in this study are behaviors that occur in a very long period of time (at least 16 years). Immediate competing demands and preferences in each situation and each age range may be different, so it is too difficult to identify and measure. Thus, this construct was not included in the model in this study.

3.1.5. Behavioral outcome: Health-promoting behavior is the endpoint or action outcome. Outcome behavior is ultimately directed toward attaining positive health outcomes. When integrated behaviors into a healthy lifestyle, results in improved health and better quality of life at all stages of development. Previous studies' models have focused on testing the predictability of the model. Health-promoting behaviors have included physical activity, nutrition, oral health, sexual health, hearing, and health-related quality of life (Lusk et al., 1997; Wu et al., 2003; Panurat, 2009; Mohamadian et al., 2011; Mohamadian and Arani, 2014).

3.2 Theoretical substruction

The researcher conducted a theoretical substruction, a process whereby a researcher establishes linkages between the theoretical and operational systems. Theoretical substruction was used to identify the major variables, analyze the levels of abstraction among the variables, identify hypothesized relationships between variables, and connect the study concepts to the empirical indicator (Dulock &

Holzemer, 1991). Theoretical substruction was also conducted by considering the structural hierarchy of theoretical deduction proposed by Fawcetts' (2000), including steps from previous scholars.

The step begins with identifying construct understudy and describing their relationships. Then the concrete concepts will be operationally defined, and the concept is linked to empirical indicators that provide a method to measure the variable according to the HPM as follows (Dulock & Holzemer, 1991; Fawcett, 2000; Hinshaw, 1979; Reed & Shearer, 2012).

The HPM noted that the set of variables derived from behavior-specific cognitions and affect have important motivational significance. Because the variables can be modified through nursing actions (Pender et al., 2015), each factor is proposed as exerting a direct influence on the likelihood of engaging in health-promoting actions. Moreover, research is in progress to determine the extent to which the behavior-specific knowledge and affect factors identified in the model singly or in additive, or multiplicative combinations explain health-promoting behaviors (see Figure 3).

Therefore, factors influencing sexual abstinence included in the model were behavior-specific cognitions and affect, and commitment to a plan of sexual abstinence could be substructured as follows.

3.2.1. Perceived benefits of sexual abstinence

Perceived benefits of sexual abstinence are derived from the perceived benefits of action, which are mental representations of the positive or reinforcing consequences of behavior. Persons commit to engaging in behaviors from which they anticipate deriving personally valued benefits (Pender et al., 2015). Perceived benefits of action allow individuals to perform health-promoting behavior through the motivation of anticipated benefits.

The perceived benefit of sexual abstinence was defined as an anticipated outcome of sexual abstinence, which comprised extrinsic and intrinsic benefits, which motivates female adolescents to maintain sexual abstinence. The motivational importance of anticipated benefits was based on personal outcomes

from experience or vicarious experience through observing others (Dunsmore, 2010). Panurat (2009) also defined the perceived benefits of sexual abstinence as Thai female middle adolescents' mental representations of positive or reinforcing consequences of refraining from sexual intercourse, which consisted of intrinsic and extrinsic benefits.

The motivation of sexual abstinence originating from within an individual was called intrinsic benefit, such as a sense of self-worth, whereas an extrinsic one included external sources outside of the individual. Literature across countries provided components of benefits with mixing up information. Dunsmore (2010) presented the motivation for maintaining sexual abstinence in college students as, e.g., future orientation, social responsibility, moral consequences, or physical consequences. Kaljee et al. (2017) and others provided extrinsic benefits among Vietnamese adolescents as healthy; being safe from STD, AIDS, an unexpected pregnancy, emotional stress, or stigma from social (Norris, 2003; Kaljee, 2017; Loewenson et al., 2004). Then Seifert et al. (2018) supported benefits as grades reward and crowd cheering.

In the Thai context, Supamethaporn's (2006) finding found that female adolescents perceived intrinsic and extrinsic benefits of sexual abstinence from their experience of sexual abstinence and observed others in their family or community. Intrinsic benefits included proud of themselves as good women and gaining self-value. Extrinsic benefits comprised external rewards as staying healthy or academics achievements. Supported by other Thai studies, many benefits of sexual abstinence also included being safe from mental stress and learning achievement (Danaidussadeekul, 2004). Besides, moral commitment (Suthinpheuk, 2010) and maintaining spirituality (Roojanavech, 2016) were also the benefits of sexual abstinence. Some Thai female adolescents did not want to have gossiped or social stigma from premature sexual intercourse (Sridawruang, 2010). Panurat (2009) presented extrinsic benefits and intrinsic benefits of sexual abstinence based on the HPM. Extrinsic benefits consisted of benefits of health, learning achieved, a successful

career, family. Intrinsic benefits include a sense of social acceptance, positive feelings towards oneself, and the acceptance of others.

Thus, in this study, the perceived benefits of sexual abstinence are defined as the positive consequences of sexual abstinence perceived by Thai female adolescents. It consists of extrinsic benefits and intrinsic benefits. The extrinsic benefits include getting the benefit of healthy, learning achievement, having a successful career in the future, and having a proper couple in a future marriage. The intrinsic benefits included self-value, having a sense of social acceptance, and accepting from others.

Measurements of perceived benefits of sexual abstinence:

Existing measurements of perceived benefits of sexual abstinence were found as the perceived advantages of delaying sex scale and the perceived benefits of sexual abstinence scale provided as follows.

1) Perceived advantages of delaying sex scale developed by Eggers et al. (2017) to measure perceived advantages or pros of delaying sex in 1670 students, both male and female (age 12–16) of non-private South African high schools. The scale consists of four items; 'waiting until I am older before I have sex will: 1) help me achieve my life's goals; 2) will help prevent me from getting hurt emotionally; 3) will please my parents, and 4) will lower my risk of getting HIV'. Responses format was a 5-point Likert scale (strongly disagree (1) to strongly agree (5)). The reliability of the scale is presented as Cronbach's = 0.72, and the validity does not exist. The scale contains items asking the benefit of sexual abstinence until older, which are achieving life's goals, prevent adolescents from getting hurt emotionally, please their parents, and lower my risk of getting HIV. However, all items reflect just some defining attributes of perceived benefits of sexual abstinence defined as Thai female adolescents, and some such as social acceptance are not provided. Moreover, the scale reflects achieving life's goals but lacks clarifying which part of life's goals (education, career, or future family), health outcome as a lower risk of getting HIV, STDs, or unwanted pregnancy. Thus, the scale is not fit the definition of perceived benefits of sexual abstinence in this study.

2) Perceived benefits of sexual abstinence scale (BaSA)

developed by Panurat (2009) measured the perceived benefit of sexual abstinence in middle Thai female adolescents. This scale measured an individual's perception of positive or reinforcing consequences of refraining from sexual intercourse during the school year with 25 items. The scale consists of extrinsic benefits; healthy, learning achieved, a successful career, proper couple, and intrinsic; having a sense of social acceptance, self-value, and the acceptance of others. Twenty-two items included both intrinsic benefits and extrinsic benefits. For example, "Maintaining a Thai lady's moral conduct" or "Maintaining family's reputation." Questions of extrinsic benefits are "Being safe from STDs" or "Having a good opportunity to study in a desirable university" or "Having a good family in the future." The response format was a 4-point Likert scale (totally disagree (1), to totally agree (4)). Its content validity from 5-panel experts was 0.89, the CFA (Confirmatory factor analysis) showed that all regression weights between the seven components and the perceived benefits of sexual abstinence (BeSA) ranged from 0.51 to 0.84, which were statistically significant at $p < 0.01$. Cronbach's alpha was 0.92. Then, Wongchalee (2011) adopted this scale and applied it to measure the perceived benefit of sexual abstinence in 432 early Thai female adolescents. The modified BeSA contains 25 items, CVI=0.86, and Cronbach's alpha reliability=0.90, which are not different from the original versions'.

From the above information, the BeSA was suitable for measuring the perceived benefit of sexual abstinence. The researcher modified the original scale regarding trends and tested its psychometric properties before using it in this study.

3.2.2. Perceived barriers to sexual abstinence

Perceived barriers to sexual abstinence are derived from perceived barriers to action. Pender et al. (2015) defined barriers as mental blocks, hurdles, and personal costs of undertaking a given behavior. It consists of perceptions about the unavailability, inconvenience, difficulty, or time-consuming of a particular action. Barriers usually arouse motives of avoidance concerning a given behavior. Anticipated barriers have been repeatedly found to affect intentions to engage in a specific

behavior. Loss of satisfaction from giving up health-damaging behaviors such as smoking or eating high-fat foods to adopt a healthier lifestyle may also constitute a barrier. Research studies have defined barriers to sexual abstinence as the blocks, hardship, or personal costs of undertaking sexual abstinence (Rasberry, 2009; Panurat, 2009; Wongchalee, 2011; Oladepo & Fayemi, 2011). Oladepo and Fayemi (2011) defined it as the obstructing of sexual abstinence. In the Thai context, Panurat (2009) defined it based on the HPM as a female adolescent's thoughts or beliefs about obstructing or impeding her refraining from sexual intercourse, which may be imagined or real. Eggers et al. (2017) defined the cons of delaying sex close to barriers to sexual abstinence. It defined as the adolescent's perception of such as waiting to have sex until older made them look old-fashioned or their partners frustrated with them.

The components of barriers to sexual abstinence found in the literature were boyfriend, friend pressure, risk situation, money or gift motivation, and family condition. Oladepo and Fayemi (2011) studied the sexual abstinence behavior of 420 in-school Nigerian adolescents (10-19 years). They found that respondents reported the obstructing of sexual abstinence were uncontrollable sexual urges from a partner, friend pressure, financial or material benefits, and no motivation for sexual abstinence. Some male adolescents felt that sexual intercourse was a regular practice, which young people should do. Consistently, Panurat (2009) presented that barriers include boyfriend pressure, peer pressure, risk behavior, and family problem.

Boyfriend pressure or fear of losing a relationship with boyfriend has been classical barriers to sexual abstinence. The boyfriend put pressure on a convincing girl to know that she must have sexual intercourse with him for proving her love. Rasberry (2009) found that the boyfriend's pressure obstructed practicing sexual abstinence during the study; girls knew they might lose their boyfriend if they maintained sexual abstinence. Moreover, Oladepo and Fayemi (2011) supported that female adolescents faced uncontrollable sexual urges from their partners (46.7%).

Friend pressure was another component of barriers to sexual abstinence. Oladepo and Fayemi (2011) found friend pressure was one-factor

influencing sexual abstinence; some participants showed that if they did not have sex, they would feel odd, which affects the acceptance from their friends. Moreover, some female adolescents had friends who were not valued in sexual abstinence might perceive that sexual abstinence was outdated or ridiculous, were likely not to maintain sexual abstinence (Abbott & Dullas, 2008).

Situation and family conditions were mentioned as barriers to sexual abstinence. Oladepo and Fayemi (2011) found that male participants gave their partners the money and then had sex with her. Furthermore, some studies provided information about transactional sex. Luke et al. (2007) studied in 551 adolescents' relationships in Kenya and found that higher young women's income increases in delaying sex. Material transfers from the male partner decrease young women's negotiating power on sexual abstinence. Some found barriers to sexual abstinence included wrong perceptions about sex and the influence of drugs and alcohol and television's influence (Mokwena, 2016).

Family problem was another one of the components of barriers to sexual abstinence. Parents and relatives were viewed as important sources of information for sexual and reproductive health. This lack of parental presence was perceived to result in adolescents feeling an overall lack of adult support and guidance. Pilgrim et al. (2014) found that female adolescents were significantly more likely to engage in first sex if neither parent resided in the household, either due to death or other reasons. The absence of the living biological parents from home was associated with a higher risk of having sex (Pilgrim et al., 2014).

Therefore, in this study, perceived barriers to sexual abstinence were defined as the blocks or obstruct of undertaking sexual abstinence. The blocks or obstructs of sexual abstinence may be imagined or the real thing. It includes boyfriend pressure; boyfriend requests sexual intercourse, friend pressure, risk situations, and family problem.

Measurement of perceived barriers to sexual abstinence:

Existing measurement of perceived barriers to sexual abstinence is rare. One

measurement measured the perceived cons (disadvantages) of delaying sex, and the other was the Perceived barriers to sexual abstinence scale.

1) The perceived cons of delaying sex scale were developed by Eggers et al. (2017) to assess the perceived cons of delaying sex in 1670 students (age 12–16) of non-private South African high schools. This scale assessed by four items, and responses were captured using the 5-point Likert scale. For example, "waiting until I am older before I have sex will make me look old-fashioned." Cronbach's alpha was 0.81.

2) The Perceived barrier to sexual abstinence scale (BaSA) was developed by Panurat (2009) to assess the Perceived benefit of sexual abstinence in middle Thai female adolescents. This scale measured an individual's perception of obstruction to her refraining from sexual intercourse during the school year with 19 items. BaSA scale included four components: boyfriend's pressure, peer pressure, situation, and family problem. The response format was a 4-point-Likert scale; totally disagree=1, disagree=2, agree=3, totally agree=4. For the original version of the BaSA scale of Panurat (2009), it contains CVI=0.80, the Cronbach's alpha was 0.97. Then, Wongchalee (2011) adopted this scale and applied to measure the perceived benefit of sexual abstinence in 432 early Thai female adolescents by adding item asking about money or material rewards from a partner, including modified item 8 for appropriately used in her population. The modified BaSA consequently contains 20 items, and CVI=0.95 and Cronbach's alpha=0.96.

Thus, the researcher modified the BaSA to measure perceived barriers to sexual abstinence. Then the researcher modified items appropriate with Thai female adolescents and tested its psychometric properties before using it in the study.

3.2.3 Perceived self-efficacy of sexual abstinence

Perceived self-efficacy of sexual abstinence is derived from the perceived self-efficacy of action. Self-efficacy is recognized as one of the essential prerequisites for behavior change (Bandura, 1997). It has been applied to research in diverse areas. There were smoking cessation, HIV prevention, dietary practices, or

exercise behaviors. It has been incorporated into the frameworks of many influential theories, including Social Cognitive Theory, the Health Promotion Model, the Health Belief Model, and the Transtheoretical Model (Pender et al., 2015; DiClemente & Peterson, 1994; Glanz, Rimer, & Viswanath, 2008).

Pender et al. (2015) proposed that self-efficacy is the judgment of personal capability to organize and carry out a particular course of action. Judgments of personal efficacy are distinguished from outcome expectations; perceived self-efficacy is a judgment of one's ability to accomplish a performance, whereas an outcome expectation is a judgment of the likely consequences (benefit or costs) the behavior will produce. Perceptions of skill and competence in a particular domain motivate individuals to engage in behaviors in which they excel.

From sexual abstinence literature, Buhi et al. (2011) defined self-efficacy of sexual abstinence as the confidence to remain abstinent. Eggers et al. (2017) defined self-efficacy as the ability of adolescents to wait to have sex until they were older. In the Thai context, Panurat (2009) defined perceived self-efficacy of sexual abstinence as Thai female adolescents' judgment of the ability to refrain from sexual intercourse in social situations where sex is likely to occur. Thus, perceived self-efficacy of sexual abstinence could be defined as female adolescents' confidence that they can do, it was under their control, and being able to maintain even under pressure situation.

For perceived self-efficacy of sexual abstinence's components, Pender et al. (2015) proposed it consisted of a judgment to perform a behavior. Some literature included assertiveness, refusal skills, or goal setting as part of the self-efficacy of sexual abstinence (Oladepo & Fayemi 2011). Buhi et al. (2011) included the confidence to remain abstinent until marriage and the ability to resist if adolescents were pressured to have sex. Eggers et al. (2017) added the ability to wait to have sex, even if adolescents were in the risk situations; drinking alcohol, having a partner older than them; someone offered them money or gifts, and they were deeply in love. Among them, Panurat (2009) provided four components covering the perceived self-efficacy of sexual abstinence. It included the ability to negotiate not

to have sex, deny having sex, assuring sexual abstinence, and control situations leading to sex.

Thus, in this study, perceived self-efficacy of sexual abstinence was defined as the judgment of Thai female adolescents in their ability to perform sexual abstinence and overcome the barriers of sexual abstinence during the school year. It is composed of believing in their capacity to negotiate not to have sex, deny having sexual intercourse, assuring sexual abstinence, and control situation leading to sexual intercourse.

Measurement of perceived sexual abstinence self-efficacy:

1) Two items of self-efficacy developed by Buhi et al. (2011), self-efficacy was assessed using two items as "I can remain abstinent until marriage" and "If I am pressured to have sex, I can resist," the items only reflects the ability to assure sexual abstinence and deny sexual intercourse. The item scaled on a 4-point response format, from not confident at all to extremely confident.

2) Self-efficacy to delay sex developed by Eggers et al. (2017). The scale was used to measure self-efficacy to delay sex in 1670 students (age 12–16) of non-private South African high schools. It contained four items: e.g., if I am deeply in love, waiting until I am older before I have sex is...'. The scale was a 5-point Likert scale, very difficult for me (1) to very easy for me (5). The Cronbach's α was 0.80.

3) Perceived self-efficacy to sexual abstinence (SASE) developed and published by Panurat, Aunguroch, and Chaiyawat (2014) to assess the perceived sexual abstinence self-efficacy in Thai female adolescents. This scale measured an individual's perception of the judgment of her ability to refrain from sexual intercourse in social situations where sex is likely to occur with 12 items. The SASE scale included four components; the ability to negotiate, the ability to deny, the ability to assure, and the ability to adapt circumstances. The response format was a 4-point-Likert scale, totally not (Panurat, Aunguroch, & Chaiyawat, 2014).

The original version of the SASE scale contained content validity was 0.86, Cronbach's alpha for perceived sexual abstinence self-efficacy was 0.95. Then Wongchalee (2011) adopted this scale and applied it to measure the perceived benefit of sexual abstinence in 432 early Thai female adolescents. The modified SASE contains 13 items with 0.89 for CVI and 0.93 for Cronbach's alpha reliability.

From the above information, the SASE scale was appropriate to measure perceived self-efficacy to sexual abstinence. However, the researcher a bit modified and tested its psychometric properties before using it in this study.

3.2.4. Sexual abstinence-related affect

Sexual abstinence-related affect is derived from activity-related affect, which is defined as subjective feeling states that occur before, during, and following behavior, based on the stimulus properties associated with behavioral events. Activity-related affect consists of three components, 1) emotional arousal to the act itself (act-related), 2) the self-acting (self-related), and 3) the environment in which the action takes place (context-related). Activity-related affect reflects a direct emotional reaction or gut-level response to the behavior, which can be positive (fun, delightful, enjoyable) and negative (disgusting, or unpleasant). Activity-related affect could be found as positive or negative (Pender et al., 2015; N. J. Pender, 1996).

The sexual abstinence-related affect could be defined as feelings regarding sexual abstinence, which can be positive or negative. Firstly, act-related components found as feelings regarding behaviors (e.g., exercise) in the range of feeling positive and negative; feelings liked or dislikes, pleasurable or displeasure before, during, or after exercise (Hardy & Rejeski, 1989; Motl et al., 2001; Rejeski, Reboussin, Dunn, King, & Sallis, 1999; Robbins et al., 2004; Taymoori et al., 2010), feelings with consuming breakfast in students, enjoyable or boring (Dehdari et al., 2014). Act-related was found as positive feelings regarding sexual abstinence across countries (not specific to before, during, or after the behavior). Being sexually abstinent, American adolescents felt positive, feeling like it, good or happy with it (Buhi & Goodson, 2007; Buhi et al., 2011). Thus, act-related of sexual abstinence seemed to be positive.

Secondly, self-related affect is how a person feels with oneself when performing a behavior. It was shown as adolescents became energetic, alive, feeling good, or exhausted when doing exercise. Self-related depends on the characteristic of different behaviors. In case of premature sexual intercourse or having sex during the period of study, female adolescents feel afraid, worried, guilty, or embarrassed with doing it (Blinn-Pike et al., 2004; Kaljee et al., 2007). In sexual abstinence, self-related is how female adolescents feel with themselves when maintaining sexual abstinence. The literature on sexual abstinence presented that female adolescents who maintained sexual abstinence felt; free from adverse outcomes of having sex, proud of themselves, mature than others who are not maintained sexual abstinence, or feel like they are doing the right thing (Buhi et al., 2011; Haglund, 2006; Supametaporn, 2006). Only one study provided that female adolescents may have a negative feeling with themselves when maintaining sexual abstinence, such as feeling outdated or left out from a boyfriend (Brady & Halpern-Felsher, 2008). Hence, a self-related component could be in a range of positive and negative when maintaining sexual abstinence.

Context-related can be defined as a feeling related to a context where that behavior takes place. Context of the exercise was shown as a sport wears or a gym, in which the exercise occurs, it can be feeling happy with the environment of exercise; gym, beautiful clothing, or exercise equipment (Evenson et al., 2006; Springer, Kelder, & Hoelscher, 2006). Nevertheless, context-related behaviors are different due to various kinds of behavior. Besides, Sexual abstinence is an abstract and long-time behavior. The context of sexual abstinence may be included persons who are with female adolescents during the period of study, parents, and peers. However, parents and peers were already classified as the internal influence, child-rearing promoting sexual abstinence and peer influence. Thus, the context-related affect of sexual abstinence was not included in the sexual abstinence-related affect variable in this study.

Hence, sexual abstinence-related affect refers to Thai female adolescent's feelings regarding sexual abstinence of Thai female adolescents. Sexual

abstinence-related affect is composed of feeling regarding sexual abstinence behavior and feeling regarding oneself when remaining sexual abstinence. Sexual abstinence-related affect will be measured by using a sexual abstinence-related affect scale.

Measurement of sexual abstinence-related affect: Few existing instruments measured sexual abstinence-related affect as follows.

1) The five-item emotional reactions scale developed by Collazo (2005) used to measure emotional reactions in Puerto Rican high school students (grades 10th-12th). One item asked about emotional reactions toward sexual abstinence, and others asked about emotional reactions toward sexual behaviors (e.g., using condoms). Emotional reaction toward sexual abstinence items was “when adolescents think about having to abstain from sexual intercourse with a person who is not a boyfriend.” The response format was a 5-point Likert scale; (1) Very restless, (2) Restless, (3) Undecided, (4) Calm, and (5) Very calm (Collazo, 2005).

2) The Emotions scale developed by Buhi et al. (2011) to measure emotions in seventh and eighth-graders American adolescents. The scale was a 5-point response format (strongly agree to strongly disagree). The scale contains five items of positive emotions regarding sexual abstinence (e.g., being sexually abstinent makes adolescents feel happy, good”, or feel like they are doing the right thing). The other five were negative emotions regarding sex before marriage variables (e.g., having sex before marriage makes me feel afraid, worried, or guilty) (Buhi et al., 2011). The Cronbach’s α for scaled was 0.90.

According to the definition of sexual abstinence-related affect as mentioned above, the existing scales were not appropriate in measuring sexual abstinence-related affect in this study. Therefore, the researchers developed a new scale considering items from the existing scales and previous qualitative studies.

3.2.5. Child-rearing promoting sexual abstinence

Child-rearing promoting sexual abstinence is derived from the interpersonal influences of Pender et al. (2015) and previous evidence. According to the dictionary, child-rearing promoting sexual abstinence refers to parents' actions or

practices grounded in cultural patterns and beliefs in child and adolescent (Cambridge dictionary, 2016; Mariam-Webster, 2016). The word “Child-rearing” is used in the context when focusing on a child as a center since they were childhood. Also, child-rearing in general shares a typical value as the preservation of life, maintenance of the health, and the well-being of children; however, child-rearing promoting sexual abstinence is specific to the culture (Selin, 2014). In Thailand, child-rearing performed throughout the child and adolescent period consisted of reinforcing connectedness, enhancing maturity, and protecting children and adolescents from harm (Virasiri, Yunibhand, & Chaiyawat, 2011). In terms of promoting sexual abstinence, child-rearing is vital in the Thai context. Supamethaporn (2006) found that child-rearing in Thai culture is influential to the sexual abstinence and livelihood of individuals. There is an inheritance of sexual abstinence since the past, such as Thai women reserve themselves, do not have prematurely sexual intercourse before the right time. Sexual intercourse may lead to unwanted pregnancy during study, which causes daughters to stop studying, commit an abortion, abandon children, or get HIV. Besides, Thai parents raise daughters by observing the effects of prematurely sexual intercourse in society and how to prevent such problems (Supamethaporn et al., 2010). Therefore, child-rearing promoting sexual abstinence has been performed by Thai parents to promote sexual abstinence in their daughters regarding Thai culture value.

The HPM proposed primary sources of interpersonal influence are parents via parent’s norms, support, and modeling. Norms were linked to parental beliefs and expectations of sexual abstinence (Bersamin et al., 2008; Parkes et al., 2011). Support was linked to parental teaching about sexual abstinence, love and understanding, and encouragement (Chareonsuk et al., 2013; Supamethaporn et al., 2010). Modeling was linked to a model of sexual abstinence (Long-Middleton et al., 2013; Supamethaporn et al., 2010). Therefore, child-rearing promoting sexual abstinence in this study referred to Thai female adolescent’s perception about the act of parents in promoting sexual abstinence during the period of study, which included parental beliefs and expectations of sexual abstinence, teaching and

encouraging daughter sexual abstinence, giving love and understanding, and being model of sexual abstinence.

Firstly, assuring daughter to recognize parental love is a key component of child-rearing promoting sexual abstinence. Parents make female adolescents realize the unconditional love of parents towards them. Parents give and sacrifice everything to make them achieve their lives goals. Then parental love pushing female adolescents to set goals for life security and maintain sexual abstinence as a means (Supametaporn, 2006). Parkes et al. (2011) provided that parents can have a sense when female adolescents are upset about something during school. Parents encourage them to talk about their difficulties, and understand what they are going through during those days, and standing by them when facing problems (Parkes et al., 2011). Literature provides a parent-daughter relationship, and spending time with each other will motivate their daughters to trust their parents, and daughters are likely to have more opportunities to get information and exchange ideas about sexual abstinence (Rogers, Thao, Stormshak, & Dishion, 2015; Supametaporn, 2006). Building parent-adolescent relationships need parents to understand their daughter and listen when a daughter needs someone to talk to (Maguen & Armistead, 2006).

Secondly, teaching daughter sexual abstinence has highly existed in literature. It refers to parents give female adolescent knowledge on how to maintain sexual abstinence during the period of study. Parents address the right time of having sex as after graduation from school, getting married, or into adulthood. Thai parents cultivate their daughter that sexual abstinence is a means or a method female adolescents can use during the period of study for achieving life goals (Supametaporn et al., 2010). Parents also teach their daughters that female adolescents who maintain sexual abstinence can bring long-term success as academic achievement, getting a job, or having a proper couple (Chareonsuk et al., 2013; Haglund, 2006; Macintyre et al., 2015; Morrison-Beedy et al., 2008; Supametaporn et al., 2010). Sexual abstinence will also bring female adolescents a good reputation as a good woman (Panurat, 2009; Supametaporn et al., 2010). Also,

most parents realize sexual abstinence can protect female adolescents from unwanted pregnancy (Chareonsuk et al., 2013; Haglund, 2006; Macintyre et al., 2015; Morrison-Beedy et al., 2008; Supametaporn et al., 2010), and sexually transmitted diseases (STDs) (Chareonsuk et al., 2013; Supametaporn et al., 2010).

Moreover, some parents also teach proper behavior and appropriate interaction with the opposite sex. Proper behavior includes appropriate dressing such as no dressing showing too much skin, which may activate sexual desire in the opposite-sex (Supametaporn et al., 2010). If female adolescents have boyfriends, they have to stay under adult supervision. A boyfriend who sincere about girlfriend would not force her to have sex. Also, many parents teach female adolescents to avoid risk situations that activated sexual desirous. Risk situations of sex include drinking alcohol, being touched body by a male, going outside the home with a male, or staying alone with a male in private places (Chareonsuk et al., 2013; Panurat, 2009; Sridawruang, 2011; Supametaporn et al., 2010). Parents tell female adolescents limit or rule in order to help them avoid risks of premature sexual intercourse and can maintain sexual abstinence. Parents set limits on female adolescents' activities and time spend outside the home (Supametaporn et al., 2010).

Female adolescents begin to learn since childhood and gradually extend their learning when growing up. Teaching also was occurred in everywhere and every time as possible such as while watching television, mealtime, driving, riding, or during time spending together (Chareonsuk et al., 2013; Haglund, 2006; Macintyre et al., 2015; Morrison-Beedy et al., 2008; Supametaporn et al., 2010). Parents teach female adolescents by using several methods. Many parents give their daughter an example about sex from their experience, and community to teach them about not having sex during the study (Haglund, 2006; Morrison-Beedy et al., 2008; Wamoyi, Fenwick, Urassa, Zaba, & Stones, 2010). Some parents also teach from the content of television or media; pornographic movies, reveal dressing, or the dancing styles as examples of behaviors encourage sex through the arousal of sexual desire from viewing them (Wamoyi, Fenwick, Urassa, Zaba, & Stones, 2011).

Thirdly, convincing the daughter to recognize parents' expectations of sexual abstinence, refers to parents expecting or believing that Thai female adolescents have to maintain sexual abstinence. Parents' expectations include belief in the benefits of sexual abstinence and desire their daughter to be a good daughter, maintain a family's reputation, and be praised by others in the community. Thai parents want their daughter's life to gain future achievement, graduation, a good marital relationship, and having success in her career. Parents expect female adolescents not to have sex in school and believe that sexual abstinence helps them have a bright future. Moreover, sexual abstinence is a good Thai girl (Sridawruang et al., 2010; Supametaporn et al., 2010). Thai female adolescents recognize parental expectations of this behavior during the period of study. Thus, the girl who maintains sexual abstinence is classified as the dutiful daughter, who repays parental love and kindness.

Finally, encouraging daughter sexual abstinence refers to parents to give daughters the motivation to maintain sexual abstinence. Parents often address that not maintaining sexual abstinence brings difficulties for female adolescents (unwanted pregnancy and abortion) by showing them the news about problems caused by having sex during the study (Morrison-Beedy et al., 2008). Some parents added more results of not remain sexual abstinence; AIDS, STDs, low self-esteem, or loss of educational opportunities, all of which would ruin the family' reputation and make life difficulty (Chareonsuk et al., 2013; Panurat, 2009; Supametaporn et al., 2010). Furthermore, some of them give rewards to their daughters who practice this behavior, such as keep praising them and others who successfully maintain sexual abstinence (Panurat, 2009).

Therefore, in this study, child-rearing promoting sexual abstinence refers to acts of parents toward Thai female adolescents in assuring daughter to recognize parental love, teaching daughter sexual abstinence, convincing the daughter to recognize parent's expectations of sexual abstinence, and encouraging daughter sexual abstinence.

Measurements of child-rearing promoting sexual abstinence:

Measurements related to child-rearing promoting sexual abstinence were conducted based on different definitions and contexts of the population as follows.

1) Maternal influence scale developed by Lam et al. (2008). The scale is used to measure child-rearing by mother in promoting sexual abstinence and having to save sex. The scale is divided into two parts (indirect and direct) with six components; Maternal Control, Maternal Support, Maternal Educational Expectation, Maternal Approval of Sex, Adolescents' Perception of Maternal Approval of Sex, and Mother-child Sexual Communication. These six scales were characterized in both a dichotomous and 4-level Likert scale. For psychometric properties, only three scales obtained Cronbach's alpha; Maternal Support scale were 0.84 for Asian American and 0.85 for White Americans, Adolescents' Perception of Maternal Approval of Sex scale were 0.74 for Asian Americans and 0.79 for White Americans, and Mother-child Sexual Communication scale were 0.91 for Asian Americans and 0.90 for White Americans. The six scales were shown as existing scales used in Asian and American contexts, balancing in 3 maternal control components and three maternal supportiveness components. However, this scale is not a specific scale to only measure child-rearing promoting sexual abstinence but also measure promoting safe sex during the period of study, which is not fit the operational definition in this study.

2) Parent-daughter sexual abstinence communication Scale (PDSAC) was developed by Chareonsuk and Phupaibul (2014) based on Theory Plan Behavior. The scale purposely used to measure parent-daughter sexual abstinence communication during the school years consisted of 24 items yielding four components: 1) the negative consequences of early sexual intercourse, 2) avoiding sexual risk situations, 3) appropriate interaction with boys, and 4) having good life immunity. This scale was used in 12-16-year-old Thai female adolescents 261 persons, Bangkok, Thailand. A 5-level Likert scale characterized the scale. Score ranking from 1=never to 5= very often. Higher scores indicated higher levels of parent-daughter sexual abstinence communication in the family. The mean CVI = 0.95, Cronbach alpha ($\alpha = .67$). Cronbach's alpha coefficient of this scale was .94, and

of 4 components were 0.91, 0.89, 0.78, and 0.48, respectively (Chareonsuk & Phuphaibul, 2014).

3) The parental influence scale (PaIN) was developed by Panurat (2009) based on Supamethaporn's grounded theory and the HPM. The scale purposely used to measure child-rearing promoting sexual abstinence in 3 components; parental expectation, child-rearing, and encouragement. This scale was used in 14-16-year-old Thai female adolescents 1360 persons, four regions, Thailand. The format of the PaIN was a 4-point Likert scale; strongly disagree (1) to strongly agree (4). The total scale is computed by the mathematical mean across all items yielding a possible mean score range from 1 to 4, with higher average scores indicating greater parental influence. Content validity was 0.85, and Cronbach's alpha was 0.89. Then Wongchalee (2011) adopted the PaIN, and it contained CVI = 0.89, and Cronbach's alpha = 0.91.

