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DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL

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Burapha University

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DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL

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ARUNOTHAI SINGTAKAEW : DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL. ADVISORY COMMITTEE: NUJJAREE CHAIMONGKOL, Ph.D., PORNPAT HENGUDOMSUB, Ph.D. 2021.

Deliberate self-harm [DSH] is an intentional behavior of direct destruction of body tissues which causes non-fatal physical trauma to the extent that bleeding occurs or causes a bruise to appear and without conscious suicidal intent, such as cutting, punching, etc. Adolescents' DSH is an important issue in mental health work because of its high prevalence in Thailand. A model-testing, cross-sectional study was conducted to test a causal model of DSH in Thai adolescents. A multi-stage random sampling was used to recruit participants of 360 adolescents aged 10-19 years studying in high schools in the north of Thailand in 2019. Data collection was carried out from July 2019 to January 2020. Six self-report instruments included the family relationship questionnaire, the Student-School Connectedness scale, the Resilience Factors scale for Thai adolescents, the self-control questionnaire, the Thai version of Perceived Stress Scale-10 and the Deliberated Self-Harm Inventory. Their consistency reliability ranged from 0.81-0.89. Data were analyzed by using descriptive statistics and Structural Equation Modeling.

The results revealed the prevalence of DSH behaviors among participants who are Thai adolescents were 45.9%, and can be classified by sex were approximately equal percentage between boys (47%) and girls (44.7%). The modification of the hypothesized model fit the data well (c^2 = 333.35, p = .078, df = 298, CMIN/ df = 1.119, GFI = .952, AGFI = .900, and RMSEA = .018). Sex, resilience, stress, and school connectedness had direct effects on DSH (β = -0.139, β = -0.266, β = 0.163, and β = -0.671, respectively). Resilience and stress also mediated the link between sex (girl), family relationship, school connectedness, and DSH. Sex, stress, resilience, family relationship, and school connectedness accounted for 65.20% of variance in prediction of DSH in Thai adolescents. These findings suggested that

this causal model of DSH is fit the empirical data. The prevalence of DSH among Thai adolescents is high. An intervention to strengthen and enhance the school connectedness, family relationship, and resilience as well as to reduce stress among Thai adolescent for DSH prevention should be developed and implemented in both sexes, specifically in boys.

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CHAPTER 1
INTRODUCTION

Statements and significance of the problems

Deliberate self-harm [DSH] is an intentional behavior of direct destruction or chopping of body tissues which causes non-fatal physical trauma to the extent that bleeding occurs or causes a bruise to appear and without conscious suicidal intent (World Health Organization [WHO], 2013; Wu et al., 2016). The examples of DSH includes self-cutting, burning, punishing, beating, hair pulling, head banging, using drug or object with intent of self-hurt. It can be the first-time incident (one time) or more than once, which is called repetitive deliberate self-harm behavior (Gratz, 2001; Ystgaard et al., 2009). However, according to review related literatures, repetitive deliberate self-harm behavior is the act of DSH behavior for more than five times (Bjärehed & Lundh, 2008; L.-G. Lundh, Wångby-Lundh, Paaske, Ingesson, & Bjärehed, 2011; L. g. Lundh, WÅngby-Lundh, & Bjärehed, 2011).

DSH in adolescents is frequently encountered in mental health work. Some studies claim that non-fatal suicidal acts are assumed to occur at least 10 times more often than fatal suicides (Van der Feltz-Cornelis et al., 2011). According to statistics, self-harm is the fifth leading cause of illness and disability among people aged 10-19 years. It represents 1.4% of global burden of disease in 2002 with the expectation to increase to 2.4% by 2020 (Aishvarya, Maniam, Sidi, & Oei, 2014; WHO, 2012, 2014). High prevalence of DSH among adolescents ranges from 17-31% in the community (Landstedt & Gillander Gådin, 2011; Muehlenkamp & Gutierrez, 2007; Su, Hao, Huang, & Tao, 2010; Wu et al., 2016).

In Thailand, the rate of DSH was found to be as high as 36.8 people per hundred thousand people or an average total number of self-harmers as high as 25,000-27,000 people per year. It was 40.99% in the central region, while the northern, northeastern and southern regions were 29.97%, 17.38% and 11.66%, respectively (Mongkol et al., 2004; Mongkol et al., 2005). Overall analysis of DSH statistics found that the problem was four to five times as high as fatal suicidal outcome. Moreover, in 2010, acts of intentional-self-harm were categorized using

ICD 10 classification alone, and 24,924 hospitalizations, and an incidence of 35.6/ 100,000 people were found. The highest level of total treatment cost was 149,672,190 Baht and the mean length of stay was 2.9 +/-6.7 days (Paholpak et al., 2012). Since the Ministry of Public Health of Thailand has estimated that self-harm costs ranged from 500 to 5,500 million Baht per year, depending upon the level of injury and complications (Mongkol et al., 2004; Mongkol et al., 2005, Paholpak et al., 2012). This eventually results in higher annual burden of medical and nursing care costs for the Thai government.

The collection of data from all levels of health service centers in Thailand by means of a stand form for self-harm surveillance system (report 506.ds) revealed that, in 2004-2005, 65-66.3% of adolescent's DSH were in female. In particular, the majority (61%) was 10-29 years of age, while the other age ranges of 10-19, 20-24 and 25-29 years accounted for 26.7%, 20.0%, and 14.3%, respectively. However, 39% of those were over 29 years. Most of them (84%) conducted the deliberate self-harm behavior for the first time. In comparison to other factors, the evidence indicates a stronger association between DSH and the conflicts with family, problems of love, jealousy, and problems in school. Poor emotional regulation shows a strong association with DSH than other factors too (Mongkol et al., 2004; Mongkol et al., 2005). Therefore, the incidence of DSH in Thailand was high, compared to other East Asians countries (Paholpak et al., 2012).

According to age-based statistical analysis, Thai adolescents, especially those who are aged 10-19 years, tend to face many life problems and adjustments due to their little life experience. This can thus be a potential cause of mental health problems. In 2007-2011, 3.43 per hundred thousand populations of Thai adolescents aged 15-19 years old have had previous self-harm history. Furthermore, male adolescents' engagement in self-harm for suicidal attempt is three times higher than female counterparts, while the prevalence of repeated DSH behavior in female adolescents is three times higher than male counterparts (Ministry of Public Health, 2012).

Besides, the adolescents and their family suffer from the consequences of DSH, including the physiological distress, psychological distress, and social problems. For the physiological distress, severely scratched scars or wounds are

resulted from overt self-harm and paradoxical disengagement from treatment or care plan (Florides, 2015; Hunt, 2016). When coping with many problems, psychological distress could induce occasional/ repetitive DSH or addictive behavior across the lifespan as well as lead to the mental health illness and psychological problem that become a risk factor for suicidal ideation (Hawton, Saunders, & O'Connor, 2012; Rungsang & Chaimongkol, 2017). For social problems, the painful grief of affected families results in the experience of stigmatization or familicide, while contagious social effects become a risk factor for suicidal ideation, parasuicide or copycat, and more seriously for attempted suicide in early adulthood. In addition, DSH-related treatment costs also lead to the economic burden (Aishvarya et al., 2014; Blum, Sudhinaraset, & Emerson, 2012; Gvion, Horesh, Levi-Belz, & Apter, 2015; Rungsang, Chaimongkol, Deoisres, & Wongnam, 2017).

From the diathesis-stress model of DSH (Nock & Cha, 2009) and reviewing of related literatures, DSH in adolescents is influenced by several factors. There are two main risk factors including the proximal and distal ones. For the proximal risk factor, it represents an intimate vulnerability of adolescents' DSH. It could be a particular condition or event in the early lifespan from intra-interpersonal of adolescents. There are psychological problem, perceived body image, eating disorder, unhealthy weight control behavior, substance abuse, and sex. The distal risk factor stimulates an individual's vulnerability through a particular condition or event in daily life. It includes family relationship, school connectedness, and social support.
In addition, Nock and Cha (2009) suggest that the diathesis-stress model of DSH also can be categorized into 4 factors; bio-psycho-social predisposing factor, precipitating factor, perpetuating factor, and protective factor. Firstly, Bio-Psycho-Social predisposing factor is the condition which operates from early life and renders the adolescent's vulnerability to the DSH, e.g. emotional numbing, early abuse, genetic or sex. Secondly, precipitating factor can be either internal or external element that causes or contributes to the occurrence of DSH, including the stress or anxiety in daily life, e.g. personal failure, humiliation or the argument with boy/ girl-friends. Thirdly, the perpetuating factor is an element that prolongs the situation or condition indefinitely. This includes the regulation of social situation and emotional experience leading to inability to effectively release tension and to cope with stress, for example

lower parental relationship or perceived less school connectedness (Baetens et al., 2014; Tuisku et al., 2009). Lastly, the protective factor is an element serving or intending to protect the adolescent, to improve the situation, or learn how to cope in the well-being, including self-control, individual's resilience or the enhancement of coping skills, family relationship, peer and teacher relationships, and school connectedness. However, there is an evidence that the most influential factors of DSH in adolescents are family relationship, school connectedness, resilience, sex, self-control, and stress (Bjärehed & Lundh, 2008; Chaney, 2011; Landstedt & Gillander Gådin, 2011; Loh, Teo, & Lim, 2013; Mangnall & Yurkovich, 2008; McMahon et al., 2010; Moran et al., 2012; Silmi et al., 2017; Van der Wal, 2017).

Family relationship is an interpersonal correlation within the domestic group of people who have some degree of kinship, whether through blood, marriage, or adoption. Ideally each domestic group shows mutual love, care and respect; engages in recreational activities; and enjoys the unity of members (Friedman, Bowden, & Jones, 2003). DSH in adolescent derives from family relationship. The evidences showed that the family relationship was a better predictor of DSH and non-fatal suicidal behaviors than other factors (Kaminski et al., 2010; Tatnell, Kelada, Hasking, & Martin, 2014). Adolescents who reported higher positive parental relationship were less likely to report the DSH (Fortune, Cottrell, & Fife, 2016; Ponnet et al., 2005). Conversely, the adolescent engaged in DSH had lower parental relationship or perceived less family relationship (Baetens et al., 2014; Tuisku et al., 2009). Several studies revealed that the family conflicts, poorer communication with parents, and the absence of a family relationship were significantly associated with DSH (Hawton & Harriss, 2008; McMahon et al., 2010; Stanford, Jones, & Hudson, 2018; Tulloch, Blizzard, & Pinkus, 1997). Moreover, the lack of family relationship is associated with greater severity of the adolescents' DSH. Likewise, non-suicidal adolescents in community studies have better relationship with their own parents than those with suicidal ideation (Evans, Hawton, & Rodham, 2004; Martin, Rotaries, Pearce, & Allison, 1995).

The school connectedness is the belief by students that adults and schoolmates care for their learning, while students themselves are concerned about school and feel that they are cared for while in school. Those with sense of school

connectedness are more likely to have better academic achievement (higher grades and test scores) and school attendance, longer school stay and healthier behaviors (Centers for Disease Control Prevention [CDC], 2009; Resnick et al., 1997; Resnick, Harris, & Blum, 1993). The dissatisfaction with school achievement is related to DSH among girls more than boys (Landstedt & Gillander Gådin, 2011). However, a positive school connectedness is found to be a protective factor against DSH among adolescents (Eisenberg, McMorris, Gower, & Chatterjee, 2016; Klemera et al., 2017; Young, Sweeting, & Ellaway, 2011). The perception of connectedness to safety at school has been found to reduce risk of repetitive adolescents' DSH (Taliaferro & Muehlenkamp, 2017). In addition, researches have demonstrated that school connectedness predicted the resilience in adolescence (Oldfield, Stevenson, Ortiz, & Haley, 2018; Shochet, Homel, Cockshaw, & Montgomery, 2008).

The deliberate self-harm severity significantly varies according to sex difference. The research showed that DSH was more common among female adolescents (Landstedt & Gillander Gådin, 2011) and several studies also indicated particularly high prevalence of DSH among girls (Law & Shek, 2013; Straiton, Roen, & Hjelmeland, 2012). On the other hand, the proportion of severe self-harm is much higher among male adolescents. Self-cutting is most common among 10-14 years old girls (Griffin et al., 2018), whereas hitting, banging, pinching and firing/ burning are high among boys (Wu et al., 2016; Xiao et al., 2013). Interestingly, girls with DSH history have a decrease in suicide ideation from adolescence to adulthood but the increase in suicidal attempts in the same period is found among boys with DSH experience. Therefore, sex could predict adolescents' DSH outcome and indicate DSH severity in early adulthood (Griffin et al., 2018; Sigurdson, Undheim, Wallander, Lydersen, & Sund, 2018; Van der Wal, 2017).

Resilience is an individual's capacity to bounce back in the face of threat and to turn adversity into advantage or opportunity resulting in the people's recoverability from life problems (Hiew, Mori, Shimizu, & Tominaga, 2000). In particular, adolescents with high resilience will recover to a normal state quickly; however, those with low resilience may encounter mental health problems. According to the previous study on Norwegian adolescents who have violent experiences and engage in self-harm, low resilience significantly and negatively correlates with psychological

problems (Huang & Mossige, 2015). Moreover, a study stated that the strong resilience significantly predicted self-harming behavior and reduced the odds of engaging in self-harm (Van der Wal, 2017). On the other hand, previous research also reported that resilience would be a good predictor of self-control (Artuch-Garde et al., 2017). Hence, resilience is a positive psychological variable that is a correlation of self-control and is related to positive coping techniques when facing stressors (K. N. Campbell, 2014). Thus adolescents who are effectively resilient to their own emotions, thoughts, and behaviors are more likely to have the traits of people with self-control and less likely to engage in DSH behavior.

Self-control refers to the individual's capacity to alter its own states and responses, an important key to success in the life. Hence, this enables behavior to vary adaptively depending on each person's contexts, such that engaging in acts of restraint depletes this inner capacity and undermines subsequent attempts at control (ego depletion), especially insofar as the latter requires conforming to socially desirable values instead of pursuing egotistic goals (Baumeister & Exline, 2000; Baumeister, Vohs, & Tice, 2007; Inzlicht, Schmeichel, & Macrae, 2014). On the other hand, several studies have reported that, at least 70% of adolescents with DSH, DSH is a way they manage their stress, reduction of tension, release of anger, and enhancement of feelings of self-control (Briere & Gil, 1998a; Gratz, 2003). Therefore, the self-control behavior and resilience are important protective factors in relation with adolescents' DSH. Some studies revealed that self-control and resilience have been identified as a component of protective antecedent at the individual level. This include changing emotions, continuing a task even when wanting to stop, and resisting impulses (K. N. Campbell, 2014; Meredith et al., 2011). Adolescents scoring higher in self-control were less likely to have DSH behavior, compared to participants scoring low in self-control. This is consistent with the idea that those who have high self-control are better able to deliberate on their stressful situation and avoid responses that relate
to DSH behavior (Chaney, 2011; Hay & Meldrum, 2010; Tangney, Boone, & Baumeister, 2004). (Mongkol et al., 2005; Mongkol et al., 2004)

Stress refers to feelings of discomfort and unhappiness that occurs as the outcome of a person's evaluation of interactions with his or her environment. People

evaluate through their cognition whether the environment that affects them threatens or negatively impacts their health or not. A person will become stressful when he/ she perceives a threat or negative impact to his or her own health (Lazarus, Cohen, Folkman, Kanner, & Schaefer, 1980). However, when the stress is continuous or accumulative, it can exceed the adaptive capacity of adolescent and is associated with poor physical and mental health. Several studies proposed that the adolescents engaged in DSH as a strategy to cease extreme and intolerable physiological arousal caused by stressful life events and the acute life stress which is a predictor of DSH (Liu, Cheek, & Nestor, 2016; Nock & Prinstein, 2004, 2005; O'Connor, Rasmussen, & Hawton, 2010). Adolescents with greater physiological hyperarousal when responding to stress are more likely to engage in DSH. The relationship is further supported by adolescents who attribute the purpose of their self-injury to deal with "stress with schoolwork overload" and to "release tension or stress" (Nock & Mendes, 2008) . Academic stress was reported to be associated with adolescents' DSH (Arun & Chavan, 2009; Latha & Reddy, 2007). Studies revealed the adolescent girl who felt stress in her body, they are more likely to engage in self-cutting (Bjärehed & Lundh, 2008; Sakhat, 2017).