From the above information, no existing measurements can be used in this study because most of them were not fit for the conceptual definition and population context. In Thailand, there were two measurements conducted in previous research. First, the Parental Influence scale (PaIN) was conducted by Panurat (2009) to measure parental influence in middle-Thai female adolescents. The PaIN contained three components; expectations of parents, teaching about sexual abstinence, and encouragement of sexual abstinence, the majority of indicators underpinning the HPM. Nevertheless, this scale lacks indicators about assuring daughter to recognize parental love, which literature presented as the key to CPSA.

Additionally, some indicators needed to be modified or updated regarding the trends and globalization. Also, the PDSAC's indicators obtained only teaching and encouraging daughter sexual abstinence, which brought the PDSAC cannot be used to measure child-rearing promoting sexual abstinence in this study. Therefore, the researcher conducted a new scale by considering the existing measurement and comprehensive literature review.

3.2.6. Peer influence on sexual abstinence

Peer influence on sexual abstinence is derived from interpersonal influences. Based on Pender et al. (2015), peer influence on sexual abstinence via norms support and modeling. These three interpersonal influences determine individuals' predisposition to engage in health-promoting behavior. The dictionary provided a peer who was a person of the same age or had the same social position (Cambridge dictionary, 2017). A peer can be a close friend, group friend, classmate, schoolmate, including friend's group and friendships in the social network community such as Facebook, Line communication, Instagram, Twitter, Blog, and other applications.

Peer's norms and attitudes set standards for performance that individuals may adopt or reject. Female adolescents likely adopt performance that they perceive from peers. A systematic review of Buhi & Goodson (2007) found that peer norms influence intentions to have sex, early sexual debut, and subsequent sexual behavior. The perception of negative peer attitudes toward sex influences sexual abstinence, intentions to remain abstinent, and delay of sexual debut (Sneed, 2015). Besides, female adolescence become involved with groups whose values and norms are perceived as attractive or similar and, in turn, perform these norms into their behaviors. They tend to do what they believe their friends like. Especially for a best friend or close friend, sexual belief and expectations of friends in performing sexual abstinence were influence female adolescent's sexual abstinence (Suthinphuak, 2010; Buhi et al., 2011; Leerlooijer, 2014; Isro, 2016). In contrast, if the best friend does not maintain sexual abstinence, female adolescents will not maintain sexual abstinence (Maguen & Armstrong, 2006).

Peer's support included instrumental and emotional encouragement. Instrumental encouragement was the information of sexual abstinence, such as a strategy of avoiding sex. Female adolescents learn the benefits of sexual abstinence, a technique from a peer, and are likely to subsequently maintain this behavior (Panurat, 2009; Ounjit, 2015). Emotional encouragement was praise or motivation of sexual abstinence (Buhi & Goodson, 2007; Sneed, 2015;

Kapungu et al., 2010). Research on sexual abstinence presented addressed peer support is necessary for sexual abstinence programs. Lastly, peer modeling could be defined as female adolescents learn sexual abstinence through observing peer's behavior. Peer modeling occurs when female adolescents have peers who remain sexual abstinence (Buhi and Goodson (2007).

Thus, peer influence on sexual abstinence refers to Thai female adolescents perceiving on peer's norm, support, and modeling in maintaining sexual abstinence.

Measurement of peer influence on sexual abstinence: The measurements of peer influence on sexual abstinence were provided as follows.

1) Perceived Peer Norms Favouring Sex Scale developed by Bingenheimer, Asante, and Ahiadeke (2015) adapted consisted of 13 items (Cronbach's alpha = 0.84), from three existing instruments. For example, the questions, "boys/girls should wait until they get married to have sex?"

2. Perception of Attitudes Toward Sex and Peer Sexual Behavior developed by Sneed, Tan, and Meyer (2015) using three items to assess the participant's perception of peer attitudes toward sex. For example, "My friends think it's weird if a boy my age has never had vaginal intercourse" and "My friends think it's weird if a girl my age has never had vaginal intercourse," participants responded on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). For the third item, 'My friends would think I'm being ridiculous (if I decided not to have sex with anyone at this time in my life),' participants responded on a 4-point scale ranging from 1 (very likely) to 4 (not likely). Items were summed to create a single scale for peer attitudes. Higher scores on the scale were associated with attitudes that supported limiting sexual behavior. To assess the perception of peer sexual behavior by asking participants, "How many of your friends have had sexual intercourse." The response format was a 5-point scale ranging from 1 (none) to 5 (all).

3) Peer influence scale (PeIN) was developed by Panurat (2009) to assess peer influence on sexual abstinence in middle Thai female adolescents. This

scale measures an individual's perception of their peer influence during the school year with 21 items. The PeIN scale included three components; perceptions about the norm of a peer, peer support, and modeling of a peer in sexual abstinence with 21 items. The response format was a 4-point Likert scale, totally not true =1, not true=2, true=3, totally true=4. The scale contained content validity=0.85, Cronbach's alpha for peer influence=0.93. Then Wongchalee (2011) adopted this scale to measure peer influence on sexual abstinence in 432 early Thai female adolescents. Then the modified PeIN 0.80 for CVI and 0.92 for Cronbach's alpha reliability.

Hence, the original version of PeIN (Panurat, 2009) was selected because it has been conceptualized based on the sexual abstinence in Thai female adolescents. Moreover, the validity and reliability were acceptable. The researcher modified the PeIN and tested its psychometric properties before using it in this study.

3.2.7. Commitment to a plan of sexual abstinence

Commitment to a plan of sexual abstinence is derived from commitment to a plan of action in the HPM. Pender et al. (2015) provide a commitment to a plan of action as an intention to carry out a particular health behavior, including the identification of specific strategies to do so successfully. Commitment to a plan of action is similar to the construct of “intention” in the theory of reasoned action (TRA) and the Theory of Planned Behavior (TPB) but denotes more deliberate planning (Pender et al., 2002). Intention alone without associated strategies often results in “good intentions” but failure to perform health behavior. Commitment to a plan is similar to the concept of intention (Rise, Thompson, and Verplanken, 2003).

Commitment to a plan of sexual abstinence is provided in the literature. Buhi and Goodson (2007) referred to sexual abstinence intention as motivation to engage in the aforementioned sexual behaviors, before marriage or within a future period (e.g., in the next year). Iriyama (2007) defined sexual abstinence as the intention of postponing having sexual intercourse until graduating from school. Panurat (2009) defined commitment to a plan of sexual abstinence as intention and strategies for eliciting, carrying out, and reinforcing of Thai female

middle adolescent to refrain from sexual intercourse during the school year. The strategy consists of actions that provide some tangible reward or reinforcement if the commitment is sustained. Strategies are selected to energize and reinforce health behaviors according to individual preferences and performing behavior. Thus, some literature provided learning the knowledge and skills, interest, awareness, and acquisition of values as attributes of commitment to a plan of action inherent to action (Garcia-Moyano, 2017; Kholifah, 2017).

Therefore, commitment to a plan of sexual abstinence in this study refers to Thai female adolescent's intention of sexual abstinence and specific strategies they use to carry out sexual abstinence. Intention includes decision-making in sexual abstinence, setting aim, and promising to be sexually abstinent.

Measurements of commitment to a plan of sexual abstinence:

The existing measurements have been used to measure intention and commit to a plan of sexual abstinence.

1) The intention to abstain from sex developed by Eggers et al. (2017): The scale was used to measure sexual abstinence intention in 1670 students, both male and female (age 12–16) of non-private South African high schools. The scale was assessed by three items: 1) 'I intend to have sex within the next month; 2) I intend to have sex within the next six months; 3) I intend to have sex within the next year'. The intention items were formulated in an affirming way (e.g., 'I intend to have sex'). The response format was a 5-point scale, scores were averaged to form a scale, and all factor loadings were higher than 0.50. All responses were inversely coded to reflect the intention to abstain from sex (Cronbach's $\alpha = 0.88$).

2) Sexual abstinence intention scale developed by Charoensuk (2012). The scale was used to measure sexual abstinence intention in early and middle Thai female adolescents. 4 items were asking about sexual abstinence intention, the scale was measured with 6- point Likert scale (1=absolutely impossible to 5= missing). The high total score means greater sexual abstinence intention.

3) Intentions scale developed by Buhi et al. (2011). Six questions were used to assess intentions to remain abstinent in American adolescents (male

and female). Adolescents were asked to respond to questions (e.g., I will or will not “have vaginal sex before marriage”). The scale used a 5-point response format, from definitely will not to definitely will. Reliability analysis for Wave 1 data on these six items resulted in a Cronbach’s α of .93.

4) Commitment to a plan of sexual abstinence scale (CSA)

Panurat (2009) to assess commitment to a plan of sexual abstinence in Thai female adolescents. This scale measured an intention and strategies for eliciting, carrying out, and reinforcing middle Thai female adolescents to refrain from sexual intercourse during the school year with 11 items. The CSA scale included two components; intention and strategy. The response format was a 4-point Likert scale; never =1, occasionally=2, often=3, very often=4. The scale contained content validity=0.85, Cronbach's alpha =0.92. Then Wongchalee (2011) adopt this scale, and it contained CVI = 0.80, and Cronbach's alpha reliability=0.90, which were similar to the original versions'.

The original version of the CSA (Panurat, 2009) was selected because it has been conceptualized based on sexual abstinence in Thai female adolescents and the HPM, and the validity and reliability were acceptable. The researcher modified the PeIN and tested its psychometric properties before using it in this study.

3.2.8. Sexual abstinence

In this study, sexual abstinence is derived from the health-behavior outcome. It refers to the way in which Thai female adolescents conduct in never having sexual intercourse, including penile-vaginal, penile-anal, and penile-oral intercourse with males until graduating from secondary education (Centers for Disease Control and Prevention, 2017a).

Measurements of sexual abstinence:

From the evidence, it depends on the operational definition of sexual abstinence defined by different researchers. Some findings included sexual interactions such as kissing, holding, or mutual genital touching into sexual abstinence (Byers et al., 2009; Planes et al., 2009). Some studies included antecedent

factors such as knowledge of sexual abstinence, attitude towards sexual abstinence, or sexual abstinence intention in their definitions of sexual abstinence (Norris and Clark, 2003; Asuzu, 2015; Dlamini et al., 2009). Also, some studied measure intention or commitment to sexual abstinence instead of measuring sexual abstinence behavior.

From existing scales, researchers mostly put a question to ask sexual abstinence behavior as "Have you ever had sexual intercourse?" regarding the CDC (Buhi et al., 2011). Also, Panurat (2009) developed the Sexual abstinence scale; SAS, the items that ask about actions, reflect sexual abstinence in Thai female adolescents. The questions included, e.g., "Have you had vaginal intercourse with a male? The response to the items were coded on a dichotomous scale, yes= "0" (not abstinent) and no= "1" (abstinent). The SAS contained S-CVI = 1, and Cronbach's alpha = 0.76.

In summary, according to the definition of sexual abstinence, three items of the SAS (Panurat, 2009) were used to measure sexual abstinence in this study.

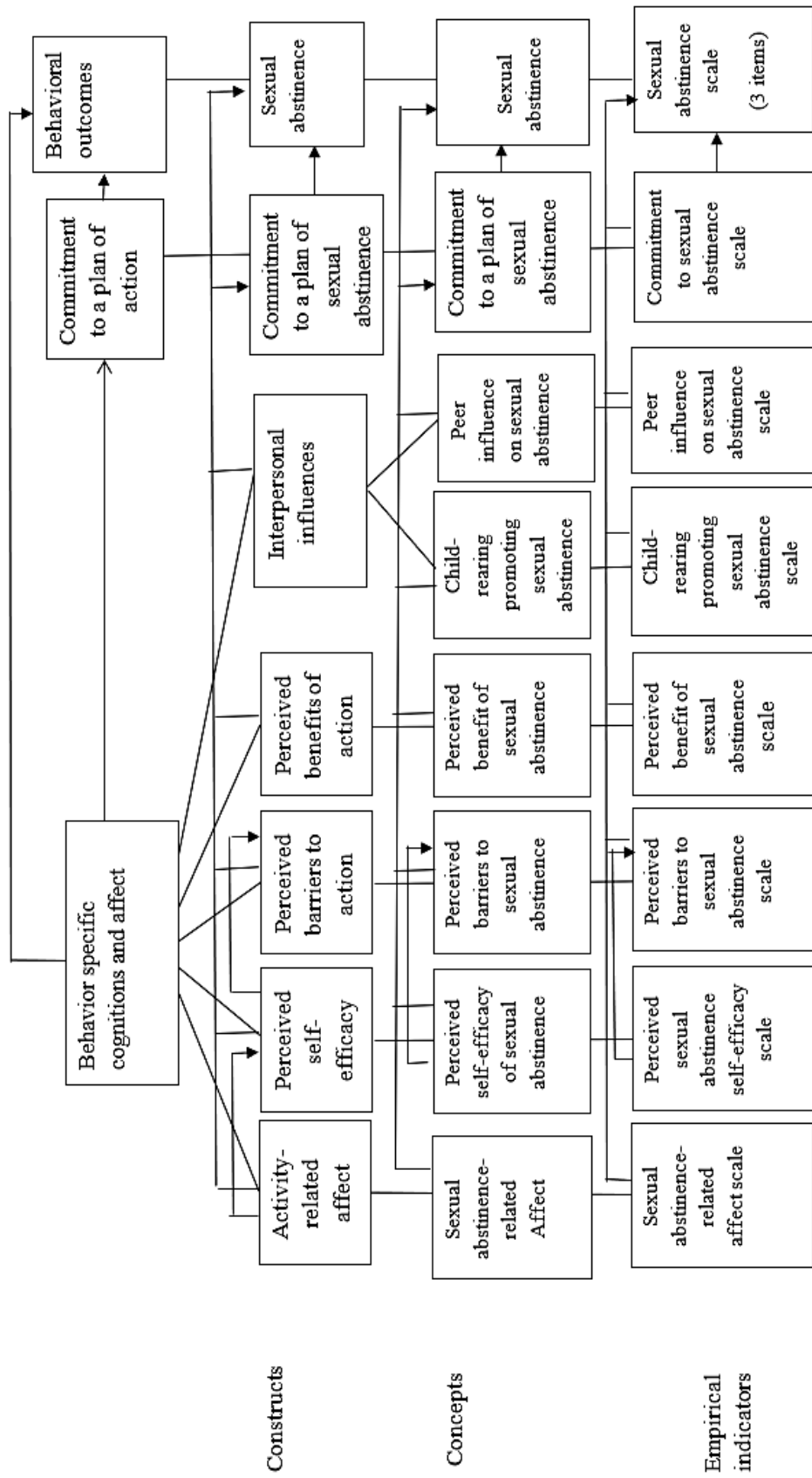


Figure 2 Theoretical substructure diagram

4. Factors influencing sexual abstinence

4.1. Perceived benefits of sexual abstinence

The HPM proposed that intrinsic and extrinsic benefits influence individual motivation and intentions regarding activity and their actual behaviors. Perceived benefits of action are directly and indirectly motivated behavior through determining the extent of commitment to a plan of action to engage in the behaviors. Research studies presented benefits influence on sexual abstinence was related to sexual abstinence intention and sexual abstinence (Dunsmoore, 2006; Asuzu, 2013; Rassberry, 2006; Buhi et al., 2011; Mokewena, 2016). Loewenson et al. (2004) studied among 73,464 American high-school students; findings found that the benefit of sexual abstinence as decreasing adverse health outcomes such as STD's and unwanted pregnancy was the reason for being primary abstainers in girls. In Thailand, Wongchalee and Chaiyawat (2016) studied among 432 early Thai female adolescents; the finding showed that the perceived benefit of sexual abstinence was significantly positively related to commitment to sexual abstinence ($r=0.36$, $p<0.01$). Also, Panurat (2009) studied among 1,360 middle Thai female adolescents and found that the perceived benefits of sexual abstinence were significantly related to sexual abstinence ($r=0.276$, $p<.001$). Therefore, the perceived benefit of sexual abstinence had a positive direct and indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

4.2. Perceived barriers to sexual abstinence

Pender et al. (2015) presented that when readiness to act is low, and barriers are high, the action is unlikely to occur. Perceived barriers to action affect health-promoting behavior directly by serving as blocks to action as well as indirectly through decreasing commitment to a plan of action such as sexual abstinence. Evidence proposed perceived barriers to sexual abstinence affect sexual abstinence intention in a negative direction (Fila & Smith, 2006; Pender et al., 2015). Eggers et al. (2017) studied among 1,670 South African students age 12-16 years old and found that perceived barriers to sexual abstinence had a negative effect on the sexual abstinence intention in ($r = -0.24$, $p<0.05$). Wongchalee (2011) studied among 432

early Thai female adolescents; the finding showed that perceived barriers to sexual abstinence significantly related to commitment to a plan of sexual abstinence in a negative direction ($r=-0.20$, $p = .01$). Thus, perceived barriers to sexual abstinence have a negative direct effect on a commitment to a plan of sexual abstinence and also has a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

4.3. Perceived self-efficacy of sexual abstinence

The HPM proposed that self-efficacy influences perceived barriers to action, with higher efficacy resulting in a lowered perception of barriers. The literature presented that female adolescents who have high perceiving self-efficacy of physical activity will have high confidence in overcoming barriers to this behavior. Literature supported that female adolescent who has high perceiving self-efficacy of sexual abstinence will have high confidence in overcoming barriers to sexual abstinence (Ayotte et al., 2010; Mohamadian & Ghannae Arani, 2014). The result of Huglund (2006) studied among 14 sexually abstinent, African American female adolescents, which found that female adolescents with high perceiving self-efficacy of sexual abstinence can overcome the boyfriend's pressure to have sex (Haglund, 2006). The others also supported that female adolescent who perceives the high ability of sexual abstinence, get low perceptions of barriers to sexual abstinence (Abbott & Dalla, 2008; Rasberry & Goodson, 2009). Thus, female adolescents with a high perceived self-efficacy of sexual abstinence were more likely to have low barriers to sexual abstinence.

Moreover, self-efficacy motivates health-promoting behavior directly by efficacy expectations and indirectly by affecting perceived barriers and levels of commitment or persistence in pursuing a plan of action. The majority of literature proposed self-efficacy as a factor of commitment to a plan of sexual abstinence and sexual abstinence behavior (Norris, 2003; Asuzu, 2015; Childs, 2008; Wang, 2006; Wang, 2009; Goodson, 2006; Buhi et al., 2011) and sexual abstinence (Rasberry, 2009; Panurat, 2009; Wongchalee, 2011). The review of Santelli et al. (2004) found that adolescents scoring high on self-efficacy also were less likely to initiate intercourse

and maintain sexual abstinence significantly ($p < .05$). Panurat (2009) studied among 1,360 middle Thai female adolescents and found that perceived sexual abstinence self-efficacy significantly related to sexual abstinence ($r = 0.46$, $p < 0.05$). Noris, Clark, and Magnus (2003) studied among African American middle school students ($n = 113$), the results showed sexual abstinence self-efficacy significantly related to sexual abstinence behavior ($r = 0.48$, $p < .001$). Congruently, Buhi et al. (2011) studied among 898 seventh and eighth American students and found that sexual abstinence self-efficacy was a predictive factor of sexual abstinence intention. Buhi et al. (2011) also found that perceived self-efficacy of sexual abstinence had a positive indirect effect on sexual abstinence through sexual abstinence intention in American adolescents.

4.4. Sexual abstinence-related affect

Existing literature has presented activity-related affect had an effect on many health-promoting behaviors; exercise, physical activity, consuming breakfast, or reproductive health behaviors in adolescents. Female adolescents who had a positive sexual abstinence-related affect will have a high possibility of having an intention to maintain sexual abstinence (Buhi & Goodson, 2007; Collazo, 2005). As intention and decision-making on sexual abstinence are one of the components of commitment to a plan of sexual abstinence, thus, positive sexual abstinence-related affect may be related to commitment to a plan of sexual abstinence (Pender, Murdaugh, et al., 2015). Besides, the HPM noted that activity-related affect is likely to influence individuals' motivation to pursue behavior in the long term (Pender et al., 2015). Therefore, for sexual abstinence, it may be concluded that sexual abstinence-related affect has a direct effect on commitment to a plan of sexual abstinence and sexual abstinence in female adolescents, respectively.

4.5. Child-rearing promoting sexual abstinence

Evidence found child-rearing promoting sexual abstinence was a predictor of female adolescent's commitment to a plan of sexual abstinence and sexual abstinence (Chareonsuk et al., 2013; Haglund, 2006; Macintyre et al., 2015; Morrison-Beedy et al., 2008; Supametaporn et al., 2010). Buhi et al. (2011) studied among 898 seventh and eighth American students and found that interpersonal factors as beliefs

and norms had a significantly positively direct effect on the sexual abstinence intention and sexual abstinence ($\beta = 0.24$, $p < .001$). In Thailand, Chareonsuk et al. (2013) studied among 470 Thai female adolescents in school (age 12-16 years old), found parent-daughter sexual abstinence communication had significant positive indirect effects on sexual abstinence intention through behavioral beliefs, normative beliefs, and control beliefs in female adolescents ($\beta = 0.20$, $p < .001$). Wongchalee and Chaiyawat (2016) studied among 432 early Thai female adolescents and found parental influence on sexual abstinence had a positive direct effect on a commitment to a plan of sexual abstinence in Thai female adolescents ($\beta = 0.359$, $p < 0.01$). Furthermore, the findings from studies of Parkes et al. (2011) studied among 1,854 students in Scotland, and Tolma et al. (2011) studied among 976 adolescents (The average age was 14.4 years) presented that female adolescents will recognize parental love and feel close to their parents, which affected maintaining sexual abstinence (Parkes et al., 2011; Regnerus & Luchies, 2006; Tolma et al., 2011). Therefore, female adolescents who have child-rearing promoting sexual abstinence were more likely to have on a commitment to a plan of sexual abstinence and remain sexual abstinence.

4.6. Peer influence on sexual abstinence

Peer influence on sexual abstinence was related to sexual abstinence in Thai female adolescents. Research has found that having friends who participate in sexual abstinence is consistently correlated with female adolescents' sexual abstinence. A systematic review of Buhi and Goodson (2007) also found that the perception of peer disapproval of sex or negative attitudes toward sex influenced sexual abstinence. Danaidussadeekul (2004) studied among female adolescents in the Bangkok metropolitan area; participants were 377 female students (155= female high school students, 222=female vocational college students). Finding revealed having fewer close friends who had sexual intercourse was related to sexual abstinence ($p < 0.01$). Wongchalee and Chaiyawat (2016) studied among 432 early Thai female adolescents and found that peer influence was significantly related to sexual abstinence ($r=0.45$, $p=.05$). Congruent with other studies, adolescents who

report more restrictive attitudes toward sex among their friends are less likely to have had sex themselves (Kapidia et al., 2012). Therefore, female adolescents who have peer influence were likely to have on a commitment to a plan of sexual abstinence and remain sexual abstinence.

4.7. Commitment to a plan of sexual abstinence

Commitment to a plan of action increases readiness for action by initiating appropriate strategies to bring about a behavioral event. The greater the commitment to a specific plan of action, the more likely health-promoting behavior will be maintained over time (Pender et al., 2015). Female adolescents who decide to maintain sexual abstinence will keep a promise and set aim and exact plan of remaining sexual abstinence. Female adolescents will also do an activity specific to resulting in sexual abstinence; avoid risk situations or some activities as being a private area with a male at a female's home or male's home that encouraged not remaining sexual abstinence. Activities include kissing or touching genital organs that induce sexual intercourse, accessing social media, drinking alcohol, doing drugs, watching movies, reading books or magazines, pornographic content, or hanging out with a boyfriend that encourages sex (Mokwena and Morabe, 2016). A meta-analysis of Webb and Sheeran (2006) found sexual abstinence intention was a strong predictor of sexual abstinence. Also, Buhi et al. (2011) studied among 898 seventh and eighth American students and found that sexual abstinence intention had a direct effect on sexual abstinence ($\beta=0.45$, $p<.01$). Therefore, female adolescents who have a commitment to a plan of sexual abstinence were likely to remain sexual abstinence.

In summary, factors influencing sexual abstinence derived from the HPM included in the model. There were perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence. The hypothesized model was presented in Figure 3.

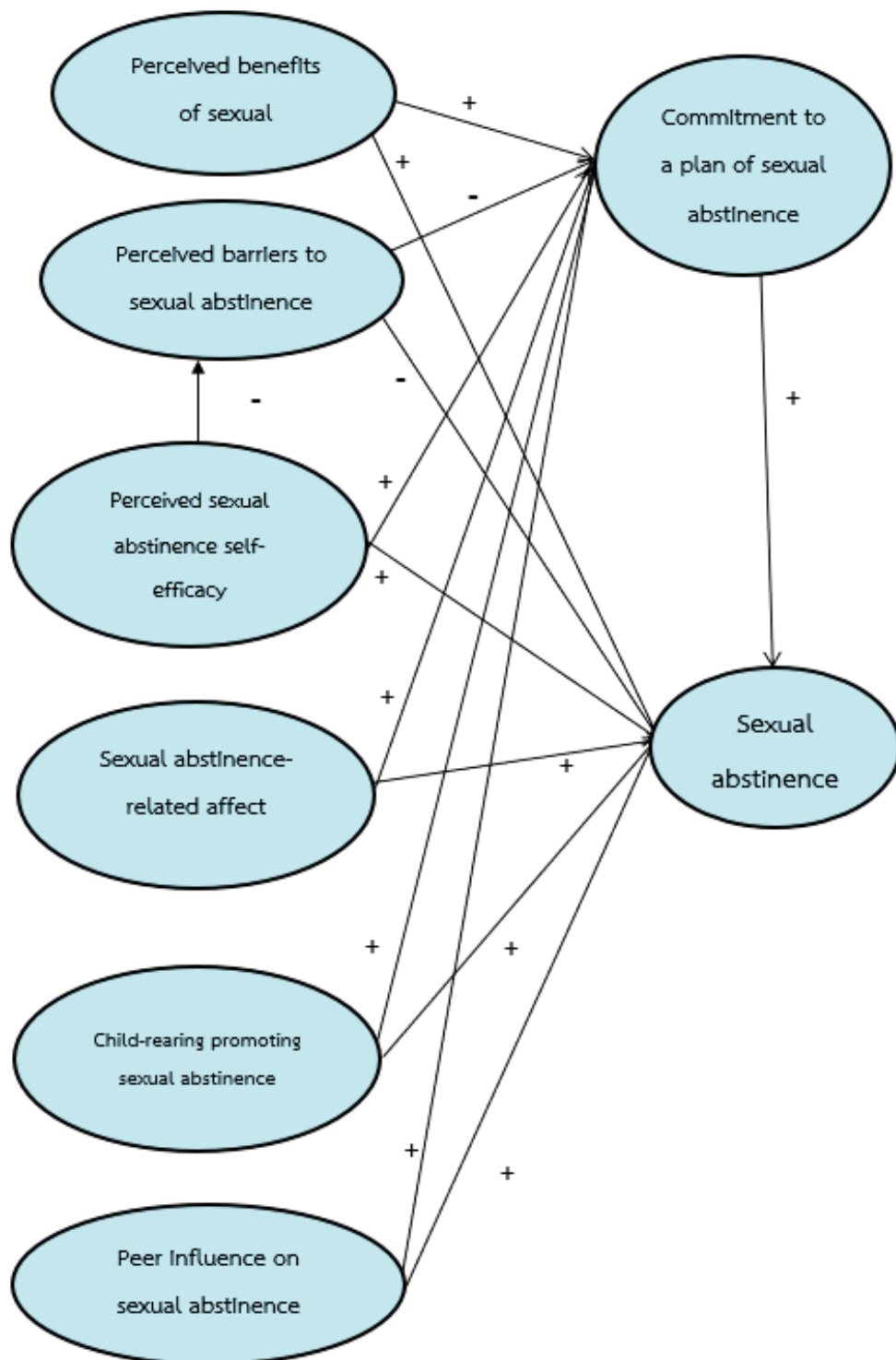


Figure 3 The hypothesized causal model of sexual abstinence in Thai female adolescents guided by the Health Promotion Model of Pender et al. (2015)

CHAPTER III

METHODOLOGY

The methodology includes research design, population and sample, research instruments, protection of human right subject, data collection, and data analysis as follows.

1. Research design

This study was a cross-sectional descriptive design. The objectives were to develop the causal model of sexual abstinence in Thai female adolescents and examine the fit of the causal model to the empirical data and examine the causal relationships among the eight variables. They were perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, commitment to a plan of sexual abstinence and sexual abstinence.

2. Population and sample

The target population was first-year female students studying in universities and high-vocational schools from six regions, Thailand. The sample in this study was 654 female adolescents studying in universities and high-vocational schools.

Sample size calculation

The researcher calculated the sample size by considering the probability of goodness of fit of the model and the model's complexity. Many experts suggested the sample sized ≥ 200 to 500 (DiStefano & Morgan, 2014; Kyriazos, 2018; Savalei & Rhemtulla, 2013). Also, the experts recommended 5 to 20 observations per estimated parameter (Hair, Black, Babin, & Anderson, 2014; Ho & Ho, 2014). The researcher initially used 10 cases per 1 estimated parameter, then 710 participants were considered. According to the missing data in previous sexual abstinence study,

20 percent (142 participants) were added to prevent missing data (Chareonsuk et al., 2013), and 852 was the total number of participants to distribute the questionnaires. Finally, 734 participants joined the study; there were only 654 cases with complete data. However, according to Hair et al. (2014), the model containing eight latent variables such as this study needs the sample size of at least 500 cases. Therefore, 654 cases are enough for analyzing the SEM in this study.

Sampling technique

The researcher used a multi-stage random sampling technique. Stratified sampling was used at the national level, and cluster sampling was used at the regional level. At the national level, the total number of first-year female students in Thailand was 404,655 (327,647 in universities and 77,008 in vocational schools). The number of students was obtained from The Office of The Higher Education Commission, OHEC, and the Office of Vocational Education Commission, OVEC.

The researcher calculated the sample size based on proportions between the population in Thailand and the universities. By having the numbers, the population in Thailand (404,655), the population in universities (327,647), and the sample size of this study (852), then the researcher calculated the sample size in university and high-vocational school as follows.

For example, in university, the population was 327,647, then the sample size was 690.

$$\frac{327,647 \times 852}{404,655} = 690$$

For high-vocational school, the population was 77,008, then the sample size was 162.

$$\frac{77,008 \times 852}{404,655} = 162$$

Thus, the sample sized was 690 in universities and 162 in high-vocational schools (see Table1).

Similarly, the researcher used the rule of three to find the sample size in each region. For example, in northern, the population in university was 43,630, and then the sample size was 92 as follows.

$$\frac{43,630 \times 690}{327,647} = 92$$

Therefore, in the region level, the sample size in universities and high-vocational schools were 92 and 23 in Northern, 140 and 50 in North-eastern, 35 and 25 in Eastern, 33 and 7 in Western, 307 and 34 in Central, and 83 and 23 in Southern respectively (see Table 1).

Table 1 Number of setting, population, and sample size from the calculation

Region	University			High-vocational school		
	Universities	1 st -year female students	Sample	Schools	1 st -year female students	Sample
Northern	31	43,630	92	125	10,955	23
North-eastern	44	66,311	140	257	23,764	50
Eastern	12	17,330	35	91	11,963	25
Western	14	15,456	33	42	3,421	7
Central	91	145,595	307	148	16,125	34
Southern	28	39,325	83	118	10,780	23
Sum	220	327,647	690	781	77,008	162

Inclusion criteria:

The criteria using to select the participants was 1) First-year student studying in university and high-vocational schools in Thailand, 2) 18 to 19 years old regarding the ethic consideration, and 3) Have a Thai nationality.

After getting the sample size of each region (both university and high-vocational school), the researcher used the lottery method of creating a simple random sample to select one university and one vocational school of each region.

Then, the researcher got the names of six universities and six vocational schools to distribute the questionnaires of this study (Figure 4).

However, the coordinators in 12 settings had their procedure to distribute the questionnaires to the participants, and they inconveniently allow the researcher to intervene in their procedures. Hence, the researcher discussed the inclusion criteria and debriefed the information sheet until they understood the information, then standby and observed the response rate on the Website. According to students' availability during their adjustment for online learning during the Covid-19, the coordinators also adjusted themselves to communicate them. For example, in Central and Northern, the universities' coordinators set the line groups and invited the students who met the inclusion criteria to the groups. Then they posted the link of the information sheet and questionnaires into the groups and asked first-year female students to answer the questionnaires. Besides, in North-eastern, the university coordinator posted the link of the information sheet and questionnaires into the faculty's Website and invited the first-year female students to answer the questionnaires.

In that situation, the researcher kept connecting with the coordinators and observed the rate of response. Nevertheless, the response rate was approximately 60%. For example, in Northern, the university coordinator distributed the questionnaires to 92 students in the Line group, but around 58 students completed the questionnaires. To solve that problem, the coordinator checked with the researcher whether enough number of participants, including kept asking more students to answer the questionnaires until reaching the numbers enough for analyzing data (at least 75%-80%). Finally, 734 participants from 12 settings answered the questionnaires; however, there were 654 cases (76.7%) with complete data.