Based on the situation worldwide, the prevalence of DSH among Thai adolescents in community populations has undergone relatively limited empirical study. A few studies focus directly on 10-19-year-old adolescents on DSH. In addition, the review of the existing Western and Eastern literature has revealed the inconsistent findings for some factor. The studies of DSH among Thai adolescents mostly focus on clinical population with mental health disorder. A few of them provide the evidence on adolescents in community setting. The identification of both direct and indirect effects of DSH on adolescents aged 10-19 years old can assist nurses, teachers, family members and other health care team members in developing a suitable planning program for preventing DSH among Thai adolescents.

Research objectives

1. To determine the prevalence of DSH among Thai adolescents.
2. To test a causal model of DSH among Thai adolescents.

Research hypotheses

This study aims to test the following hypotheses, which are drawn from the causal model depicted as Figure 1-1.

1. Sex (girl) has a positive direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.
2. Family relationship has a negative direct effect on deliberate self-harm [DSH], and has indirect effects on DSH through stress, resilience and self-control.
3. School connectedness has a negative direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.
4. Resilience has a negative direct effect on DSH, and has an indirect effect on DSH through self-control.
5. Self-control has a negative direct effect on DSH.
6. Stress has a positive direct effect on DSH, and has an indirect effect on DSH through resilience, and self-control.
7. Sex, family relationship, school connectedness, stress, resilience, and self-control have influenced on DSH among Thai adolescents.

Conceptual framework of the study

The diathesis-stress model of DSH (Nock & Cha, 2009) is derived from typically conceptualized as a predispositional factor, or set of antecedents, that makes possible a disordered state. The earliest psychopathology models featuring vulnerability proposed that the predispositional factors consisted of genetic or biological factors, to render an increased probability of the occurrence of a disorder (Ingram & Luxton, 2005). The terminology of diatheses refer to the risk or vulnerability, and has been broadened to include psychological and social factors, such as cognitive and interpersonal variables, that make a person susceptible to psychopathology (Ingram & Luxton, 2005; Monroe & Simons, 1991). It was later expanded to explain individuals who experienced certain cognitive, emotional, and social risks as well as might develop DSH.

The diathesis-stress model (Nock & Cha, 2009) acknowledges that both nature and nurture have an effect on people's thoughts, feelings, and behaviors. Since

Nock and Cha (2009) argued that this concept has since expanded to describe a general preexisting vulnerability, which might be innate, learned, or of an unknown etiology including 4 categories 1) bio-psycho-social predisposing factor as follows: biological predisposing factor includes genetic, sex, cognitive biases and distortions or depressive attributions; emotional or psychological predisposing factor are emotional dysregulation and depression; and social predisposing factor concerns a history of maltreatment or current problems with parents or peers, which contribute to feelings of alienation, isolation, or loneliness, 2) precipitating factor is a stressful event triggers over or under arousal with high self-criticism. It can be either internal or external element that causes or contributes to the occurrence of DSH, consist of the stress or anxiety in daily life, e.g. personal failure or the argument with boy/ girl-friends, 3) perpetuating factor is a DSH-specific factors, such as regulation of emotion experience or social situation, which can ultimately lead to an outcome of DSH, e.g. lower parental relationship or perceived less school connectedness, and 4) protective factors on DSH, e.g. resilience, less self-criticism or more self-control, higher family relationship and school connectedness.

Related literature reviews and the diathesis–stress model of DSH are used in explaining the hypothesized model of this study. Sex is a bio-psycho-social vulnerability that predisposes adolescents toward negative affect. Stress is a precipitating factor which refers to a specific event or trigger to the onset of adolescents' DSH. Family relationship and school connectedness are both perpetuating and protective factors that make the condition of DSH endured or inhibit DSH behavior in adolescents. For example, adolescents who have lower family relationship or perceive less school connectedness tend to have more engage in DSH than adolescents with higher family relationship or school connectedness (Baetens et al., 2014; Tuisku et al., 2009). Lastly, resilience and self-control are protective factors which refer to the conditions or coping strategies among adolescents on DSH.

Therefore, Family relationship, school connectedness, and sex are defined as exogenous latent variables. Resilience, self-control and stress are both exogenous and endogenous latent variables. Deliberate self-harm [DSH] is defined as endogenous variables. Sex and stress have a direct positive effect on DSH while family relationship, school connectedness, self-control, and resilience have a direct negative

effect on DSH. Furthermore, stress and resilience have indirect effects on DSH through self-control. School connectedness has indirect effects on DSH through resilience and self-control. Family relationship, school connectedness, sex, and resilience have indirect effects on DSH through stress. The hypothesized model of DSH in Thai adolescents has been proposed and illustrated in figure 1-1.

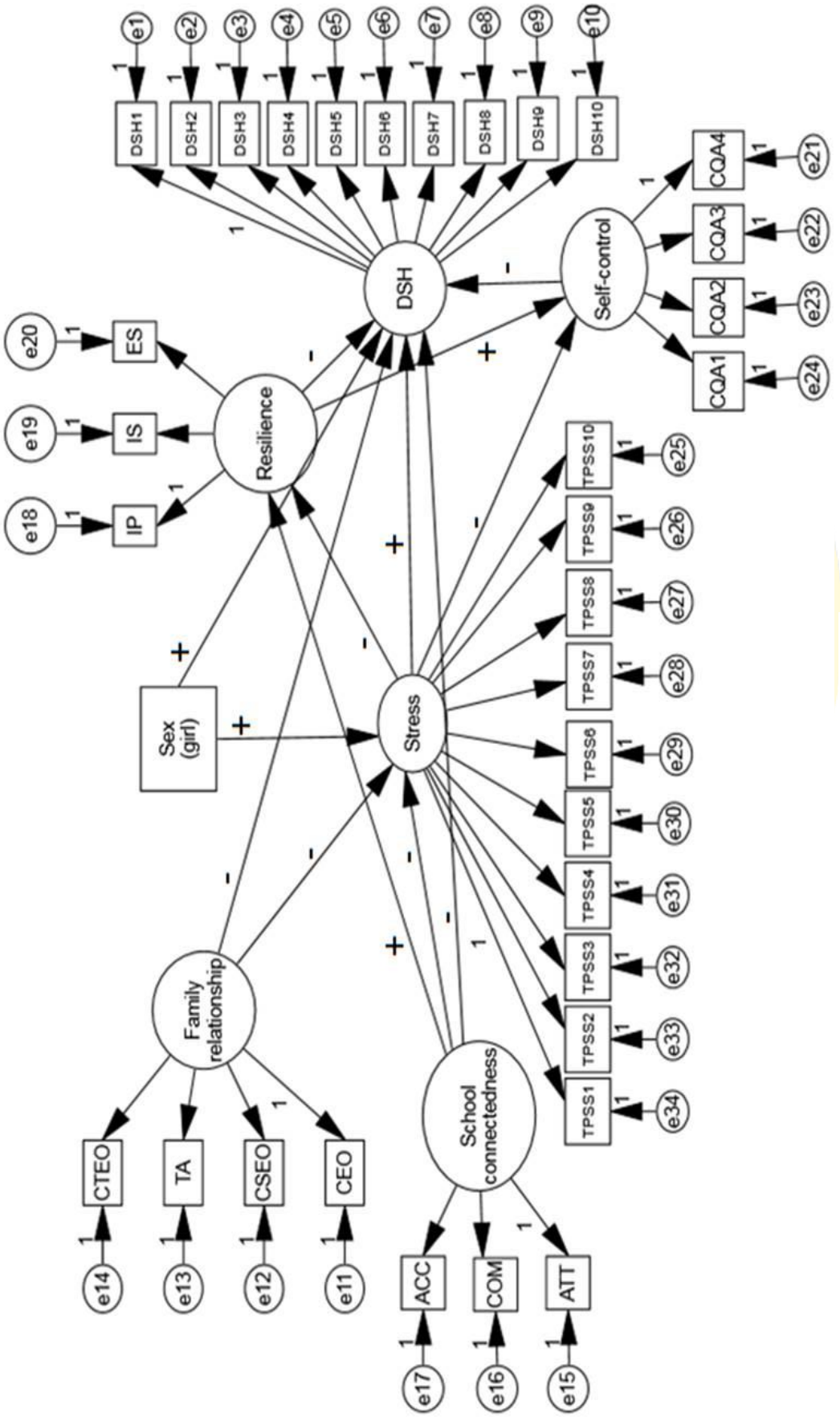


Figure 1-1 The hypothesized structural model of DSH in Thai adolescents

Scope of the research

An empirical test of a cross-sectional structural model was conducted to investigate the influence of six predictors on DSH among adolescents. The participants of this study were 360 adolescents studying in Mathayomsuksa 4-6, aged 19 years old or younger whose parents granted permission to participate in this study. They enrolled in high schools for academic year of 2019.

Definition of terms

1. Deliberate self-harm is defined as adolescent's injured himself or herself, and without a fatal outcome which is an individual behavior deliberately for the extent that bleeding occurred or caused a bruise to appear. It was measured by the deliberated self-harm Inventory: 10-Item version revised [DSHI-9r] (Lundh et al., 2011 a).

2. Family relationship refers to the receipt of care, attention and feelings within the domestic group of people who have some degree of kinship whether through blood, marriage, or adoption. It includes not only love, mutual care and respect, recreational activity, and the unity of members but also dysfunctional kinship that impacts negatively on adolescents' body and mind, for example, unbalanced caring, poorer communication with parents, and the absence of family dealing. This variable was measured by using the family relationship questionnaire developed by Punwichai (2005).

3. School connectedness is defined to the extent that the adolescents care for their school and feel that they are cared for by the school. These relationships occur on both academic and personal levels through the care of teachers, staffs, and peers in the school for their learning and academic achievement e.g. higher grades and test scores, better school attendance, and stay in school longer. However, it also includes dysfunctional relation, for example, breaking up friendships, verbal violence and threats to control another person, or bullying. All these impacts negatively on adolescents' body and mind. It was measured by the student-school connectedness scale (Spanjers, 2016).

4. Sex refers to the biological sexual characteristics differentiating between masculinity and femininity. Depending on the context of a person's physiological status as male or female only. It was recorded by a demographic questionnaire.

5. Resilience is defined as adolescents' ability to face stressful situations or crises with self-coping or adjusting, and to recover adversity into advantage or opportunity. This variable was measured using the resilience factors scales for Thai adolescents developed by Takviriyanun (2008) on the basis of resilience model and of additional review of literature related to the concept of Grotberg (2003).

6. Self-control refers to adolescents' capacity to alter its own states and responses. It is an important key to success in life, especially insofar as the latter requires conforming to socially desirable values instead of pursuing egotistic goals, such as controlling own emotion without DSH behavior (Baumeister & Exline, 2000; Baumeister et al., 2007). It was measured using the self-control questionnaire developed by Saengthongdee (2007).

7. Stress refers to the perception of emotional state that disrupts adolescent's psychological equilibrium through their cognition whether the environment that affects them threatens or negatively impacts their mental health, and may catalyze the development of DSH (Oatley, Keltner, & Jenkins, 2006). It was measured using the Thai version of perceived stress scale-10 developed by Wongpakaran and Wongpakaran (2010).

CHAPTER 2
LITERATURE REVIEWS

This study aimed to test a causal model of deliberate self-harm in Thai adolescents. This chapter describes a review of related literature on the following topics:

1. Deliberate self-harm among adolescents
2. The diathesis-stress model of DSH
3. Factors related to adolescents' DSH

Deliberate self-harm among adolescents

Deliberate self-harm [DSH] is denoted as the intentional act of self-directed injury, irrespective of motivation (De Cates et al., 2017). The important distinction is drawn between intentional self-directed injury without suicidal intent and an act of attempted suicide. While another describes that DSH exists only when there is clear intent not to kill oneself (Conaghan & Davidson, 2002). DSH is similarly referred to in several terms of literatures, for example, non-suicidal self-injury, self-mutilation, self-wounding, self-cutting, self-poisoning, parasuicide, repetitive self-injurious behavior, or self-punishment (Hall & Place, 2010; Phillips et al., 2013). Therefore, DSH among adolescents is an individual experience that derives from their cognation and behavior stimulated by their own perception and contexts. Currently, DSH is associated not only with their cognation and behavior but also with digital self-harm among them. This newly identified online behavior of digital self-harm occurs when they create an online account for anonymously sending hurtful messages or threats to themselves on the social media platform. This conceptualization encompasses self-harm as it occurs through SMS, email, social media, gaming consoles, web forums, virtual environments, and other online platforms yet to be conceived. It also correlates to offline self-harm and suicidal ideation (Patchin & Hinduja, 2017).

DSH in adolescents differs from the adulthood's one. The emotional states of adolescents easily and rapidly change. They are irritable, fluctuating and unstable. In particular, female adolescents are quick-tempered, while male adolescents tend to

exhibit signs of aggression and sexual changes, sex and growth hormones are secreted to induce radical and rapid growth. The body quickly transforms. Limbs grow longer. Females accumulate more fat than males. Males develop more muscles and become stronger than females along with other developments: enlarged areolas, deepened voice, facial hair and nocturnal emissions. On the other hand, females accumulate more fat than males, develop enlarged breasts, increased adipose tissue that contributes to their figures and widened hips and menstruate for the first time. The first menstruation indicates the onset of adolescence in females. Both sexes also experience changes to their genitalia (which increase in size, mature into those of adults and develop pubic hair), produce body odors and develop acne. This marked change in physical appearance, along with adolescent egocentrism, whereby young people find it difficult to differentiate between their own preoccupations and other's perceptions of them may cause significant distress (Rogol, Roemmich, & Clark, 2002; Wheeler, 1991).

During adolescence, adolescents can be reckless and impulsive and lack thorough consideration of actions. At the same time, adolescents clearly develop ideas about themselves and personal identities. Adolescents develop self-concept and begin exhibiting behaviors relating to their self-identity. In light of biological aspect that is correlated with emotions or can cause emotional changes within adolescents and discovered that neurotransmitter or neurochemical agents are correlated with abnormal emotions. It was found that impulsive behavior, DSH, or suicidal victims, had abnormally low levels of serotonin or 5-hydroxytriptamine [5-HT]. The low serotonin level causes adolescents to lose self-control and perform DSH when under stress (Crowell et al., 2008; Garza-Trevino, 1994; Meyer et al., 2003).