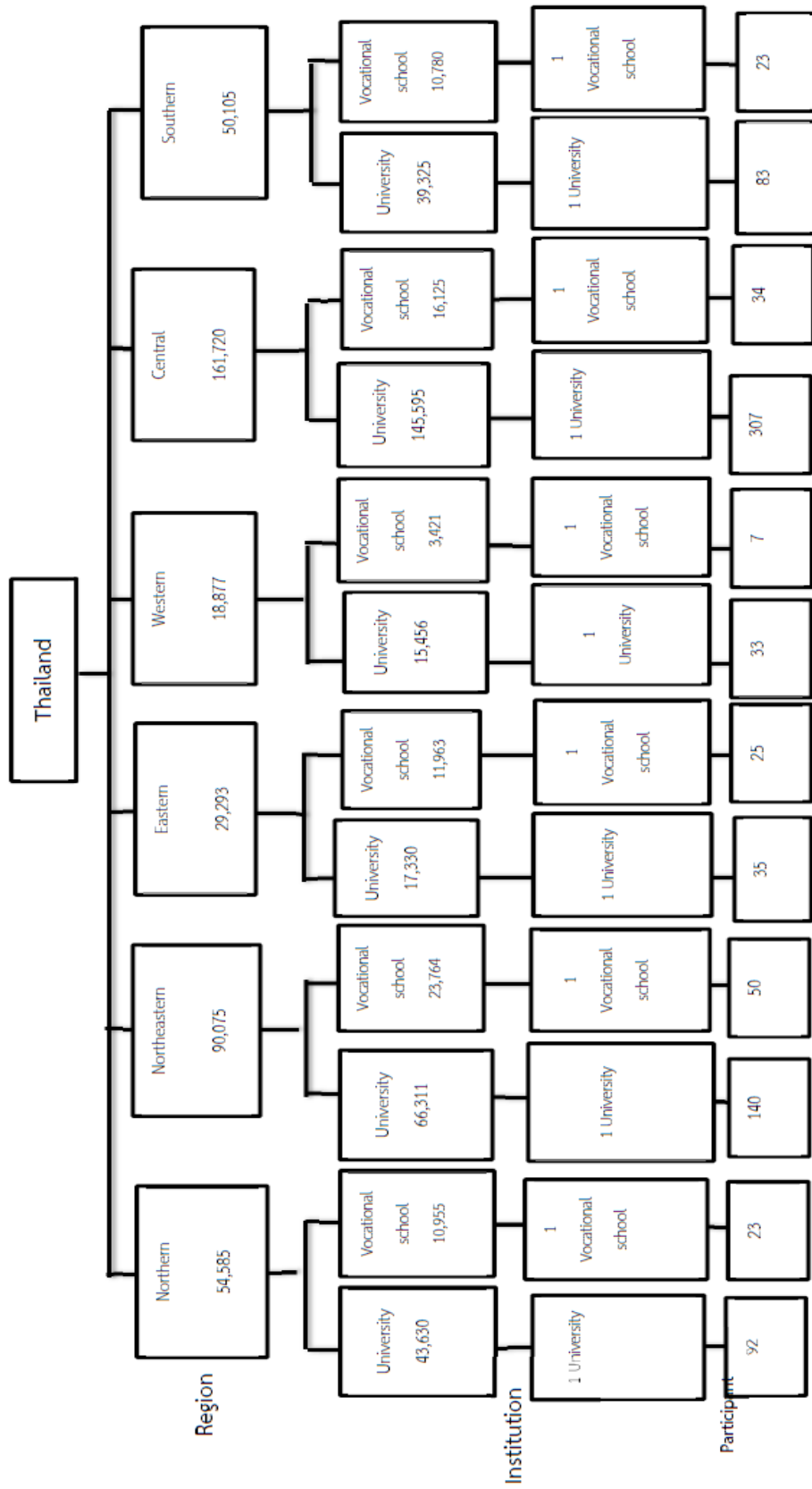


Figure 4 Multi-stage random sampling

Descriptive demographics of participants

There were six hundred and fifty-four participants with complete data. They were first-year female students aged 18 (17.4%) to 19 (82.6%) years old, had Thai nationality, and studying at the university or high-vocational school in Thailand. Most of them were Buddhist (93.1%), almost sixty-three percent had parents with married status, and living together, 5.4% had parents with separation, and 23.7 % of them had parents' divorce status. Besides, most of them lived with parents (69.3%), 9.5% lived with relatives, 5.7 % lived alone, and the others lived with boyfriends (2.4%), girlfriends (1.5%), and 11.6 % lived in a dormitory with peers (see Table 2).

Table 2 Demographic data (n=654)

Demographic characteristics	n=654	Percentage
Age (years old)		
18	114	17.4
19	540	82.6
Religion		
Buddhist	609	93.1
Christian	11	1.7
Muslim	17	2.6
No religion	17	2.6
Spending money (THB per month)		
< 2,000	111	17.0
2,001 - 4,000	243	37.1
4,001-6,000	166	25.4
6,001 – 8,000	74	11.3
8,001 - 10,000	35	5.4
10,000 – 20,000	21	3.2
> 20,000	4	.6

Demographic characteristics	n=654	Percentage
Sufficient money		
Sufficient and can save	274	41.9
Sufficient and but cannot save	148	22.6
Sometimes sufficient	203	31.1
Insufficient	29	4.4
Parental status		
Married and live together	407	62.2
Married status but separate living	35	5.4
Divorced	155	23.7
Father passed away	48	7.3
Mother passed away	6	.9
Father and mother passed way	3	.5
Lived with		
Alone	37	5.7
Parent	453	69.3
Relative	62	9.5
Boyfriend	16	2.4
Girlfriend	10	1.5
Peer	76	11.6
Family income (THB per month)		
< 5,000	38	5.8
5,001 - 10,000	134	20.5
10,001- 30,000	245	37.5
30,001 – 50,000	94	14.3
50,001 - 80,000	81	12.4
80,000 – 100,000	40	6.1
>100,000	22	3.4

3. Research instruments

There were nine measurements used to measure eight variables. Seven measurements; 1) Perceived benefits of sexual abstinence scale (BeSAS), 2) Perceived barriers to sexual abstinence scale (BaSAS), 3) Perceived sexual abstinence self-efficacy scale (SASES), 4) Peer influence scale (PeINS), 5) Commitment to a plan of sexual abstinence scale (CSAS), and 6) Sexual abstinence scale (SAS) and 7) personal information sheet was developed by Panurat (2009) and modified by the researcher. The other two measurements, 8) Sexual abstinence-related affect scale (SAAS) and 9) Child-rearing promoting sexual abstinence scale (CPSAS), were developed by the researcher.

3.1 Scale's modification

The BeSA, BaSA, SASE, PeIN, and CSA were modified by the researcher considering a suggestion of literature (Switzer, Wisniewski, Belle, Dew, & Schultz, 1999).

3.1.1. The perceived benefit of sexual abstinence scale (BeSA) was developed by Panurat (2009) to assess the perceived benefit of sexual abstinence in Thai female adolescents. The original scale contains 25 items with extrinsic benefits (health, education, career, family or couple), and intrinsic benefits (a sense of social acceptance, self-value, and the acceptance of others). The response format was a 4-point Likert scale; totally disagree=1, disagree=2, agree=3, totally agree=4. Panurat (2009) calculated and interpreted the mean score as a high and low perceived benefit of sexual abstinence. The psychometric properties testing results presented the CFA reported acceptable values of fit indices, and the Cronbach's alpha was 0.92.

In this study, the researcher modified two items. The item no. 6 was changed from "Having a good opportunity to study in a desirable university" to "Having a good opportunity to study in a desirable education institution." Also, item no. 8 was changed from "Being successful in a couple's life" to "Being successful in a couple's life in the future." The second one is specific to concerning about future life of Thai female adolescents. Having the items review by 5-panel experts, eight items were

rated below 0.80 and removed. The experts suggested five items were not relevant to the concept, two items were redundant to the others, and one item is not fit to the population context. Thus, 17 items were retained in the scale. The total scale was scored by computing the mathematical all items yielding a possible score range from 17.00 to 68.00 with higher mean scores indicating more perceived benefits of sexual abstinence.

3.1.2. The perceived barrier to sexual abstinence scale (BaSA) was developed by Panurat (2009) to assess the perceived barriers to sexual abstinence in Thai female adolescents. The original scale contains 19 items with four components: boyfriend's pressure, peer pressure, situation, and family problem. The response format was a 4-point Likert scale; totally disagree=1, disagree=2, agree=3, totally agree=4. Panurat (2009) calculated and interpreted the mean score as a high and low level of perceived barrier to sexual abstinence. Also, the psychometric properties testing results presented the CFA reported values of fit indices, and the Cronbach's alpha was 0.97.

In this study, the researcher modified the original scale by adding 1 item regarding trends. Item no.20 was "Sexual abstinence is obstructed by a desire for money or more items such as cell phone or brand name products." Having 20 items review by 5-panel experts, two items rated below 0.8 were removed because their meanings were not relevant to the concept definition. Thus, 18 items were retained in the scale. The total scale was scored by computing the mathematical all items yielding a possible score range from 18.00 to 72.00 with higher mean scores indicating a more perceived barrier to sexual abstinence.

3.1.3. The perceived sexual abstinence self-efficacy scale (SASE) was developed and published by Panurat, Aunguroch, and Chaiyawat (2014) to assess the perceived sexual abstinence self-efficacy in Thai female adolescent. This scale contains 12 items with four components; the ability to negotiate, the ability to deny, the ability to assure, and the ability to adapt circumstances. The response format was a 4-point Likert scale; totally not confident=1, not confident=2, confident=3,

very confident=4. Panurat (2009) calculated and interpreted the mean score as a high and low perceived sexual abstinence self-efficacy without mentioning the cut-off score. Also, the psychometric properties testing results presented the CFA reported values of fit indices, and the Cronbach's alpha was 0.95.

In this study, the researcher modified the original version by changing items no. 6, 7, and 10. Item no.6 was changed from "I can reject sex although my boyfriend threatens to break up" to "I can reject sex although the man whom I am in love with threatens to break up," no. Seven was changed from "I can reject sex although my boyfriend and I are in the bedroom" to "I can reject sex although my boyfriend and I are in the private place." of which the last item is more specific to be the circumstance that female adolescents engage in sex nowadays. For item no.10, even though it is a long and complicated sentence, shorten and make it easy appears to be an appropriate way before using it. Thus, it was changed to "If I see someone being made out at the party or feel pressured to have sex, I can leave to go home. Next, the researcher added two items (no.13 and 14) congruent with the current ability to adapt circumstances; "I can reject sex although I want money or gifts from a man," and "I can reject drinking alcohol or using the substance at the party." Thus, 14 items were kept in the scale. Having the items review by 5-panel experts, 1 item was rated below 0.80 and then was removed due to redundancy. Thus, 13 items were retained in the scale. The total scale was scored by computing the mathematical all items yielding a possible score range from 13.00 to 52.00 with higher mean scores indicating more perceived self-efficacy of sexual abstinence.

3.1.4. The peer influence on sexual abstinence scale (PeIN) was developed by Panurat (2009) to assess peer influence on sexual abstinence in Thai female adolescents. This scale contains 21 items with three components; perceptions about the norm of a peer, peer support, and modeling of a peer in sexual abstinence with 21 items. The response format was a 4-point Likert scale, totally not true =1, not true=2, true=3, totally true=4. Panurat (2009) calculated and interpreted the mean score as a high and low level of perceived sexual abstinence

self-efficacy. Also, the psychometric properties testing results presented the CFA reported values of fit indices, and the Cronbach's alpha was 0.93.

In this study, the researcher modified the PeIN by changing item no.16 to be precise. It was changed from “My friends often tell me news about school sex to prevent it” to “My friends often tell me news about students having sex to prevent it. Having the items review by 5-panel experts, three items were rated below 0.80 and removed because the meaning of the items was not relevant to the scale's objective. Thus, 18 items were retained. The total score ranges from 18.00 to 72.00, with higher mean scores indicating more peer influence on sexual abstinence.

3.1.5. Commitment to a plan of sexual abstinence scale (CSA) was developed by Panurat (2009) to assess commitment to a plan of sexual abstinence in Thai female adolescents. This scale contains 11 items with two components: intention and strategy. The response format was a 4-point Likert scale; never =1, occasionally=2, often=3, very often=4. Panurat (2009) calculated and interpreted the mean score as a high and low level of commitment to a plan of sexual abstinence. Also, the psychometric properties testing results presented the CFA reported values of fit indices, and the Cronbach's alpha was 0.92.

The researcher modified the CSA by adding three items. One item reflects the intention of sexual abstinence; no.14 “I keep telling myself I am making the right decision by not having sex during the period of study.” This item reflects the decision-making of sexual abstinence, and it could be fulfilled the intention domain. The other two items were added congruent with the current strategy that Thai female adolescents use; no.12 “I avoid drinking alcohol or using drugs.” and no.13 “I warn myself that having sex during the period of study will make my parents sad.” Thus, the CSA contains 14 items. Having the items review by 5-panel experts, seven items were rated as below 0.80 and then were removed because the meaning of the item was not relevant to the scale's objective or redundancy. According to the expert's recommendation, the researcher changed the format to be the Visual Analogue Scale (VAS) to make the scale more comfortable to answer. Thus, seven

items were retained. The total score ranges from 0.00 to 70.00, with higher mean scores indicating more commitment to a plan of sexual abstinence.

3.1.6 Personal information was developed by Panurat (2009) with eight items assessing age, education level, a religious, and a person whom participants lived with. It also included parental status, father and mother's education, a career of father and mother, and income of father and mother. The researcher added spending money and financial problem of participants and removed the education and career of father and mother. Finally, it comprised eight items; 1) age, 2) siblings, 3) religious, 4) spending money, 5) financial problem, 6) parental status, 7) person they live with, and 8) family income.

3.1.7 The Sexual abstinence scale (SAS) was developed by Panurat (2009) to assess the sexual abstinence in middle Thai female adolescents. The SAS contains nine items. However, only three items were used to measure sexual abstinence: e.g., "Have you ever had oral sex with a male?". The response to the items is coded on a dichotomous scale, yes= "0" (not abstinent) and no= "1" (abstinent). For score interpretation, if a participant answer "no" for all three questions, she will be counted as sexual abstinence. In contrast, if a participant answer "yes" at least one out of three items, she will be counted as non-abstinent. The result of Panurat (2009) report that the S-CVI was 1.0 and Cronbach's alpha coefficient was 1.0. In this study, three experts reviewed the SAS contained S-CVI = 1.00, and the result of Cronbach's alpha was 0.82.

Psychometric property testing procedure

1. Five-panel experts examined content validity. They were professional nurse instructors. All of them have experience in sexual health and pediatric nursing, two of them have experience in the HPM, and 3 of them have experience in child-rearing and instrument development. Those experts were asked to rate each item whether they are relevant to the scales' objectives by rating scale (1=not relevant, 2=somewhat relevant, 3=quite relevant, and 4=highly relevant) (Waltz, Strickland, & Lenz, 2010). The content validity index was calculated both item-content validity index (I-CVI) and scale-content validity index (Average) (S-

CVI/Ave) (Lynn, 1986). The researcher followed the criteria of an acceptable value of S-CVI/Ave is 0.90 or higher, and I-CVI should be higher than 0.80 (Lynn, 1986; Polit & Beck, 2006). Moreover, I-CVI values are used to guide decisions about item revisions or rejections. If the I-CVI is lower than 0.8, the experts' comments will guide of revision of items (Polit, Beck, & Owen, 2007).

2. Construct Validity: Confirmatory factor analysis (CFA) was conducted for construct validity. The samples were the other group of 300 first-year female students studying in second university, Thailand. Statistical analysis was carried out by using *Mplus* software Version 8 (SCBMX80001XXX) (Kelloway, 2015; Muthén & Muthén, 2016). For continuous scales, the BeSAS, BaSAS, SASES, PeINS, and CSAS, normality, and assumption testing were considered before conducting CFA. The criteria of the goodness-of-fit of the model were considered: e.g., χ^2 value should not be significant at $p=0.05$, χ^2/df ratio <2 , CFI >0.95 , TLI >0.95 , RMSEA <0.05 , and SRMR <0.05 (Hair et al., 2014; Kelloway, 2015; Muthén & Muthén, 2016).

3. Reliability: Each instrument was examined for internal consistency reliability using Cronbach's alpha in 300 participants. Cronbach's alpha tends to be high if the scale items are highly correlated. According to the rule of thumb in social science, Cronbach's alpha should be at least 0.70-0.80 (Hair et al., 2014; Nunnally & Bernstein, 1994b).

The results of psychometric property testing: This part briefly presented the content validity index, construct validity, and the Cronbach's alpha coefficient of each scale as follows.

1. The perceived benefit of sexual abstinence scale (BeSA)

In this study, the BeSA contained 17 items, the S-CVI was 0.90, and all items achieve the I-CVI as 0.80-1.00. The results of the CFA represented construct validity. The results of the hypothesized model were below the threshold values of a good model fit. The fit indices of the BeSA containing 17 items with 2 domains were; $\chi^2=638.620$, $p=.000$, $df=101$, χ^2/df ratio $=6.32$, CFI $=0.870$, TLI $=0.825$, RMSEA $=0.133$, SRMR $=0.050$. Next, the model modification indices suggested the researchers set covariance paths between errors. After model adjustment, the fit

indices were met the criteria for a good model fit; $\chi^2 = 71.564$, $p=0.0928$, $df=57$, χ^2/df ratio=1.25, CFI=0.997, TLI=0.993, RMSEA=0.029, SRMR=0.032. The standardized factor loading of all items ranging from 0.548-0.958. Also, the result of Cronbach's alpha coefficient was 0.93 (see Table 4).

2. The perceived barrier to sexual abstinence scale (BaSA)

The BaSA contains 18 items; the S-CVI was 0.83. All items achieve the minimum criterion of I-CVI, 0.80-1.00. For construct validity, the results of the hypothesized CFA model were below the threshold values of a good model fit. The fit indices of the BaSA containing 18 items with 4 domains were; $\chi^2=282.442$, $p=0.000$, $df=129$, χ^2/df ratio=2.18 CFI=0.959, TLI=0.951, RMSEA=0.063, SRMR=0.047. The model modification indices suggested the researchers set covariance paths between measurement errors. After model adjustment, the fit indices were met the criteria for a good model fit; $\chi^2=108.947$, $p=0.0742$, $df=89$, χ^2/df ratio=1.22, CFI=0.995, TLI=0.991, RMSEA=0.027, SRMR=0.038. The standardized factor loading of all items ranging from 0.648-0.897. The result of Cronbach's alpha coefficient was 0.89 (see Table 4).

3. The perceived sexual abstinence self-efficacy scale (SASE)

The SASE contains 13 items. The S-CVI was 0.96; all items achieved the minimum criterion of I-CVI, 0.80-1.00. For construct validity, the results of the hypothesized CFA model were below the threshold values of a good model fit. The fit indices of the SASE with 4 domains were; $\chi^2=421.343$, $p=0.000$, $df=61$, χ^2/df ratio=6.90, CFI=0.774, TLI=0.711, RMSEA=0.14, SRMR=0.08. Then the model modification indices suggested the researchers set covariance paths between measurement errors. After model adjustment, the fit indices were met the criteria for a good model fit; $\chi^2=47.683$, $p=0.1604$, $df=39$, χ^2/df ratio=1.22, CFI=0.995, TLI=0.989, RMSEA=0.027, SRMR=0.030. The standardized factor loading of all items ranging from 0.537-0.810. The result of Cronbach's alpha coefficient was 0.88 (see Table 4).

4. The peer influence on sexual abstinence scale (PeIN)

The PeIN contained 18 items. The S-CVI was 0.88. All items achieve the minimum criterion of I-CVI, 0.80-1.00. The results of the hypothesized CFA model were below the threshold values of a good model fit. The fit indices of the PeIN with

3 domains were; $\chi^2=422.027$, $p=.0000$, $df=132$, χ^2/df ratio=3.20 CFI=0.933, TLI=0.922, RMSEA=0.086, SRMR=0.047. The results of the hypothesized model were below the threshold values of a good model fit. The model modification indices suggested the researchers set covariance paths between measurement errors. After model adjustment, the fit indices were met the criteria for a good model fit; $\chi^2=122.145$, $p=0.0748$, $df=101$, χ^2/df ratio=1.20, CFI=0.995, TLI=0.993, RMSEA=0.026, SRMR=0.033. The standardized factor loading of all items ranging from 0.583-0.926. The result of Cronbach's alpha coefficient was 0.94 (see Table 4).

5. The commitment to a plan of sexual abstinence scale (CSA)

The CSA contained seven items. The S-CVI/Ave was 0.91, and all items achieved the minimum criterion of I-CVI, 0.80-1.00. The results of the hypothesized CFA model were below the threshold values of a good model fit. The fit indices of the CSA with 2 domains were; $\chi^2=88.292$, $p=.0000$, $df=14$, χ^2/df ratio=6.30 CFI=0.939, TLI=0.908, RMSEA=0.133, SRMR=0.037. The model modification indices suggested the researchers set covariance paths between measurement errors. After model adjustment, the fit indices were met the criteria for a good model fit; $\chi^2=12.639$, $p=0.317$, $df=11$, χ^2/df ratio=1.149, CFI=0.999, TLI=0.998, RMSEA=0.022, SRMR=0.015. The standardized factor loading of all items ranging from 0.538-0.849. The result of Cronbach's alpha coefficient was 0.90 (see Table 4).

6. The Sexual abstinence scale (SAS)

The SAS contained four indicators. The S-CVI/Ave was 1.00, and the result of Cronbach's alpha was 0.82. All items achieved the I-CVI 1.00. The result of Cronbach's alpha coefficient was 0.82.

3.2 Scale development

The researcher developed the Sexual abstinence-related affect scale (SAAS) and child-rearing promoting scale (CPSAS). The process of instrument development was guided by DeVellis (2017), Waltz, Strickland, and Lenz (2010), and Nunnally and Burnstein (1994) (DeVellis, 2017; Nunnally & Bernstein, 1994a; Waltz et al., 2010). All steps were presented in 2 phases; I) scale construction and II) psychometric testing.

The details of the instrument development of each instrument were described in Figure 5.

The processes of scale's construction started with generating an item pool applied from a comprehensive literature review and existing measurements. The SAAS and the CPSAS were considered to be 4-point Likert scale format (Marsden & Wright, 2010). No adding a neutral option could make the respondent have a precise and stable understanding of each point's meaning and easy to fill up the questionnaires (Marsden & Wright, 2010). Five experts examined the first draft. The experts evaluated each item by considering its relevance to the objective of the measurement by using a four-point rating scale; 1 (not relevant) to 4 (very relevant) (Waltz et al., 2010). The content validity index (CVI) was calculated based on the number of experts giving a rating higher than 3, divided by the number of experts. The experts had requested suggestions of revision on items contained a score lower than 3.

Item analysis and item selection were used to identify an appropriate item; this was provided from 299 female adolescents. Normality testing was tested for EFA by using skewness and kurtosis values that were not larger than 3.0 and corresponded with an alpha level 0.05 (Kline, 2011). Bartlett's test of sphericity was significant, and the Kaiser-Meyer-Olkin (KMO) value should be greater than 0.5. Based on an acceptable value of statistics, the corrected item-total correlation should be >0.30 ; the inter-item correlation should be 0.2-0.8, factor loading should be >0.30 . The communality score should be >0.50 , and Cronbach's alpha coefficient should be above the 0.70 (Hair et al., 2014; Nunnally & Bernstein, 1994a). The researcher asked 10 participants for their willingness and interviewed regarding the problems that occurred while answering the questionnaire to determine the appropriateness and clarity of the item's wording. Then some items were modified to clarify the meaning. Finally, psychometric properties testing was conducted as well as the modified scales.

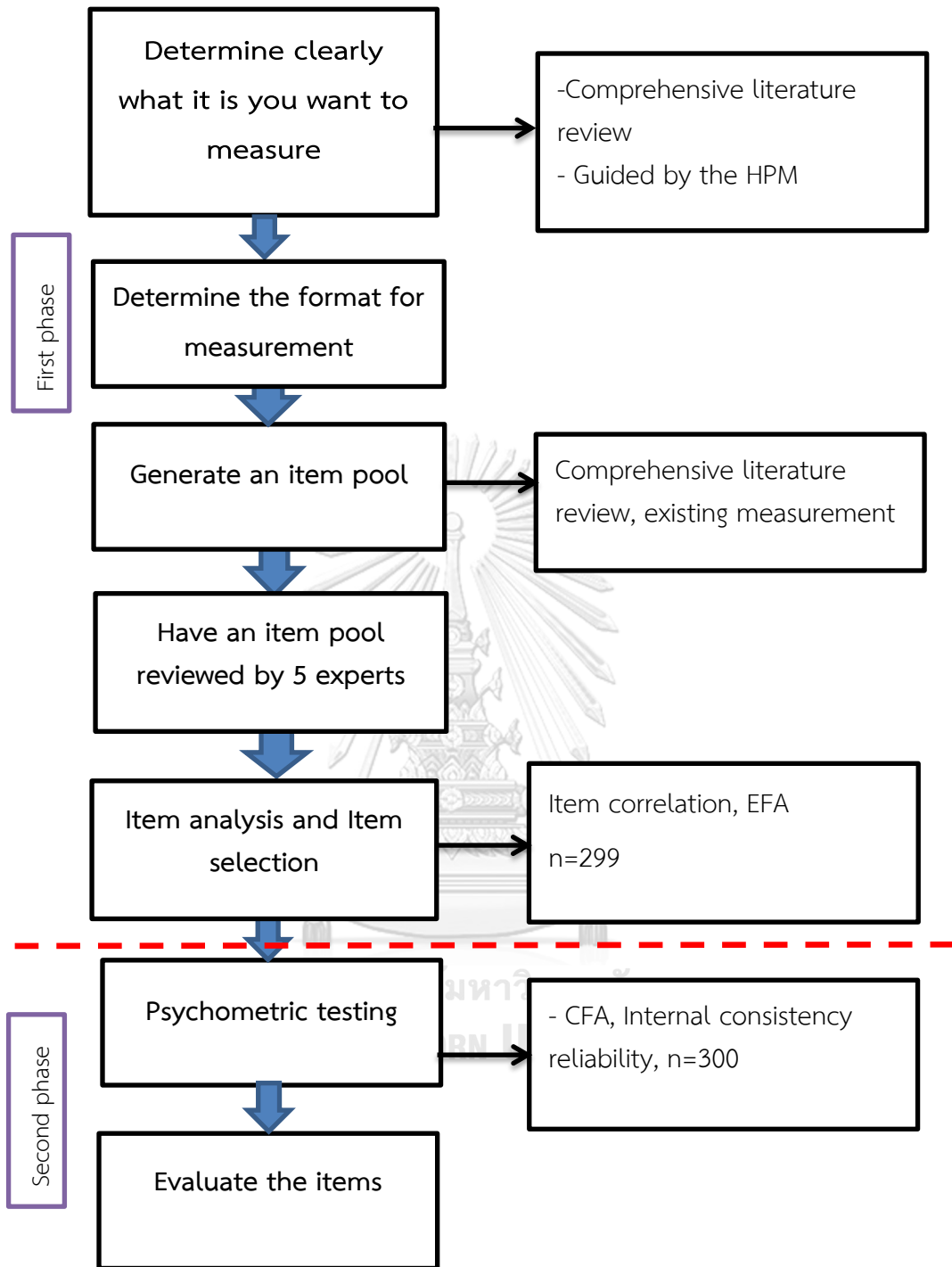


Figure 5 The flowchart of the measurement development procedure

The result of scale development

3.2.1. Sexual Abstinence-related Affect Scale (SAAS) was used to measure sexual abstinence-related affect in Thai female adolescents. According to the HPM, the SAAS consisted of 2 domains; 1) feeling regarding sexual abstinence behavior and 2) feeling regarding oneself when remaining sexual abstinence. The SAAS was written in the form of a questionnaire and use a 4-item Likert scale of 1 = Totally not true to 4 = Totally true for each item.

There were 25 item pools from literature and existing measurements; 17 items from 3 existing instruments, and eight items from qualitative studies. The researchers checked items concerning the possibility of measuring the concept, compare similarities and differences. The first-draft contained 16 items. Following review by the experts, the S-CVI was 0.76, four items rated as below 0.80 were removed because the meanings of them were difficult to answer and seemed not relevant to the concept. The S-CVI of 12 items subsequently increased to 0.85.

Two hundred ninety-nine participants applied for the item analysis and item selection process. Twelve items were identified to find appropriate items by using item correlation and EFA. Skewness and kurtosis values were -1.642 to -0.940, and -0.370 to 2.721 ($p < 0.05$), which were acceptable for normality testing (Kline, 2011). Bartlett's test of sphericity was significant ($\chi^2 = 1548.325$, $p < 0.001$). The KMO value was 0.80, indicating the appropriateness of factor analysis. Five items were deleted; three items had a very low inter-item correlation ($r < 0.10$), and two items had a low value of corrected item-total correlations (< 0.30). Thus, seven items were retained with corrected item-total correlations 0.34-0.58, feeling regarding sexual abstinence behavior (1 item) and feeling regarding oneself when remaining sexual abstinence (6 items). Reviewing the items by 10 participants, 1 item; "When I am thinking about sexual abstinence, I feel good" was revised to be more explicit in its meaning. The S-CVI of 7-item SAAS was 0.85. All seven items achieve the minimum criterion of I-CVI, 0.80-1.00.

The results of CFA presented the standardized factor loading of all items ranging from 0.723-845. The fit indices were; $\chi^2=217.131$, $p=.0000$, $df=14$, χ^2/df ratio=15.5 CFI=0.852, TLI=0.778, RMSEA=0.220, SRMR=0.056. The results of the model were below the threshold values of a good model fit. The model modification indices suggested covariance paths between measurement errors. After model adjustment, the fit indices were met the criteria for a good model fit; $\chi^2=9.263$, $p=0.1593$, $df=6$, χ^2/df ratio=1.54, CFI=0.998, TLI=0.992, RMSEA=0.043, SRMR=0.015. Finally, the result of Cronbach's alpha coefficient was 0.909 (see Table 4).

3.2.2. The child-rearing promoting sexual abstinence scale (CPSAS) is used to measure child-rearing promoting sexual abstinence among Thai female adolescents.

There were 134 items from the literature review and existing measurements. Ninety-two items were drawn from the grounded theory of Supamethaporn et al. (2010), other Thai literature (e.g., Isaro et al., 2013, Fongkaew et al., 2012), and international literature (e.g., Kao et al., 2010; Bersamin et al., 2008; Lam et al., 2008). Forty-two items were selected from Thai measurements (18 items from PaIN, and 24 items from PDSAC) (Chareonsuk & Phuphaibul, 2014; Panurat, 2009). The researchers checked all items concerning the possibility of measuring the concept, compare similarities and differences. The first draft of the CPSAS contained 25 items with four components guiding by the HPM; 1) assuring daughter to recognize parental love, 2) teaching daughter sexual abstinence, 3) convincing the daughter to recognize parent's expectations of sexual abstinence, and 4) encouraging daughter sexual abstinence. Following reviews by the experts, two items with redundancy were removed. The S-CVI of 23 items was 0.93.

Two hundred ninety-nine participants applied the item analysis and item selection process. Twenty-three items were then identified to find appropriate items by using item correlation and EFA. Skewness and kurtosis values were -0.441 to -1.005, and 0.090 to 1.482 ($p < 0.05$), which were accepted for normality testing (Kline, 2011). Bartlett's test of sphericity was significant ($\chi^2 = 5322.910$, $p = 0.000$), and the KMO value was 0.88, indicating the appropriateness of factor analysis. Six items were deleted; 3 items had a high value of inter-item correlations ($r > 0.80$) with others; 1 item had inter-item correlation < 0.2 ; 1 item had corrected item-total correlation < 0.30 , and the other 1 item was also excluded because its communality value was 0.33. Thus, 17 items of the CPSAS were retained. Reviewing the items by 10 participants, 1 item with the acceptably statistical value was modified to be more apparent in its meaning.

The final draft of the CPSAS contained 17 items with four components; assuring the daughter to recognize parental love (2 items), teaching daughter sexual abstinence (7 items), convincing the daughter to recognize parent's expectations of sexual abstinence (4 items), and encouraging daughter sexual abstinence (4 items). The S-CVI of 17-item CPSAS was 0.96. All items achieved the minimum criterion of I-CVI, 0.80-1.00. The Cronbach's alpha coefficient was 0.93, and four factors were 0.84, 0.92, 0.91, and 0.87, respectively.

For construct validity testing, the standardized factor loading was 0.499 to 0.908 ($p < 0.05$). The fit indices were below the threshold values of a good model fit; $\chi^2 = 260.056$, $p = .0000$, $df = 106$, χ^2/df ratio = 2.450, CFI = 0.962, TLI = 0.952, RMSEA = 0.070, SRMR = 0.040. The model modification indices suggested covariance paths between measurement errors. After model adjustment, the fit indices met with the criteria for a good model fit; $\chi^2 = 98.064$, $p = 0.083$, $df = 80$, χ^2/df ratio = 1.220, CFI = 0.996, TLI = 0.992, RMSEA = 0.027, SRMR = 0.030 (Kelloway, 2015) (see Table 4).

Table 3 The number of items, scoring range, S-CVI/Ave, I-CVI, and Cronbach's alpha of instruments

Instrument	Number of items	Scoring range	S-CVI/Ave	I-CVI	Cronbach's alpha
BeSA	17	1-4	0.89	0.80-1.0	0.94
BaSA	18	1-4	0.83	0.80-1.0	0.90
SASE	13	1-4	0.97	0.80-1.0	0.88
SAAS	7	1-4	0.85	0.80-1.0	0.90
CPSAS	17	1-4	0.94	0.80-1.0	0.93
PeIN	18	1-4	0.88	0.80-1.0	0.95
CSA	7	0-10	0.91	0.80-1.0	0.90
SAS	3	0-1	1.0	1.0	0.82

Table 4 Summary of the fit indices of the measurement models (n=300)

Model-fit Criteria	Value	Scale value							
		BeSA	BaSA	SASE	SAAS	CPSAS	PeIN	CSA	
χ^2 value	-	71.564	108.947	47.683	9.263	98.064	122.145	12.639	
df	-	57	89	39	6	80	101	11	
P-value	> 0.05	0.0928	0.0742	0.1604	0.1593	0.083	0.0748	0.317	
χ^2/df	< 2.00	1.25	1.22	1.22	1.54	1.22	1.20	1.149	
CFI	> 0.95	0.997	0.995	0.995	0.998	0.996	0.995	0.999	
TLI	> 0.95	0.993	0.991	0.989	0.992	0.992	0.993	0.998	
RMSEA	< 0.05	0.029	0.027	0.027	0.043	0.027	0.026	0.022	
SRMR	< 0.05	0.032	0.038	0.030	0.015	0.030	0.033	0.015	

CFI= Comparative fit Index

CLI= Tucker-Lewis Fit Index

RMSEA = Root mean square error of approximation

SRMR= Standardized Root Mean Square Residual

Interpretation of the score of all instruments

Data interpretation of BeSAS, BaSAS, SASES, PeINS, CSAS, and CPSAS, and SAAS were presented in the form of the mean of the score and standard deviation. The researcher produced the cut-off points facilitating interpretation and use to describe the level of all variables in this study. Following the basic of class width calculator to interpret the score of each variable, the researcher set up the sum score of each into a five intervals width (Stephanie, 2017). The range of total mean scores and the average mean score had represented the level from low to high as table 5.

$$\text{Interval width} = \frac{(\text{Highest score} - \text{Lowest score})}{\text{Number of levels}}$$

Table 5 Summary of interpretation of the score of each instrument (n=300)

Instrument	Items	Interval width	Interpretation of the score				
			Low	Slightly low	Moderate	Slightly high	High
BeSA	17	10.2	17.0-27.2	27.3-37.4	37.5-47.6	47.7-57.8	57.9-68.0
BaSA	18	10.8	18.0-28.8	28.9-39.6	39.7-50.4	50.5-61.2	61.3-72.0
SASE	13	7.8	13.0-20.8	20.9-28.6	28.7-36.4	36.5-44.2	44.3-52.0
SAAS	7	4.2	7.0-11.2	11.3-15.4	15.5-19.6	19.7-23.8	23.9-28.0
PeIN	18	10.8	18.0-28.8	28.9-39.6	39.7-50.4	50.5-61.2	61.3-72.0
CPSAS	17	10.2	17.0-27.2	27.3-37.4	37.5-47.6	47.7-57.8	57.9-68.0
CSA	7	14.00	0.00- 14.00	14.01- 28.00	28.01- 42.00	42.01- 56.00	56.01- 70.00

In addition, the research also used the basics of class width calculator to interpret the average mean score of each component of the variable. Each component of the BeSA, BaSA, SASE, SAAS, PeIN, and the CPSAS was also considered a five intervals width (Stephanie, 2017). The range of average mean score had represented from low to high as follows.

Range of mean scores	Level
3.41-4.00	High
2.81-3.40	Slightly high
2.21-2.80	Moderate
1.61-2.20	Slightly low
1.00-1.60	Low

For the CSA, the range of average mean score of each component had represented from low to high as follows.

Range of mean scores	Level
8.01-10.00	High
6.01-8.00	Slightly high
4.01-6.00	Moderate
2.01-4.00	Slightly low
0.00-2.00	Low

4. Protection of human right subject

1. This study was conducted in six universities and six high-vocational schools in Thailand. The research proposal, instruments, and related documents were reviewed and approved by the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University, or ECCU (COA No. 051/2020).

2. The “Participant information sheet” was given to all participants. In the case of the paper-based questionnaires, participants were informed of the objectives of the study, benefits, risks, types of questionnaires, and free to withdraw from the study without losing any benefits or penalties. Also, information about the protection of confidentiality was given to all participants. In the case of the web-based questionnaire, it contains information on participant information sheets with the same content as the paper-based questionnaires.

3. For confidentiality, all participants were not requested to sign their names in any form according to the ECCU’s recommendation. Because the research topic

was about sexual behavior, and without signing names, let participants felt comfortable that their answers were not referred to them later. Besides, participants answered the questionnaires individually. In the case of the paper-based questionnaires (conducting for EFA), after completing the questionnaires, participants put them into envelopes, sealed, and sent them directly to the researcher. The questionnaires did not contain a name, surname, or student ID, which refers to participants. All questionnaires were kept in the researchers' private locker at home until the study was completed. In the case of the web-based questionnaire, participants were not required to log in. Thus, no one can identify their address or location. Data files were also deleted after completing this study.

4. There is no harm to the participants. There is neither cost nor any payment to participate in this study. After completing the questionnaires, each participant received a gift in appreciation for their participation.

5. Data collection procedure

Data collection was conducted between February to May 2020, which is in the second semester for undergraduate students in Thailand.

The data was for instrumentation and psychometric properties testing, and testing the model, respectively.

1. After getting approval from the ECCU (COA No. 051/2020) and permission for collecting data from a research setting. The researcher contacted a person assigned by their highest board administrations of those settings. The researcher began to coordinate with that person to make an appointment and discuss collecting data procedures. Then the researcher collected data according to the procedure of each setting assigned by their highest board administrations.

2. For instrumentation, the researcher collected data for item analysis and exploratory factor analysis. After getting approval from the ECCU, the researcher collected data from 300 participants (299 completed the questionnaires) in the first university by a paper-based questionnaire in February 2020.

Nevertheless, after collecting data for EFA, the other settings required the online or web-based questionnaires dealing with the Coronavirus Disease 2019 (COVID-19) and physical distancing practice (World Health Organization, 2020b). Thus, the researcher created the web-based questionnaires using the service from the Modular Object-Oriented Dynamic Learning Environment or Moodle Program (version 3.5.9) with consulting the web-hosting and the expert in this program. Then, the researcher sent the information of the web-based questionnaires to the ECCU to get approval again.

3. After getting approval from the ECCU again, the researcher collected data from 300 participants in the second university for psychometric properties testing of measurements in March 2020. The researcher contacted the coordinator and gave them information on the study and inclusion criteria, and sent them the URL (<http://43.229.134.47/thaiadole/>) of the web-based questionnaires to him. Next, he transferred the URL to first-year female students via Line group communication. Spending 1 week, 300 participants completed the questionnaires.

4. For testing the model, the researcher collected data from 852 participants in the other six universities and six vocational schools. Similarly, the researcher contacted the coordinators of each setting and gave them information on the study and inclusion criteria and sent them the URL of the questionnaires. For 12 coordinators, nine of them were staff of the research and development departments or academic department in universities/vocational schools, two of them were staff of student development divisions, and one coordinator was a staff of student personnel services. Then they transferred the URL to the first-year female students. The procedure of transferring is variety; E-mail, Line group communication, or posting the URL on their faculty Website. Spending almost two months, 734 participants responded to the questionnaires. However, 80 cases were incomplete data; 2 cases were outliers (reported their first sex at age 60 and 100 years); 78 cases were missing data. Finally, the researcher got 654 cases with complete data, resulting in a response rate of 76.76%. The flowchart of data collection was present in Figure 6.

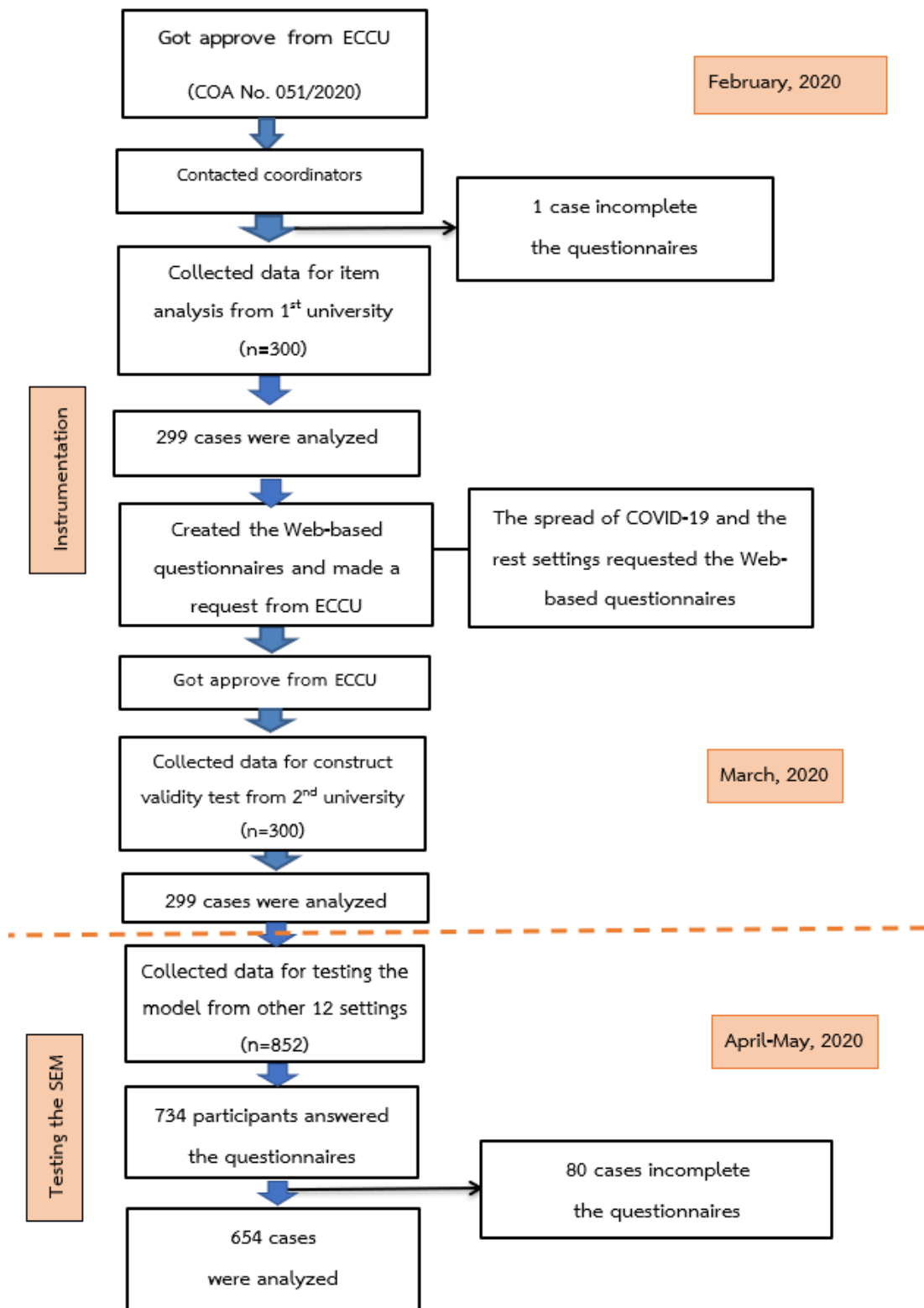


Figure 6 The flowchart of data collection

6. Data analysis

Research data were analyzed using descriptive statistics, item analysis, and selection with the Statistical Package for the Social Science Program (SPSS). The CFA and SEM were analyzed by using the *Mplus* software Version 8 (SCBMX80001XXX). Data analysis procedures were described in the following details.

1. Demographic data was calculated and presented by mean, standard deviation, percentage, and frequency distribution.

2. The items of the new instruments were analyzed by item correlation and EFA. The statistics included the corrected item-total correlation, inter-item correlation factor loading, and the communality value.

3. The psychometric properties of the measurement were tested. Construct validity was tested by the CFA, and Cronbach's Alpha Coefficient was tested for reliability.

4. Testing the causal model was started with analyzing the relationships among the latent variables by Pearson's Product Moment Correlation. The structural model was then investigated using *Mplus* with the maximum likelihood robust (MLR) estimator.

CHAPTER IV

RESULTS

The purposes of this study were to develop and test the causal model of sexual abstinence in Thai female adolescents, including examining the causal relationships among eight study variables. This chapter presented research results regarding 1) characteristics of variables, 2) assumption testing and 3) findings and hypotheses testing.

1. Characteristics of variables

The eight variables in this study included perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, commitment to a plan of sexual abstinence and sexual abstinence. The detail regarding the characteristics of each variable was as follows.

1.1 Sexual abstinence

In table 6, among 654 participants, 76.0% remained sexual abstinence until graduation from high school and continuing in higher education. One-hundred fifty-seven participants (24.0%) reported engaging in sexual intercourse. Among non-abstainers (157 participants), they mostly ever engaged in vaginal sexual intercourse only (65 participants, 41%). Also, 74 participants engaged in at least two types of sexual intercourse. Moreover, 17 participants (10.8%) had already engaged in all three types of sexual intercourse; oral-anal-and vaginal intercourse (see Table 6).

For the aged of having first sexual intercourse, the two youngest ages of participants engaging in first sexual intercourse were 11 years old. Also, 18 participants (11.5%) had their first sexual intercourse at early adolescence stage (age 11 to 14), 79 participants (50.3%) had their first sexual intercourse at middle adolescence (age 15 to 17), and 60 participants (38.2%) had their first sexual intercourse at late adolescence (age 18 to 20) (see Table 6).

Table 6 Sexual behaviors (n=654)

Sexual behaviors	n=654	%
Sexual abstinence	497	76.0
Sexual intercourse	157	24.0
Type of intercourse	n=157	
One type		
Oral only	11	7
Anal only	8	5
Vaginal only	65	41
At least two types		
Oral and vaginal	49	31.2
Oral and anal	7	4.5
Anal and vaginal	1	0.6
Three types (oral-anal-vaginal)	17	10.8
Age at first sex (years old)	n=157	
11	2	0.3
12	4	0.6
13	4	0.6
14	8	1.2
15	6	0.9
16	16	2.4
17	57	8.7
18	46	7.0
19	14	2.1
Total	157	100.0

1.2 Perceived benefits of sexual abstinence

From table 7, the total score of perceived benefits of sexual abstinence ranged from 17.00 to 68.00. The mean of the total score was 53.84 (S.D.=11.59). The skewness of the total score was -0.92, indicating that most participants had scores of perceived benefits of sexual abstinence higher than the mean score. The kurtosis value was a positive value (0.32), which means the data was in platykurtic shape. Two components had varied in terms of the number of items; thus, this study applied an average of the mean scores to compare them. The results presented the component with the highest score was the intrinsic benefits of sexual abstinence (average mean score=3.20), followed by the extrinsic benefits of sexual abstinence (average mean score=3.09), respectively.

Table 7 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of perceived benefits of sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Benefit	53.84/11.59	3.15	17-68	17-68	-0.92	0.32	Slightly high
Extrinsic	18.59/5.39	3.09	6-24	6-24	-1.03	0.10	Slightly high
Intrinsic	35.25/9.39	3.20	11-44	11-44	-1.21	0.51	Slightly high

1.3 Perceived barriers to sexual abstinence

The total score of perceived barriers to sexual abstinence was 18 to 72. The mean total score was 37.63 (S.D. =14.05), which fell in the range of slightly low levels. The skewness of the total score was 0.36, which means the data was approximately symmetric. The kurtosis of the total score was -0.69, which means the data was in platykurtic shape. The researcher applied an average of the mean scores to compare components. The results presented that the component with the highest score was risk situation (average mean score=2.12), boyfriend pressure (average mean

score=2.11), friend pressure (average mean score=2.05), and family problem (average mean score=2.03), respectively (see Table 8).

Table 8 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of perceived barriers to sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Barrier	37.63 /14.05	2.08	18-72	18-72	0.36	-0.69	Slightly low
Boyfriend	12.68/6.03	2.11	6-24	6-24	0.43	-1.07	Slightly low
Friend	10.29/4.44	2.05	5-20	5-20	0.47	-0.62	Slightly low
Situation	10.59/4.72	2.12	5-20	5-20	0.39	-0.94	Slightly low
Family	4.07/1.85	2.03	2-8	2-8	0.52	-0.69	Slightly low

1.4 Perceived self-efficacy of sexual abstinence

The total score ranged from 13 to 52. The mean total score of perceived self-efficacy of sexual abstinence fell in the range of slightly high levels (Mean = 43.72, SD =9.06). The skewness of the total score was -1.55, which means the data was approximately symmetric. The kurtosis of the total score was 2.28, which means the data was in platykurtic shape. The researcher applied an average of the mean scores to compare components. The results presented that the component with the highest score was assuring sexual abstinence (average mean score=3.38), followed by the ability of circumstance (average mean score=3.37), the ability of negotiation (average mean score=3.32), and the ability to deny (average mean score=3.29) respectively (see Table 9).

Table 9 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of perceived self-efficacy of sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Self-efficacy	43.72/9.06	3.34	13-52	13-52	-1.55	2.28	Slightly high
Negotiation	6.64/1.69	3.32	2-8	2-8	-1.26	0.82	Slightly high
Deny	3.29/0.88	3.29	1-4	1-4	-1.11	0.36	Slightly high
Assure	3.38/0.83	3.38	1-4	1-4	-1.36	1.24	Slightly high
Circumstance	30.39/6.52	3.37	9-36	9-36	-1.54	2.02	Slightly high

1.5 Sexual abstinence-related affect

The total score ranged from 8 to 28. The mean total score fell in the range of slightly high level (Mean = 22.37, S.D.=5.24). The skewness of the total score was -0.77, which means the data was approximately symmetric. The kurtosis of the total score was -0.01, which means the data was in platykurtic shape. This study applied an average of the mean scores to compare components. The results presented that the component of self-related (average mean score=3.20) had a higher score than act-related (average mean score=3.13) (see Table 10).

Table 10 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of sexual abstinence-related affect

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Affect	22.37/5.24	3.17	7-28	8-28	-0.77	-0.01	Slightly high
Act-related	3.13/1.01	3.13	1-4	1-4	-0.90	-0.36	Slightly high
Self-related	19.24/4.44	3.20	6-24	6-24	-0.75	-0.01	Slightly high

1.6 Child-rearing promoting sexual abstinence

The total score of child-rearing promoting sexual abstinence range from 22 to 68, which fell in the range of slightly high level (Mean = 52.28, S.D.=12.32). The skewness of the total score was -0.62, which means the data was approximately symmetric. The kurtosis of the total score was -0.1, which means the data was in platykurtic shape. The researcher applied an average of the mean scores to compare components. The results presented that the component with the highest score was encouraging sexual abstinence (average mean score=3.20), enabling daughters to recognize parental love (average mean score=3.14), teaching daughter's sexual abstinence (average mean score=3.03), and convincing daughter realize expectation on sexual abstinence (average mean score=2.98), respectively (see Table 11).

Table 11 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of child-rearing promoting sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Child-rearing	52.28/12.32	3.09	17-68	22-68	-0.62	-0.31	Slightly high
Love	6.29/1.76	3.14	2-8	3-8	-0.96	0.11	Slightly high
Teaching	21.24/6.04	3.03	7-28	9-28	-0.70	-0.54	Slightly high
Expectation	11.92/3.44	2.98	4-16	5-16	-0.52	-0.64	Slightly high
Encouragement	12.82/2.69	3.20	4-16	5-16	-0.86	0.90	Slightly high

1.7 Peer influence on sexual abstinence

The total score of peer influence on sexual abstinence range from 20 to 72, fell in the range of slightly high level (Mean = 51.49, S.D.= 12.83). The skewness of the total score was -0.60, which means the data was approximately symmetric. The kurtosis of the total score was -0.10, which means the data was in platykurtic shape (see table 12). The researcher applied an average of the mean scores to compare components. The results presented that the component with the highest score was

norms of peers (average mean score=2.91), followed by support (average mean score=2.84), and modeling (average mean score=2.63), respectively (see Table 12).

Table 12 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of peer influence on sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Peer	51.49/12.83	2.80	18-72	20-72	-0.60	-0.10	Slightly high
Norms	29.16/7.68	2.91	10-40	11-40	-0.72	0.23	Slightly high
Support	17.05/4.59	2.84	6-24	7-24	-0.49	-0.12	Slightly high
Model	5.27/1.63	2.63	2-8	2-8	-0.46	-0.42	Moderate

1.8 Commitment to a plan of sexual abstinence

The total score of commitment to a plan of sexual abstinence ranged from 1.20 to 70.00, fell in the range of slightly high level (Mean = 50.50, S.D.= 17.82). The skewness of the total score was -0.92, which means the data was approximately symmetric. The kurtosis of the total score was -0.07, which means the data was in platykurtic shape. The researcher applied an average of the mean scores to compare components. The results revealed that the component of the strategy of sexual abstinence (average mean score=7.21) had a bit higher score than the sexual abstinence intention (average mean score=7.20) (see Table 13).

Table 13 Total mean score, the average mean score, S.D., skewness, kurtosis, and interpretation of commitment to a plan of sexual abstinence

Variables	Total mean score/S.D.	Average mean score	Possible range	Actual range	Skewness	Kurtosis	Interpretation
Commitment	50.50/17.82	7.21	0.00-70.00	1.20-70.00	-0.92	-0.07	Slightly high
Intention	7.20/3.06	7.20	0.00-10.00	0.00-10.00	-0.94	-0.2	Slightly high
Strategy	43.29/15.32	7.21	0.00-60.00	0.20-60.00	-0.89	-0.10	Slightly high

2. Assumption testing

Univariate normality

An important assumption in conducting SEM analyses was that the data were normal. According to Byrne (2011), using the *Mplus* program, the normality was accessed through univariate skewness and kurtosis, and it could be referred to as multivariate testing in another program. In judging the extent to which skewness and kurtosis values are indicative of normality, the value of skewness is between -3 to +3, and kurtosis is between -7 to +7 (Byrne, 2011; Hair JF, 2014; Kline, 2011; West, Finch, & Curran, 1995). In this study, the skewness of the total score of seven independent variables was in the acceptable range of normality.

Linearity

The P-P plots were evaluated to assess linearity. The pattern indicated a linear relationship. Thus, this assumption was accepted (Appendix I).

Multicollinearity

The result of this data analysis was to describe the relationship between the variables used in the study. The researcher analyzed Pearson's product-moment correlation coefficient, where the correlations among variables should be not higher than 0.85. If the coefficient between variables is higher than 0.85, it means that the

condition occurs in multicollinearity. In this study, the correlation coefficients ranged from -0.087 to 0.711, and the correlations among indicators ranged from -0.021 to 0.795. Thus it was no such a problem (Kline, 2010). The correlations matrix among variables/ indicators were shown in Table 14 and Table 15.

Table 14 The correlations among eight variables (n=654)

Variables	BeSA	BaSA	SASE	SAA	CPSA	PeIN	CSA	SA
BeSA	1.000							
BaSA	-0.184**	1.000						
SASE	0.219**	-0.299**	1.000					
SAA	0.321**	-0.240**	0.565**	1.000				
CPSA	0.239**	-0.240**	0.534**	0.647**	1.000			
PeIN	0.237**	-0.087*	0.413**	0.579**	0.586**	1.000		
CSA	0.289**	-0.379**	0.568**	0.600**	0.595**	0.481**	1.000	
SA	0.232**	-0.357**	0.576**	0.565**	0.711**	0.391**	0.659**	1.000

* $p < 0.05$, ** $p < 0.01$

Table 15 Correlations matrix among 22 indicators (n=654)

Variables	Extrinsic	Intrinsic	Boyfriend	Friend	Situation	Family	Nego	Deny	Assur	Circum	Act	Self
Extrinsic	1											
Intrinsic	.760**	1										
Boyfriend	-.208**	-.310**	1									
Friend	-.209**	-.281**	.574**	1								
Situation	-.212**	-.254**	.583**	.696**	1							
Family	-.179**	-.227**	.668**	.632**	.669**	1						
Nego	.445**	.500**	-.332**	-.294**	-.229**	-.215**	1					
Deny	.384**	.418**	-.304**	-.298**	-.242**	-.218**	.696**	1				
Assur	.375**	.421**	-.223**	-.226**	-.152**	-.114**	.661**	.675**	1			
Circum	.468**	.519**	-.314**	-.299**	-.231**	-.231**	.658**	.663**	.706**	1		
Act	.546**	.612**	-.312**	-.351**	-.319**	-.252**	.510**	.405**	.332**	.515**	1	
Self	.600**	.656**	-.230**	-.251**	-.213**	-.153**	.443**	.390**	.382**	.485**	.702**	1
Love	.444**	.495**	-.219**	-.238**	-.231**	-.163**	.457**	.340**	.378**	.470**	.559**	.472**
Teach	.449**	.475**	-.234**	-.326**	-.281**	-.195**	.464**	.404**	.392**	.457**	.564**	.433**
Expect	.527**	.538**	-.189**	-.210**	-.207**	-.126**	.432**	.320**	.331**	.423**	.575**	.466**
Encourage	.345**	.329**	-.083**	-.119**	-.141**	-.049**	.245**	.154**	.182**	.223**	.376**	.368**
Norm	.491**	.474**	-.051**	-.116**	-.136**	-.023**	.348**	.285**	.278**	.335**	.456**	.510**
Support	.454**	.480**	-.063**	-.117**	-.137**	-.029**	.368**	.302**	.309**	.343**	.448**	.488**
Model	.361**	.305**	.060**	-.009**	-.044**	.061**	.339**	.276**	.254**	.248**	.306**	.355**
Intention	.509**	.569**	-.315**	-.381**	-.337**	-.278**	.608**	.440**	.442**	.478**	.566**	.536**
Strat	.534**	.564**	-.341**	-.408**	-.355**	-.290**	.599**	.466**	.434**	.486**	.565**	.559**
SA	.515**	.581**	-.361**	-.365**	-.322**	-.296**	.568**	.421**	.432**	.546**	.696**	.489**

**p<0.01

Table 15 Correlations matrix among 22 indicators (n=654)

Variables	Love	Teach	Expect	Encourage	Norm	Support	Model	Intention	Strat	SA
Love	1									
Teach	.605**	1								
Expect	.658**	.619**	1							
Encourage	.413**	.460**	.471**	1						
Norm	.451**	.378**	.498**	.455**	1					
Support	.407**	.390**	.453**	.409**	.735**	1				
Model	.251**	.259**	.287**	.232**	.523**	.547**	1			
Intention	.498**	.522**	.516**	.282**	.422**	.413**	.345**	1		
Strat	.527**	.546**	.488**	.271**	.426**	.399**	.319**	.791**	1	
SA	.647**	.670**	.628**	.318**	.337**	.335**	.255**	.627**	.644**	1

**p<0.01

3. Findings of the causal model

Findings of the causal model were presented according to the objectives of the study and hypothesis testing below:

Research hypothesis 1: The causal model of sexual abstinence in Thai female adolescents fits the empirical data.

According to the hypothesized model (Figure 1), there were eight variables. Perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence were exogenous variables. The endogenous variables included perceived barriers to sexual abstinence, commitment to a plan of sexual abstinence, and sexual abstinence. Among these, perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence were mediating variables.

3.1 Model identification

Model identification is to check if the model is over-identified, just-identified, or under-identified. An over-identified and just-identified model can be analyzed SEM. The formula for model identification is; $Df = [NI(NI+1)/2] - \text{number of parameter estimation}$, where Df is the degree of freedom, and N is a number of indicator/observed variables. In the causal model of this study, there are 22 measured variables and 71 estimated parameters. Thus, the hypothesized model contained $Df = 22*(22+1)/2 - 71 = 182$, which more than zero. Therefore, the model is “over-identified” and can be analyzed SEM (Ramlall, 2016).

3.2 Model estimation

According to Kline (2011), this step involves using an SEM computer tool to conduct the analysis. Several things take place at this step: (1) Evaluate model fit, which means determining how well the model explains the data. The researchers' initial models do not fit the data well very often. Assuming a satisfactory model fit, then (2) interpret the parameter estimates, and (3) consider and discuss the model (Kline, 2011).

3.3 Testing the model

For the analytic approach, the causal model testing consists of the measurement model and the SEM model. The researcher estimated the causal model using *Mplus* as follows.

3.3.1 Measurement model

The measurement model determines how the observed variables indicate latent variables or constructs. Seven variables were evaluated using confirmatory factor analysis (CFA). The variables include perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence. The researcher developed and tested a measurement model using 300 sample data. In this step, the maximum likelihood estimation (ML) estimator was used because the variables were all continuous variables. The results showed that the seven measurement models, BeSAS, BaSAS, SESAS, CPSAS, SAAS, PeINS, and CSAS model, had an approximately overall model fit. The models had Chi-square (χ^2) value not significant at p-value 0.05, the proportion of χ^2 and the degree of freedom (df) was lower than 2.0, the CFI and TLI were higher than 0.95, and RMSEA and SRMR was lower than 0.05 (see Table 4). The results revealed that all components of the measurements had significantly related to their specific constructs and validated the relationships among observed variables and their constructs (see Appendix G).

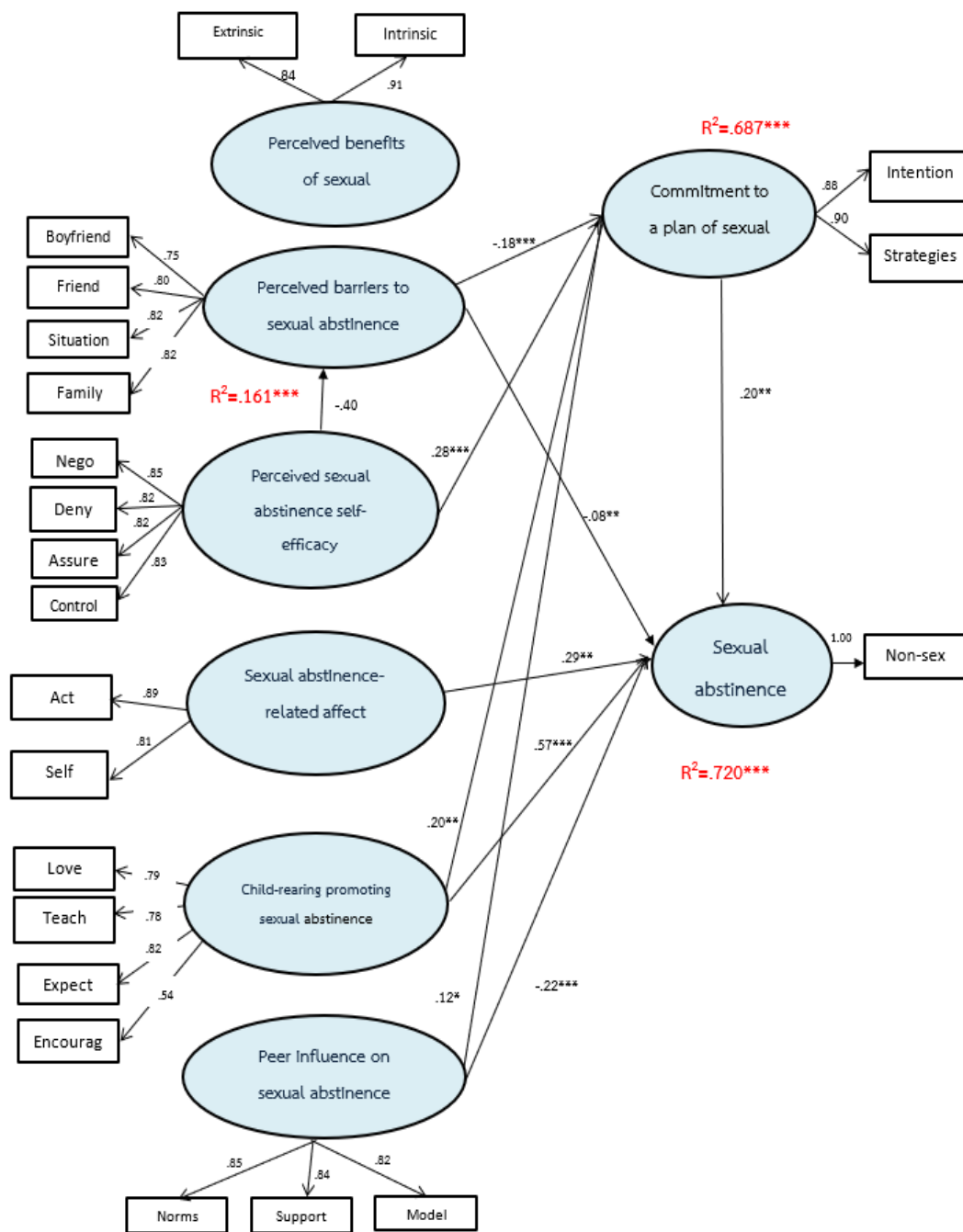
3.3.2 The SEM testing

The SEM testing aimed to examine the causal relationships among variables proposed by the HPM and evidence. The researcher developed and tested the SEM model using 654 sample data. For the practical approach to dealing with the categorical-dependent variable as sexual abstinence, a robust version of ML for binary data, which uses robust standard error estimates, is called MLR in *Mplus* performs functional analysis in this study (Bandalos, 2014).

The criteria of the goodness-of-fit of the model were considered to support the model fit between the proposed model and the observed data. In

general, experts suggested the acceptable value as well as the result form ML estimator; e.g., χ^2 value should not be significant at p-value 0.05, χ^2 to degrees of freedom ratio was lower than 2.00, CFI, TLI was higher than 0.95, and RMSEA and SRMR were lower than 0.05 (Hu & Bentler, 1999; Kelloway, 2015). Specifically, for the MLR estimator, the values of CFI, TLI, and RMSEA were recommended to consider evaluating the model fit (Curran, West, & Finch, 1996; Hu & Bentler, 1999; Yu, 2002). Therefore, the researcher considered these three indicatives of the optimal model fit to the data possible for the MLR estimator.