In terms of emotions, adolescents exhibit constantly fluctuating, easily changing, easily irritable, easily angered emotions and easily feel depressed without an explanation. Negative emotions might cause delinquent or aggressive behaviors and affect learning and living. The regulation of emotion involves the management of diverse systems and components, including internal systems (neurophysiological, cognitive, and subjective evaluations), behavioral components (facial and behavioral actions), and external/ social components (cultural values, social contextual significance and personal motivation/ goals). In terms of morals, adolescents are

highly idealistic because they begin to be able to separate between good and evil on their own. They develop personal conscience, demand righteousness and justice in society, enjoy helping other people, desire to be good people who are well-liked by other people, and adolescents feel frustrated by injustices in society or at home. They sometimes intensely express their displeasure and directly criticize parents or teachers. Resistance and protests are frequent during adolescence and occur when adolescents encounter injustice, exploitation and inequality. During early adolescence, self-control might be poor. However, self-control successively improves and develops into a complete system of morals like adults (Silk, Steinberg, & Morris, 2003; Zeman, Cassano, Perry-Parrish, & Stegall, 2006).

Adolescents are also afraid and worried about growing into adulthood with increasing responsibilities and independence. As children become adolescents, they begin to separate from parents and some may no longer want to go places together as in the past. Instead, they prefer to do things independently and do not want interference; and occasionally, they even prefer isolation at home. While they demand independence and privacy, they are also constantly exposed to information about responsibilities. They are easily misguided to head in the wrong direction and frequently develop conflicts with parents, guardians and teachers. (Ministry of Public Health, 2018). Hence, Adolescence is a time of accelerated change, both physiology and cognition. The timing of puberty has been linked to the onset of emotional dysregulation and poor self-concept, with increased bio-psycho-social vulnerability for them (Stattin & Magnusson, 1990; Thomson, 2006).

In terms of social development, adolescents begin to grow apart from their families. Adolescents become less close to their parents and siblings than before and become more interested in their peers. Adolescents spend long periods with friends and activities outside the home and begin developing interest for the opposite sex, society and the environment. Adolescents adapt to fit better with rules imposed by social groups and develop social, communication, negotiation, problem-solving, mediation, flexibility and mollifying skills along with the ability to work with other people. Good social development provides the foundation for good interpersonal relationships and good personalities, while social learning provides adolescents with the means to support themselves as they discover lifestyles suitable for themselves,

choose occupations suitable for themselves and build a good society and environment for themselves in the future. Adolescents generally experience all three developments concurrently, whether physical, emotional or social. With appropriate development, adolescents can adjust well. However, if one area is lacking and remains uncorrected, adolescents might fail to make adjustments and eventually develop mental health problems and begin to DSH (Thomson, 2006; Wheeler, 1991; WHO, 2014).

According to above, adolescents' vulnerability is a glimpse into the importance of adolescents' DSH that "why" adolescents choose to DSH and engaging in this behavior more than other ages. Adolescents' DSH is a serious and complex problem caused by several elements. It occurs as a means of burying deep emotional pain and also views as a mechanism for psychological protection. DSH might be caused by self-criticism, calling for attention, contagion effect (copycat), stress in daily life or perceived faults within the self to the extent that the faults are no longer acceptable. These causes lead to physical self-imposed punishments to relieve stress such as physically hitting, banging the head against the wall, stabbing with a needle, cutting or stabbing with a knife or taking poison. As symptoms successively escalate without treatment, suicidal ideation can be the final outcome. Hence, when an adolescent is engaged in DSH, it is necessary to provide urgent help (Arun & Chavan, 2009; Fox & Hawton, 2004; Ingram & Luxton, 2005; Rungsang et al., 2017).

Prevalence of DSH

DSH is a significant problem among adolescents worldwide with its prevalence ranging from 6 to 41.6% in a population-based study from England, Irish, Sweden, and Australia (Hawton, Bergen, et al., 2012; L. g. Lundh et al., 2011; McMahon et al., 2014; Muehlenkamp, Claes, Havertape, & Plener, 2012). The prevalence rate of DSH varies depending on the method for assessing history of DSH and the population being assessed. Generally, studies have asked a single item question to assess whether a participant has engaged in DSH, and this is often followed up with questions on method of DSH, and a description of the event (De Leo & Heller, 2004; L.-G. Lundh et al., 2011).

With respect to hospital-based statistics for DSH, a primary care unit reported the observed increase of annual incidence of self-harm to in girls (37.4 per 10,000), compared to boys (12.3 per 10,000). Besides, there was a sharp increase (68%)

in DSH in girls aged 13-16 years from 45.9 per 10,000 in 2011 to 77.0 per 10,000 in 2014 (Morgan et al., 2017). Meanwhile, 26.6% of a community sample of adolescents reporting a history of DSH in the previous year (including drug overdose) has been hospitalized for their injuries (McMahon et al., 2014). Those studies suggested that a large proportion of DSH was not included in hospital statistics as medical attention was not sought. In addition, a number of cases of DSH presented to hospital will not be identified as DSH but as accidental injury or injury of undetermined cause. According to the data from the hospital episode statistics [HES] and Office for National Statistics [ONS] in England, the prevalence of hospitalization due to self-harm was 37.4 per 10,000 girl populations. The same-year comparison (2011) revealed that a sharp increase of 68% in girls aged 13-16 from 45.9 per 10,000 in 2011 was considerably lower than the rate reported among Sweden's non-clinical samples (41.6% of 1,052 participants) (L.-G. Lundh et al., 2011; Morgan et al., 2017).

The prevalence of hospital-based statistics of adolescents' DSH may only represent the iceberg tip but a large proportion of adolescents' DSH in the community setting is underreported. There is found that the prevalence of DSH in the community setting of Chinese, Japanese, and Vietnam adolescents based on extant literatures ranges from 9.6% to 31% (Linh Cu & Blum, 2011; Su et al., 2010; Wan, Hu, Hao, Sun, & Tao, 2011; Watanabe et al., 2012; Wu et al., 2016).

Respecting the current situation of DSH in Thai adolescents, evidences in 2004-2005 have shown that 65-66.3% of them are female, while 26.7% of adolescents aged 10-19 years have engaged in DSH. Most of them (84%) conducted DSH for the first time (Mongkol et al., 2004; Mongkol et al., 2005). The sample in those studies had intentional self-harm behavior and received health services from healthcare centers in 72 provinces across Thailand. Data collections were done using a stand from self-harm surveillance system (report 506.ds).

Therefore, the focus is on a large proportion of Thai adolescents' DSH in the community setting is underreported. This signal that DSH is more common in the general Thai adolescent population and more research is needed on DSH and associated factors in community-based samples of Thai adolescents. The rate of DSH was 40.99% in the central region, while the rates of DSH in the northern, northeastern

and southern regions are 29.97%, 17.38%, and 11.66%, respectively (Mongkol et al., 2004; Mongkol et al., 2005). In contrast, the rate of DSH in light of suicide attempted has the highest statistics in the northern, central region, northeastern and southern regions, respectively. DSH during adolescence has been found to significantly increase the risk of suicidal ideation and suicide attempts finally (Liu, Chen, Bo, Fan, & Jia, 2017; Memon, Sharma, Mohite, & Jain, 2018; Rungsang & Chaimongkol, 2017).

However, DSH behavior can be the first-time incident (one time) or more than once, which is called repetitive DSH behavior (Gratz, 2001; Ystgaard et al., 2009). On the other hand, the relevant literatures stated that repetitive DSH behavior was the act of DSH behavior for more than five times (Bjärehed & Lundh, 2008; L.-G. Lundh et al., 2011) and that the adolescents engaging in self-harm were approximately nine times more likely to die unnaturally during follow-up, with especially noticeable increase in risks of suicide (Morgan et al., 2017).

DSH is a powerful predictor of suicidality (Mehlum et al., 2014). Previous study revealed the significant positive relationship of DSH with suicidal behaviors in young people (Zubrick et al., 2017). Moreover, a study of students in a Chiang Mai's high school indicated that 4.6% of adolescents had attempted suicide during the past year. Importantly, they presented that 7.4% of girls and 5.7% of boy had attempted suicide (Peltzer & Pengpid, 2012). This would be of high interest to deeply examine DSH among Thai adolescents. In particular, Chiang Mai is the second-largest province of Thailand and its metropolitan area has a population of nearly one million people. This is more than half of total population in Chiang Mai province. A competitive lifestyle in Chiang Mai nowadays impact on Thai adolescents' DSH.

Measures of DSH

Measurements of DSH include self-report, a semi-structured interview, and a structured interview. Gutierrez, King, and Ghaziuddin (1996) initially developed the self-harm behavior questionnaire [SHBQ] as a semi-structured interview, based on information gathered from open-ended clinical interviews and an extensive review of the suicide risk assessment literature. To increase efficiency, the questionnaire was later changed into a self-report format, including both closed and open responses (Hagstrom & Gutierrez, 1998). The SHBQ includes four sections investigating:
a) intentional self-harm not identified by the participant as suicidal in nature;

b) suicide attempts; c) suicide threats; and d) suicidal ideation. The SHBQ's first section starts with the question "have you ever hurt yourself on purpose (e.g., scratched yourself with finger nails or sharp object)." Participants who answer "yes" then indicate how many times they have engaged in the behavior, ages at first and most recent incident, methods used, whether anyone else was aware of the behavior, and if the behavior resulted in injury that required medical attention. It includes harm in which there was suicidal intent. A qualifier such as, but was not a suicide attempt, is needed to ensure that suicide attempts are not included in the self-harm section. As a result, the SHBQ may over-estimate NSSI. The alpha estimates were high for each scale: past suicide attempts, α = .96, (corrected item-total correlations range = .79 to .97); self-harm, α = .95 (corrected item-total correlations range = .88 to .95); suicide threat, α = .94 (corrected item-total correlations range = .68 to .91), and suicide ideation, α = .89 (corrected item-total correlations range = .65 to .90) (Gutierrez, Osman, Barrios, & Kopper, 2001).

Subsequently, self-report measures of DSH have been developed to assess the history of DSH behavior, including the deliberate self-harm inventory and the adolescent version, the functional assessment of self-mutilation, the self-Injurious Thoughts and behaviors interview, the inventory of statements about self-injury, and the self-harm inventory. Firstly, the measure which is related adolescents' DSH is the adolescent version of the DSHI-s (Lundh et al., 2007) is a short version of the DSHI (Gratz, 2001). It is a self-report questionnaire and used to assess 16 different deliberately self-harming behaviors. The specific acts of adolescents' DSH listed in the questionnaire are based on clinical observations, testimonies of individuals who engage in self-harming behavior, and common behaviors reported in the literature. Cronbach's alpha was calculated to determine the internal consistency of the dichotomous DSHI items. Results indicate that the DSHI had high internal consistency (α = .82) (Gratz, 2001; Lundh et al., 2007) .

The functional assessment of self-mutilation [FASM] (Lloyd, Kelley, & Hope, 1997) is a self-report measure of the methods, frequency, and functions of self-mutilation behavior [SMB]. Items regarding the methods and functions of SMB were initially developed through an extensive review of past literature on SMB in both normative and psychiatric populations. Next, a series of independent focus

groups were conducted with adolescent psychiatric inpatients engaging in SMB to supplement the list of methods and functions extracted from past research.

The self-injurious thoughts and behaviors interview [SITBI] (Nock, Holmberg, Photos, & Michel, 2007) is a structured interview with 169 items in five modules. It assesses the presence, frequency, and characteristics of five types of SITB: a) suicidal ideation ("Have you ever had thoughts of killing yourself?"), b) suicide plans ("Have you ever actually made a plan to kill yourself?"), c) suicide gestures ("Have you ever done something to lead others to believe you wanted to kill yourself when you really had no intention of doing so?"), d) suicide attempts ("Have you ever made an actual attempt to kill yourself in which you had at least some intent to die?"), and e) non-suicidal self-injury [NSSI] ("Have you ever done something to purposely hurt yourself without intending to die?"). Previous study based on the administration of the SITBI to 94 adolescents and young adults suggested that the SITBI has strong interrater reliability (KD-20 = .99, r = 1.0) and test-retest reliability (KD-20 = .70, intraclass correlation coefficient = .44) over a 6-month period. Moreover, concurrent validity was demonstrated via strong correspondence between the SITBI and other measures of suicidal ideation. The researchers concluded that the SITBI uniformly and comprehensively assesses a wide range of self-injury-related constructs and provides a new instrument that can be administered with relative ease in both research and clinical settings (Nock et al., 2007).

The inventory of statements about self-injury [ISAS] (Klonsky & Glenn, 2009) is designed to comprehensively assess the functions of non-suicidal self-injury [NSSI]. The ISAS consists of two parts and assesses 13 functions of NSSI, as well as the frequency of 12 NSSI behaviors. Its first section assesses lifetime frequency of 12 NSSI behaviors performed "intentionally (i.e., on purpose) and without suicidal intent." The behaviors assessed are: banging/ hitting self, biting, burning, carving, cutting, wound picking, needle-sticking, pinching, hair pulling, rubbing skin against rough surfaces, severe scratching, and swallowing chemicals. Participants are asked to estimate the number of times they have performed each behavior. Five additional questions assess descriptive and contextual factors, including age of onset, the experience of pain during NSSI, whether NSSI is performed alone or around others, time between the urge to self-injure and the act, and whether the individual wants to

stop self-injuring. This measure demonstrates good reliability and validity (Klonsky & Olino, 2008).

The self-harm inventory [SHI] (Sansone, Wiederman, & Sansone, 1998) includes 22 item of yes/ no question that explores respondents' self-harm history. Each item is preceded by the phrase, "Have you ever intentionally, or on purpose…" Individual items include, "cut yourself, burned yourself, hit yourself, scratched yourself," and, "prevented wounds from healing." There are three eating-disorder items (i.e., "exercised an injury on purpose, starved yourself to hurt yourself, abused laxatives to hurt yourself"), two high-lethal items (i.e., "overdosed, attempted suicide"), and three items relating to medical issues (i.e., "prevented wounds from healing, made medical situations worse, abused prescription medication"). Its total score is simply the sum of "yes" responses, with a maximum possible score of 22. This measure has been used in a number of research projects, is free-of-charge, and takes five minutes or less to complete. (Sansone & Sansone, 2010).

Deliberate self harm inventory, short 10-item version [DSHI-9r] is used to measure the participants' deliberate engagement in any of nine different forms of self-harm during the past six months. The participants are instructed to rate the number of times of such engagement in each of these behaviors on a scale from 0 to 6, where 0 is ''never'' and 6 is ''more than five times". The previous study shows the good test-retest reliability; Cronbach's alpha was .90 (Bjärehed & Lundh, 2008; L.-G. Lundh et al., 2011; L. g. Lundh et al., 2011). However, those self-reported were replied by adolescents in the western country, and were fixed with their context. In Thailand, there are currently no reports of time-trend statistics for rates of adolescents' DSH among general population using self-report methodology.

For the measurement, DSHI-9r is a suitable self-report questionnaire because it is based on the evidence of the quality of available outcome measurement instruments (i.e. reliability, validity, and responsiveness), as well as on aspects of feasibility. Also, the literature review on outcome of DSHI-9r gives a clear overview of all important aspects. Therefore, the researcher selected DSHI-9r for back translated into Thai language.

The diathesis-stress model of DSH

The diathesis-stress model of DSH (Nock & Cha, 2009) is a psychological theory that attempts to explain the result of an interaction between a predispositional vulnerability and a stress caused by life experiences. In this model, DSH is constructed by the cognitive-biological, social and psychological vulnerability predisposing factors that make individuals less able to cope with stressors. Hence, a diathesis can take the form of genetic, psychological, biological, or situational factors. Coupled with risk factors specific to self-injury (e.g. contagion in peer group, high self-criticism), the individuals may turn to DSH to regulate their emotional or social experience. Thus, a large range of differences exists among individuals' vulnerabilities to the development of DSH (Ingram & Luxton, 2005; Ormel et al., 2013).

The diathesis-stress model [DSM] has a core attribute with the interaction between predispositions (nature) and stress (nurture). The range of predispositions, however, extends beyond genetic predispositions to social and cognitive predispositions. Relatively minor stressors may lead to a mental illness in adolescents who are highly vulnerable. Notwithstanding, the theory is comprehensive of biological (e.g. genetic), social and psychological aspects (Van Heeringen, 2012). Therefore, the interaction among predispositions, stressors and DSH specific factors contributes to the DSH outcome as depicted in Figure 2-1.

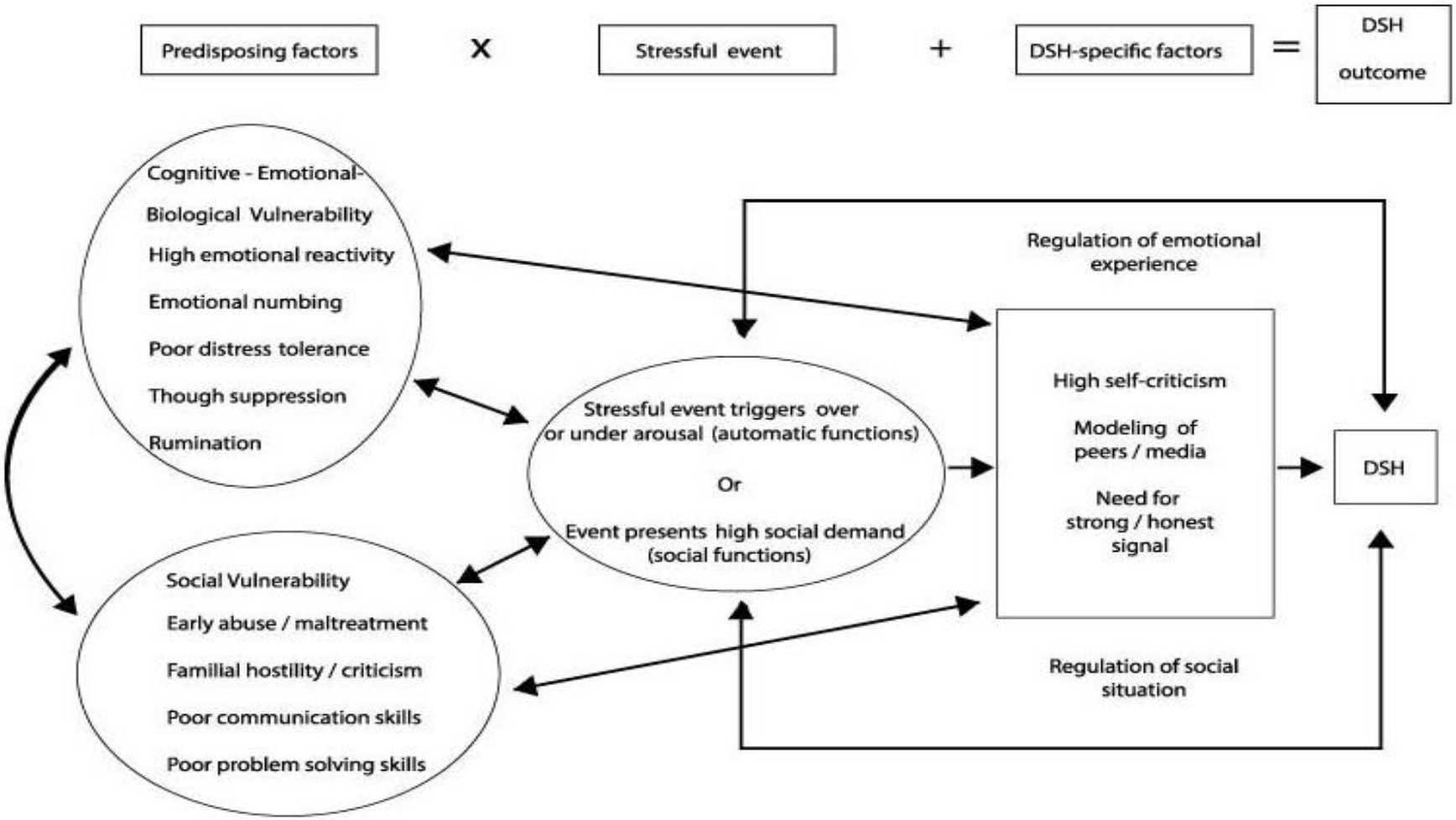


Figure 2-1 The Diathesis-stress Model of DSH (Nock & Cha, 2009, p. 74)

In addition, the DSM proposes that enduring conditions, or traits, are predispositions that result in a person being more likely to engage in DSH behavior when encountering a stressor, compared with someone without the diathesis (Barton, 2014). For example, the stress factors that trigger the onset of illness or disorder may be either external (e.g. loss of relationship, daily hassles, acute stress, trauma) or internal (e.g. exacerbation of symptoms of depression) as depicted in figure 2-1. In summary, the diathesis interacts with stressors, which may be external or internal distal antecedents (Fliege, Lee, Grimm, & Klapp, 2009).

The DSM has high levels of empirical support (Nock, 2010) . There is support for the contention that both intrapersonal and external distal characteristics have an impact on current functioning. The long-term influence of adolescents stress, for instance, is shown as being due to an interaction between genetic vulnerabilities and permanent changes at the endocrine level (Crowell et al., 2008; Garza-Trevino, 1994; Meyer et al., 2003). In addition, acute life stress is an independent predictor of DSH (O'connor, Rasmussen, & Hawton, 2012). In summary, there are a number of studies on aspects of the DSM that provide empirical support for the theory (Barton, 2014). The DSM has wide applicability across clinical illnesses and has been applied to SA, DSH, and suicidal behavior (Blankstein, Lumley, & Crawford, 2007; Vandemoortele, 2012). Hence, be suited to the exploration of DSH as a separate condition and the characteristics that are associated with adolescents' DSH in the current study. The application of the DSM to adolescents' DSH behavior in this model is briefly examined.

Generally, the diathesis-stress model of others assumes that mental illnesses occur due to stressful conditions in the environment interacting with the biological and psychological characteristics of the individual. The model assumes that mental disorders require a predisposition towards the disease, and provides a general explanation for why individuals having a predisposition for a disorder but living in a healthy environment, may not develop the disorder, and why people who live in a stressful environment without a predisposition may not develop certain disorders. Hence, the diathesis, or predisposition, interacts with the individual's subsequent stress response. Stress is a life event or series of events that disrupts a person's psychological equilibrium and may catalyze the development of a mental health

problems, and examined the interaction between vulnerabilities (biological predispositions to react in a given, potentially deleterious, manner) of the individual and the demands of the social environment in which that individual functions (Oatley et al., 2006; Turner, 1994).

On the other hand, an unavoidable implication of these models was that neither biology nor the environment alone was "sufficient" explanation. The mental disorder was the result of interactions between the biologically predisposed individual and environmental events. A diathesis or predisposition is a relatively distal necessary or contributory cause, but it is not sufficient to cause the disorder. Instead, there must be a more proximal cause (so-called the stressor or distal cause) which may also be contributory or necessary but is generally not sufficient by itself to cause the disorder (Carson, Butcher, & Mineka, 2003). The diathesis-stress model of DSH (Nock & Cha, 2009) proposes that DSH is either automatically or socially reinforced through its effects on emotions and on social interactions, respectively. Subsequently, DSH is likely to be repeated over time. The model predicts that the regulated emotions and social interactions reduce the proximal and distal risk factors for DSH or decrease their reinforcing properties. Therefore, DSH specific risk factors are also necessary. Chief among these risks is social exposure to DSH. Peers and the media can also support model to reduce DSH, encourage its use, and reduce inhibitions against using self-injury to regulate emotions and social interactions. The presence of self-criticism or self-hatred may also prompt individuals to direct negative feelings.

Despite this, the diathesis-stress/ dual risk model refers to variability in response to effects of adverse influences. The model posits that individuals who are vulnerable due to their genetic makeup (diathesis) will be more likely to develop a psychological disorder if they grow up in a negative environment or experience stressful events (stress), compared to those not being characterized by the same vulnerability but exposed to the same adversity. On the other hand, according to some scholars, the trait-like characteristics of vulnerability (another core feature of the construct) are that vulnerability is an endogenous process. In particular, whether stemming from genetically or biologically acquired characteristics or acquired through psychological or learning processes, vulnerability resides within the person. This explicitly distinguishes vulnerability from "external" stress. Since within the

appearance of additional models, diatheses or vulnerabilities came to be conceptualized as of two types: inborn and acquired. An inborn vulnerability is “laid down in the genes and reflected in the internal environment and neurophysiology of the organism.” An acquired vulnerability is “due to the influence of traumas, specific diseases, perinatal complications, family experiences, adolescent peer interactions, and other life events that either enhance or inhibit the development of subsequent disorder” (Zubin & Spring, 1977).

Then, Diathesis-Stress model was developed by Hefferon (2013), which was adapted from Bakermans-Kranenburg and Van IJzendoorn (2007). It revealed both vulnerability (the case of those individuals who show a negative outcome when exposed to adverse experiences) and resilience (the case of those individuals who appear to be protected from adversity). However, in the absence of adversity, the diathesis-stress model does not predict any differences in outcomes between those who are genetically vulnerable and those who are not. In other words, differences between vulnerable and resilient individuals emerge only under adverse environmental conditions. According to the diathesis-stress model, a genetically vulnerable individual with a history of positive environments and experiences will not differ from an individual not characterized by the same genetic vulnerability. Since vulnerability describes the propensity to respond negatively to adverse experiences, as a function of individual characteristics, whereas resilience reflects protective resistance from the same negative influences. No differences are predicted in response to positive influences (Hefferon, 2013).

In addition, some studies claimed that repetitive self-harm in the presence of certain types of known psychopathology has generally been conceptualized as biologically driven behavior and considered to occur outside of the realm of DSH. For example, head banging and self-biting are relatively common among severely mentally retarded individuals (Bunclark & Crowe, 2000). On the other hand, studies revealed that repetitive self-harm was common and more often occurred in adolescents from the affective and social consequences of puberty because adolescent development also involves cognitive maturation. The frontal lobes, responsible for executive functioning and curbing impulsivity, do not fully develop until early adulthood (Giedd et al., 1999). DSH is known to be associated with impulsivity

independent of other factors including stress, depression, anxiety and self-esteem (Hawton, Rodham, & Evans, 2006); hence a lack of maturity in executive functioning among adolescents may make them vulnerable to DSH. Likewise, one systematic study found Twenty-five studies (19%) examined hopelessness as a predictor of DSH repetition (Larkin, Di Blasi, & Arensman, 2014). Therefore, limiting the attributes, antecedents, and consequences of DSH serves the impact of narrowing scholarly works that address adolescents' DSH without suicidal intent. These are schematically depicted in Figure 2-2.

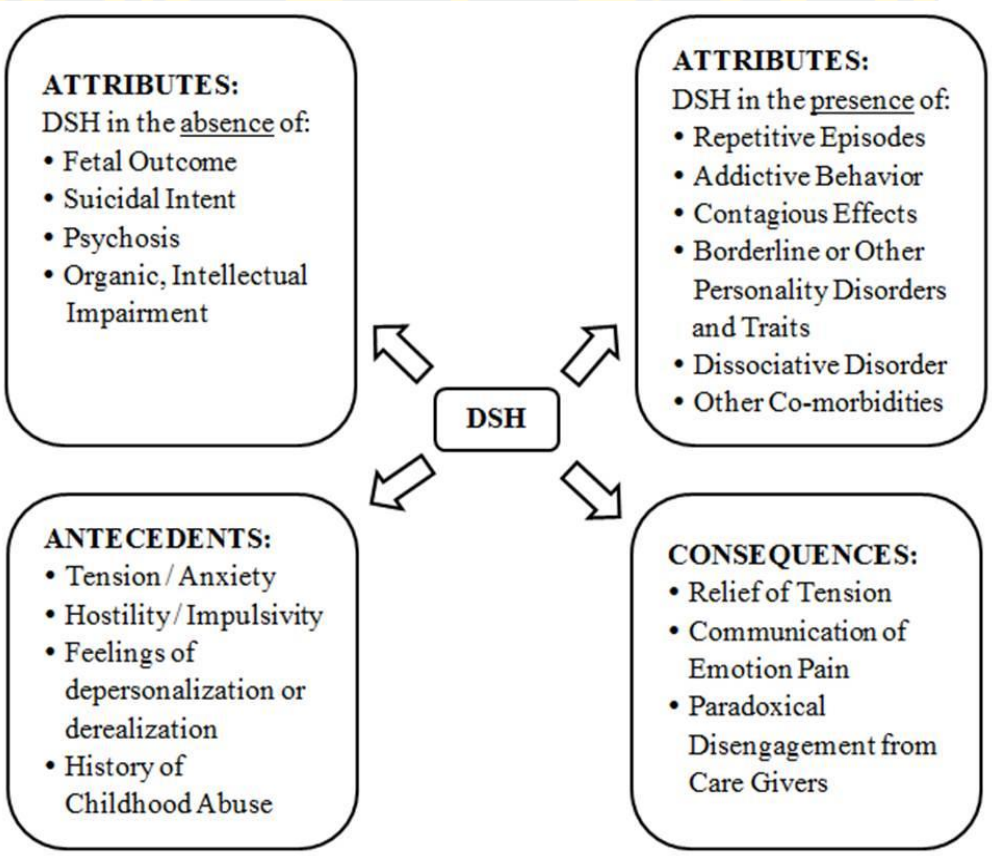


Figure 2-2 Attributes, antecedents, and consequences of DSH
(Mangnall & Yurkovich, 2008)

Likewise, Mangnall and Yurkovich (2008) revealed those antecedents, whether tension/ anxiety, hostility/ impulsivity, feeling of depersonalization or depersonalization or derealization, history of childhood abuse. Those antecedents were seen as a mechanism for regulating emotion in times of stress, intrapersonal and interpersonal experience, and serves to explore how bio-psycho-social vulnerability (diatheses) interact with environmental influences (stressors) to produce DSH.

Some study revealed that the diathesis-stress model of DSH is the most reflective of the research findings overall (Garisch, 2010). Importantly, this model encapsulates both the interpersonal and intrapersonal vulnerability factors (Garisch, 2010; Nock, 2010). In addition, related literature reviews and diathesis-stress model of DSH (Nock & Cha, 2009) stated that enduring conditions, or traits, are predispositions that result in adolescents being more likely to engage in DSH behavior when encountering a stressor, compared with someone without the diathesis (vulnerability) or bio-psycho-social predisposing factors (Barton, 2014; Ingram & Luxton, 2005). Biological predisposing factors include cognitive biases, distortions, perceived body image, eating disorder, unhealthy weight control behavior, substance abuse, or sex. Psychological predisposing factors are adolescents' emotional dysregulation. Social predisposing factors include current problems with family, poor family relationship and school connectedness.