The proposed model results showed that the fit indices were below the threshold values of a model fit. The fit indices were; $\chi^2= 621.654$, $p<0.05$, $df=186$, χ^2/df ratio=3.34, CFI=0.944, TLI=0.931, RMSEA=0.060, SRMR =0.046. The model explained 72 % ($R^2= 0.720$) of sexual abstinence. However, the three indicatives value (CFI, TLI, and RMSEA) were not met the model fit criteria (See Figure 7).



$\chi^2 = 621.654$, $p < 0.05$, $df = 186$, χ^2/df ratio = 3.34, CFI = 0.944, TLI = 0.931, RMSEA = 0.060, SRMR = 0.046.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, R² = Square multiple correlation

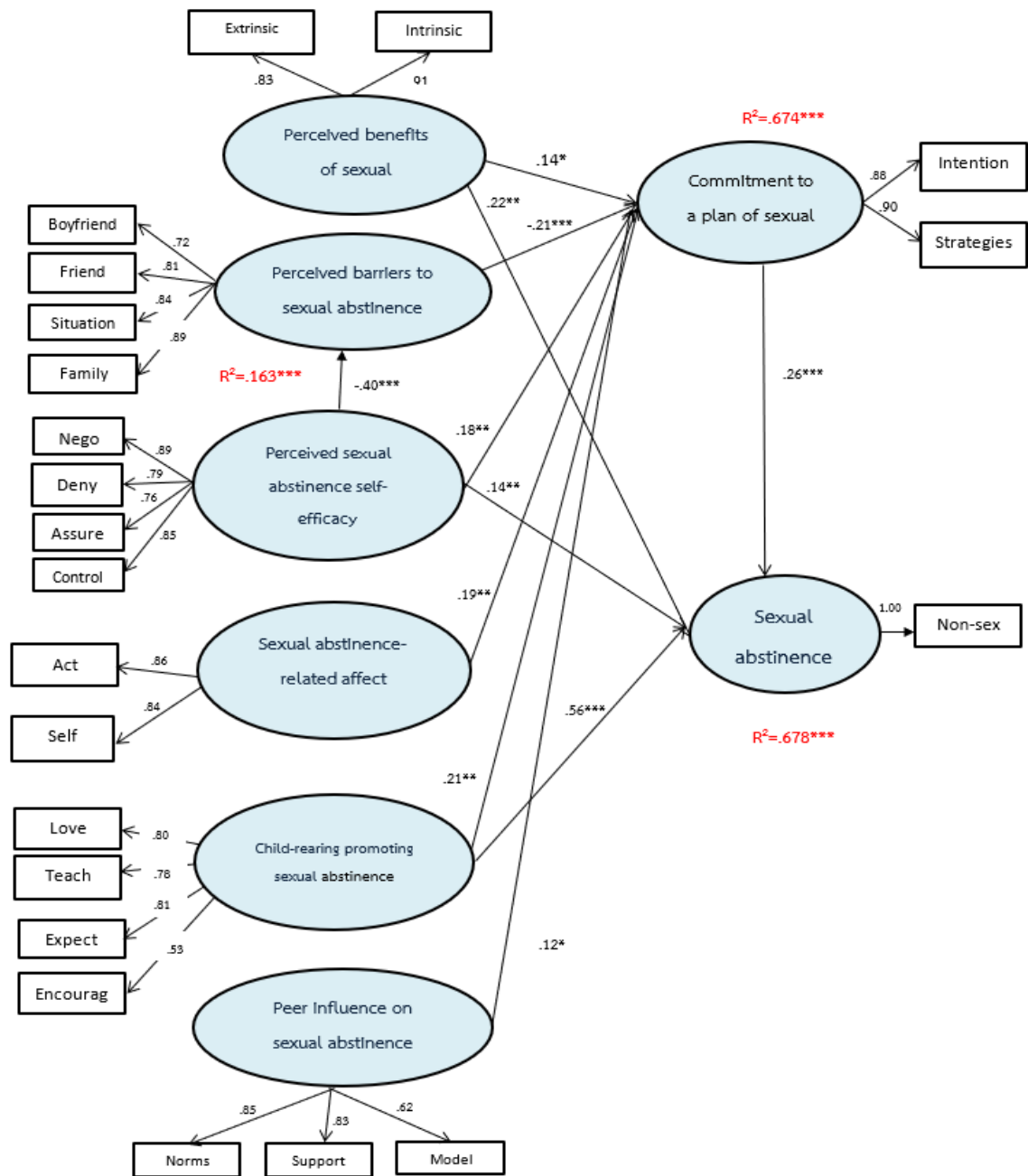
Figure 7 The proposed model of sexual abstinence in Thai female adolescents

3.4 Model modification

Some correlations were added considering the possibility related to theory to modify the model. After model adjustment, the fit indices were met the criteria for a model fit with observe data; $\chi^2=434.344$, $p<0.05$, $df=173$, χ^2/df ratio=2.51, CFI=0.967, TLI=0.955, RMSEA=0.048, SRMR=0.041 (see Figure 8). The standardized coefficient of indicators ranged from 0.528-0.909. Most parameter estimates had significant effect except for (1) perceived barriers to sexual abstinence on sexual abstinence, (2) sexual abstinence-related affect on sexual abstinence, and (3) peer influence on sexual abstinence. The R square of three variables had statistically significant at the p-value 0.001. The model explained 68 % ($R^2 = 0.678$) of the variance of sexual abstinence in Thai female adolescents. Besides, the model explained 67% ($R^2 = 0.674$) of the variance of commitment to a plan of sexual abstinence and 16% ($R^2 = 0.163$) of perceived barriers on sexual abstinence.

Table 16 Comparison of the hypothesized and the revised model (n=654)

Model fit information	The proposed model	The modified model
Chi-square (χ^2)	621.654	434.344
Degrees of freedom (df)	186	173
P-value	<0.05	<0.05
χ^2 / df	3.34	2.51
CFI	0.944	0.967
TLI	0.931	0.955
RMSEA	0.060	0.048
SRMR	0.046	0.041



$\chi^2=434.344$, $p<0.05$, $df=173$, χ^2/df ratio=2.51, CFI=0.967, TLI=0.955, RMSEA=0.048, SRMR=0.041

* $p<0.05$, ** $p<0.01$, *** $p<0.001$, R^2 = Square multiple correlation

Figure 8 The modified model of sexual abstinence in Thai female adolescent

Table 17 Summary of the effects of causal variables on affected variables (n=654)

Causal variable	Affected variables											
	Abstinence				Commitment				Barrier			
	DE	IE	TE		DE	IE	TE		DE	IE	TE	
Benefit	.22*	.03	.25**		.14*	-	-		-	-	-	
Barrier	-.03	-.05***	-.09**		-.21***	-	-		-	-	-	
Self-efficacy	.14**	.08**	.23***		.18**	.08***	.26***		-.40***	-	-	
Affect	-.21	.04	-.16		.19*	-	-		-	-	-	
Child-rearing	.56***	.05**	.61***		.21**	-	-		-	-	-	
Peer	-0.08	.03*	-0.05		.12*	-	-		-	-	-	
Commitment	.26***	-	.26***		-	-	-		-	-	-	
	R ² = .678				R ² = .674				R ² = .163			

Self-efficacy → Barrier → Abstinence = 0.01

Self-efficacy → Commitment → Abstinence = 0.047**

Self-efficacy → Barrier → Commitment → Abstinence = 0.022***

*p<.05, ** p<.01, *** p<.001, DE = Direct effect, IE = Indirect effect, TE = Total effect

Evaluation of the goodness of fit criteria

1. The measurement model fits the empirical data. The standardized factor loading was ranging from 0.36 to 0.98 ($p < 0.001$). The R square of each indicator ranged from 0.590 to 0.955, suggesting that those indicators were sufficient to represent the constructs (see Appendix G).

2. The results of the modified SEM model were; $\chi^2 = 434.344$, $p < 0.05$, $df = 173$, χ^2/df ratio = 2.51, CFI = 0.967, TLI = 0.955, RMSEA = 0.048, SRMR = 0.041. Among these, the CFI, TLI, and RMSEA values indicated the model fit the empirical data.

In the SEM, the R^2 for the structural equation was 0.678, meaning that the model accounted for 68% of the variance in sexual abstinence in Thai female adolescents. The model accounted for 67% of the variance in commitment to a plan of sexual abstinence, and 16 % of the variance in perceived barriers of sexual abstinence.

3. The significantly causal factors were child-rearing promoting sexual abstinence, commitment to a plan of sexual abstinence, perceived benefits of sexual abstinence, perceived self-efficacy of sexual abstinence, and perceived barriers to sexual abstinence, respectively. The total effects were 0.61, 0.26, 0.25, 0.23, and -0.09, respectively.

In summary, the hypothesis one was supported as proposed in the hypothesized model of sexual abstinence in Thai female adolescents.

Research hypothesis 2: Perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence have significant effects on sexual abstinence in both direct effect and indirect effect.

The findings revealed that four hypotheses were fully supported by the empirical data, whereas three hypotheses were partly supported.

Hypothesis 2.1: Perceived benefits of sexual abstinence had a positive direct effect on sexual abstinence and, and it has a positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence.

According to the final model, perceived benefits of sexual abstinence had a significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.14, p < .05$), and it had a significant positive direct effect on sexual abstinence ($\hat{\beta} = 0.22, p < .01$). Even though perceived benefits of sexual abstinence had a non-significant positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = 0.03, p > .05$), the total effect of the perceived benefits of sexual abstinence on sexual abstinence was $0.25, p < .01$. Thus, hypothesis 2.1 was fully supported, as proposed in the hypothesized model of sexual abstinence in Thai female adolescents.

Hypothesis 2.2: Perceived barrier to sexual abstinence has a negative direct effect on sexual abstinence, and it has a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

Perceived barriers to sexual abstinence had a significantly negative direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = -0.21, p < .001$), but it had a non-significant direct effect on sexual abstinence ($\hat{\beta} = -0.023, > .05$). Perceived barriers to sexual abstinence had a significant negative indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = -0.05, p < .001$). Besides, the total effect of perceived barriers to sexual abstinence on sexual abstinence was $-0.09, p < .01$. Hence, hypothesis 2.2 was partly supported, as proposed in the hypothesized model.

Hypothesis 2.3: Perceived self-efficacy of sexual abstinence has a negative direct effect on perceived barriers to sexual abstinence, and it has a positive direct effect on commitment to a plan of sexual abstinence and sexual abstinence. It had a positive indirect effect on sexual abstinence through perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence.

The results showed perceived self-efficacy of sexual abstinence had a significant negative direct effect on perceived barriers to sexual abstinence ($\hat{\beta} = -0.40, p < .001$). Perceived self-efficacy of sexual abstinence had a significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.18, p < .05$), and it had a significant positive direct effect on sexual abstinence ($\hat{\beta} = 0.14, p < .01$).

It had a significant positive indirect effect on commitment to a plan of sexual abstinence through perceived barriers to sexual abstinence ($\hat{\beta} = 0.08$, $p < .001$). Moreover, it had a significant positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = 0.047$, $p < .01$), and through perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence ($\hat{\beta} = 0.022$, $p < .001$). The total effect of perceived self-efficacy of sexual abstinence on commitment to a plan of sexual abstinence was 0.26 , $p < .001$. The total effect of perceived self-efficacy of sexual abstinence on sexual abstinence was significant ($\hat{\beta} = 0.23$, $p < .001$). Therefore, hypothesis 2.3 was fully supported, as proposed in the hypothesized model.

Hypothesis 2.4: Sexual abstinence-related affect has a positive direct effect on commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence.

Sexual abstinence-related affect had a significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.19$, $p < .01$), but it had a non-significant negative direct effect on sexual abstinence ($\hat{\beta} = -0.21$, $p > .05$). It also had a non-significant positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = 0.04$, $p > .05$). The total effect of sexual abstinence-related affect on sexual abstinence was non-significant ($\hat{\beta} = -0.16$, $p > .05$). Thus, hypothesis 2.4 was partly supported, as proposed in the hypothesized model.

Hypothesis 2.5: Child-rearing promoting sexual abstinence has a positive direct effect on commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

The result of the final model presented that child-rearing promoting sexual abstinence had a significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.21, p < .01$), and it had a significant positive direct effect on sexual abstinence ($\hat{\beta} = 0.56, p < .001$). It also had a significant positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = 0.05, p < .01$). The total effect of child-rearing promoting sexual abstinence on sexual abstinence was significant ($\hat{\beta} = 0.61, p < .001$). Therefore, hypothesis 2.5 was fully supported, as proposed in the hypothesized model.

Hypothesis 2.6: Peer influence on sexual abstinence has a positive direct effect on commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence.

According to the final model, peer influence on sexual abstinence had a non-significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.12, p < .05$), and it had a non-significant negative direct effect on sexual abstinence ($\hat{\beta} = -.08, p > .05$). It had a significant positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence ($\hat{\beta} = 0.03, p < .05$). The total effect of peer influence on sexual abstinence was $-.05, p > .05$. Therefore, hypothesis 2.6 was partly supported, as proposed in the hypothesized model.

Hypothesis 2.7: Commitment to a plan of sexual abstinence has a positive direct effect on sexual abstinence.

The result of the final model presented commitment to a plan of sexual abstinence had a significant positive direct effect on sexual abstinence ($\hat{\beta} = 0.26, p < .001$). Therefore, hypothesis 2.7 was fully supported, as proposed in the hypothesized model of sexual abstinence in Thai female adolescents.

Summary

The descriptive static characteristics of study variables have been explained. The data were met with the assumptions for SEM analysis. The measurement models were accessed and presented the acceptable construct validity. The hypothesized causal model of sexual abstinence in Thai female adolescents was analyzed and modified. The final model reported it fitted the empirical data. Seven variables in the final model explained approximately 68% of the variance in sexual abstinence in Thai female adolescents. Four hypotheses were fully supported, and three hypotheses were partly supported, as proposed in the hypothesized model. Therefore, the model provided its practical for explaining sexual abstinence in Thai female adolescents



CHAPTER V

DISCUSSION

This chapter provides a discussion of the study findings. It includes a conclusion, hypothesis testing, implications for nursing, and recommendations for future research.

1. Conclusion

The purpose of this cross-sectional descriptive design was to develop and test the causal model of sexual abstinence in Thai female adolescents and examine the causal relationships among the eight variables. The variables include perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, commitment to a plan of sexual abstinence and sexual abstinence. The hypothesized causal model was guided by The Health Promotion Model of Pender, Murdaugh, and Parsons (2015). The sample was a first-year female students studying in universities and high-vocational schools, Thailand. Multi-stage random sampling was applied to recruit participants, and 654 participants completed the questionnaires.

There were eight measurements used to measure eight variables. The researcher adopted six measurements from the study of Panurat (2009) and modified, including developing two new measurements. Then the researcher conducted psychometric properties testing. The measurements had acceptable values of validity and reliability. The data was collected for scale construction and psychometric properties (February to March 2020), and testing the model (April to May 2020). The data for scale construction was collected by using the paper-based questionnaire (299 participants). However, the data for scale psychometric properties testing (300 participants) and the data for testing the SEM (654 participants) was collected by using the web-based questionnaire dealing with the Coronavirus Disease

2019 (COVID-19) and physical distancing practice (World Health Organization, 2020b). This study was approved by the Ethical Review Committee for Research Involving Human Research Subjects, Health Sciences Group, Chulalongkorn University. This study also obtained a research scholarship from Graduate School, Chulalongkorn University, Thailand and The Japanese-Thai friendship doctors and dentists association. Statistical analysis of the data was performed using the Statistical Package of the Social Science (SPSS version 22) to examine descriptive statistics, reliability of measurement, and bivariate correlation. The *Mplus* program was used to test the univariate normality, skewness and kurtosis, measurement model (CFA), and the hypothesized model.

The results showed that the measurement models contained the construct validity. The hypothesized model fit the empirical data with the acceptable fit-indices value of criteria; $\chi^2=434.344$, $p<0.05$, $df=173$, χ^2/df ratio=2.51, CFI=0.967, TLI=0.955, RMSEA=0.048, SRMR=0.041. The total effects provided the significant causal factors that affect sexual abstinence until graduation from secondary education. They were child-rearing promoting sexual abstinence, commitment to a plan of sexual abstinence, perceived benefits of sexual abstinence, perceived self-efficacy of sexual abstinence, and perceived barriers to sexual abstinence. The total effects were 0.61, 0.26, 0.25, 0.23, and -0.09, respectively.

The final model was resulting in indicating the fit of the model to the empirical data. Furthermore, 68% of the variance of sexual abstinence in Thai female adolescents were explained by seven independent variables. The other six independent variables also explained 67% of the variance of commitment to a plan of sexual abstinence. Finally, 16% of the variance of perceived barriers to sexual abstinence was explained by perceived self-efficacy of sexual abstinence.

2. Hypothesis testing in the overall model results

Hypotheses 1: The causal model of sexual abstinence in Thai female adolescents fits the empirical data.

The results of the final model indicated that the hypothesized model constructed from the HPM (Pender et al. 2015) fit the empirical data ($\chi^2=434.344$, $p<0.05$, $df=173$, χ^2/df ratio=2.51, CFI=0.967, TLI=0.955, RMSEA=0.048, SRMR=0.041). The model could explain sexual abstinence in Thai female adolescents as follows:

1.1 Sixty-eight percent of the variance of sexual abstinence in Thai female adolescents were explained by perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence.

1.2 Sixty-seven percent of the total variance in commitment to a plan of sexual abstinence were explained by perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence.

1.3 Sixteen percent of the total variance in perceived barriers to sexual abstinence was explained by perceived self-efficacy of sexual abstinence.

This theoretically driven study examined the impact of multiple behavior-specific cognitions and affect factors. Results from this study indicated that the causal model of sexual abstinence in Thai female adolescents was useful in explaining sexual abstinence in Thai female adolescents. Moreover, the results of this study supported the causal relationships among these factors congruent with the HPM's proposition as follows.

Hypotheses 2: Perceived benefits of sexual abstinence, perceived barriers to sexual abstinence, perceived self-efficacy of sexual abstinence, sexual abstinence-related affect, child-rearing promoting sexual abstinence, peer influence on sexual abstinence, and commitment to a plan of sexual abstinence have significant effects on sexual abstinence in both direct effect and indirect effect.

The study findings revealed that four of the seven hypotheses were fully supported by the empirical data obtained in the study, while three hypotheses were partially supported. The discussions of the hypothesis testing were presented as follows:

2.1 Perceived benefits of sexual abstinence had a positive direct effect on commitment to a plan of sexual abstinence and sexual abstinence. It also had a positive indirect effect on sexual abstinence through commitment to a plan of sexual abstinence.

This study's results support the hypothesis that perceived benefits of sexual abstinence had a positive direct effect on sexual abstinence, indicating that female adolescents who perceived the benefits of sexual abstinence could maintain sexual abstinence. The motivational importance of anticipated sexual abstinence benefits is based on personal outcomes from direct experience sexual abstinence and observe others engaging in sexual abstinence in Thai society (Pender et al., 2015). Female adolescents tend to remain sexually abstinent that have a high likelihood of positive outcomes. Perceived benefits of sexual abstinence included intrinsic (e.g., self-value) and extrinsic (e.g., healthy and life success), which motivate them to maintain sexual abstinence (Blinn-Pike et al., 2004; Dunsmore, 2010; Supametakorn et al., 2010).

In Thai society, most of the female adolescents can learn and realize the benefits of sexual abstinence from many resources such as parents (Supametakorn et al., 2010). Thus, maintaining sexual abstinence until studying in higher education could be possible for most of them. This finding of the current study was congruent with previous studies in Thailand. In the previous study, Panurat

(2009) found that the perceived benefit of sexual abstinence was correlated with sexual abstinence in middle Thai female adolescents.

In addition, the perceived benefits of sexual abstinence had a significant positive direct effect on commitment to a plan of sexual abstinence ($\hat{\beta} = 0.14$, $p < .05$), and then the total effect of the perceived benefits of sexual abstinence on sexual abstinence was 0.25 , $p < .01$. These results indicated that female adolescents with a perceived benefit of sexual abstinence and a commitment to a plan of sexual abstinence could maintain sexual abstinence. These findings may be because the indirect effect was drawn from this SEM study. That is, the perceived benefits of sexual abstinence could have an indirect effect on sexual abstinence. In other words, the effect of perceived benefits of sexual abstinence on sexual abstinence could be transmitted through a commitment to a plan of sexual abstinence.

The HPM proposed that perceived benefits of action had an indirect effect on behavior through a commitment to a plan of action, a mediator of behavior (Pender et al., 2011). For sexual abstinence in Thailand, parents taught and encouraged daughters about the benefits of sexual abstinence and the strategy of maintaining this behavior since they were young. Then Thai female adolescents have a commitment to a plan of sexual abstinence and used it as a method to maintain life security (Supamethaporn et al., 2010). Female adolescents who perceived that sexual abstinence was good for their and following the strategy, such as staying away from risky situations, drinking alcohol, or staying in a private place with a male, could remain sexual abstinence until higher education. These findings were congruent with the study on physical activity. Lubans et al. (2008) and others found that commitment to a plan of physical activity mediates the association between perceived benefits of physical activity and physical activity (Lubans et al., 2008; Taymoori & Lubans, 2008). Asuzu (2013) and others found that abstinence benefits could go a long way in determining sexual abstinence motivation. For these reasons, it can be concluded that these findings confirmed the causal relationship between

perceived benefits of sexual abstinence and sexual abstinence, as proposed in the HPM.

2.2 Perceived barrier to sexual abstinence has a negative direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

This study's results support the hypothesis that perceived barriers to sexual abstinence had a negative direct effect on a commitment to a plan of sexual abstinence, indicating that female adolescents with perceived barriers to sexual abstinence did not have a commitment to a plan of sexual abstinence. This finding may be because perceived barriers to action are perceptions about the unavailability, inconvenience, or difficulty of a particular action. It was often viewed as mental blocks, hurdles, and personal costs of undertaking behavior (Pender et al., 2015). In this study, perceived barriers to sexual abstinence were perceptions about sexual abstinence obstacles, including pressure from boyfriend, friend, risk situation, and family problem. Evidence proposed anticipated barriers have been found to affect intentions to engage in a particular behavior in a negative direction (Fila & Smith, 2006; Pender et al., 2015). As perceived barriers to action could be real or imagined. Perceived barriers to sexual abstinence could decrease female adolescents' intention of sexual abstinence in their imagination. In reality, some of them had a boyfriend or lived in a dormitory far from their parents. They could not maintain sexual abstinence strategy, such as avoid the risk of sexual intercourse, such as drinking alcohol, staying with a male in a private place. Congruently, evidence supports that the perceived barrier to sexual abstinence was related to commitment to a sexual abstinence plan in a negative direction. Eggers et al. (2017) found that perceived barriers to sexual abstinence had a negative effect on the intention of sexual abstinence in South African high schools ($r = -0.24, p < 0.05$). In the Thai context, Wongchalee and Chaiyawat (2016) found that the perceived barriers to sexual abstinence were negatively related to commitment to a plan of sexual abstinence ($r = -0.20, p < 0.01$) in early Thai female adolescents.

Additionally, perceived barriers to sexual abstinence had a small negative direct effect on sexual abstinence ($\hat{\beta}=-.03$, $p>.05$), indicating that female adolescents with perceived barriers to sexual abstinence might not maintain sexual abstinence directly. This result may be because most Thai female adolescents in this study could remain sexual abstinence (76.0%). This group might not face the barriers of sexual abstinence, such as the pressure from a boyfriend. Also, most of them lived with parents (69.3%) who protect them from risk situations such as staying with a male in a private place. Thus, they could maintain sexual abstinence until higher education. This finding was congruent with previous studies in female adolescents. Wu and Pender (2003) found that perceived barriers to physical activity had a small negative effect on physical activity in Taiwanese female adolescents ($\hat{\beta}=-.021$, $p>.05$). Also, this finding of the current study was congruent with previous studies in Thailand. Panurat (2009) found that the perceived barrier to sexual abstinence was correlated with sexual abstinence in middle Thai female adolescents, but it had a non-significant direct effect on sexual abstinence.

Lastly, the results of this study also supported the hypothesis that perceived barriers to sexual abstinence had a negative indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence. The total effect of perceived barriers to sexual abstinence on sexual abstinence was -0.05 , $p<.01$. These results can be explained that female adolescents who perceived barriers to sexual abstinence had a low commitment to a plan of sexual abstinence and could not maintain sexual abstinence, respectively. This finding may be because anticipated barriers have been repeatedly found to affect intentions to engage in a particular behavior in a negative direction (Fila & Smith, 2006; Pender et al., 2015). As intention to behavior is one part of a commitment to a plan of behavior; thus, higher perceived barriers to sexual abstinence are likely to affect lower commitment to a plan of sexual abstinence. This finding was congruent with previous studies. Wongchalee and Chaiyawat (2016) found that the perceived benefit of sexual abstinence was the significantly negative predicted commitment to a plan of sexual abstinence in early Thai female adolescents ($\hat{\beta}=-.082$, $p<0.01$). Also, Panurat (2009)

found that commitment to sexual abstinence was significantly positively related to sexual abstinence ($r=0.43$, $p<0.01$) (Panurat, 2009). Even though the evidence supported the indirect effect between perceived barriers to sexual abstinence and sexual abstinence was only a few, it was mentioned in other behavior studies. Murphy et al. (2014) found that mammography behavior barriers negatively affected mammography behavior through intention (Murphy, Vernon, Diamond, & Tiro, 2014). The result of Shin et al. (2008) supported perceived barriers to health-promoting lifestyle behavior had significant indirect effects on such behavior through a commitment to a plan of behavior (K. R. Shin, Kang, Park, Cho, & Heitkemper, 2008). For these reasons, it can be concluded that these findings confirmed the causal relationship between perceived barriers to sexual abstinence and sexual abstinence, as proposed in the HPM.

2.3 Perceived self-efficacy of sexual abstinence has a negative direct effect on perceived barriers to sexual abstinence. It has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. Perceived self-efficacy of sexual abstinence had a positive indirect effect on sexual abstinence through perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence.

The results of this study support the hypothesis that perceived self-efficacy of sexual abstinence had a negative direct effect on perceived barriers to sexual abstinence. This finding illustrated that female adolescent with a perceived self-efficacy of sexual abstinence were more likely to overcome barriers to sexual abstinence. This finding may be because perceived sexual abstinence self-efficacy plays a role in an individual's judgment in their ability to control their thoughts, feelings, and environment of sexual abstinence. This finding was congruent with the HPM and previous studies. Pender et al. (2015) and previous studies proposed that greater perceived self-efficacy results in fewer perceived barriers to a specific health behavior (Pender et al., 2015). Mohamadian and Arani (2014) found that perceived self-efficacy of physical activity behavior was significantly correlated with perceived barriers to physical activity behavior in female adolescents the negative ($r=-0.13$,

$p < .01$). Besides, Ayotte found that higher self-efficacy was directly related to fewer perceived barriers physical activity in community-dwelling middle-aged and young-old couples ($\hat{\beta} = -.41$, $p < .001$) (Ayotte et al., 2010). For sexual abstinence, Huglund (2008) supported that female adolescent with high perceiving self-efficacy of sexual abstinence can overcome barriers to sexual abstinence, such as boyfriend's pressure (Haglund, 2006). Abbott and Dalla (2008) and Rasberry and Goodson (2009) found female adolescents who perceive the high ability of sexual abstinence get low perceptions of barriers to sexual abstinence (Abbott & Dalla, 2008; Rasberry & Goodson, 2009). Thus, it can be assumed that these findings confirmed the causal relationship between perceived self-efficacy of sexual abstinence and perceived barriers to sexual abstinence as proposed in the HPM.

Additionally, the results of this study support the hypothesis that perceived self-efficacy of sexual abstinence had a positive direct effect on a commitment to a plan of sexual abstinence. This finding illustrated that female adolescents with a perceived self-efficacy of sexual abstinence were more likely to have more intention or commitment to a plan of sexual abstinence. This finding may be because perceived self-efficacy of sexual abstinence is the judgment of female adolescents in their capability to perform sexual abstinence, this judgment increases the likelihood of commitment to a plan of sexual abstinence (Kholifah et al., 2017; Shin et al., 2005). This finding was congruent with the HPM, and evidence proposed that perceived self-efficacy to execute a given behavior increases the likelihood of commitment to behavior (Kholifah et al., 2017; Shin et al., 2005). For sexual abstinence, Childs (2007) and Rasberry and Goodson (2007) found that sexual abstinence self-efficacy was a predictive factor of sexual abstinence intention. Buhi et al. (2011) found that self-efficacy to remain sexually abstinent had a significantly positive direct effect on the sexual abstinence intention ($\hat{\beta} = 0.09$, $p < .05$). In the Thai context, Wongchalee's study (2012) found that perceived self-efficacy of sexual abstinence was a significant predictor of commitment to a plan of sexual abstinence in Thai female adolescents ($\hat{\beta} = 0.218$, $p < 0.01$).

Moreover, these findings supported the hypothesis that perceived self-efficacy of sexual abstinence had a positive direct effect on sexual abstinence, which could illustrate that female adolescent with a perceived self-efficacy of sexual abstinence were more likely to maintain sexual abstinence. This finding may be because perceived self-efficacy of sexual abstinence included the ability to negotiate, deny sex, assure sexual abstinence, and control situations leading to premature sexual intercourse, such as boyfriend's pressure (Bandura, 1977; Carlsson et al., 2018; Haglund, 2006). This finding was congruent with the literature. Bandura proposed the concept of self-efficacy as the conviction or confidence that a person can successfully execute the behavior required to produce a specific outcome (Bandura, 1977, 1982). In the HPM, Pender et al. (2011) proposed that self-efficacy is a judgment of personal capability to organize and carry out a particular course of action. Self-efficacy included perceptions of skill and competence in a particular domain that motivate individuals to engage in behavior in which they excel. The higher level of self-efficacy, the more successful a person would be in performing and maintaining behavioral change (Aqtam & Darawwad, 2018; Darawwad, Khalil, Hamdan-Mansour, & Nofal, 2016; Mohamadian et al., 2011).

Also, female adolescents who have high perceiving self-efficacy of sexual abstinence will have high confidence in maintaining sexual abstinence. Norris, Clark, and Magnus (2003) found that sexual abstinence self-efficacy significantly related to sexual abstinence behavior ($r = 0.48, p < .001$) in adolescents (Norris et al., 2003). On the other hand, Santelli et al. (2006) found adolescents scoring high on self-efficacy also were less likely to initiate intercourse and significantly maintain sexual abstinence ($p < .05$) (Santelli et al., 2006). In the Thai context, Panurat (2009) found that perceived self-efficacy of sexual abstinence had a significantly positive direct effect on sexual abstinence ($\hat{\beta} = -0.149, p < .001$).

Besides, the results of this study support the hypothesis that perceived self-efficacy of sexual abstinence had a positive indirect effect on sexual abstinence through perceived barriers to sexual abstinence and commitment to a plan of sexual abstinence. Also, the total effect of perceived self-efficacy of sexual

abstinence on sexual abstinence was significant. This finding illustrated those female adolescents with a perceived self-efficacy of sexual abstinence were more likely to overcome barriers to sexual abstinence, have more commitment to a plan of sexual abstinence, and maintain sexual abstinence, respectively. This finding may be because female adolescents who have a judgment of their capability to remain sexual abstinence and have a high commitment along their way can control situation leading sex and maintain sexual abstinence respectively (Hutchison, Follman, Sumpter, & Bodner, 2006; Supametaporn et al., 2010; Wang et al., 2009).

This finding was consistent with the HPM. According to Pender et al. (2015), self-efficacy indirectly motivates health-promoting behavior by affecting perceived barriers and levels of commitment or persistence in pursuing a plan of action (Pender et al., 2015; p.37). However, the previous study on this path (two mediating factors) was limited; most studies reported on one mediating factor; perceived barriers or commitment to a plan of behavior. Shin et al. (2005) found the significantly positive indirect path between self-efficacy of exercise and commitment to a plan of exercise through perceived barriers to exercise ($\hat{\beta} = 0.03$, $p < .001$) (Shin et al., 2005). Also, Taymoori (2010) found that physical activity's self-efficacy had an indirect effect on physical activity through a commitment to a plan of physical activity in adolescents (Taymoori et al., 2010). Moreover, the finding of Taymoori and Lubans (2008) presented that perceived barriers and commitment to a plan of physical activity were identified as mediators of physical activity promotion intervention (Lubans et al., 2008; Taymoori & Lubans, 2008). For sexual abstinence, the integrative model of Buhi et al. (2011) found self-efficacy of sexual abstinence had an indirect effect on sexual abstinence through intention to abstinence ($\hat{\beta} = 0.11$, $p < .05$). In summary, it can be assumed that the findings confirmed the causal relationship between perceived self-efficacy of sexual abstinence and sexual abstinence, as proposed in the HPM.

2.4 Sexual abstinence-related affect has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence. It has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

The results of this study partly support this hypothesis. Sexual abstinence-related affect had a significant positive direct effect on a commitment to a plan of sexual abstinence, indicating that female adolescents with a sexual abstinence-related were likely to have a commitment to a plan of sexual abstinence. In the HPM, activity-related affect referred to subjective feeling states or emotions occurring before, during, and following a specific health behavior. Activity-related affect enables individuals to perform behavior through positive feelings regarding behavior, self-related behavior, or context-related behavior (Pender et al., 2015). In this study, sexual abstinence-related affect referred to feelings regarding sexual abstinence of female adolescents, which consisted of feelings regarding sexual abstinence and feelings regarding oneself when remaining sexual abstinence. Female adolescents living in Thai culturally expect that a good Thai woman has to maintain sexual abstinence until marriage. This value cultivated them felt that sexual abstinence is right for them. Then, they primarily intended to maintain sexual abstinence until the right time.