According to the above paragraph, there are three components of predisposing factors, which are also known as proximal risks factors. They represent background characteristic that may put adolescents at risk for event or condition related to DSH at some point in his/ her lifetime. In contrast to proximal risks factors, distal risk factors are those antecedents precipitate DSH behavior, including 1) precipitating factors, such as stress or anxiety in daily life; and 2) perpetuating factors, such as the regulation of social situation and emotional experience leading to inability to effectively release tension and to cope with stress. The last composition is protective factors, including self-control, individual's resilience or the enhancement of coping skills, family relationship, peer and teacher relationships, and school environment. Adolescents represent an immediate vulnerability for a particular condition or event. This type of experience

often occurs immediately prior to adolescents' DSH behavior. (Bjärehed & Lundh, 2008; Chaney, 2011; Ingram & Luxton, 2005; Landstedt & Gillander Gådin, 2011; Loh et al., 2013; Mangnall & Yurkovich, 2008; McMahon et al., 2010; Moran et al., 2012; Silmi et al., 2017; Van der Wal, 2017).

Factors related to adolescents' DSH

Most of influential factors related to DSH among adolescents have been found to be associated with a range of bio-psycho-social factors. In the present study, the researcher performed a review of the literatures on adolescents' DSH. According to the reviews of literature on factors influencing DSH among adolescents including the diathesis–stress model of DSH (Nock & Cha, 2009) and its state of science, six main factors influencing adolescents' DSH are sex, stress, school connectedness, family relationship, self-control, and resilience.

Sex

Sex refers to a socially constructed definition of women and men, such as norms, roles and relationships of and between groups of women and men. It is not the same as sex (biological characteristics of women and men). Sex is determined by the conception of tasks, functions and roles attributed to women and men in society and in public and private life. Therefore, it varies from society to society and can be changed. Sex indicates that health policy, programs, services and delivery models are responsive to the needs of women, men, girls and boys in all their diversity (WHO, 2018). For example, the prevalence of DSH was particularly high among girls attending vocational educational programs, girls with one or two parents born outside of Sweden and girls who reported that one or both parents were not in employment (Landstedt & Gillander Gådin, 2011).

In addition, a history of deliberate self-harm was reported by 17 % of the students. It was more common among girls (23.3%) than among boys ($p < 0.001$). Several studies indicated that the prevalence of DSH was particularly high among girls (Law & Shek, 2013; Straiton et al., 2012). Sex difference in self-harm severity was significant, as the proportion of severe self-harm was much higher among male cases (Bennardi, McMahon, Corcoran, Griffin, & Arensman, 2016; Lundh et al., 2007). There was a palpable trend that, along with age increase,

the proportion of severe self-harm increased dramatically, for example, among cases aged 15 to 29 years old, the proportion of severe self-harm was 26.8% whereas among cases aged 45 to 65 years old, such proportion was 63.6%, instead (Xiao et al., 2013). On the other hand, age of onset for DSH may be related to biological changes of puberty. One study revealed females with a history of DSH generally reported a younger age of onset for their DSH than males with a history of DSH (Young, Van Beinum, Sweeting, & West, 2007). This may be due to females undergoing puberty earlier than males. The hormonal changes of puberty make adolescents more vulnerable to emotional turmoil, while extreme negative emotions are associated with DSH (Hawton et al., 2006).

Interestingly, it was found that the hypothesis of bidirectional relationship between psychological problems and self-harm was supported among girls, but not among boys. Although there was evidence of psychological problems as a risk factor of self-harm in boys, the converse was not the case. The relative absence of psychological problems was found to be a protective factor against self-harm only among boys, but not among girls. The results are discussed in terms of self-harm having a different role in the development of psychopathology among girls than among boys (Lundh et al., 2011 b) . On the other hand, researchers conducted a cross sectional survey over a period of three months in the U.S. with those aged 12-15 years and then another three months in Australia, which included 3,332 participants. These researchers discovered that the prevalence of self-injury had a twofold higher rate in females than males with an overall prevalence of 3.7% (Patton et al., 2007). Furthermore, some studies also found that the history of self-injury for adolescents in schools in England was 11.2% for females and only 3.2% for males. Females who lived with one parent also had higher rates of self-injury. In one of the only studies correlating self-harm with sex and ethnicity, Caucasian females reported higher rates of self-injury than Asian females (Hawton, Rodham, Evans, & Weatherall, 2002).

While in Asian countries, the prevalence of DSH was more than four times as high among girls as among boys. DSH was further associated with having suicidal thoughts, having depression/ anxiety symptoms, and having used recreational drugs. These associated factors were similar for both sexes and for both Japanese older [16-18 years old] and younger teenagers [12-15 years old] (Watanabe et al., 2012).

Likewise, in Vietnam, adolescent girls' DSH were almost four times more likely than boys to attempt suicide. Hence, non-fatal self-harm involving young people have been reported as a great global burden of premature death, injury and disability (Cu Le & Blum, 2011).

Stress

Stress factors provide additional factors for people to engage in DSH because stress is an inescapable part of everyone's life. Throughout their entire lives, people are constantly required to face internal and external changes that force adaptation or adjustments, and adjustments induce stress. Hence, stress is a state that occurs concurrently with and continuously throughout people's lives (Levy, Dignan, & Shirreffs, 1992). Because people have to constantly interact with society and the environment, most situations people encounter are related to losses, for example, the death of a loved one, divorce, separation, work resignation, job termination, loss of property (Aguilera, 1994). Self-harmers are generally people who have experienced stressful life events (Heikkinen, Aro, & Lönnqvist, 1994).

Stress is defined as the perception of emotional state in which adolescents who face problems and difficulties, whether personal or environmental in nature, enter. Stress causes physical and emotional fluctuations. When the adolescent stressed, the adolescents' physical balance changes, leading to displayed physical symptoms such as loss of appetite, insomnia and arrhythmia and onset of physical illnesses such as gastrointestinal diseases. The physical symptoms that occur to people let them know that the people are struggling with stress. While psychological stress is the body's sudden response to perception of impending danger (Miller & Keane, 1972). The causes of stress are divided into two groups, including 1) exogenous stress is stress generally caused by interpersonal relationship problems such as family relationships between parents, kin and siblings, or other interpersonal causes e.g. conflicts in ideas and interests, 2) endogenous stress is stress caused by pain, memories, thoughts, feelings, dreams, expectations and others (Wallace, 1978).

For instance, if DSH occurs because of temporary forms of stress, or simply as a way of experimenting with a behavior modeled from peers, it would be more likely to subside. In other words, it may be expected that adolescents who engage in DSH are less likely to continue with this in the absence of other psychological

problems (Lundh et al., 2011 a) . While several studies reported that mental health problems, such as depression, stress and anxiety were the associated factors of DSH in China (stress: $r = 0.007$, $p < .001$), England (depression and anxiety: $r = 0.02$, $p > .05$, and $r = 0.01$, $p > .05$) and Norway (depression and anxiety: $r = 0.35$, $p < .001$, and $r = 0.23$, $p < .001$), respectively (Rossow, Hawton, & Ystgaard, 2009; Wu et al., 2016). This implied that depression and anxiety might not be a proper factor for testing association with DSH. In England, despite similar western context and culture to Norway, no significant associations were found between depression, anxiety and DSH.

In both clinical and nonclinical populations, DSH has been correlated with stress (Favazza, 2006; Ross & Lee Heath, 2003; Whitlock, Eckenrode, & Silverman, 2006). Several studies reported that, at least 70% of adolescents with DSH, DSH is a way they manage their stress (Briere & Gil, 1998a; Gratz, 2003). Other study stated that most primates that develop DSH often come from conditions characterized by neglect, isolation, and lack of care. The three biggest factors that are correlated to primate DSH are isolation, abnormal rearing (attachment), and constant experimentation (Dellinge-Ness & Handler, 2006). Isolation may have a similar quality in humans. Isolation was the single biggest stressor to trigger DSH as reported by inmates (Dear, Thomson, & Hills, 2000; Jeglic, Vanderhoff, & Donovick, 2005). Therefore, the increase in stress and the numerous psycho-social various factors during adolescence may trigger DSH. This hypothesis is supported by research linking DSH to stress (De Man, 1999; Hawton et al., 2006), and research finding interpersonal stressors and other distressing events to be common precipitants of DSH. (De Leo & Heller, 2004; Harrington, 2001; Hawton et al., 2006; Ruiz-Veguilla, Diaz, & Prados, 2004).

School connectedness

WHO (2014) defined adolescents as people undergoing three stages of development: physical development involving sexual maturity; emotional development involving transition from childhood to adulthood; and economic development involving transition from economic dependence toward having a job, earning an income and having personal responsibility and dependence. Furthermore, WHO defined the age range of adolescents to be from 10 to 19 years (WHO, 2014). Therefore, much of the life of every adolescent is spent at school and constantly

associated with learning, even though some adolescents discontinue their education, whether due to some specific necessity, economic pressure, cognitive limitations, and presence in a non-facilitative environment, such as, poor teacher support, perception of sexual harassment, bullying or racism as problems in school, no friends in school, bullying, physical violence in school. There were some differences between girls and boys. For example, only one incident of sexual harassment was sufficient to generate a significant odds ratio among girls, compared with two acts of sexual harassment among boys, whereas the odds ratio for sexual assault was higher among boys than among girls. The factor ‘‘poor influence in school’’ was significantly related to DSH in girls only. In girls, the perception of a heavy workload in school was only significantly associated with DSH in the adjusted model. Dissatisfaction with school achievements was more strongly related to DSH among girls than boys. Interaction analyses suggested that being a girl attending a vocational program who was dissatisfied with her school achievements indicates an increased risk for DSH. Among girls, interaction effects with vocational program were also found with regard to experience of sexual harassment. Among boys, dissatisfaction with school achievements was significantly associated with DSH in the adjusted model only. Among boys, no significant interaction effects were found with any of the control variables (Landstedt & Gillander Gådin, 2011). In addition, factors associated with self-harm among bullied boys included psychological factors, problems with schoolwork, worries about sexual orientation and physical abuse) (McMahon, Reulbach, Keeley, Perry, & Arensman, 2012). Additional, school-related factors such as academic, social and safety-related), should be considered as the risk factors for DSH in young people (Landstedt & Gillander Gådin, 2011).

Significant problems adolescents face at school are problems associated with the subjects of their learning. For instance, some adolescents struggle with subjects involving calculation, while others have poor memory. Some adolescent fear failure because they desire success to ensure their positive developments during adulthood. As physical, emotional and social developments of adolescents can be affected if adolescents lack learning skills or cannot get along with teachers and peers, schools should find ways to help adolescents.

Family relationship

The family is a highly important institution for shaping the adolescents' personality and character in addition to the development of maturity and rearing which influences individual personalities (Friedman, 1992). Therefore, the family relationship characteristics should be the receipt of care, attention, and feelings by family members as well as mutual support and acceptance leading to intimacy and closeness with a desire to share with one another. In addition, Friedman (1992) proposed a concept concerning familial obligations in which duties are tasks families should perform to create benefit for family members and ensure that family members can live normally in society. The family is the most influential institution in modifying adolescent behavior. Adolescents are always connected and tied to their families. However, family relationships are challenging and complicated. When a difficulty occurs, the family naturally enters into conflict. As conflict and frustrations in family members intensify, the thinking, emotions and behaviors of adolescents can be affected to the extent that they engage in self-harm (Friedman, 1992; Friedman et al., 2003; Toumbourou, Olsson, Williams, & Hallam, 2013).

The family relationships affect the adolescents' personality development and mental health. For example, in a family where the parents love their children very much and raise them in an overly protective manner and control with care for every aspect, the children lose themselves, lack confidence and become perpetually dependent on others. As a result, when faced with difficulty on their own, they might experience a high level of stress, which can lead to deliberate self-harm. Since, the good family relationship can help family members communicate effectively with each other, remain happy and have faith in religion as well as help train family members to be patient, conscious, forgiving and supportive of other people in society. In contrast, poor relationships negatively affect every family member by destroying family happiness, preventing unity, disrupting friendliness, causing distancing and leading to family conflicts. Poor relationships negatively affect the adolescents' personalities and health of family members and promote deviance in the form of delinquency, drug addiction, gambling and others. Thus, family relationships are important and should be considered in order to promote positive feelings with each other (Suljevic & Marquardt, 2016; Toumbourou et al., 2013).

According to the findings, people with Type A personalities have foundations in the overly high expectations set during adolescence by parents. Parents pressure these adolescents, particularly in regard to schooling and grades. This effect is known as the "grade pressure syndrome". As these adolescents grow up into adults, they develop Type A personality with the following characteristics: aggression, ambition, competition stress, and self-pressure in completing goals. On the other hand, people with Type B personality live a simple, easy-going life without pressuring themselves too much (Mahajan & Rastogi, 2011). Therefore, parental styles and relationships with adolescent are important. Steinberg and Darling (2017) divided four parental styles and relationships as follows: 1) authoritative parents-they have stable and secure psychological states, pay attention to their adolescent and are democratic, flexible, warm, disciplined and supportive of the decisions made by their adolescent. They give complete responsibility and independence to their adolescent to promote development of personal identity in adolescents. This type of relationship between parents and adolescents is good because of mutual understanding and reason;
2) authoritarian parents-they put themselves at the center and consider themselves to be superior. They exert authority, set strict rules and prefer to make decisions for their adolescent. Adolescent to this type of parents have to obey. Otherwise, severe punishments will occur. At the same time, the parents have high expectations of their adolescent, but dislike communication. This style of parenting causes a great deal of stress in adolescents and creates intense conflicts; 3. Indulgent parents-they are attentive to their adolescent and give their adolescent whatever they wanted.
The parents set no rules, no regulations, and no expectations on their adolescent. Instead, they only wish for the comfort and happiness of their adolescent. As a result, the adolescents of these parents are selfish and lack responsibility; and 4. Indifferent parents-they interact very little with adolescent and pay no attention to how or what their adolescent is doing. The parents only mind their own business, have no time for their adolescent and hardly communicate with them. As a result, the adolescent never learn how to love other people and do not mature with their age as they become adolescents (Glasgow, Dornbusch, Troyer, Steinberg, & Ritter, 1997; Steinberg & Darling, 2017; Steinberg, Lamborn, Darling, Mounts, & Dornbusch, 1994).

Family relationships have been found to have an impact on the prevalence of

DSH, with rates of the behavior increasing as perceptions of family relationships decrease. For example, those engaging in DSH are more likely to report lower levels of trust, lower feelings of care from family members, more feelings of alienation within the household, and more feelings of failed protection from their families (Bureau et al., 2010). Self-reports of individuals engaging in DSH show a higher level of feeling parents do not treat the individual with the respect and dignity they deserve, as well as higher perceptions of poor communication with parents (Buser, Buser, & Kearney, 2012). Further research has shown that families of those with self-harm are more likely to consist of a single parent household or some arrangement other than living with natural parents, leaving those with self-harm to often feel they lack a confidant within their own home (Tulloch et al., 1997). Upon observation, families of individuals with self-harm have been shown to display less positive emotions and higher rate of negative emotions when communicating with one another than a non-injuring population. They further display less cohesiveness or feelings of closeness with one another than control subjects who do not engage in this behavior (Crowell et al., 2008).

Self-control

Self-control refers to a person's own regulation ability in thoughts, emotions, feelings and actions in a direction desired by the person when coping with any problems and barriers, or situations involving internal problems and conflicts (Bandura & Walters, 1977). Likewise, Averill (1973) defined "personal control ability" to have the following three components: behavioral, perception and decision-making components covering the ability to predict what will happen, what a person can do, what a person cannot do, whether the person will be able to work, whether the person will be successful, to create desired results at the desired time and place, the ability to accept encouragements and choose actions including the ability to predict and control results of actions. The aforementioned abilities are key components in controlling and perceiving self-control is the most important characteristic. Therefore, self-control is related to the person's psychological and behavioral conditions. Based on the aforementioned definition of self-control, self-control means a person's ability to perform behaviors with reason and patience when confronted with problems, barriers or a state of internal psychological conflict in order to create positive results, control and change personal behaviors to become desirable for positive effects while avoiding

inappropriate behaviors.

Mahoney and Thoresen (1972) reported the following two major self-control processes. Firstly, stimulus control means a process in which a person learns to express consistent behaviors with personal situations or stimuli by assessing conditions and situations controlling behaviors by discerning stimuli before changing or reorganizing situations or stimuli to facilitate desirable behaviors. Secondly, self-presented control means causing impact on self after performing target behaviors. The impact may be reinforcement or punishment. In behavior control, reinforcement should be used more than self-punishment or DSH. On the other hand, Rosenbaum (1980) developed the self-control concept from Bandura's Self-Efficacy Theory by defining self-control as adolescents' decisions regarding personal ability to manage and achieve specified goals.

Rosenbaum (1980) developed the self-control concept by summarizing characteristics of individuals with self-control to have the following behaviors: 1) use of self-statements and reminders to control emotional and physical expressions such as self-observation, self-assessment from self-recorded information with possible reinforcement by rewarding if behaviors change positively, 2) use of problem-solving strategies in self-control such as planning, defining problems, assessing options and expecting consequences, 3) ability to delay immediate gratification without being self-indulgent in order to enable control of personal desires, 4) self-efficacy in working or achieving self-created goals. Perceived self-efficacy makes life goals clearer, which stated the key to ethical development, comes from social intellectual learning concepts, meaning self-control is related to resistance to temptations and the ability to wait for satisfaction. In cases involving resistance to temptation, adolescents must overcome desire for gratification through suppression. In the same manner, adolescents must express patience, endurance and self-control when waiting for satisfaction in order to receive greater desired goals in the future rather than small immediate rewards (Rosenbaum, 1980).

Resilience

Resilience has also been defined differently as another dimension of mental health and an essential factor for healthy living. Resilience has been defined as the ability to restore mental strength and energy and the process of recovery adjustments

during situations that cause suffering or misery in life (Phungthum, 2009).
The Department of Mental Health (2009 cited in Toumbourou, Olsson, Williams, & Hallam, 2013) stated that resilience is a person's ability to adjust physically and mentally when faced with a crisis and successfully return to normal living. Life crises include loss of work, physical harm, accidents, house fire, loss of a loved one and chronic or serious illness. People do not expect life crises. Therefore, people experience anxiety or panic in addition to sadness, loss of appetite, insomnia, hopelessness or despair, depending on their crisis.

Resilience can be expressed on many occasions, whether from the moment when a crisis occurs or during the recovery period after the crisis has passed. Therefore, importance of resilience on adolescents' DSH, including 1) resilience prevents us from losing our mental health as we face suffering or life crises. Resilience helps us rapidly recover our previous state, 2) resilience is comparable to a life force that nourishes us through obstacles and fate in life until we achieve success, especially for people who have previously overcome such crises, 3) resilience helps people live with greater endurance, and 4) resilience helps us learn about and accept changes in life and gives us greater flexibility without attachment to our environment (Toumbourou et al., 2013).

Resilience prevents adolescents from losing their mental health as well as DSH behavior. When adolescents face suffering or life crises, resilience helps them rapidly recover their previous state. At certain points in adolescence, adolescents might encounter situations that cause grievous suffering and pain. This can be the unexpected loss of a loved one, family problems, conflict with friends, and so on. Also known as life crises or stress in daily life, they occur in varying extents, depending on each person. Adolescents with high resilience will recover to a normal state quickly, while adolescents with low resilience will recover more slowly. Nevertheless, resilience can be augmented by ourselves and the people around us (Huang & Mossige, 2015; Oldfield et al., 2018). Resilience demonstrates that life's obstacles can be overcome with strong resilience which has been categorized into the following three levels consist, 1) Recovery, but not to the same state as before; some people experience changes after encountering terrible events in life. For example, they might become paranoid, even though they were not paranoid before, or they

might view the world more pessimistically, 2) Complete recovery to normal as before. This means that the person recovers the person's original state, and 3) Recovery with greater strength than before; as a life crisis passes, physical and emotional living improves in one way or another. The person is able to better understand life, perceives more life opportunities and adjusts the person's lifestyle to experience greater happiness (Phungthum, 2009).

DSH is typically prompted by over arousal or emotional stress, such as feelings of intense anxiety, anger, stress or psychological distress. Sometimes DSH is brought about by autonomic under own adolescents' vulnerability, such as vulnerable psychology including emotional regulation and adolescent egocentrism. It is adolescents' inability to distinguish between their perception of what others think about them and what people actually think in reality (Elkind, 1967). Some studies reported the vulnerability and stress both contribute to occurrence of DSH. The model has been extended; for example, with respect to DSH in adolescence, three central constructs have been proposed: vulnerability factors, stressful environmental stimuli, and protective factors (social support, intelligence, and healthy patterns of family interaction) (Bridge, Goldstein, & Brent, 2006).

In these instances, DSH may be used in regulating emotions either upward or downward from the predisposing factors. In addition, social stress can also prompt episodes of DSH. For example, academic stress, conflict boy/ girlfriend, disputes with classmates, fight with friend or the disruption of interpersonal relationships can elicit DSH. In these instances, DSH may be used to obtain others' attention, to communicate emotional pain, or to avoid social responsibilities. It depends on the regulation of social situation and emotional experience leading to inability to effectively release tension and to cope with stress; it can be both the precipitating and perpetuating factors.

Summary

All existing empirical evidences indicate that high or low prevalence of DSH in adolescents worldwide depend on cultural and social context of individual countries. Such difference may depend on hospital-based data collection, which was different from collecting data from hidden cases or population-based

approach.

Despite the fact that this group of adolescents may not commit suicide, they have been ignored and the research on them is limited. The monitoring of them is the key to prevent repetitive self-harm, which may result in the need of long-term hospitalization and to avoid possible development of adolescent's repetitive DSH behavior into suicidal ideation in the early adulthood.

The diathesis-stress model of DSH (Nock & Cha, 2009) and review of related literatures demonstrates that DSH is influenced by important factors, namely, sex (bio-psycho-social predisposing factor), stress (precipitating factor), family relationship and school connectedness (being both perpetuating and protective factors), and self-control and resilience (protective factors).

CHAPTER 3
RESEARCH METHODS

With the research purpose to test a causal model of deliberate self-harm in Thai adolescents, this chapter presents research design, population and sample, research instruments, protection of human right, data collection procedures, and data analysis.

Research design

A causal model-testing, cross-sectional design is conducted to examine the influence of six predictors (including family relationship, school connectedness, resilience, sex, self-control, and stress) of DSH among adolescents in Thailand. In addition, A cross-sectional structural model is appropriate for testing not only the relationship between components and associated factors but also the accuracy of the hypothesized causal model (Burns & Grove, 2010).

Population and sample

Target population

The target population of this study is Thai adolescents (aged 19 years old or younger) studying in Grade 9-12 (Mathayomsuksa 4-6) of secondary schools located in the northern part of Thailand.

Accessible population

The accessible population is the target population studying in schools (having more than 2,500 students) under the Office of Secondary Education Services Area located in the northern region of Thailand.

Sample

A multi-stage random sampling technique is used in recruitment of sample from the accessible population.

Inclusion criteria

Inclusion criteria for recruitment are that the sample has never been diagnosed with a mental health problem, and is permitted by parents to participate in this study.

Sample size

A ratio of five to ten respondents per parameter is considered the most appropriate sample size (Bentler & Chou, 1987; Hair, Black, Babin, Anderson, & Tatham, 1998; R. Kline, 2011). Based on this recommendation, this study has 43 estimated parameters (17 errors, 13 factor loadings, and 13 path coefficients), and the sample size of 301 participants is appropriate (43 x 7 = 301). In addition, as it is also on the basis of subjects' characteristics, the design of questionnaire and study potentially leads to the possible attrition rate. Therefore, the sample size of this study increases by 20% resulting in a total sample of 360 participants (n = 180 participants in each school) to be recruited. This sample size is acceptable because 250-500 subjects are usually needed to maintain power and obtain stable parameter estimates and standard errors (Schumacker & Lomax, 2012).

Setting of the study

The sample from the accessible population within the inclusion criteria is recruited from secondary schools, which are defined as an institution providing the secondary education and also usually include the building where this takes place. Some secondary schools provide both lower and upper secondary education (12 to 15 and 15 to 18 years of age, respectively). However, these can also be provided in separate schools, as in the American middle and high school system. In Thailand, elite public schools and private ones typically admit pupils aged 13 to 18 and 12 to 19 years, respectively (Vibulpatanavong, 2017; Von Feigenblatt, Suttichujit, Shuib, Keling, & Ajis, 2010).

Secondary schools in Thailand are the continuation from primary ones and the preparation for vocational program or higher education. The attendance is usually compulsory for students until the age of 18 or 19 years. Hence, secondary schools are particularly important social and learning environment, impacting not only on adolescents' academic and vocational pathways, but also on present and future mental health and well-being. Adolescents not engaging in learning or having poor relationships with peers and teachers are more likely to engage in DSH or in socially disruptive behaviors, stress, and anxiety/ depressive symptoms. They also have poorer adult

relationships, and eventually fail to complete secondary school (Bond et al., 2007; Carter, McGee, Taylor, & Williams, 2007; McLaughlin & Clarke, 2010; Taliaferro & Muehlenkamp, 2017).

In addition, secondary schools' social and cultural context of competitive lifestyle causes negative social interaction patterns. Such experiences highlight different social experiences including, for example, being bullied, not getting along with teachers, feelings of not belonging, not doing well at school, and feeling under stress and depression as well as negative thinking. These factors are a terrible state of mind, which associates with the increase of DSH, and is the most frequently reported motive for DSH (Moldenhauer, 2004; Rasmussen & Hawton, 2014; Rossow et al., 2009; Rungsang et al., 2017; Sripongwiwat, Bunterm, & Tang, 2018; Wu et al., 2016). Hence, researchers find that adolescents need the relief from a terrible state of mind so the research population in this research is from secondary schools located in the northern region of Thailand.

Sampling

A sample of 360 high school students was recruited by means of multi-stage random sampling technique as follows:

Stage 1: Amphoe Mueang of Chiang Mai province has been selected by a convenience sampling technique with a criterion of secondary schools with especially large number of population (more than 2,500 students). It is acceptable for being calculated to represent 25% of total population. Consequently, there are residually public schools = 2, while private schools = 5.

Stage 2: Each of them is randomly selected by simple random sampling as follows: one school from the residually public schools (n = 2), and another one school from the residually private schools (n = 5). As depicted in figure 3-1 showed School 1 and School 2.

Stage 3: Three programs: Thai science-math, English science-math, and language-arts are selected by cluster random sampling technique.

Stage 4: Three classes are selected by a simple random sampling technique, including, Mathayomsuksa 4, 5, and 6 in equal proportions.

Stage 5: Participants are selected by a simple random sampling technique from each class. Lastly, there are 360 participants in this current study as depicted

in Figure 3-1.

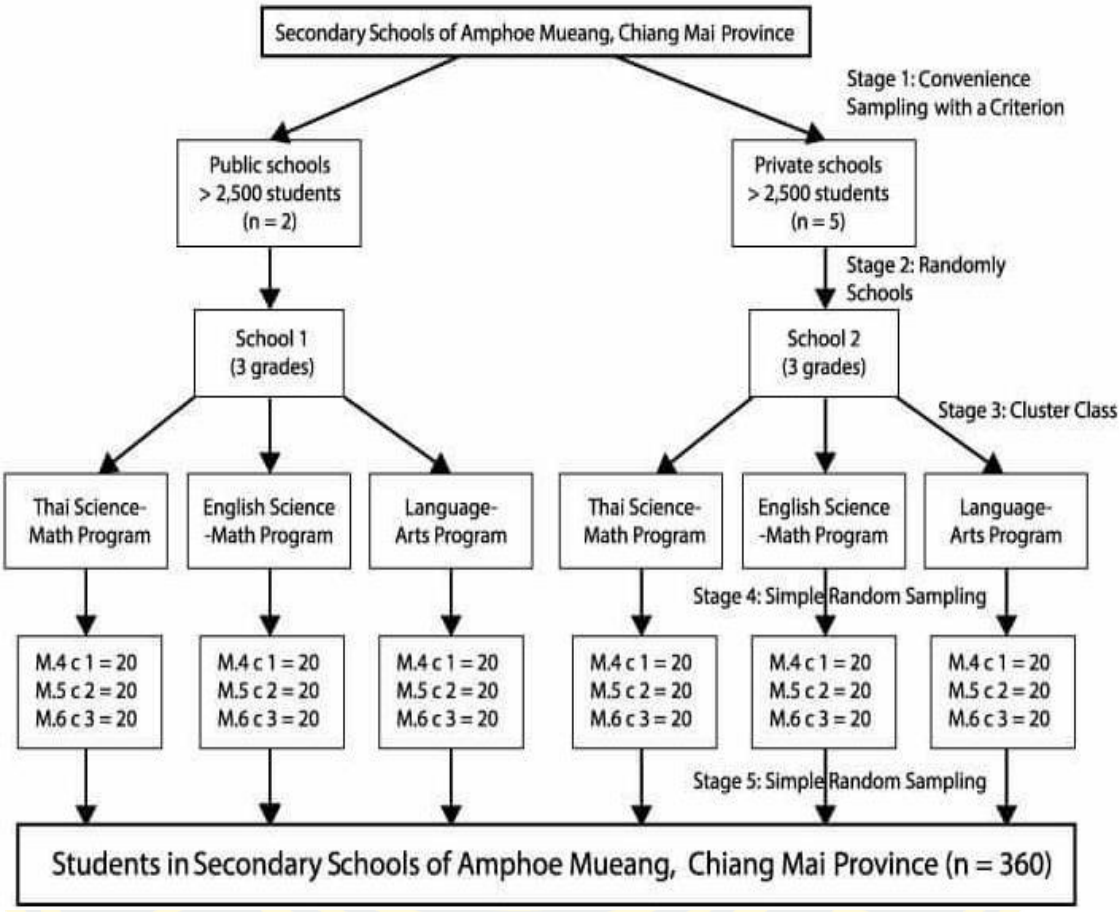


Figure 3-1 A multi-stage random sampling technique of this study

Research instruments

The research instrument includes six self-report questionnaires and the demographic information as follows:

1. The participants' characteristics measured by a demographic questionnaire include age, sex, GPA, education, their regular expenses in daily life, number of siblings, being the number of siblings, the persons they are living with, and marital status of their parents.