In the HPM, activity-related affect referred to subjective feeling states or emotions occurring before, during, and following a specific health behavior. Activity-related affect enables individuals to perform behavior through positive feelings regarding behavior, self-related behavior, or context-related behavior (Pender et al., 2015). Pender et al. (2015) proposed that positive behavior-related affect was associated with the probability of commitment, and action is increased. This finding of the current study was congruent with previous studies. Studies of Puerto Rican high school youth (Collazo, 2004) and early adolescent African Americans (Stanton et al., 1996) presented that positive emotions toward abstinence were associated with intention to remain abstinent. Thus, it can be assumed that the findings confirmed

the causal relationship between sexual abstinence-related affect and commitment to a plan of sexual abstinence as proposed in the HPM.

However, sexual abstinence-related affect had a non-significant direct effect or indirect effect on sexual abstinence, indicating that female adolescents with a sexual abstinence-related affect might not maintain sexual abstinence. According to Pender et al. (2015), sexual abstinence-related affect could be occurred before, during, or after performing sexual abstinence. Most female adolescents may have positive feelings regarding sexual abstinence, feeling good with it, or feeling like doing the right thing. These feelings primarily increase their commitment to a plan of sexual abstinence, but they might not remain sexual abstinence eventually because this behavior takes a long term period. In other words, sexual abstinence-related affect might not cause female adolescents to maintain sexual abstinence until higher education. This finding of the current study was congruent with the previous study on sexual abstinence intention. Buhi et al. (2011) found that emotions regarding sexual abstinence had a non-significant direct effect on sexual abstinence in American students. Buhi et al. (2011) also found that emotions regarding sexual abstinence had no indirect effect on sexual abstinence through sexual abstinence intention. Therefore, these findings partly support the effect of sexual abstinence-related affect on sexual abstinence, as proposed in the HPM.

2.5 Child-rearing promoting sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence.

The results of this study fully support the hypothesis that child-rearing promoting sexual abstinence had a positive direct effect and indirect effect on sexual abstinence through commitment to a plan of sexual abstinence, indicating that female adolescents who have child-rearing promoting sexual abstinence will maintain sexual abstinence. According to the HPM and literature, parents are primary sources of interpersonal influence via parent's norms, support, and modeling (Parkes

et al., 2011; Pender et al., 2015). In Thailand, child-rearing performed throughout the adolescent period consisted of reinforcing connectedness, enhancing maturity, and protecting children and adolescents from harm (Virasiri et al., 2011). Child-rearing in Thai culture is influential to the sexual abstinence and livelihood of individuals. There is an inheritance of sexual abstinence since the past, such as Thai women reserve themselves, do not have prematurely sexual intercourse before the right time. Sexual intercourse may lead to unwanted pregnancy during study, which causes daughters to stop studying, commit an abortion, abandon children, or get HIV. Thai parents raise daughters by observing the effects of prematurely sexual intercourse in society and how to prevent such problems (Supametaporn et al., 2010). Therefore, Thai parents are the essential persons in raising daughters to promote sexual abstinence in their daughters regarding Thai culture value (Supametaporn et al., 2010; Wight & Fullerton, 2013).

Moreover, Thai female adolescent's perception of parental love, teaching about sexual abstinence, parent's expectations of sexual abstinence, and encouraging daughter sexual abstinence, which helps maintain sexual abstinence until graduation from secondary school. Findings of Supamethaporn et al. (2010) supported that Thai parents have been the first learning source of female adolescents since childhood. Then female adolescents can think that sexual abstinence is suitable for their lives and have a commitment to a plan of sexual abstinence (Danaidussadeekul, 2004). This finding was congruent with the HPM and evidence (Chareonsuk et al., 2013; Haglund, 2006; Macintyre et al., 2015; Morrison-Beedy et al., 2008; Supametaporn et al., 2010). For instance, Tolma et al. (2011) and the others presented that female adolescents will recognize parental love and feel close to their parents, which affected maintaining sexual abstinence (Regnerus & Luchies, 2006; Tolma et al., 2011). Therefore, these findings fully confirm the causal relationship between child-rearing promoting sexual abstinence and sexual abstinence as proposed in the HPM.

2.6 Peer influence on sexual abstinence has a positive direct effect on a commitment to a plan of sexual abstinence and sexual abstinence, and it has a

positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence

The results of this study support the hypothesis that peer influence on sexual abstinence had a positive direct effect on a commitment to a plan of sexual abstinence. Also, it had a significant positive indirect effect on sexual abstinence through a commitment to a plan of sexual abstinence. These indicated that female adolescents who have peer influence on sexual abstinence would have a commitment to a plan of sexual abstinence and maintain sexual abstinence. This may be because the peer is one of interpersonal influences behavior during adolescence (Leatherdale et al., 2006; Padilla-Walker & Bean, 2009; Pender et al., 2015). Female adolescents intend to behave according to their friends, expect them to behave such as sexual abstinence is right for them (Bersamin, Walker, Fisher, & Grube, 2006; Bingenheimer, Asante, & Ahiadeke, 2015; Leerlooijer et al., 2014; Rai et al., 2003; Romer et al., 1994). This finding was congruent with previous studies. Eggers et al. (2017) found norms of friends had a direct effect on the sexual abstinence intention in African female adolescents ($\beta = 0.40, p < .05$). In the Thai context. Panurat (2009) and Wongchalee and Chaiyawat (2016) supported that peer influence on sexual abstinence was related to commitment to a plan of sexual abstinence.

However, the results of this study did not support the hypothesis that peer influence on sexual abstinence had a positive direct effect on sexual abstinence, indicating that female adolescents who have peer influence on sexual abstinence might not maintain sexual abstinence. Peer influence might not play a significant role in maintaining sexual abstinence among this group of female adolescents (age 18-19 years old) because this group gains more cognitive developments and the ability to think and a firm sense of independence. Female adolescents might act differently from their friend's sexual norms or modeling. Most of them may have friends in various norms regarding sexual behavior, or some friends already have sex, but they can maintain sexual abstinence. Moreover, 76% of them successfully remain sexual abstinence. Lam et al. (2014) supported that time with same-sex peers peaked in middle adolescence, age 15-17 years (Lam, McHale, &

Crouter, 2014). Also, Robinson et al. (1999) and Bachanas et al. (2002) identified peer norms of sexual behavior were not associated with sexual behavior in female adolescents (Bachanas et al., 2002; Robinson, Price, & Telljohann, 1999). Therefore, these findings partly confirm the causal relationship between peer influence and sexual abstinence, as proposed in the HPM.

2.7. Commitment to a plan of sexual abstinence has a positive direct effect on sexual abstinence

This finding provided that commitment to a plan of sexual abstinence had a positive direct effect on sexual abstinence. This indicated that female adolescents who have a commitment to a plan of sexual abstinence would maintain sexual abstinence. Commitment to a plan of sexual abstinence had a significant effect on sexual abstinence because when people perform a behavior, they have to be intended and have strategies to accomplish that behavior (Pender et al., 2015). Especially for sexual abstinence, which is a behavior that female adolescents have to maintain since they were young, and continues until graduation from high school. If they have no commitment, sexual abstinence cannot be accomplished.

Congruently, previous studies supported that female adolescent will strategies specific to sexual abstinence; avoid being a private area with a male, kissing or touching genital, and drinking alcohol and doing drugs (e.g., Norris et al., 2003, Oladepo, 2011; Siebenbruner, 2007; Buhi et al., 2011; Mokwena & Morabe, 2016). The finding of Webb and Sheeran (2006) which confirmed that intentions cause behavior (Webb & Sheeran, 2006). Sieverding (2005) also found that intention significantly predicted sexual initiation in adolescents (Sieverding, Adler, Witt, & Ellen, 2005). Moreover, Masters et al. (2008) found that sexual abstinence intention was a predictor of sexual abstinence (Masters, Beadnell, Morrison, Hoppe, & Gillmore, 2008). Also, Buhi et al. (2011) revealed that sexual abstinence intention had a positively direct effect on sexual abstinence ($\hat{\beta} = 0.66, p < 0.001$). In conclusion, this finding confirmed the causal relationship between commitment to a plan of sexual abstinence and sexual abstinence, as proposed in the HPM.

3. Implications for nursing knowledge and nursing practice

1. The causal model can guide nurses in developing an effective sexual abstinence promotion in Thai female adolescents.

2. Among the seven causal variables, child-rearing promoting sexual abstinence has the largest effect. Therefore, nurses should work with parents to increase their ability to raise young girls in a way that encourages sexual abstinence.

4. Recommendations for future research

Based on the present study's findings, the following recommendations for future research can be provided as follows.

1. The recent study identified the behavior-specific cognitions and affect factors that had causal and effect with sexual abstinence in Thai female adolescents. Future studies should investigate the impact of interventions with parental involvement and considering the feasible factors to maximize sexual abstinence outcomes such as perceived benefits of sexual abstinence, commitment to a plan of sexual abstinence, and perceived self-efficacy of sexual abstinence.

2. Two new instruments were developed in this study; The Child-rearing promoting sexual abstinence scale (CPSAS) and The Sexual abstinence-related affect scale (SAAS). Their validity and reliability need to be established in a larger population.

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doi:10.1037/hea0000244



APPENDICES

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY



Appendix A

Approval of the dissertation proposal

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY



ประกาศ

คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
เรื่อง การอนุมัติหัวข้อวิทยานิพนธ์ ครั้งที่ 3/2559 ประจำปีการศึกษา 2559

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาวิทยานิพนธ์

รหัสนิสิต	5777402436
ชื่อ-นามสกุล	นาวาอากาศตรีหญิงละอองดาว วรรณฤทธิ์
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
ประธานกรรมการ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
อาจารย์ที่ปรึกษาหลัก	รองศาสตราจารย์ ดร. วราภรณ์ ชัยวัฒน์
อาจารย์ที่ปรึกษาร่วม	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
กรรมการ	รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์
กรรมการภายนอก	รองศาสตราจารย์ ดร. โชติกา ภาษีผล
ชื่อหัวข้อวิทยานิพนธ์	แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย A CAUSAL MODEL OF SEXUAL ABSTINENCE IN THAI FEMALE ADOLESCENTS
ครั้งที่อนุมัติ	3/2559
ระดับ	ปริญญาเอก

จากมติคณะกรรมการบริหารคณะพยาบาลศาสตร์ ครั้งที่ 8/2560 วันที่ 26 พฤษภาคม 2560

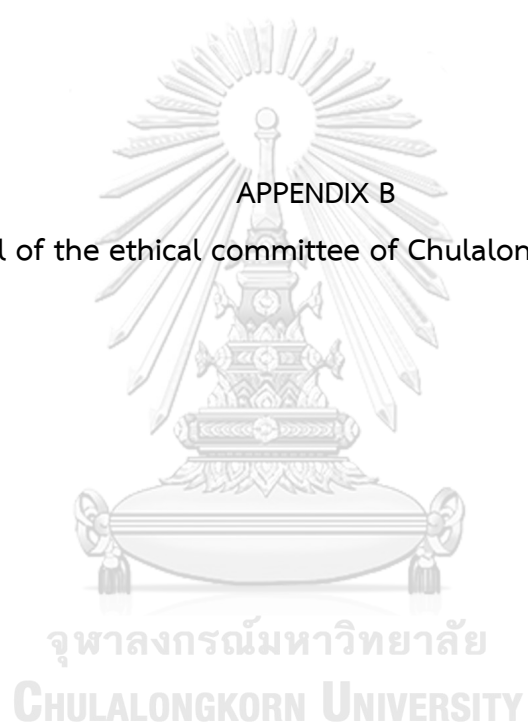
ประกาศ ณ วันที่ 1 มิถุนายน พ.ศ. 2560

(รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์)

คณบดีคณะพยาบาลศาสตร์

APPENDIX B

Approval of the ethical committee of Chulalongkorn University





The Research Ethics Review Committee for Research Involving Human Research
Participants, Group I, Chulalongkorn University

Jamjuree 1 Building, 2nd Floor, Phiyathai Rd., Patumwan district, Bangkok 10330, Thailand,
Tel: 0-2218-3202, 0-2218-3049 E-mail: eccr@chula.ac.th

AF 02-12

COA No. 051/2020


Certificate of Approval


Study Title No. 274.1/62 : A CAUSAL MODEL OF SEXUAL ABSTINENCE IN THAI FEMALE ADOLESCENTS

Principal Investigator : Sqn.Ldr. LA-ONGDAO WANNARIT

Place of Proposed Study/Institution : Faculty of Nursing,
Chulalongkorn University

The Research Ethics Review Committee for Research Involving Human Research Participants, Group I, Chulalongkorn University, Thailand, has approved constituted in accordance with Belmont Report 1979, Declaration of Helsinki 1964, Council for International Organizations of Medical Sciences (CIOMS) 2009, Standards of Research Ethics Committee (SREC) 2013, and National Policy and guidelines for Human Research 2015 the phase of developing model and tools of research proposal.

Signature: 
(Associate Prof. Prida Tasanapradit, M.D.)
Chairman

Signature: 
(Associate Prof. Nuntaree Chaichanawongsoj, Ph.D.)
Secretary

Date of Approval : 11 February 2020

Approval Expire date : 10 February 2021

The approval documents including;

- 1) Research proposal
- 2) Participant Information Sheet and Consent Form
- 3) Researcher
- 4) Questionnaires



274.1/62
11 FEB 2020
Approval
Approval Expire Date 10 FEB 2021

The approved investigator must comply with the following conditions:

1. The research/project activities must end on the approval expired date of the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (RECCU). In case the research/project is unable to complete within that date, the project extension can be applied one month prior to the RECCU approval expired date.
2. Strictly conduct the research/project activities as written in the proposal.
3. Using only the documents that bearing the RECCU's seal of approval with the subjects/volunteers (including subject information sheet, consent form, invitation letter for project/research participation if available).
4. Report to the RECCU for any serious adverse events within 5 working days.
5. Report to the RECCU for any change of the research/project activities prior to conduct the activities.
6. Final report (AF 02-14) and abstract is required for a one year (or less) research/project and report within 30 days after the completion of the research/project. For thesis, abstract is required and report within 30 days after the completion of the research/project.
7. Annual progress report is needed for a two- year (or more) research/project and submit the progress report before the expire date of certificate. After the completion of the research/project processes as No. 6.



ที่ อว 64.11/ 1613



คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
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15 พฤศจิกายน 2562

เรื่อง ขออนุมัติบุคลากรเป็นผู้ทรงคุณวุฒิ

เรียน คณบดีคณะแพทยศาสตร์โรงพยาบาลรามาธิบดี มหาวิทยาลัยมหิดล

สิ่งที่ส่งมาด้วย 1. โครงร่างวิทยานิพนธ์ 1 ชุด
2. เครื่องมือที่ใช้ในการวิจัย 1 ชุด

เนื่องด้วย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ นิสิตชั้นปริญญาตรีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาวิทยานิพนธ์ เรื่อง “แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย” โดยมี รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และรองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้จึงขอเรียนเชิญ ศาสตราจารย์ ดร.รุจา ภูโพบูลย์ อาจารย์สาขาวิชาการพยาบาลเด็ก เป็นผู้ทรงคุณวุฒิตรวจสอบความตรงตามเนื้อหาของเครื่องมือการวิจัยที่นิสิตสร้างขึ้นเพื่อประโยชน์ทางวิชาการต่อไป

จึงเรียนมาเพื่อโปรดพิจารณาอนุมัติให้บุคลากรข้างต้นเป็นผู้ทรงคุณวุฒิตรวจสอบเครื่องมือการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่านและขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.สุนิตา ปรีชาวงศ์)

รองคณบดี

รักษาการแทนคณบดีคณะพยาบาลศาสตร์

สำเนาเรียน	ศาสตราจารย์ ดร.รุจา ภูโพบูลย์
ฝ่ายวิชาการ	โทร. 0-2218-1131 โทรสาร. 0-2218-1130
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ โทร. 0-2218-1133
อาจารย์ที่ปรึกษาร่วม	รองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ โทร. 0-2218-1153
ชื่อนิสิต	นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ โทร. 08-6349-9261

ที่ อว 64.11/ 1616



คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศศพรฯ ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
กรุงเทพฯ 10330

15 พฤศจิกายน 2562

เรื่อง ขออนุญาตให้ใช้ข้อมูลนักศึกษาเพื่อประกอบการทำดัชนีพันธ

เรียน เลขาธิการคณะกรรมการการอาชีวศึกษา

เนื่องด้วย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ นิสิตชั้นปริญญาตรีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาดัชนีพันธ เรื่อง “แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย” โดยมี รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ เป็นอาจารย์ที่ปรึกษาดัชนีพันธ และรองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ เป็นอาจารย์ที่ปรึกษาดัชนีพันธร่วม ในการนี้ใคร่ขออนุญาตให้ใช้ข้อมูลจำนวนนักศึกษาหญิง ระดับประกาศนียบัตรวิชาชีพชั้นสูง (ปวส.) ชั้นปีที่ 1 ปีการศึกษา 2562 จำแนกตามสถานศึกษา จังหวัด และคณะหรือสาขาที่ศึกษาทั่วประเทศไทย เพื่อประกอบการพัฒนาดัชนีพันธในขั้นตอนการคำนวณและคัดเลือกกลุ่มตัวอย่างเข้าศึกษา

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตให้ นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ ใช้ข้อมูลเพื่อประกอบการทำดัชนีพันธดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

สุนิตา มณีรัตน์

(ผู้ช่วยศาสตราจารย์ ดร.สุนิตา มณีรัตน์)

รองคณบดี

รักษาการแทนคณบดีคณะพยาบาลศาสตร์

ฝ่ายวิชาการ

โทร. 0-2218-1131 โทรสาร. 0-2218-1130

อาจารย์ที่ปรึกษา

รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ โทร. 0-2218-1133

อาจารย์ที่ปรึกษาร่วม

รองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ โทร. 0-2218-1153

ชื่อนิสิต

นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ โทร. 08-6349-9261

ที่ อว 64.11/๐๓๗ |



คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศศพรช ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
กรุงเทพฯ 10330

๘/ กุมภาพันธ์ 2563

เรื่อง ขอบความอนุเคราะห์ให้ผลิตดำเนินการทดลองใช้เครื่องมือการวิจัย

เรียน อธิการบดี

- สิ่งที่ส่งมาด้วย 1. โครงร่างวิทยานิพนธ์ 1 ชุด
2. เครื่องมือที่ใช้ในการวิจัย 1 ชุด

เนื่องด้วย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ นิสิตชั้นปริญญาตรีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาวิทยานิพนธ์ เรื่อง “แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย” โดยมี รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และรองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้ใคร่ขอความอนุเคราะห์ให้ผลิตดำเนินการทดลองใช้เครื่องมือการวิจัย ในนักศึกษาหญิง ชั้นปีที่ 1 จำนวน 300 คน โดยใช้แบบสอบถามการรับรู้ประโยชน์ของพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้อุปสรรคต่อพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้ความสามารถของตนเองต่อการปฏิบัติพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามความรู้สึกเกี่ยวกับพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามอิทธิพลของเพื่อน แบบสอบถามการเลี้ยงดูของพ่อแม่เพื่อส่งเสริมการละเว้นเพศสัมพันธ์ แบบสอบถามความตั้งใจในการละเว้นเพศสัมพันธ์ และแบบสอบถามข้อมูลทั่วไปและการละเว้นเพศสัมพันธ์ ทั้งนี้ผลิตจะประสานงานเรื่อง วัน และเวลาในการทดลองใช้เครื่องมือการวิจัยอีกครั้งหนึ่ง

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์ให้ นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ ดำเนินการทดลองใช้เครื่องมือการวิจัย ดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์)

คณบดีคณะพยาบาลศาสตร์

ฝ่ายวิชาการ
อาจารย์ที่ปรึกษา
อาจารย์ที่ปรึกษาพร้อม

ชื่อ นิสิต

โทร. 0-2218-1131 E-mail. fonbox@chula.ac.th
รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ โทร. 0-2218-1133
รองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ โทร. 0-2218-1153
นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ โทร. 08-6349-9261

ที่ อว 64.11/ ๐๒๕๐



คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
กรุงเทพฯ 10330

๒/ กุมภาพันธ์ 2563

เรื่อง ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย

เรียน อธิการบดีมหาวิทยาลัย

สิ่งที่ส่งมาด้วย 1. โครงร่างวิทยานิพนธ์ 1 ชุด
2. เครื่องมือที่ใช้ในการวิจัย 1 ชุด

เนื่องด้วย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ นิสิตชั้นปริญญาตรีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาวิทยานิพนธ์ เรื่อง “แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย” โดยมี รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และรองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้ใคร่ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย ในนักศึกษาหญิง ชั้นปีที่ 1 จำนวน 92 คน โดยใช้แบบสอบถามการรับรู้ประโยชน์ของพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้อุปสรรคต่อพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้ความสามารถของตนเองต่อการปฏิบัติพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามรู้สึกเกี่ยวกับพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามอิทธิพลของเพื่อน แบบสอบถามการเลี้ยงดูของพ่อแม่เพื่อส่งเสริมการละเว้นเพศสัมพันธ์ แบบสอบถามตั้งใจในการละเว้นเพศสัมพันธ์ และแบบสอบถามข้อมูลทั่วไปและการละเว้นเพศสัมพันธ์ ทั้งนี้ นิสิตจะประสานงานเรื่อง วัน และเวลาในการเก็บรวบรวมข้อมูลการวิจัยอีกครั้งหนึ่ง

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์ให้ นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ ดำเนินการเก็บรวบรวมข้อมูลการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์)

คณบดีคณะพยาบาลศาสตร์

ฝ่ายวิชาการ
อาจารย์ที่ปรึกษา
อาจารย์ที่ปรึกษาร่วม
ที่อนิสิต

โทร. 0-2218-1131 E-mail. fonbox@chula.ac.th
รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ โทร. 0-2218-1133
รองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ โทร. 0-2218-1153
นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ โทร. 08-6349-9261

ที่ อว 64.11/๐๙๕๖



คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11
ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน
กรุงเทพฯ 10330

๒๑ กุมภาพันธ์ 2563

เรื่อง ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย

เรียน ผู้อำนวยการวิทยาลัยอาชีวศึกษา

- สิ่งที่ส่งมาด้วย 1. โครงร่างวิทยานิพนธ์ 1 ชุด
2. เครื่องมือที่ใช้ในการวิจัย 1 ชุด

เนื่องด้วย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ นิสิตชั้นปริญญาตรีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย กำลังดำเนินการพัฒนาวิทยานิพนธ์ เรื่อง “แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย” โดยมี รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ และรองศาสตราจารย์ ดร.จินตนา ยูนิพันธุ์ เป็นอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ในการนี้ใคร่ขอความอนุเคราะห์ให้นิสิตดำเนินการเก็บรวบรวมข้อมูลการวิจัย ในนักศึกษาหญิง ชั้นปีที่ 1 จำนวน 23 คน โดยใช้แบบสอบถามการรับรู้ประโยชน์ของพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้อุปสรรคต่อพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามการรับรู้ความสามารถของตนเองต่อการปฏิบัติพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามความรู้สึกเกี่ยวกับพฤติกรรมการละเว้นเพศสัมพันธ์ แบบสอบถามอิทธิพลของเพื่อน แบบสอบถามการเลี้ยงดูของพ่อแม่เพื่อส่งเสริมการละเว้นเพศสัมพันธ์ แบบสอบถามความตั้งใจในการละเว้นเพศสัมพันธ์ และแบบสอบถามข้อมูลทั่วไปและการละเว้นเพศสัมพันธ์ ทั้งนี้ นิสิตจะประสานงานเรื่อง วัน และเวลาในการเก็บรวบรวมข้อมูลการวิจัยอีกครั้งหนึ่ง

จึงเรียนมาเพื่อโปรดพิจารณาอนุเคราะห์ให้ นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ ดำเนินการเก็บรวบรวมข้อมูลการวิจัยดังกล่าว คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์จากท่าน และขอขอบพระคุณอย่างสูงมา ณ โอกาสนี้

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.วราภรณ์ ชัยวัฒน์)

คณบดีคณะพยาบาลศาสตร์

ฝ่ายวิชาการ
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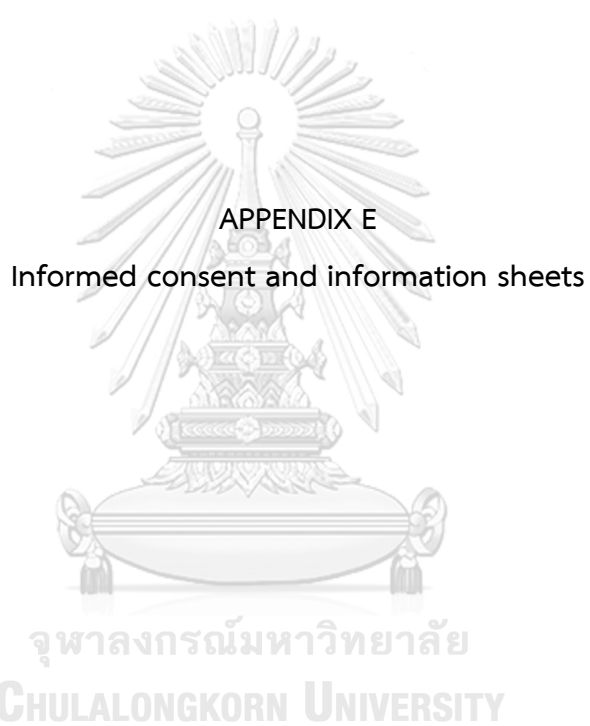
APPENDIX D
List of the experts

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

List of the experts

1. Professor Dr. Rutja Phuphaibul
Faculty of Medicine Ramathibodi Hospital, Mahidol University,
2. Associate Professor Dr. Saovakon Virasiri
Faculty of Nursing, Khon Kaen University
3. Assistant Professor Pol.Col. Dr. Somsuk Panurat
Police Nursing College, Royal Thai Police
4. Dr. Pinhatai Supamethaporn
Faculty of Nursing, Naresuan University
5. Assistant Professor Dr. Surasak Treenai
Faculty of Nursing, Chulalongkorn University





เอกสารข้อมูลสำหรับผู้มีส่วนร่วมในการวิจัย

ชื่อโครงการวิจัย แบบจำลองเชิงสาเหตุของการละเว้นเพศสัมพันธ์ของหญิงวัยรุ่นไทย

ชื่อผู้วิจัย นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ

ตำแหน่ง นิสิตดุษฎีบัณฑิตกณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ติดต่อผู้วิจัย คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย อาคารบรมราชชนนีศรีศตพรรษ
ชั้น 11 ถนนพระราม 1 แขวงวังใหม่ เขตปทุมวัน กรุงเทพฯ 10330 โทรศัพท์ 02-2181128 โทรสาร
02-2181130หรือ (ที่ทำงาน) วิทยาลัยพยาบาลทหารอากาศ ถ.พหลโยธิน แขวงคลองถนน เขตสาย
ไหม กทม.10220 โทรศัพท์ 02-534-6088

หรือ (ที่บ้าน) 171/2264 ถ. โรจนนิล 4 แขวงคลองถนน เขตสายไหม กทม. 10220

โทรศัพท์มือถือ 08-6349-9261 **E-mail:** Lchumthi@gmail.com

ขอเรียนเชิญเข้าร่วมการวิจัย ก่อนตัดสินใจเข้าร่วมในการวิจัย โปรดทำความเข้าใจว่างานวิจัยนี้เกี่ยวข้องกับอะไรและทำไมเพราะเหตุใด กรุณาใช้เวลาในการอ่านข้อมูลต่อไปนี้อย่างรอบคอบ หากมีข้อความใดที่อ่านแล้วไม่เข้าใจหรือไม่ชัดเจน โปรดสอบถามเพิ่มเติมกับผู้วิจัยได้ตลอดเวลา ผู้วิจัยจะอธิบายจนกว่าจะเข้าใจอย่างชัดเจน

1. งานวิจัยนี้ศึกษาเกี่ยวกับ แบบจำลองเชิงสาเหตุของการไม่มีเพศสัมพันธ์ของหญิงวัยรุ่นไทย มีวัตถุประสงค์เพื่อตรวจสอบปัจจัยทำนายและความสัมพันธ์ของปัจจัยที่เกี่ยวข้องกับการไม่มีเพศสัมพันธ์ของหญิงวัยรุ่นไทย เนื่องจาก การละเว้นเพศสัมพันธ์/การไม่มีสัมพันธ์ในช่วงที่ยังศึกษาอยู่หรือชะลอการมีเพศสัมพันธ์ไว้ จนกว่าจะถึงเวลาที่เหมาะสมหรือจบการศึกษาก่อนหน้านี้ เป็นพฤติกรรมที่ส่งเสริมให้หญิงวัยรุ่นได้มีสุขภาพที่ดีทั้งร่างกายและจิตใจ โดยเฉพาะอย่างยิ่งในระหว่างที่ยังเรียนหนังสืออยู่ เช่น ปลอดภัยจากการตั้งครรภ์ไม่พึงประสงค์ หรือจากการติดเชื้อทางเพศสัมพันธ์ได้อย่างแน่นอน ซึ่งการมีสุขภาพที่ดี จะทำให้สามารถเรียนหนังสือได้อย่างราบรื่นจนจบ ได้ทำงานที่มีรายได้สูงๆ อย่างที่ได้ตั้งใจไว้ จนสามารถดูแลตัวเองได้ และเป็นกำลังสำคัญในการพัฒนาประเทศชาติต่อไป แต่อย่างไรก็ตาม ในปัจจุบันนี้ความรู้เรื่องการไม่มีสัมพันธ์ในช่วงที่ยังศึกษาอยู่ ยังคงไม่ชัดเจนนัก ว่ามีปัจจัยอะไรบ้างที่ส่งผลต่อการไม่มีสัมพันธ์ในช่วงที่ยังศึกษาอยู่ของหญิงวัยรุ่นไทย ด้วยเหตุนี้ ผู้วิจัยจึงทำวิจัยเรื่องนี้ขึ้น

2. ประโยชน์ของการวิจัยนี้ จะช่วยให้พยาบาลวิชาชีพ ตลอดจนบุคลากรทางสุขภาพสามารถเข้าใจถึงการไม่มีสัมพันธ์ในช่วงที่ยังศึกษาอยู่ของหญิงวัยรุ่นไทย ซึ่งผลการศึกษานี้จะสามารถนำไปพัฒนากระบวนการส่งเสริมสุขภาพของหญิงวัยรุ่นไทยทั้งในสถานศึกษาและสถานพยาบาลได้อย่างแท้จริง และส่งผลให้การพยาบาลมีคุณภาพมากยิ่งขึ้น

3. ผู้เข้าร่วมการวิจัยในครั้งนี้ คือ นักศึกษาหญิงชั้นปีที่ 1 ที่กำลังศึกษาในสถาบันอุดมศึกษา สังกัดสำนักงานคณะกรรมการการอุดมศึกษา และหลักสูตรประกาศนียบัตรวิชาชีพชั้นสูง สังกัดสำนักงานคณะกรรมการการอาชีวศึกษา ทั่วประเทศไทย อายุ 18 ถึง 19 ปี สามารถพูด อ่าน เขียน ภาษาไทยได้ ไม่มีโรคหรืออาการเจ็บป่วยร้ายแรง และยินดีเข้าร่วมการวิจัย

สำหรับการเก็บข้อมูลแบ่งเป็น 2 ขั้นตอน คือ ขั้นตอนที่ 1 การพัฒนาเครื่องมือวิจัย แบ่งระยะการดำเนินงานเป็น 2 ระยะ คือ 1) การเก็บข้อมูลเพื่อวิเคราะห์รายข้อคำถาม และ 2) การเก็บข้อมูลเพื่อทดสอบคุณภาพของแบบสอบถาม และ ขั้นตอนที่ 2 คือการทดสอบแบบจำลองเชิงสาเหตุของการไม่มีเพศสัมพันธ์ของหญิงวัยรุ่นไทย

สำหรับการศึกษาของผู้เข้าร่วมวิจัยในครั้งนี้ อยู่ในขั้นตอนที่ 2 คือ การเก็บข้อมูลเพื่อทดสอบแบบจำลองเชิงสาเหตุของการไม่มีเพศสัมพันธ์ของหญิงวัยรุ่นไทย ใช้วิธีการสุ่มเลือกกลุ่มตัวอย่างจำนวน 852 คน จากสถาบันอุดมศึกษา ประเทศไทย

หลังจากได้รับอนุมัติจากคณะกรรมการพิจารณาจริยธรรมการวิจัยในคนแล้ว ผู้วิจัยทำหนังสือถึงอธิการบดี/ผู้อำนวยการของสถานศึกษา เพื่อขอเข้าเก็บรวบรวมข้อมูล เมื่อได้รับอนุมัติให้เข้าเก็บข้อมูลได้ ผู้วิจัยจึงประสานบุคคลที่แต่ละสถาบันมอบหมาย และนัดหมายเพื่อเข้าปรึกษาขั้นตอนการดำเนินการ จากนั้น เก็บข้อมูลตามวิธีการและสถานที่ ที่แต่ละสถาบันกำหนด โดยผู้ประสานมิได้มีส่วนร่วมใด ๆ ระหว่างการเก็บข้อมูล การสุ่มเลือกนักศึกษาเข้าโครงการวิจัยนี้ ไม่ได้เลือกจากลักษณะ/พฤติกรรมรายบุคคลของนักศึกษาที่เกี่ยวข้องกับหัวข้อของโครงการวิจัยนี้