2. Deliberate self-harm [DSH] is measured by the Deliberated Self-Harm Inventory: 10-Item Version Revised [DSHI-9r] developed by Lundh et al. (2011 a). In this scale, participants are asked if they have deliberately engaged during the past 6 months in any of ten different kinds of direct physical self-harm, such as cutting

wrists, arms, or body areas, burning oneself with cigarette or lighter, sticking sharp objects into the skin, biting oneself, punching oneself or banging one's head, and so on. They are also instructed to rate from 0 to 6, where 0, 1, 2, 3, 4, 5 and >5 refer to "never", "one time", "two times", "three times", "four times", "five times", and "more than five times", respectively. Higher score indicates the adolescents' severe deliberate self-harming and more likelihood to engage in suicidal ideation. It means that a total score (from 0 to 60) on the DSHI-9r can thus be calculated by summarizing the number of times a person reports having engaged in these self-harming behaviors. The evidence of good test-retest reliability for the earlier version of DSHI-10 is reported by Bjärehed and Lundh (2008). Its internal consistency ranges from .90-.91 (Bjärehed, Wångby-Lundh, & Lundh, 2012; Lundh, Bjärehed, & Wångby-Lundh, 2013; Lundh et al., 2011; Lundh et al., 2011; Viborg, Wångby-Lundh, Lundh, Wallin, & Johnsson, 2018).

3. Family relationship is measured by the Family Relationship Questionnaire developed by Punwichai (2005). The participants are asked to rate on 1-4 rating scale, and to tell about their family relationship during the past 6 months. It contains 40 items and is composed of the following four dimensions: communication between each other; commitment and support between each other; trust and appreciate each other's values and consistency in treating each other. The contents of questionnaire have both positive, where the score of 4 means 'very often' and of 1 refers to 'almost never', while negative questions are scored in reverse direction. The higher the mean score is, the better the family relationship becomes. After examining the reliability in the adolescent group, Cronbach's Alpha Coefficient of .89 is found (Bamrungsena, 2002; Punwichai, 2005).

4. To measure school connectedness, the Student-School Connectedness Scale developed [SSCS] by Spanjers (2016) containing 27 items with three subscales of school attitude (17 items), communication (5 items), and acceptance (5 items) is used. The participants are asked about their school connectedness during the past 6 months. The contents of questionnaire are based on 1-4 rating scale, where 1, 2, 3 and 4 refer to "disagree", "somewhat disagree", "somewhat agree", and "agree",

respectively. Higher score indicates the adolescents' better school connectedness within their schools. A total score (from 0 to 108) on the SSCS can thus be calculated by summarizing total scores of adolescents' answers to the questionnaire. Its internal consistency of total and subscale scores ranges from .88 to .93 (Spanjers, 2016).

5. Resilience is measured using the resilience factors scales for Thai adolescents, which is developed by Takviriyanun (2008) on the basis of resilience model and of additional review of literature related to Grotberg' concepts (Grotberg, 2003). The said concepts summarize research papers on adolescents facing hardship in more than 30 countries, including Thailand. It is found that vulnerable adolescents are able to adapt themselves if there are 3 following important factors: 1) external supports, 2) inner strengths and 3) interpersonal and problem-solving skills. All these are called by Grotberg "I HAVE", "I AM" and "I CAN", respectively. In this regard, the participants are asked about their resilience during the past 6 months. The contents of questionnaire include 25 questions allowing respondents to assess what statements most reflect their own feelings on the basis of 1-4 Likert scale - totally untrue (1 point) to totally true (4 points). The possible scores range from 25 to 100 so higher score represents a high prevalence of resilience factors. The score interpretation is divided into 3 equal ranges: low level (26-50), moderate level (51-75) and high level (76-100). After examining the reliability in the adolescent group, Cronbach's Alpha Coefficient of .90-.92 is found (Permpool, Takvinyanun, & Hengudomsub, 2011; Rungsuwan, Takviriyanun, & Thongbui, 2016; Takviriyanun, 2008).

6. Self-control is measured by the self-control questionnaire developed by Saengthongdee (2007). The participants are asked about their self-control to indicate their feelings or thoughts in a certain way within the past 6 months. This instrument is developed according to self-control theory of Hirschi and Gottfredson (1983) and composed of 23 questions with 5-rating scale. They are also instructed to rate from 1 to 5, where 1, 2, 3, 4, and 5 refer to "mostly agree", "much agree", "moderately agree", "less agree", and "least agree", respectively. A total score ranges from 23-115. Higher score is high self-control, while lower score is interpreted as low self-control. Its scoring criteria are as follows: mean score of 23.00-54.00 (low level), 54.01-85.00 (moderate level) and 85.01-115.00 (high level). After examining the reliability in the

adolescent group, Cronbach's Alpha Coefficient of .86 is found (Suwanruangsri, Chunuan, & Chatchawet 2015).

7. The stress measurement uses the Thai version of Perceived Stress Scale-10 developed by Wongpakaran and Wongpakaran (2010). Participants are requested to respond to 10 questions on a 5-rating scale ranging from 0 (never) to 4 (very often). This indicates how often they have felt or thought a certain way within the past 6 months. Each question has 5 scales ranging from 0 to 4 in which 0, 1, 2, 3 and 4 represent “never”, “almost not”, “sometimes”, “relatively often” and “very often”, respectively. Besides, scores range from 0 to 40, with higher composite scores is indicative of greater perceived stress. The good internal consistency of the scale is found with a Cronbach's Alpha of .84 in the student group (Wongpakaran & Wongpakaran, 2011).

Back-translation technique

The back translation technique is a necessary procedure for the research in which its instrument in original language has been adapted into the target one. In particular, the original English version of Deliberated Self-Harm Inventory: 10-Item Version Revised (DSHI-9r) and Student-School Connectedness Scale (SSCS) are the instruments that have never been translated into Thai language before. Therefore, DSHI-9r and SSCS is translated into Thai versions by means of back translation technique (Beaton, Bombardier, Guillemin, & Ferraz, 2016; Cha, Kim, & Erlen, 2007) as follows:

Firstly, the original English version of DSHI-9r and SSCS is translated independently into Thai language by two bilingual native Thai translators with expertise in both languages. Then, the differences in translation of both versions are compared and revised. Importantly, the contents are translated by experts specialized in psychiatric and mental health nursing to ensure the precise conveying of meanings and statements of the original measurements. This is due to the fact that the translated contents must be correct, fully connote main concepts of the instruments, and fix with Thai adolescents’ culture contexts.

Secondly, two native Thai linguists working as the English instructors of Burapha University Language Institute have independently made the translation of the

translated Thai versions back to English without having seen the original ones before. Then, contents, cultural acceptability, grammar, and structure consistency of both original and back translated English versions are reviewed and compared by the principal investigator and major advisor who are bilingual native Thai speakers with knowledge in this area. In addition, the incorrect parts are also revised by them for the sake of precision and conformance to the original versions.

Psychometric properties of the research instruments

The instruments of this study include the DSHI-9r (10 items), the family relationship questionnaire, the school connectedness scale, the resilience factors scales for Thai adolescents, the self-control questionnaire, the perceived stress scale (Thai version), and the demographic questionnaire. The permission to use the DSHI-9r (10 items) and the school connectedness scale, which are in English, has been granted by the developer. The pilot study to test their psychometric properties including validity and reliability has also been conducted.

Validity

First, the content validity of the family relationship questionnaire, the resilience factors scales for Thai adolescents, the self-control questionnaire, the perceived stress scale (Thai version) has been not only validated in previous studies but also evaluated in Thai sample. Especially, the perceived stress scale (Thai version), translated into Thai using back translation technique, has been administrated in Thai. Therefore, in this study, the revalidation of their content validity is not required.

Second, back translation technique is used in translating DSHI-9r (10 items) and school connectedness scale into Thai to ensure their content validity and cultural comparability. The translation accuracy verification and content validity of both instruments have been validated in terms of language appropriateness by the panel of four experts. Two of them are specialized in psychiatric doctor (Psychiatrist) and mental health nursing instructor. Meanwhile, the other two are native Thai linguists who are fluent in both languages and work as nursing instructors at The Johns Hopkins University, School of Nursing. They are former English instructors at Burapha University Language Institutes too.

Finally, the construct validity of each instrument has been tested using confirmatory factor analysis [CFA] by means of AMOS program to estimate the specified measurement model.

Reliability

The internal consistency reliability of all research instruments has been evaluated using internal consistency. According to Hair, Black, Babin, and Anderson (2010), at least 30 participants are adequate to evaluate reliability of research instruments. The internal consistency with Cronbach's alpha should be 0.70 or above for the acceptable reliability. Also, a pilot study in this research has been performed with 30 participants who have the same characteristics with the actual ones.
The Cronbach's alpha of the DSHI-9r (10 items), the family relationship questionnaire, the school connectedness scale, the resilience factors scales for Thai adolescents, the self-control questionnaire, and the perceived stress scale (Thai version) are 0.83, 0.86, 0.81, 0.84, 0.89, and 0.82, respectively, indicating the acceptability of their reliability. The summary of the instruments used in this study are shown in Table 3-1.

Table 3-1 Summary of the study variables and measures

Variable	Measure	Likert types	Items	Reliability
Deliberated self-harm	Deliberated self-harm inventory: 10-item version revised [DSHI-9r] (Lundh et al., 2011 a)	0-6	10	0.83
Family relationship	Family relationship questionnaire (Punwichai, 2005)	1-4	40	0.86
School connectedness	Student-school connectedness scale (Spanjers, 2016)	1-4	27	0.81
Resilience	Resilience factors scales for Thai adolescents developed by Takviriyanun (2008)	1-4	25	0.84
Self-control	Self-control questionnaire developed by Saengthongdee (2007)	1-5	23	0.89
Stress	Thai version of perceived stress scale-10 developed by Wongpakaran and Wongpakaran (2010)	0-4	10	0.82

Protection of human rights

This study was approved by the ethical committee of the Institutional Review Board [IRB] for graduate studies, Faculty of Nursing, Burapha University (IRB # 04-05-2562). After receiving IRB approval to conduct this present study, the proposal and IRB approval were submitted to the Office of Secondary Education Services Area of Chiang Mai Municipality, school administrators, teachers, and participants' parents. Both participants and their parents were also informed about research objectives, benefits, potential risks, withdrawal and confidentiality.
The researcher recruited the participants based on participants and their parents' willingness to sign informed consent forms. All participants had the right to refuse to participate in the study and withdraw at any time during the process without the requirement to provide reasons and the impact on their education at schools.

A separate room was provided in order that the regular study time was not affected while completing questionnaires. No participants' information was revealed but it was reported in the overall finding for monitoring purpose. Besides, if they faced problems related to DSH behavior, stress, self-control, family relationship or school connectedness, the researcher was willing to help them by providing overall basic psycho-education within the class without any personalization for preventing the embarrassment and stigmatization. Nevertheless, when a high level of self-harm was found with a risk of suicidal ideation tendency, he/ she would be transferred by the researcher to the classroom teacher or relevant officers within that particular responsible area for further assistance.

All data acquired from this study would be kept strictly confidential.
To maintain strict confidence, the questionnaires of this study and data analysis were assigned using only code numbers instead of name. All findings were reported as grouped data without mentioning of personal identities. After collecting and analyzing questionnaires, the hard copies of data were sealed and kept by the researcher in a locked locker until this study was published. Every soft file was saved in a password-protected personal computer, and no one able to access to this data except the researcher and major advisor. All data were used only for this research and would be completely destroyed after its findings were published or presented.

Data collection procedures

The data collection has been carried out by the researcher as follows:

1. After receiving IRB approval from the ethical committee of the Faculty of Nursing, Burapha University. The researcher has submitted a research proposal and IRB approval to the Office of Secondary Education Services Area of Chiang Mai Municipality to request for data collection permission in this educational area.

2. The researcher have submitted a research proposal, IRB approval from the Faculty of Nursing, Burapha University, and permission from the Office of Secondary Education Services Area of Chiang Mai Municipality to school administrators and teachers of each school involved in this present study.

3. After receiving permission from schools, the researcher contacts the primary teachers of each classroom to make appointment at the appropriate time or extra time without the impact on study time. Participants who meet the inclusion criteria based on their individual school records and interest to participate are also contacted.

4. The researcher has made self-introduction and informed the following details: research objectives, data collection process, research duration and right of withdrawal. Then, participants are requested to bring information sheet and consent form to their parents. If they agree to participate in this study, they and their parents sign the assent form and the informed consent, respectively.

5. The researcher has met participants who are willing to participate with their parental approval on the next day at an extra-time during lunch break at their classroom to obtain permission documents.

6. After they agree to participate, participants need to complete all questionnaires including demographic questionnaires, the DSHI-9r (10 items), the family relationship questionnaire, the school connectedness scale, the resilience factors scales for Thai adolescents, the self-control questionnaire, and the perceived stress scale (Thai version) within 30-45 minutes.

7. After the completion of data collection process, the obtained data are analyzed using the appropriate statistical methods.

Data analyses

A statistical software package program has been used in the data analysis by determining the significance level at .05. The details are as follows:

1. The descriptive statistics, namely, frequency, percentage, mean, standard deviation, and range have been used in the analysis of characteristics of participants, which consist of age, sex, GPA, their regular expenses in daily life, number of siblings, being the number of siblings, the persons they are living with, and marital status of their parents.

2. The study variables, including sex, family relationship, school connectedness, self-control, resilience, stress, and DSH are described in terms of frequency, percentage, mean, standard deviation and range.

3. The hypothesized model of causal effect on adolescents' DSH has been tested directly and indirectly along with the use of AMOS program in the structural equation modeling [SEM].

CHAPTER 4
RESEARCH RESULTS

This chapter presents research findings of data analysis. First, participants' demographic and family characteristics, and prevalence of deliberate self-harm [DSH] are described. Second, it reports assumptions of the testing of structural equation models. Third, descriptive statistics of the study variables, including DSH, family relationship, school connectedness, resilience, self-control, and stress are presented. Fourth, the measurement model assessments of each variable are shown. Finally, testing hypothesis of the hypothesized model is verified.

Part 1: The participants' demographic and family characteristics

Table 4-1 presented the demographic characteristics participants. There was approximately equal percentage of male and female (49.4% and 50.6%). Their age ranged from 15 to 19 years old with a mean of 16.42, and *SD* = 0.91. The grade point average [GPA] of more than one half of participants (67.5%) was above 3.00. Their GPA ranged from 1.00-4.00 with a mean of 3.16, and *SD* = 0.56.

The majority of participants (70.8%) lived with their family. Most of them had 2 siblings (58.6%). They were the first (46.9%) and second (44.7%) children. Most of them (56.9%) had sufficient living expenses with savings but the other 39.4% had no savings in spite of sufficient living expense. An average monthly household income of most participants was 10,000-20,000 Baht (45.0%) and over 20,000 Baht (41.9%), respectively.