4. ผู้เข้าร่วมวิจัยจะได้รับการชี้แจงจากผู้วิจัยถึงวัตถุประสงค์ ขั้นตอนการเก็บข้อมูลและสิทธิต่าง ๆ และได้รับแบบสอบถามจำนวน 8 ชุด ประกอบด้วย 1) การรับรู้ประโยชน์ของพฤติกรรมการละเว้นเพศสัมพันธ์ จำนวน 17 ข้อ 2) การรับรู้อุปสรรคต่อพฤติกรรมการละเว้นเพศสัมพันธ์ จำนวน 18 ข้อ 3) การรับรู้ความสามารถของตนเองต่อการปฏิบัติพฤติกรรมการละเว้นเพศสัมพันธ์ จำนวน 13 ข้อ 4) ความรู้สึกที่สัมพันธ์กับพฤติกรรมการละเว้นเพศสัมพันธ์ จำนวน 7 ข้อ 5) อิทธิพลของเพื่อน จำนวน 18 ข้อ 6) การเลี้ยงดูของพ่อแม่เพื่อส่งเสริมการละเว้นเพศสัมพันธ์ จำนวน 17 ข้อ 7) ความมุ่งมั่นต่อแผนในการละเว้นเพศสัมพันธ์ จำนวน 7 ข้อ 8) ข้อมูลทั่วไปและการละเว้นเพศสัมพันธ์ จำนวน 17 ข้อ รวมทั้งสิ้น 114 ข้อ ใช้เวลาในการตอบแบบสอบถามประมาณ 10-15 นาที

5. การศึกษาครั้งนี้เป็นการตอบแบบสอบถาม จึงมีระดับความเสี่ยงต่ำ และไม่มีผลข้างเคียงใด ๆ ที่จะกระทบต่อร่างกายและจิตใจของผู้เข้าร่วมวิจัย อย่างไรก็ตาม หากท่านรู้สึกไม่สบายใจ หรือกังวลในขณะที่ตอบแบบสอบถาม สามารถยุติการตอบแบบสอบถามทันที ผู้วิจัยจะดำเนินการช่วยเหลือเบื้องต้น โดยให้ท่านได้ระบายความไม่สบายใจ และร่วมกันพิจารณาทางเลือกเพื่อการช่วยเหลือขั้นต่อไป

การเข้าร่วมในการวิจัยครั้งนี้เป็นโดยสมัครใจ ผู้เข้าร่วมการวิจัยมีสิทธิที่จะปฏิเสธการตอบแบบสอบถาม หรือถอนตัวออกจากการศึกษาได้ตลอดเวลาที่ต้องการ โดยไม่ต้องให้เหตุผล ทั้งนี้การปฏิเสธหรือถอนตัวออกจากการวิจัยนั้น จะไม่ก่อให้เกิดอันตราย หรือผลกระทบใด ๆ ต่อผู้เข้าร่วมวิจัย รวมถึงสิทธิประโยชน์ที่พึงจะได้รับ

6. หากผู้เข้าร่วมวิจัยมีข้อสงสัย โปรดสอบถามเพิ่มเติมจากผู้วิจัยได้ตลอดเวลา หรือติดต่อผู้วิจัยได้โดยตรงที่ นาวาอากาศตรีหญิง ละอองดาว วรรณฤทธิ์ โทรศัพท์ 08-6349-9261 หรือติดต่อตามที่อยู่ในหน้าแรกของเอกสารฉบับนี้ และหากผู้วิจัยมีข้อมูลเพิ่มเติมที่เป็นประโยชน์หรือโทษเกี่ยวกับการวิจัย ผู้วิจัยจะแจ้งให้ผู้เข้าร่วมวิจัยทราบอย่างรวดเร็ว

7. ข้อมูลที่ได้รับจากการตอบแบบสอบถามของผู้เข้าร่วมวิจัยจะถูกนำไปรวมกับข้อมูลของผู้เข้าร่วมวิจัยคนอื่น ๆ ที่เข้าร่วมในการศึกษาครั้งนี้ ทั่วประเทศไทย โดยข้อมูลจะถูกเก็บเป็นความลับ ซึ่งแม้แต่ตัวผู้วิจัยก็ไม่มีโอกาสทราบว่าแบบสอบถามนี้ตอบโดยผู้ร่วมวิจัยท่านใด หากผู้วิจัยตีพิมพ์ผลการศึกษา การรายงานผลการวิจัยจะเป็นการนำเสนอข้อมูลการวิจัยในภาพรวมเท่านั้น **ไม่มีข้อมูลใดในการรายงานที่จะนำไปสู่การระบุตัวตนของผู้เข้าร่วมวิจัยหรือชื่อสถาบันการศึกษา** ส่วนการเปิดเผยผลการวิจัยต่อหน่วยงานที่เกี่ยวข้อง จะกระทำเฉพาะในกรณีจำเป็นด้วยเหตุผลอันเป็นประโยชน์ต่อการส่งเสริมสุขภาพของหญิงวัยรุ่นไทยหรือเหตุผลทางวิชาการเท่านั้น

คำตอบของท่านจะเป็นความลับ เพราะผู้วิจัยเลือกใช้โปรแกรม Moodle สร้างแบบสอบถาม และงดการล๊อคอินเข้าใช้ เพื่อป้องกันการตรวจสอบหมายเลขไอพีสำหรับระบุตัวตน/ตำแหน่งที่ตั้งของระบบคอมพิวเตอร์ที่เชื่อมต่ออยู่บนเครือข่าย อีกทั้ง ผู้วิจัยจะทำลายไฟล์ข้อมูลที่ได้จากการตอบแบบสอบถามออนไลน์ด้วยตนเองทันที หลังจากเสร็จสิ้นการวิจัย

8. เพื่อเป็นการแสดงความขอบคุณผู้มีส่วนร่วมในการวิจัย ผู้วิจัยจะมอบปากกาเป็นของที่ระลึกแก่ผู้เข้าร่วมในการวิจัย รวมถึงผู้ที่ถอนตัวระหว่างการศึกษา โดยผู้วิจัยได้จัดส่งไปให้ท่านที่ผู้ประสานของสถาบัน เมื่อสถานศึกษาเปิดทำการปกติ

9. หากนักศึกษาไม่ได้รับการปฏิบัติตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงผู้มีส่วนร่วมในการวิจัย สามารถร้องเรียนได้ที่ คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย 254 อาคารจามจุรี 1 ชั้น 2 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330 โทรศัพท์/โทรสาร 0-2218-3202, 0-2218-3049 E-mail: eccu@chula.ac.th

หลังจากนักศึกษาได้รับข้อมูลจากผู้วิจัยครบถ้วนแล้ว และยินยอมในการเข้าร่วมวิจัย ท่านสามารถกด “Next page” และเริ่มทำแบบสอบถามได้เลยค่ะ



APPENDIX F

Research instruments (Example)

จุฬาลงกรณ์มหาวิทยาลัย
CHULALONGKORN UNIVERSITY

ตัวอย่างแบบสอบถามการรับรู้ประโยชน์ของพฤติกรรมการละเว้นเพศสัมพันธ์

คำชี้แจง ต่อไปนี้ เป็นการถามเกี่ยวกับประโยชน์ของการไม่มีเพศสัมพันธ์ในช่วงที่ยังศึกษาอยู่
โปรดทำเครื่องหมาย ✓ ในช่องที่ตรงกับความคิดเห็นของคุณ
ในแต่ละคำตอบไม่มีข้อไหนถูกและไม่มีข้อไหนผิด

ลำดับ	คำถาม	เห็นด้วย อย่างยิ่ง	ค่อนข้าง เห็นด้วย	ไม่ค่อยเห็น ด้วย	ไม่เห็นด้วย อย่างยิ่ง
สำหรับฉันท ประโยชน์ของการไม่มี					
เพศสัมพันธ์ ในช่วงที่ยังศึกษาอยู่ คือ.....					
1	ปลอดภัยจากโรคติดต่อทางเพศสัมพันธ์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	ลดความเสี่ยงในการติดเชื้อเอชไอวี/ โรคเอดส์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	รอดพ้นจากการตั้งครรภ์โดยไม่ตั้งใจ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ตัวอย่างแบบสอบถามการรับรู้อุปสรรคต่อพฤติกรรมการละเว้นเพศสัมพันธ์

คำชี้แจง ต่อไปนี้ เป็นการถามเกี่ยวกับ สิ่งที่มาขัดขวางหรือเป็นอุปสรรคต่อการไม่มีเพศสัมพันธ์
ในช่วงที่ยังศึกษาอยู่ ในแต่ละคำตอบไม่มีข้อไหนถูกและข้อไหนผิด
** หากคุณยังไม่มีแฟน ขอให้คิดว่า ถ้าคุณมีแฟน คุณจะตอบคำถามดังกล่าวอย่างไร**
โปรดทำเครื่องหมาย ✓ ในช่องที่ตรงกับความคิดเห็นของคุณ

ลำดับ	ข้อความ	เห็นด้วย อย่างยิ่ง	ค่อนข้าง เห็นด้วย	ไม่ค่อยเห็น ด้วย	ไม่เห็น ด้วย อย่างยิ่ง
สิ่งที่มาขัดขวาง ต่อการไม่มีเพศสัมพันธ์					
ในช่วงที่ยังศึกษาอยู่ คือ...					
1	คำพูดของแฟนว่าจะเลิกถ้าไม่ยอมมีเพศสัมพันธ์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	ความต้องการผูกมัดซึ่งกันและกันระหว่างฉันกับแฟน	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	ความต้องการรักษาคนรักเอาไว้	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ตัวอย่างแบบสอบถามการรับรู้ความสามารถของตนเองต่อการปฏิบัติพฤติกรรมการละเว้นเพศสัมพันธ์ในวัยเรียน

คำชี้แจง ขอให้ท่านอ่านข้อความด้านล่าง แล้วตัดสินใจว่าคุณสามารถปฏิบัติสิ่งเหล่านี้ได้มากน้อยเพียงใด โดยทำเครื่องหมาย ✓ ลงในช่องตัวเลือกที่ตรงกับความสามารถของคุณ
****หากคุณยังไม่มีแฟน ขอให้คิดว่า ถ้าคุณมีแฟน คุณจะตอบคำถามดังกล่าวอย่างไร****

ลำดับ	ข้อความคำถาม	ทำได้	ค่อนข้าง	ทำได้	ทำไม่ได้
		แน่นอน	ทำได้	น้อย	แน่นอน
1	ฉันสามารถตกลงกับแฟนถึงขอบเขตในการแสดงความรัก เช่น การไม่ยินยอมให้จับต้องร่างกายหรือส่วนต่าง ๆ ที่เป็นส่วนตัว และของสงวน (หน้าอกหรืออวัยวะเพศ)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	ฉันสามารถตกลงกับแฟนได้ว่าจะไม่มีเพศสัมพันธ์จนกว่าจะเรียนจบ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	ฉันสามารถปฏิเสธการมีเพศสัมพันธ์กับแฟน/คนรัก แม้ฉันจะมีอารมณ์ทางเพศ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



โปรดพลิกทำในหน้าต่อไปค่ะ

ตัวอย่างแบบสอบถามความรู้สึกที่สัมพันธ์กับพฤติกรรมการละเว้นเพศสัมพันธ์

คำชี้แจง ต่อไปนี้เป็นการถามเกี่ยวกับความรู้สึกของคุณเกี่ยวกับการไม่มีเพศสัมพันธ์ในช่วงที่ยัง
ศึกษาอยู่ ซึ่งแต่ละคำตอบนั้น ไม่มีข้อไหนถูกหรือผิด
โปรดทำเครื่องหมาย ✓ ลงในช่องตัวเลือกที่ตรงกับความรู้สึกของคุณ

ลำดับ	ข้อความ	ตรง มากที่สุด	ค่อนข้าง ตรง	ค่อนข้าง ไม่ตรง	ไม่ตรงเลย
	ฉันรู้สึกว่า การไม่มีเพศสัมพันธ์ ในช่วงที่ยังเรียนหนังสือ...				
1	เป็นสิ่งที่ดี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	เมื่อฉันคิดถึงนักศึกษาหญิง ที่ยังไม่มีเพศสัมพันธ์ ฉันรู้สึกว่าตัวเขา...				
2	กำลังทำสิ่งที่ถูกต้อง	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	เป็นอิสระจากการผูกมัดของผู้ชาย	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ตัวอย่างแบบสอบถามการเลี้ยงดูของพ่อแม่เพื่อส่งเสริมการละเว้นเพศสัมพันธ์

คำชี้แจง ต่อไปนี้ เป็นการถามความคิดเห็นของคุณเกี่ยวกับการเลี้ยงดู การสอน ความคาดหวัง
หรือการกระทำของพ่อแม่ (หรือบุคคลในครอบครัวที่มีความสำคัญกับคุณ เช่น ปู่ ย่า ตา
ยาย ในกรณีที่พ่อแม่ไม่ได้อยู่กับคุณ) ต่อการไม่มีเพศสัมพันธ์ ในช่วงที่ยังเรียนหนังสือ
โปรดทำเครื่องหมาย ✓ ลงในช่องที่ตรงกับกับความคิดเห็นของคุณมากที่สุด

ลำดับ	ข้อความ	ตรงมาก ที่สุด	ค่อนข้าง ตรง	ค่อนข้าง ไม่ตรง	ไม่ ตรงเลย
1	พ่อแม่เสียสละความสุข และทำงานหนัก เพื่อเลี้ยงดูฉันให้มีอนาคตที่ดี	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	พ่อแม่สอนฉันเสมอว่าไม่ให้มีเพศสัมพันธ์ก่อนวัย อันควร หรือรอจนกว่าจะเรียนจบ	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	พ่อแม่สอนฉัน ให้ระวังตัวและหลีกเลี่ยง โอกาสเสี่ยงต่อการมีเพศสัมพันธ์	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ตัวอย่างแบบสอบถามอิทธิพลของเพื่อน

คำชี้แจง ต่อไปนี้ เป็นการถามเกี่ยวกับความคิดเห็นของคุณเกี่ยวกับ ความคิด ความเชื่อ ความคาดหวัง หรือการกระทำของเพื่อนในกลุ่มของคุณ ต่อการไม่มีเพศสัมพันธ์ ในช่วงที่ยังศึกษาอยู่

โปรดทำเครื่องหมาย ✓ ในช่องที่ตรงกับความคิดเห็นของคุณมากที่สุด

ลำดับ	ข้อความ	ตรงมากที่สุด	ค่อนข้างตรง	ค่อนข้างไม่ตรง	ไม่ตรงเลย
1	เพื่อนในกลุ่มเชื่อว่า จะประสบผลสำเร็จในชีวิต หากไม่มีเพศสัมพันธ์ ในช่วงที่ยังศึกษาอยู่	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	เพื่อนในกลุ่มเชื่อว่า จะสามารถเรียนหนังสือจนจบ หากยังไม่มีเพศสัมพันธ์	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	เพื่อนในกลุ่มเชื่อว่า การเป็นลูกที่ดี ต้องไม่มีเพศสัมพันธ์ จนกว่าจะจบการศึกษา	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

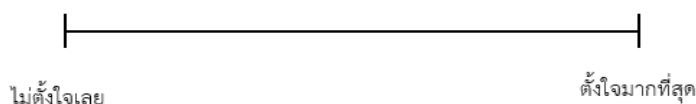
ตัวอย่างแบบสอบถามความมุ่งมั่นต่อแผนการละเว้นเพศสัมพันธ์

คำชี้แจง กรุณาอ่านข้อความต่อไปนี้ แล้วทำเครื่องหมาย (X) ลงบนเส้นตรง ภายใต้ข้อความนั้น ๆ ในตำแหน่งที่ตรงกับคำตอบความคิด/ความรู้สึก รวมถึงวิธีการหรือการปฏิบัติ ของคุณที่ใช้ป้องกัน/หลีกเลี่ยงการมีเพศสัมพันธ์ มากที่สุด

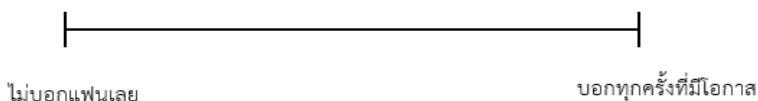
****และหากคุณยังไม่มีแฟน ขอให้คิดว่า ถ้าคุณมีแฟนคุณจะปฏิบัติอย่างไร****

โปรดทำเครื่องหมาย (X) ทับลงบนเส้นตรงตามแนวอนดั่งหัวข้อต่อไปนี้

1. ฉันตั้งใจจะไม่มีเพศสัมพันธ์ ในขณะที่ฉันยังเป็นนักศึกษา



2. ฉันตกลงกับแฟน/คนรัก ว่าจะยังไม่มีเพศสัมพันธ์จนกว่าจะเรียนจบ หรือแต่งงาน



ตัวอย่างแบบสอบถามข้อมูลทั่วไปและการละเว้นเพศสัมพันธ์

ข้อมูลส่วนบุคคล

โปรดเติมคำในช่องว่าง และทำเครื่องหมาย ✓ คำตอบที่ตรงกับข้อมูลของคุณ

1. คุณอายุ.....ปี

2. คุณมีพี่น้อง.....คน

3. คุณนับถือศาสนา

(1) พุทธ () คริสต์ () อิสลาม () ไม่ได้นับถือศาสนา () ศาสนาอื่น ๆ (โปรดระบุ).....

คำชี้แจง ผู้วิจัยใคร่ขอภัยหากมีคำถามที่เป็นเรื่องส่วนตัวของคุณ คำถามต่อไปนี้ มีความสำคัญต่อการศึกษาครั้งนี้มาก ขอความกรุณาโปรดตอบตรงตามความเป็นจริง

อย่างไรก็ตาม พฤติกรรมต่อไปนี้ไม่มีถูกหรือผิด ข้อมูลส่วนนี้จะถูกเก็บเป็นความลับ จะไม่มีผู้ใดรู้ว่า แบบสอบถามนี้เป็นของใครและกำลังศึกษาอยู่ในสถาบันใด

ในการอภิปรายจะอยู่ในภาพรวม ไม่ชี้เฉพาะว่าเป็นบุคคลใด

ลำดับ	พฤติกรรมของคุณกับเพื่อนต่างเพศ	เคย	ไม่เคย
9	ไปไหนมาไหนสองต่อสองกับเพื่อนชาย	<input type="checkbox"/>	<input type="checkbox"/>
10	เกาะกุ่มมือกัน	<input type="checkbox"/>	<input type="checkbox"/>
11	นั่งใกล้ชิดกัน	<input type="checkbox"/>	<input type="checkbox"/>
12	กอดกัน	<input type="checkbox"/>	<input type="checkbox"/>
13	จูบปากกัน	<input type="checkbox"/>	<input type="checkbox"/>
14	มีเพศสัมพันธ์ทางปาก	<input type="checkbox"/>	<input type="checkbox"/>
15	มีเพศสัมพันธ์ทางทวารหนัก	<input type="checkbox"/>	<input type="checkbox"/>
16	มีเพศสัมพันธ์ทางช่องคลอด	<input type="checkbox"/>	<input type="checkbox"/>

17. คุณเคยมีเพศสัมพันธ์กับผู้ชายหรือไม่

1. ไม่เคย

2. เคย และมีเพศสัมพันธ์ครั้งแรกอายุ.....ปี





APPENDIX G

Characteristics of participants and The measurement models of variables

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Characteristics of participants

Item analysis and item selection (n=299)

For this group, the participants were 18 (28.4%) and 19 (71.6%) years. Most of them were Buddhist (93.9%), and the others were Christian (2.7%), Muslim (1.7%), and 2.0% of them had no religion. Most of them lived with parents (64.9%), 8.4% lived with relatives (8.4%), 7.4 % of them lived alone, and the others lived with a boyfriend, a girlfriend, or a same-sex peer at a dormitory. Two hundred thirty-five participants (78.6 %) remained sexual abstinence, and 64 participants (25.7%) reported engaging in sexual intercourse (oral, anal, or vaginal). Among non-abstinent, forty-nine participants (76.6%) reported their age at first sexual intercourse; most of them (65.6%) were in 17-19 years old, and the youngest age engaging in sexual intercourse was 14 years old.

Testing the measurement models (n=300)

The participants were 18 (20.3%) and 19 (79.7%) years. Most of them were Buddhist (92.0%), and the others were Christian (1.0%), Muslim (3.7%), and 3.3% of them had no religion. Most of them live with parents (74.3%) or relatives (6.7%), 6.7 % of them living alone, and the others live with a boyfriend, a girlfriend, or a same-sex peer at a dormitory. Two hundred and ten participants (70.0%) remained sexual abstinence, and 90 participants (30.0%) reported engaging in sexual intercourse (oral, anal, or vaginal). Among non-abstinent, sixty-nine participants (76.7%) reported their age at first sexual intercourse; 56.7% were in 17 to 19 years old, and the youngest age engaging in sexual intercourse was 13 years old.

The measurement models of variables

Confirmatory factor analysis (CFA) was conducted for the construct validity of the measurement models. The samples were 300 first-year female students studying in university, Thailand. Statistical analysis was carried out by using *Mplus* software. Normality and assumption testing were considered before conducting CFA. The criteria of the goodness-of-fit of the model were considered: e.g., χ^2 value should not be significant at $p=0.05$, χ^2/df ratio <2 , CFI >0.95 , TLI >0.95 , RMSEA <0.05 , and SRMR <0.05 (Hair et al., 2014; Kelloway, 2015; Muthén & Muthén, 2016). Details of the measurement models were shown as follows.

1. The perceived benefit of sexual abstinence scale (BeSA)

Normality testing was conducted and provided an acceptable result. Skewness and kurtosis values were -1.650 to -0.643, and -0.687 to 2.012 ($p<0.05$). The KMO was 0.93, and Bartlett's test of sphericity was significant ($\chi^2 = 4713.354$, $p<0.001$). The final model provided the fit indices met the criteria for a good model fit; $\chi^2 = 71.564$, $p=0.0928$, $df=57$, χ^2/df ratio=1.25, CFI=0.997, TLI=0.993, RMSEA=0.029, SRMR=0.032. The standardized factor loading of all items ranging from 0.548-0.958.

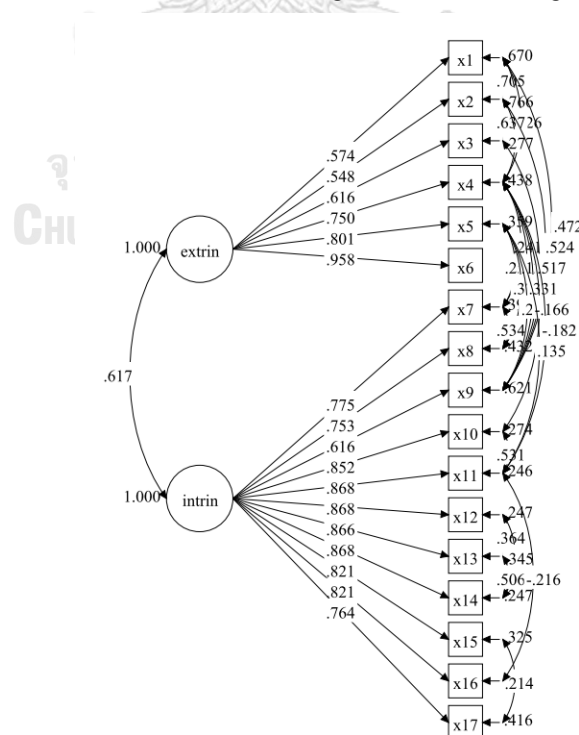


Figure 1 The standardized of the modified measurement model of the BeSA

Table 1 Confirmatory factor analysis of the BeSA (n=300)

Construct/ Number of items	Factor loading		t	P-value	R ²
	Estimate	S.E.			
Extrinsic/6	0.548-0.958	0.052-0.068	9.548-16.169	0.000	0.300-0.917
Intrinsic/11	0.615-0.868	0.018-0.037	16.646-47.131	0.000	0.379-0.754

2. The perceived barrier to sexual abstinence scale (BaSA)

The normality testing was conducted and provided an acceptable result. The Skewness and Kurtosis values were 0.292 to 1.187 and -1.055 to 0.250 (p<0.05). The KMO was 0.882, and Bartlett’s test of sphericity was significant ($\chi^2 = 3778.419$, p<0.001). The final model provided the fit indices met the criteria; $\chi^2=108.947$, p=0.0742, df=89, χ^2/df ratio=1.22, CFI=0.995, TLI=0.991, RMSEA=0.027, SRMR=0.038. The standardized factor loading of all items ranging from 0.648-0.897.

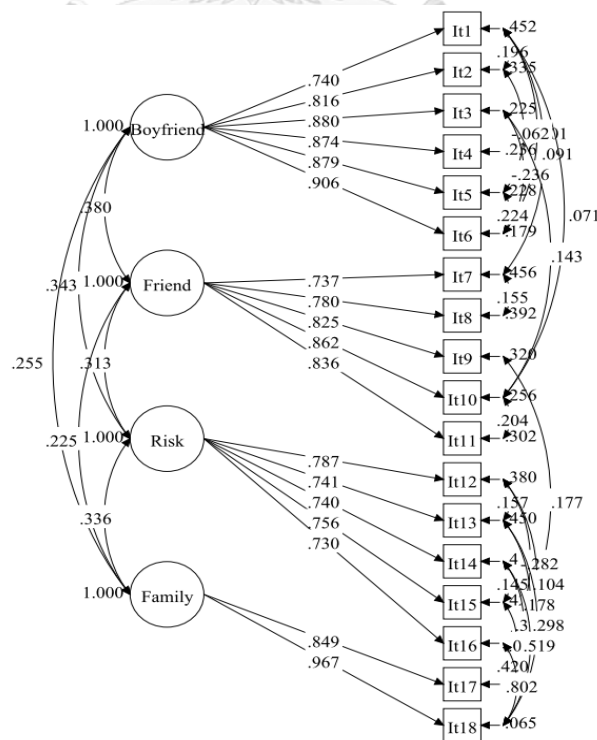


Figure 2 The standardized of the modified measurement model of the BaSA

Table 2 Confirmatory factor analysis of the BaSA (n=300)

Construct/ Number of indicators	Factor loading		t	P-value	R ²
	Estimate	S.E.			
Boyfriend's pressure/6	0.740-0.906	0.016- 0.029	25.429- 56.707	0.000	0.548-0.821
Friend's pressure /5	0.737-0.862	0.022- 0.033	22.525- 38.685	0.000	0.544-0.744
Risk situation/5	0.741-0.787	0.035- 0.041	19.434- 21.283	0.000	0.549-0.620
Family problem/2	0.849-0.967	0.063- 0.069	13.567- 14.062	0.000	0.720-0.935

3. The perceived sexual abstinence self-efficacy scale (SASE)

Normality testing was done and provided the acceptable results, Skewness and kurtosis values were -1.401 to -0.787, and -0.294 to 2.149 ($p < 0.05$). The KMO was 0.883, and Bartlett's test of sphericity was significant ($\chi^2 = 1638.735$, $p < 0.001$). The final model provided the fit indices met the criteria; $\chi^2 = 47.683$, $p = 0.1604$, $df = 39$, χ^2/df ratio = 1.22, CFI = 0.995, TLI = 0.989, RMSEA = 0.027, SRMR = 0.030. The standardized factor loading of all items ranging from 0.550-0.802.

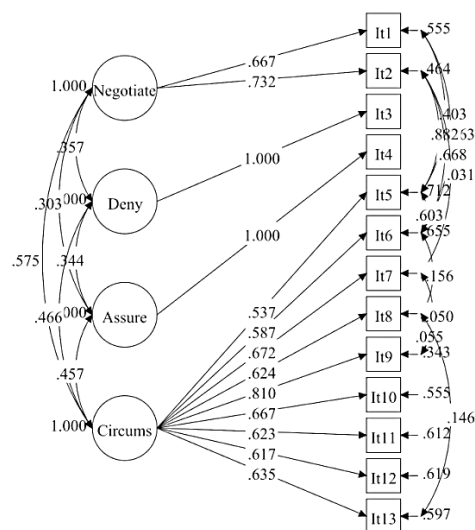


Figure 3 The standardized of the modified measurement model of the SASE

Table 3 Confirmatory factor analysis of the SASES (n=300)

Construct/ Number of indicators	Factor loading		t	P-value	R ²
	Estimate	S.E.			
The ability to negotiate/2	0.667-0.732	0.029	30.615- 2.660	0.000	0.445- 0.536
The ability to deny/1	1.000	0.000	-	-	-
The ability to assure/1	1.000	0.0000	-	-	-
The ability to circumstances/9	0.537-0.810	0.028-0.09	10.918- 28.805	0.000	0.288- 0.657

4. The peer influence on sexual abstinence scale (PeINS)

The normality testing provided the acceptable result, Skewness, and kurtosis values were -1.020 to -0.451, and -0.609 to 1.265 ($p < 0.05$). The KMO was 0.94, and Bartlett's test of sphericity was significant ($\chi^2 = 4341.824$, $p < 0.001$). The final model provided the fit indices met the criteria; $\chi^2 = 122.145$, $p = 0.0748$, $df = 101$, χ^2/df ratio = 1.20, CFI = 0.995, TLI = 0.993, RMSEA = 0.026, SRMR = 0.033. The standardized factor loading of all items ranging from 0.583-0.926.

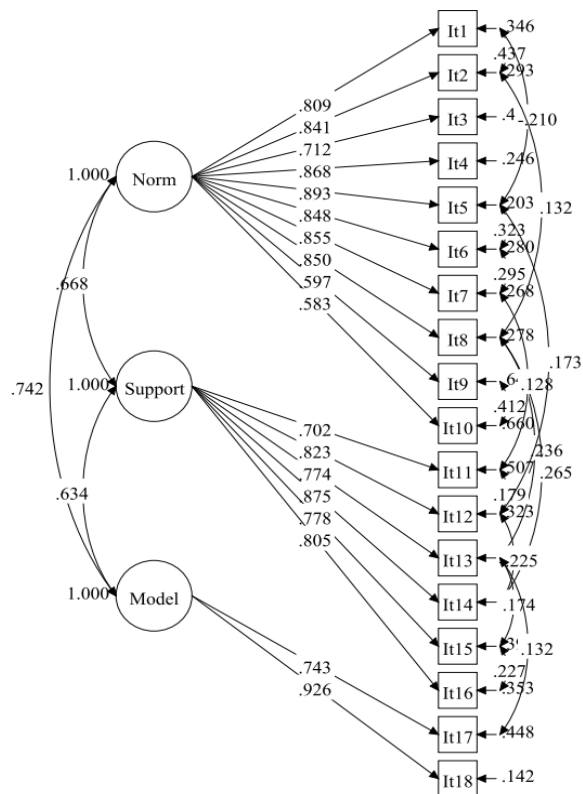


Figure 4 The standardized of the modified measurement model of the PeIN

Table 4 Confirmatory factor analysis of the PeINS (n=300)

Construct/ Number of indicators	Factor loading		t	P- value	R ²
	Estimate	S.E.			
Perceptions about the norm of peer/10	0.583-0.893	0.014- 0.040	14.726- 62.314	0.000	0.340 0.797
Support of peer/6	0.702-0.875	0.020- 0.035	20.315- 43.759	0.000	0.493- 0.766
Modeling of peer/2	0.743-0.926	0.027- 0.033	22.629- 34.883	0.000	0.552- 0.858

5. The commitment to a plan of sexual abstinence scale (CSAS)

Normality testing provided the acceptable result, Skewness and kurtosis values were -1.359 to -0.865, and -0.166 to 0.970 ($p < 0.05$). The KMO was 0.891, and Bartlett's test of sphericity was significant ($\chi^2 = 1260.568$, $p < 0.001$). The final model provided the fit indices met the criteria; $\chi^2 12.639$, $p = 0.317$, $df = 11$, χ^2/df ratio = 1.149, CFI = 0.999, TLI = 0.998, RMSEA = 0.022, SRMR = 0.015. The standardized factor loading of all items ranging from 0.538-0.849.

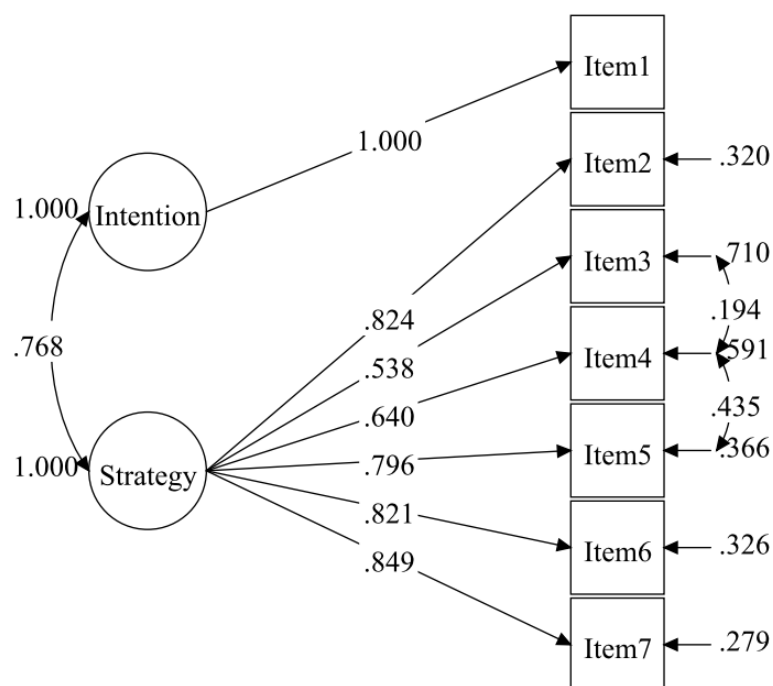


Figure 5 The standardized of the modified measurement model of the CSA

Table 5 Confirmatory factor analysis of the CSAS (n=300)

Indicators	Factor loading		t	P-value	R ²
	Estimate	S.E.			
1. Intention/1	1.000	0.000	-	-	1.000
2. Strategy/ 6	0.538- 0.849	0.021- 0.045	12.069- 40.559	0.000	0.290- 0.721

6. The sexual Abstinence-related Affect Scale (SAAS)

Normality was tested provided the acceptable result, Skewness, and kurtosis values were -1.112 to -0.581, and 0.365 to 1.943 ($p < 0.05$). The KMO was 0.856, and Bartlett's test of sphericity was significant ($\chi^2 = 1374.293$, $p < 0.001$). The final model provided the fit indices met the criteria; $\chi^2 = 9.263$, $p = 0.1593$, $df = 6$, χ^2/df ratio = 1.54, CFI = 0.998, TLI = 0.992, RMSEA = 0.043, SRMR = 0.015. The standardized factor loading of all items ranging from 0.723-845.

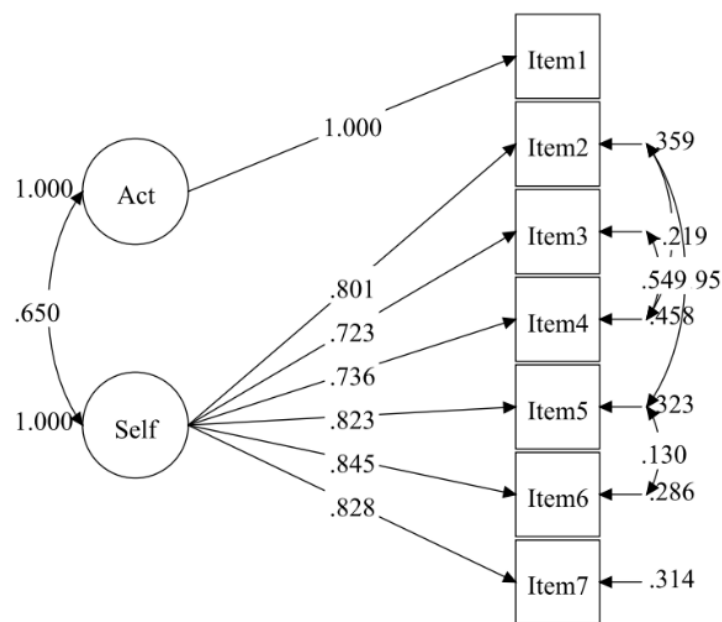


Figure 6 The standardized of the modified measurement model of the SAA

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Table 6 Confirmatory factor analysis of the SAAS (n=300)

Construct/ Number of indicators	Factor loading		t	P- value	R ²
	Estimate	S.E.			
Feeling regarding sexual abstinence behavior/1	1.000	-	-	-	1.000
Feelings regarding oneself when remaining sexual abstinence/6	0.723- 0.845	0.025- 0.033	22.602- 33.047	0.000	0.522- 0.714

7. The child-rearing promoting sexual abstinence scale (CPSAS)

Normality testing was tested and provided acceptable results. The Bartlett's test of sphericity was significant ($\chi^2=4151.12$, $p<0.001$), and the KMO were 0.91. The final model provided the fit indices met the criteria; $\chi^2=98.064$ $p=0.083$, $df=80$, χ^2/df ratio=1.220, CFI=0.996, TLI=0.992, RMSEA=0.027, SRMR=0.030. The standardized factor loading was 0.499 to 0.908.

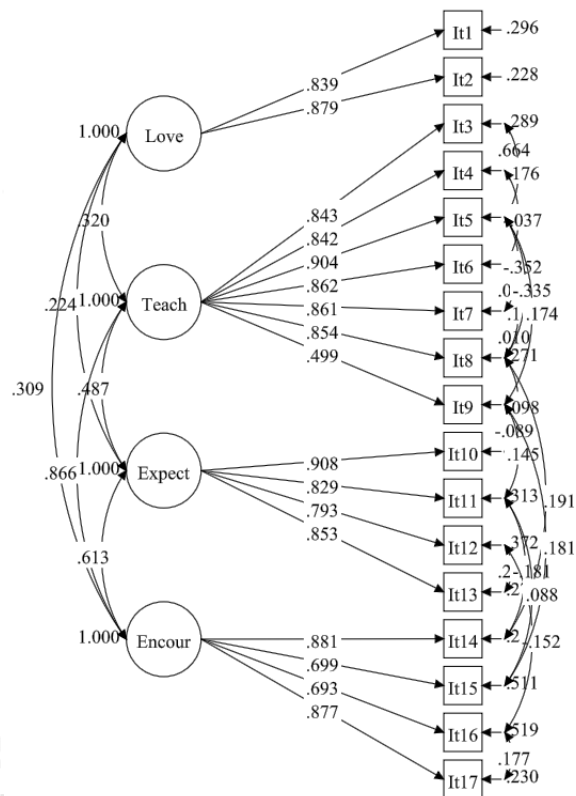


Figure 7 The standardized of the modified measurement model of the CPSAS

Table 7 Confirmatory factor analysis of the CPSAS (n=300)

Construct/ Number of indicators	Factor loading		t	P-value	R ²
	Estimate	S.E.			
1. Assuring daughter to recognize parental love / 2	0.839-	0.066-	12.644-	0.000	0.704-
	0.879	0.068	12.842		
2. Teaching daughter sexual abstinence / 7	0.499-	0.017-	10.923-	0.000	0.249-
	0.904	0.046	54.493		

Construct/ Number of indicators	Factor loading		t	P-value	R ²
	Estimate	S.E.			
3. Convincing daughter to recognize parent's expectation of sexual abstinence/ 4	0.793-	0.016-	30.372-	0.000	0.628-
	0.908	0.026	56.546		
4. Encouraging daughter sexual abstinence/4	0.693-	0.017-	20.478-	0.000	0.481-
	0.881	0.034	51.077		





APPENDIX H

Demographic characteristics of participants and variables outputs

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Demographic characteristics of participants

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	114	17.4	17.4	17.4
	19	540	82.6	82.6	100.0
	Total	654	100.0	100.0	

Religious

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Buddhism	609	93.1	93.1	93.1
	Christianity	11	1.7	1.7	94.8
	Islam	17	2.6	2.6	97.4
	None	17	2.6	2.6	100.0
	Total	654	100.0	100.0	

Spending

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 2,000	111	17.0	17.0	17.0
	2,001 - 4,000	243	37.2	37.2	54.1
	4,001 - 6,000	166	25.4	25.4	79.5
	6,001 - 8,000	74	11.3	11.3	90.8
	8,001 - 10,000	35	5.4	5.4	96.2
	10,000 - 20,000	21	3.2	3.2	99.4
	> 20,000	4	.6	.6	100.0
	Total	654	100.0	100.0	

Enough

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sufficient and can save	274	41.9	41.9	41.9
	Sufficient and but cannot save	148	22.6	22.6	64.5
	Sometimes sufficient	203	31.0	31.0	95.6
	Insufficient	29	4.4	4.4	100.0
	Total	654	100.0	100.0	

Parent status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married and live together	407	62.2	62.2	62.2
	Married status but separate living	35	5.4	5.4	67.6
	Divorced	155	23.7	23.7	91.3
	Father passed away	48	7.3	7.3	98.6
	Mother passed away	6	.9	.9	99.5
	Father and mother passed way	3	.5	.5	100.0
	Total	654	100.0	100.0	

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Living with

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	alone	37	5.7	5.7	5.7
	Parent	453	69.3	69.3	74.9
	Relative	62	9.5	9.5	84.4
	Boyfriend	16	2.4	2.4	86.9
	Girlfriend	10	1.5	1.5	88.4
	Friend same-sex	76	11.6	11.6	100.0
	Total	654	100.0	100.0	

Family_income

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid < 5,000	38	5.8	5.8	5.8
5,001 - 10,000	134	20.5	20.5	26.3
10,001-30,000	245	37.5	37.5	63.8
30,001 - 50,000	94	14.4	14.4	78.1
50,001 - 80,000	81	12.4	12.4	90.5
80,000 - 100,000	40	6.1	6.1	96.6
>100,000	22	3.4	3.4	100.0
Total	654	100.0	100.0	

Sexual behavior

Non-oral sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .00	84	53.5	53.5	53.5
1.00	73	46.5	46.5	100.0
Total	157	100.0	100.0	

Non-anal sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .00	30	19.1	19.1	19.1
1.00	127	80.9	80.9	100.0
Total	157	100.0	100.0	

Non-vaginal sex

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid .00	134	85.4	85.4	85.4
1.00	23	14.6	14.6	100.0
Total	157	100.0	100.0	

Number of sex type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	one type	83	52.9	52.9	52.9
	two types	57	36.3	36.3	89.2
	three types	17	10.8	10.8	100.0
	Total	157	100.0	100.0	

Have oral sex and vaginal sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	108	68.8	68.8	68.8
	1.00	49	31.2	31.2	100.0
	Total	157	100.0	100.0	

Have oral sex and anal sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	150	95.5	95.5	95.5
	1.00	7	4.5	4.5	100.0
	Total	157	100.0	100.0	

Have anal sex and vaginal sex

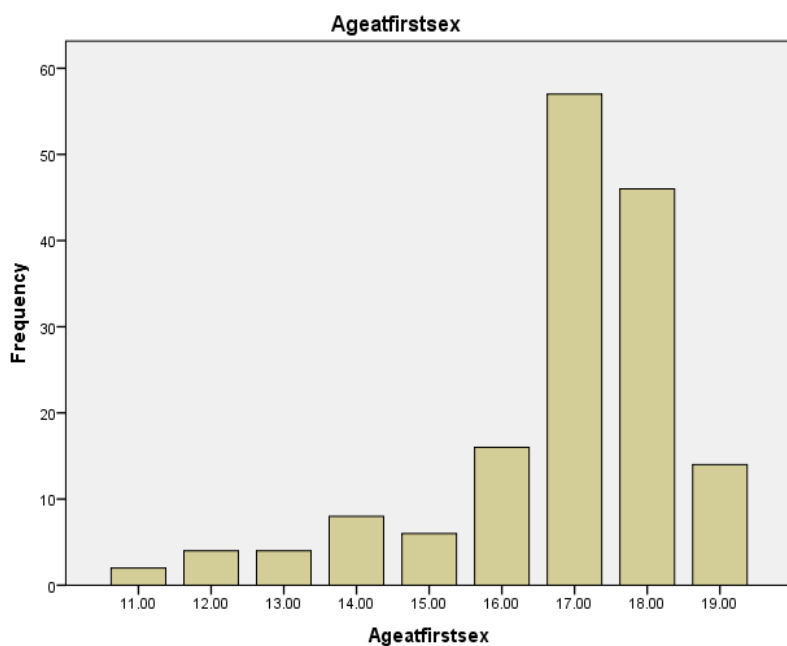
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0.00	156	99.4	99.4	99.4
	1.00	1	.6	.6	100.0
	Total	157	100.0	100.0	

Age of participants engaged in first sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18.00	29	18.5	18.5	18.5
	19.00	128	81.5	81.5	100.0
	Total	157	100.0	100.0	

Age at first sex

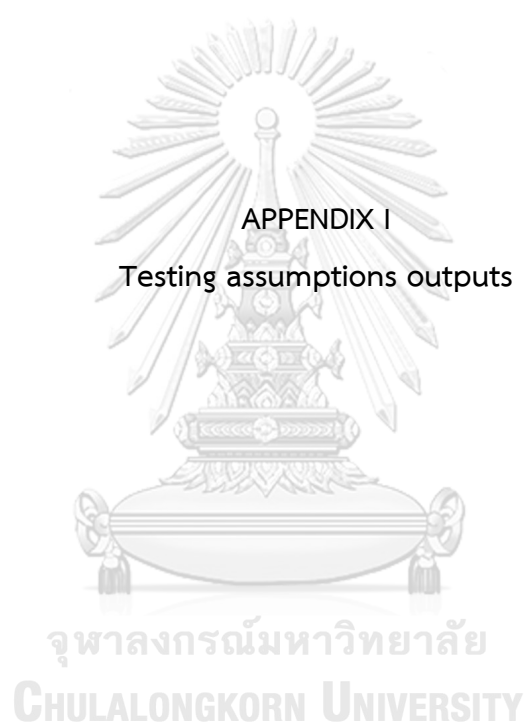
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	11.00	2	1.3	1.3	1.3
	12.00	4	2.5	2.5	3.8
	13.00	4	2.5	2.5	6.4
	14.00	8	5.1	5.1	11.5
	15.00	6	3.8	3.8	15.3
	16.00	16	10.2	10.2	25.5
	17.00	57	36.3	36.3	61.8
	18.00	46	29.3	29.3	91.1
	19.00	14	8.9	8.9	100.0
	Total	157	100.0	100.0	

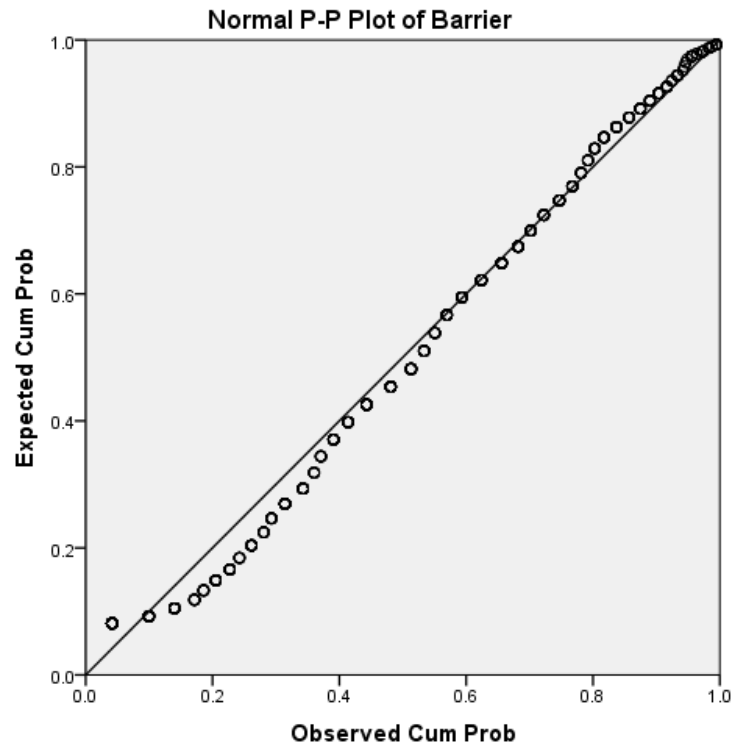
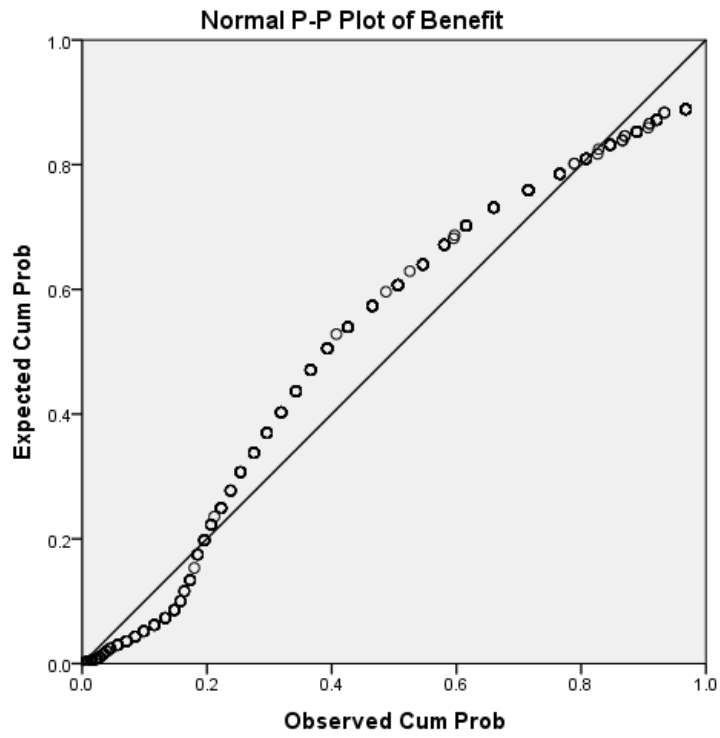


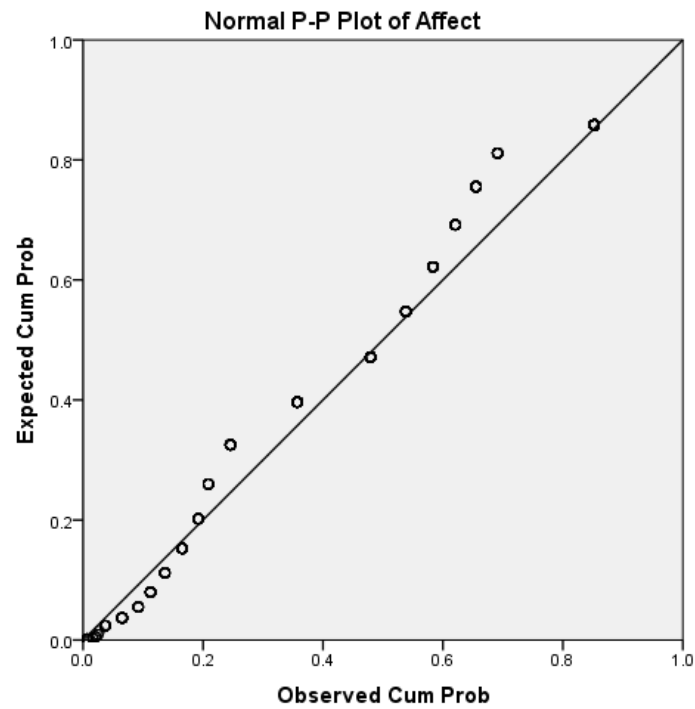
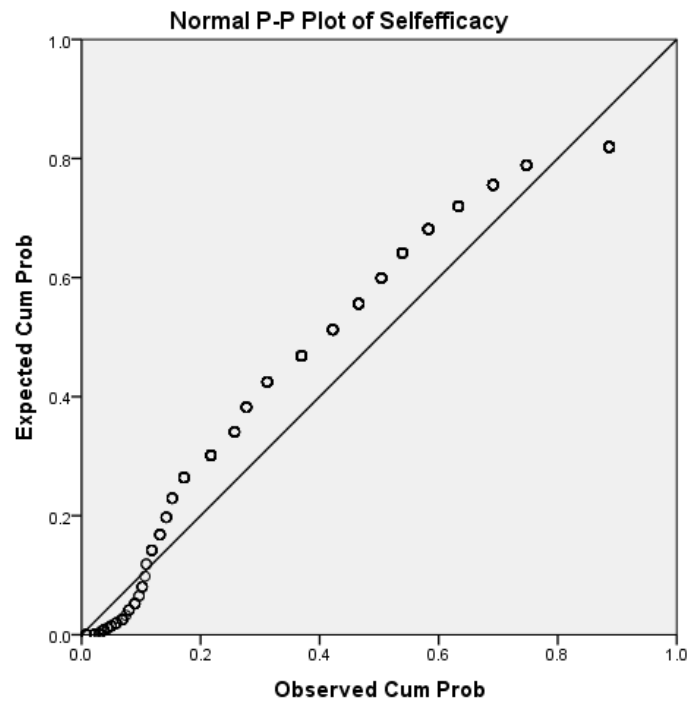
Descriptive Statistics of variables

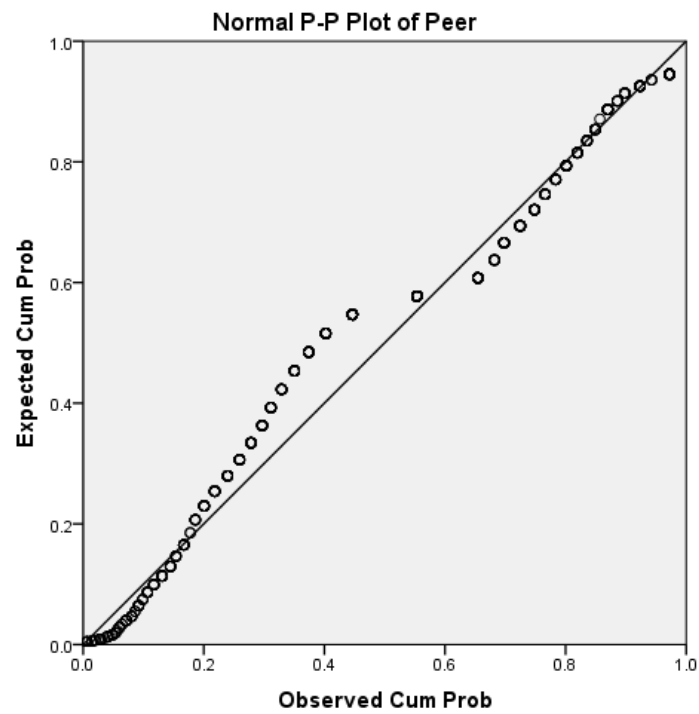
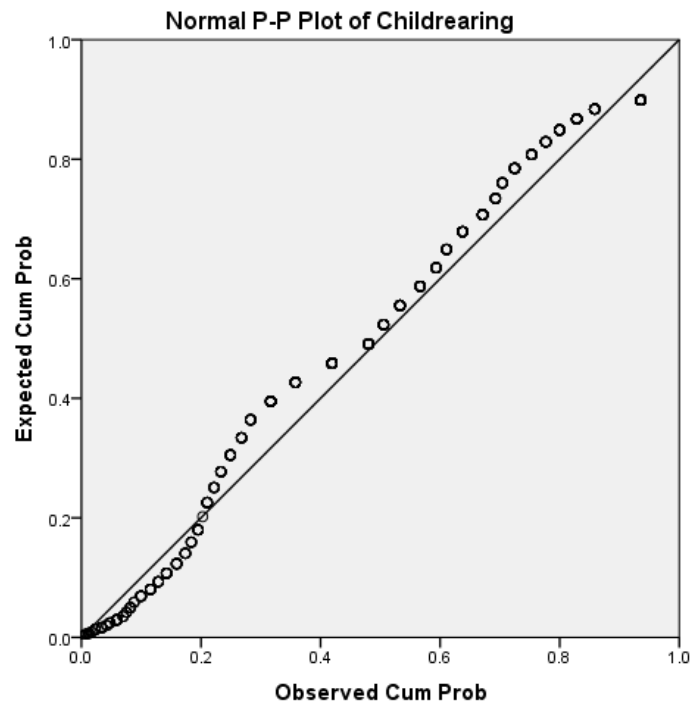
	N	Minimum		Maximum		Mean		Std. Deviation		Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Benefit	654	17.00	68.00	53.8481	11.59386	-.929	.096	.032	.191				
Barrier	654	18.00	72.00	37.6376	14.05977	.362	.096	-.690	.191				
Selfefficacy	654	13.00	52.00	43.7202	9.06855	-1.550	.096	2.286	.191				
Affect	654	7.00	28.00	22.3746	5.24079	-.771	.096	.018	.191				
Childrearing	654	22.00	68.00	52.2829	12.32241	-.626	.096	-.312	.191				
Peer	654	20.00	72.00	51.4939	12.83202	-.607	.096	.108	.191				
Commitment	654	1.20	70.00	50.5020	17.82645	-.925	.096	-.074	.191				
Valid N (listwise)	654												

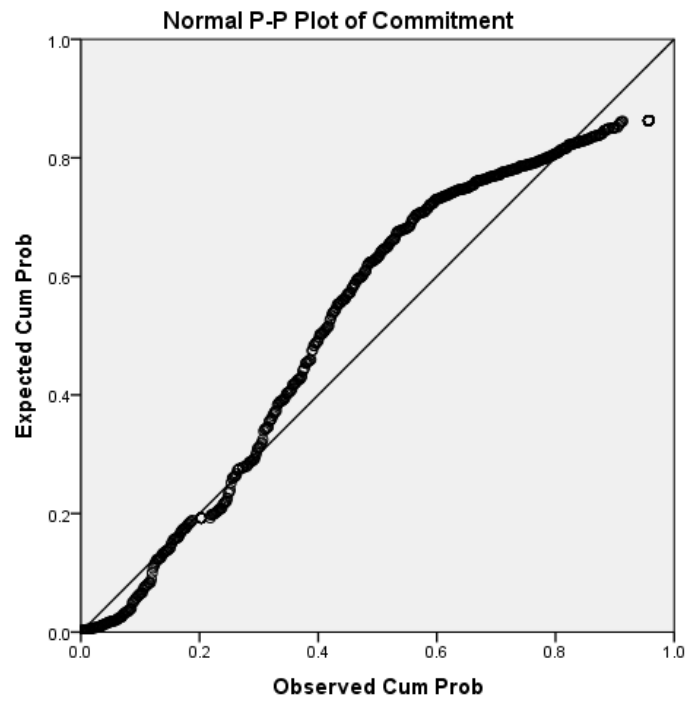


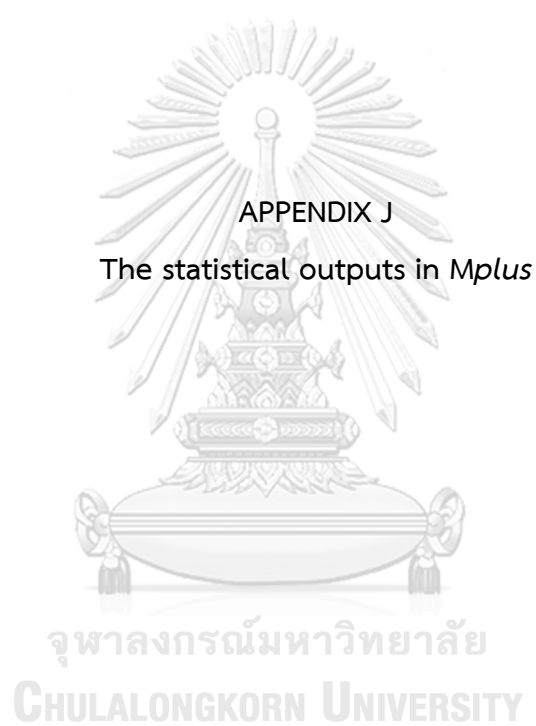












MODEL FIT INFORMATION

Number of Free Parameters 102

Loglikelihood

H0 Value	-15201.853
H0 Scaling Correction Factor for MLR	1.2946
H1 Value	-14956.401
H1 Scaling Correction Factor for MLR	1.1912

Information Criteria

Akaike (AIC)	30607.707
Bayesian (BIC)	31064.984
Sample-Size Adjusted BIC ($n^* = (n + 2) / 24$)	30741.134

Chi-Square Test of Model Fit

Value	434.344*
Degrees of Freedom	173
P-Value	0.0000
Scaling Correction Factor for MLR	1.1302

* The chi-square value for MLM, MLMV, MLR, ULSMV, WLSM and WLSMV cannot be used for chi-square difference testing in the regular way. MLM, MLR and WLSM chi-square difference testing is described on the Mplus website. MLMV, WLSMV, and ULSMV difference testing is done using the DIFFTEST option.

RMSEA (Root Mean Square Error Of Approximation)

Estimate	0.048	
90 Percent C.I.	0.042	0.054
Probability RMSEA \leq .05	0.706	

CFI/TLI

CFI	0.967
TLI	0.955

Chi-Square Test of Model Fit for the Baseline Model

Value	8064.135
Degrees of Freedom	231
P-Value	0.0000

SRMR (Standardized Root Mean Square Residual)

Value	0.041
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STANDARDIZED MODEL RESULTS

STDYX Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BENEFIT BY				
EXTRIN	0.835	0.019	43.597	0.000
INTRIN	0.910	0.015	59.468	0.000
BARRIER BY				
BOYF	0.725	0.057	12.668	0.000
FRIEND	0.815	0.055	14.807	0.000
SITUA	0.838	0.041	20.518	0.000
FAM	0.785	0.040	19.516	0.000
SELFEF BY				
NEGO	0.889	0.020	43.430	0.000
DENY	0.788	0.024	32.289	0.000
ASSURE	0.755	0.029	26.437	0.000
CIRCUM	0.855	0.024	35.849	0.000
AFFECT BY				
ACT	0.859	0.017	49.267	0.000
SELF	0.841	0.021	39.215	0.000
CHILD BY				
LOVE	0.797	0.022	35.867	0.000
TEACH	0.781	0.024	32.290	0.000
EXPECT	0.813	0.021	38.800	0.000
ENCOUR	0.527	0.037	14.188	0.000
PEERI BY				
NORM	0.849	0.023	37.604	0.000
SUPPORT	0.835	0.026	32.623	0.000
MODEL	0.623	0.033	19.158	0.000
COM BY				
INTEN	0.876	0.018	49.809	0.000
STRAT	0.900	0.014	64.562	0.000
SA BY				
NSEX	1.000	0.000	999.000	999.000
SA ON				
BENEFIT	0.218	0.087	2.508	0.012
BARRIER	-0.037	0.033	-1.106	0.269
SELFEF	0.145	0.050	2.904	0.004
AFFECT	-0.216	0.128	-1.687	0.092
CHILD	0.561	0.078	7.188	0.000
PEERI	-0.089	0.057	-1.565	0.117
COM	0.259	0.059	4.390	0.000
COM ON				
BENEFIT	0.141	0.066	2.121	0.034
BARRIER	-0.212	0.035	-6.109	0.000
SELFEF	0.180	0.056	3.206	0.001
AFFECT	0.187	0.083	2.263	0.024
CHILD	0.209	0.065	3.238	0.001
PEERI	0.119	0.050	2.376	0.018
BARRIER ON				
SELFEF	-0.404	0.041	-9.885	0.000

R-SQUARE

Observed Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
EXTRIN	0.697	0.032	21.799	0.000
INTRIN	0.829	0.028	29.734	0.000
BOYF	0.526	0.083	6.334	0.000
FRIEND	0.663	0.090	7.403	0.000
SITUA	0.702	0.068	10.259	0.000
FAM	0.616	0.063	9.758	0.000
NEGO	0.790	0.036	21.715	0.000
DENY	0.620	0.038	16.144	0.000
ASSURE	0.570	0.043	13.218	0.000
CIRCUM	0.732	0.041	17.925	0.000
ACT	0.737	0.030	24.634	0.000
SELF	0.707	0.036	19.607	0.000
LOVE	0.636	0.035	17.933	0.000
TEACH	0.610	0.038	16.145	0.000
EXPECT	0.661	0.034	19.400	0.000
ENCOUR	0.278	0.039	7.094	0.000
NORM	0.720	0.038	18.802	0.000
SUPPORT	0.697	0.043	16.312	0.000
MODEL	0.388	0.041	9.579	0.000
INTEN	0.768	0.031	24.904	0.000
STRAT	0.810	0.025	32.281	0.000
NSEX	1.000	999.000	999.000	999.000
Latent Variable	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
BARRIER	0.163	0.033	4.942	0.000
COM	0.674	0.032	21.086	0.000
SA	0.678	0.032	21.263	0.000

STANDARDIZED TOTAL, TOTAL INDIRECT, SPECIFIC INDIRECT, AND DIRECT EFFECTS

STDYX Standardization

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from BENEFIT to SA				
Total	0.255	0.087	2.910	0.004
Total indirect	0.037	0.019	1.960	0.050
Specific indirect				
SA				
COM				
BENEFIT	0.037	0.019	1.960	0.050
Direct				
SA				
BENEFIT	0.218	0.087	2.508	0.012

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from BARRIER to SA				
Total	-0.092	0.031	-2.982	0.003
Total indirect	-0.055	0.016	-3.494	0.000
Specific indirect				
SA				
COM				
BARRIER	-0.055	0.016	-3.494	0.000
Direct				
SA				
BARRIER	-0.037	0.033	-1.106	0.269
Effects from SELFEEF to SA				
Total	0.229	0.045	5.070	0.000
Total indirect	0.084	0.022	3.854	0.000
Specific indirect				
SA				
BARRIER				
SELFEEF	0.015	0.014	1.098	0.272
SA				
COM				
SELFEEF	0.047	0.018	2.643	0.008
SA				
COM				
BARRIER				
SELFEEF	0.022	0.007	3.406	0.001
Direct				
SA				
SELFEEF	0.145	0.050	2.904	0.004

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from SELFEEF to COM				
Total	0.266	0.054	4.959	0.000
Total indirect	0.086	0.015	5.667	0.000
Specific indirect				
COM BARRIER SELFEEF	0.086	0.015	5.667	0.000
Direct				
COM SELFEEF	0.180	0.056	3.206	0.001

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from AFFECT to SA				
Total	-0.168	0.130	-1.295	0.195
Total indirect	0.048	0.027	1.770	0.077
Specific indirect				
SA COM AFFECT	0.048	0.027	1.770	0.077
Direct				
SA AFFECT	-0.216	0.128	-1.687	0.092

	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from CHILD to SA				
Total	0.615	0.076	8.060	0.000
Total indirect	0.054	0.018	3.059	0.002
Specific indirect				
SA				
COM				
CHILD	0.054	0.018	3.059	0.002
Direct				
SA				
CHILD	0.561	0.078	7.188	0.000
	Estimate	S.E.	Est./S.E.	Two-Tailed P-Value
Effects from PEERI to SA				
Total	-0.058	0.057	-1.019	0.308
Total indirect	0.031	0.015	2.076	0.038
Specific indirect				
SA				
COM				
PEERI	0.031	0.015	2.076	0.038
Direct				
SA				
PEERI	-0.089	0.057	-1.565	0.117

VITA

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DATE OF BIRTH 05 October 1979

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