Table 4-1 Demographic characteristics of the participants (N = 360)

Characteristic		N	%
Sex			
	Male	178	49.4
	Female	182	50.6
Age (Years)			
	15	64	17.8
	16	116	32.2
	17	150	41.7
	18	25	6.9
	19	5	1.4
	(*M* = 16.42, *SD* = 0.91, range 15-19)		
Birth order			
	1 (First child)	169	46.9
	≥2 (Younger child)	191	53.1
Number of siblings			
	0	13	3.6
	1	84	23.3
	2	211	58.6
	3	40	11.1
	4	10	2.8
	5	2	0.6
Grade point average [GPA] (GPA)			
	1.00-2.00	25	6.9
	2.01-2.50	29	8.1
	2.51-3.00	63	17.5
	3.01-3.50	132	36.7
	3.51-4.00	111	30.8
	(*M* = 3.16, *SD* = 0.56, range 1.00-4.00)		
Parents' marital status			
	Married	255	70.8
	Divorced	56	15.6

Table 4-1 (continued)

Characteristic	N	%
Separated	32	8.9
Widow	17	4.7
Average monthly household income (Thai Baht)		
< 5,000	8	2.2
5,000-9,999	39	10.8
10,000-20,000	162	45.0
Over 20,000	151	41.9
Sufficiency of income		
Yes	347	96.3
with savings	205	56.9
without savings	142	39.4
No	13	3.6

The prevalence of DSH among Thai adolescents

The prevalence of DSH behaviors among participants who are Thai adolescents can be classified by sex, class, and school. In addition, this part presents the numbers of times of engagement in DSH behaviors and of participants with DSH behavior, categorized by each Item as well. Lastly, DSH behaviors of male and female adolescents are also compared.

1. DSH behaviors among Thai adolescents by sex

The prevalence of DSH behaviors among participants who are Thai adolescents were 45.9%, and can be classified by sex were approximately equal percentage between boys and girls. There were 169 (47%) and 161 (44.7%) male and female adolescents engaging in DSH behaviors, respectively. According to results of Pearson's Chi-squared test, $\chi^2 = 4.950$, $df = 1$, $p < .05$ was found. It meant that the comparison of DSH behaviors among adolescents of both sexes indicated the statistical significance level of.05 (significant). The number of male adolescents engaging in DSH behaviors was higher than the one of female counterparts as depicted in Table 4-2.

Table 4-2 DSH behaviors among Thai adolescents by sex (N = 360)

Deliberate Self-harm	N	%
No		
Adolescent boy	9	2.5
Adolescent girl	21	5.8
Yes		
Adolescent boy	169	47.0
Adolescent girl	161	44.7
(χ^2 = 4.950, *df* = 1, *p* < .05)		

2. DSH behaviors among Thai adolescents by grade level

The prevalence of DSH behaviors among Thai adolescents by grade level was approximately equal percentage between grade 11 and 12. However, it was found that 116 students (32.2%) in grade 10 (Mathayomsuksa 4) engaged in DSH behaviors. It was the highest number in comparison to other grades. These grade 10 students were 15-16 years old. This followed by the number of 109 and 105 students (30.3% and 29.2%) in grade 11 (Mathayomsuksa 5) and grade 12 (Mathayomsuksa 6), respectively. The former was 17 years old, while the latter was 18-19 years as depicted in Table 4-3.

Table 4-3 DSH behaviors among Thai adolescents by grade level (N = 360)

Grade level	DSH (N)	%	No DSH (N)	%
Grade 10	116	32.2	4	1.1
Grade 11	109	30.3	11	3.0
Grade 12	105	29.2	15	4.2

3. DSH behaviors among Thai adolescents by types of school

Similar to the classification by sex, the prevalence of DSH behaviors among Thai adolescents by school was approximately equal percentage between government and private school. However, the number of adolescents engaging in DSH behaviors in government schools was higher than the private ones. In particular, there were 171 (47.5%) and 159 (44.2%) adolescents who had DSH behaviors in government and privates schools, respectively, as depicted in Table 4-4.

Table 4-4 DSH behaviors among Thai adolescents by types of school (N = 360)

School	DSH (N)	%	No DSH (N)	%
Private	159	44.2	21	5.8
Government	171	47.5	9	2.5

4. Number of times with DSH behaviors

Their engagement in DSH behaviors ranged from 3-14 times with a mean of 6.11, and *SD* = 2.83. The most self-harm was 6 times (16.7%) in the past 6 months, and the fewest were 14 times (0.3%) as depicted in Table 4-5.

Table 4-5 Number of times with DSH behaviors (N = 330)

Frequency of DSH	N	%
3 times	21	6.4
4 times	39	11.8
5 times	52	15.8
6 times	55	16.7
7 times	48	14.5
8 times	45	13.6
9 times	37	11.2
10 times	12	3.6
11 times	13	3.9
12 times	7	2.1
14 times	1	0.3
M±*SD*	6.11±2.83	

However, previous studies stated that one time of deliberate self-harm was considered as the successful act of deliberate self-harm and repetitive deliberate self-harm behavior was the act of DSH behavior for more five times (Bjärehed & Lundh, 2008; L.-G. Lundh et al., 2011; L. g. Lundh et al., 2011). Therefore, the interpretation of previous studies showed that 60 adolescents (18.3%) engaged in DSH behaviors less than 5 times. Meanwhile, 52 (15.8%) and 218 (65.9%) of them had DSH behaviors for 5 times and more than 5 times, respectively, as depicted in Table 4-6.

Table 4-6 Number of times with DSH behaviors follow as previous studies (N = 330)

Number of times	N	%
< 5 times	60	18.2
5 times	52	15.8
> 5 times	218	65.9

5. Number of participants' with DSH behavior by Item

The self-harm behavior most frequently used by the participants was "Bit yourself, to the extent that you broke the skin" (72.8%) with 255 and 7 of them doing once and twice, respectively. The second and third most frequent DSHs among them were "Punched yourself, to the extent that you caused a bruise to appear" (66.9%), and "Stuck sharp objects such as needles, pins, staples, etc. into your skin" (65.3%), respectively. The least frequent one was "Cut your wrist, arms, or other area(s) of your body" (43.3%). Details were shown in Table 4-7.

Table 4-7 Number of participants' with DSH behavior by item (N = 360)

Item	Statement	DSH		# times					
		N	%	1	2	3	4	5	>5
5	Bit yourself, to the extent that you broke the skin?	262	72.8%						
8	Punched yourself, to the extent that you caused a bruise to appear?	241	66.9%	203	38				
6	Stuck sharp objects such as needles, pins, staples, etc. into your skin? (tattoos, ear piercing, needles used for drug use, or body piercing are not included here)	235	65.3%	230	5				
7	Banged your head against something, to the extent that you caused a bruise to appear?	231	64.2%	222	9				
9	Prevented wounds from healing?	222	61.7%	216	1	3			
4	Severely scratched yourself, to the extent that scarring or bleeding occurred?	201	55.8%	193	8				

Table 4-7 (continued)

Item	Statement	DSH		# times					
		N	%	1	2	3	4	5	>5
3	Carved words, pictures, designs, or other marks into your skin?	170	47.2%	163	7				
10	Harmed yourself in any of the above-mentioned ways so that it resulted in hospitalization or injury severe enough to require medical treatment?	169	46.9%	156	11	2			
2	Burned yourself with a cigarette, lighter, or match?	168	46.7%	163	5				
1	Cut your wrist, arms, or other area(s) of your body?	156	43.3%	136	3	17			

6. Comparison of DSH behaviors between male and female adolescents by Item

The self-harm behavior most frequently used by the participants was “Bit yourself, to the extent that you broke the skin” (72.8%), equally divided into 36.4% of male and female adolescents each. The second and third most frequent DSHs among them were “Punched yourself, to the extent that you caused a bruise to appear” (66.9%), divided into 35.0% and 31.9% of male and female adolescents, respectively, and “Stuck sharp objects such as needles, pins, staples, etc. into your skin” (65.3%) with 33.6% and 31.7% of male and female adolescents, respectively. The least frequent one was “Cut your wrist, arms, or other area(s) of your body” (43.3%), divided into 22.8% and 20.5% of male and female adolescents. The comparison of DSH behaviors between male and female adolescents by Item revealed non-statistical significance level of .05. However, DSH behaviors between both sexes on the basis of 10 items were compared revealing the Pearson's Chi-squared test of $\chi^2 = 4.950$, $df = 1$, $p = .0.026$. It meant that the comparison of DSH behaviors between male and

female adolescents indicated the statistical significance level of .05. More number of male adolescents engaged in DSH behaviors than the female counterparts. This conformed to Table 4-2, which was explained previously. Details of the comparison of DSH behaviors between both sexes by Item were shown in Table 4-8.

Table 4- 8 Comparison of DSH behaviors between male and female adolescents by item (N = 330)

Item	Statement	Boys (N = 169)		Girls (N = 161)		χ^2	*p*-value
		N	%	N	%		
1	Cut your wrist, arms, or other area(s) of your body?	82	22.8%	74	20.5%	1.072	0.301
2	Burned yourself with a cigarette, lighter, or match?	85	23.6%	83	23.1%	0.167	0.683
3	Carved words, pictures, designs, or other marks into your skin?	82	22.8%	88	24.4%	0.188	0.664
4	Severely scratched yourself, to the extent that scarring or bleeding occurred?	99	27.5%	102	28.3%	0.007	0.935
5	Bit yourself, to the extent that you broke the skin?	131	36.4%	131	36.4%	0.119	0.730

Table 4-8 (continued)

Item	Statement	Boys (N = 169)		Girls (N = 161)		χ^2	*p*-value
		N	%	N	%		
6	Stuck sharp objects such as needles, pins, staples, etc. into your skin? (tattoos, ear piercing, needles used for drug use, or body piercing are not included here)	121	33.6%	114	31.7%	1.132	0.287
7	Banged your head against something, to the extent that you caused a bruise to appear?	119	33.1%	112	31.1%	1.106	0.293
8	Punched yourself, to the extent that you caused a bruise to appear?	126	35.0%	115	31.9%	2.349	0.125
9	Prevented wounds from healing?	111	30.9%	111	30.8%	0.072	0.789
10	Harmed yourself in any of the above-mentioned ways so that it resulted in hospitalization or injury severe enough to require medical treatment?	85	23.6%	84	23.3%	0.092	0.761
	Total	169		161		4.950	0.026*

p-value from Chi-square test, * Significant at the 0.05 level

Part 2: Assumption testing for structural equation model [SEM]

The most commonly used conditions for testing assumptions of structural equation model analysis were the tests of missing data, outlier, normality, linearity, and multicolinearity (Schumacker & Lomax, 2012; Tabachnick & Fidell, 2007). Prior to data analysis process, these assumptions might meet the criteria so that SEM could be continued in order to decrease potential distortions and bias in research results as well as to facilitate estimation process and findings interpretation (Hair, Black, Babin, & Anderson, 2010; Schumacker & Lomax, 2012; Tabachnick & Fidell, 2007).

The missing data were checked prior to rub any further statistical analysis. The results indicated no missing data (details in appendix F).

The independence from data outliers was verified using univariate and multivariate outliers. Tabachnickanick and Fidell (2007) stated that standardized scores were used in assessing the univariate outlier. Any cases with score below -3.29 or over 3.29 based on the standard deviation were considered as an outlier. The results showed that no univariate outlier was found (details in appendix F). Additionally, multivariate outliers were tested using the Mahalanobis distance statistic, which was the distance of a case from the centroid of the means of all variables. The χ^2 distribution was used in the calculation. A case of *an* χ^2 value equal or less than .001 was labeled as a multivariate outlier (Tabachnick & Fidell, 2007). The test results also revealed no multivariate outlier (details in appendix F).

The normal distribution of data was verified using the skewness and kurtosis for multivariate analysis due to the need of variables with normal distribution. The skewness and kurtosis were also used in univariate normality evaluation. Some literatures stated that the normality assumption of skewness and kurtosis for variables were between -1.96 to 1.96 (Tabachnick & Fidell, 2007). In contrary, certain studies argued that general values between -2.0 to 3.5 were acceptable for general research (Lomax, 2013). Besides, some research pointed out the effect of the skewness on mean scores, while the kurtosis had a significant impact on the test of variance and covariance. Thus, the symmetric distribution of skewness and peakness distribution of kurtosis were zero. Variables with absolute values of skewness over 3.0 and of kurtosis over 8-20 were labeled extreme (Hair et al., 2010; R. B. Kline, 2015; Tabachnick & Fidell, 2007). Hence, skewness and kurtosis values were calculated to examine the distribution of scores for each

measurement. It was also important to determine cutoff points to define the skewness and kurtosis of which absolute values were larger than 3.0 and 10.0, respectively (R. B. Kline, 2015). Those calculated results showed that all variables met the criteria for normality distribution as follows: self-control [Zskewness (.140/ .129) = 1.085, Zkurtosis (-.499/ .256) = -1.949], school connectedness [Zskewness (-.073/ .129) = -.566, Zkurtosis (-.437/ .256) = -1.707], stress [Zskewness (-.268/ .129) = -2.778, Zkurtosis (-.105/ .256) = -.410], resilience [Zskewness (.055/ .129) = .426, Zkurtosis (1.062/ .256) = 4.148], family relationship [Zskewness (.129/ .129) = 1, Zkurtosis (.090/ .256) = .352] and deliberate self-harm [Zskewness (-.095/ .129) = -.736, Zkurtosis (-.728/ .256) = -2.844]. All of them were considered to be a normal distribution for each measurement of exogenous and endogenous variables and the mediator. Details of skewness, kurtosis and standard errors of skewness and of kurtosis were shown in Appendix F.

The linearity assumption was verified using Pearson's correlation coefficients (Schumacker & Lomax, 2012; Tabachnick & Fidell, 2007). The relationships between continuous independent variables were assessed and the evidence of linearity between pairs of variables was found. The analysis revealed that all independent variables had the correlation coefficients ranging from -.010 to .678; therefore, no Pearson's correlations exceeded 0.90.

Lastly, the multicollinearity was verified using Pearson's correlation coefficients, tolerance value, and variance inflation factor [VIF]. The use of Pearson's correlation coefficients in multicollinearity was based on correlation matrix occurred when variables were too highly correlated ($r \geq 0.90$). However, the results in the earlier procedure indicated no evidence of multicollinearity. The tolerance value should be over 0.20, while VIF should be below 4.00 (Hair et al., 2010; Tabachnick & Fidell, 2007). In this analysis, the tolerance value ranged from 0.253 to 0.822, thereby indicating that no tolerance value was less than 0.20. Likewise, VIF values ranged from 1.927 to 3.308 meant that none of them were greater than 4.0. Hence, no evidence of multicollinearity was found among variables (Appendix F).

In conclusion, all assumption testing of missing data, univariate and multivariate outliers, normality, linearity, and multicollinearity met the statistical criteria. A total of 360 participants were subsequently used for the statistical analysis of structural equation modeling [SEM].

Part 3: Descriptive statistics of the study variables

Regarding the hypothesized model of deliberate self-harm among Thai adolescents, it was derived from diathesis-stress model of DSH and related literatures and had six major predictors (sex, family relationship, resilience, sex, school connectedness, and self-control) and one dependent variable (deliberate self-harm). The descriptive statistics for each variable, except sex, was presented below because sex was an observed variable in the nominal scale. It has already been mentioned in Part 1. Thus only factors in the interval scale were discussed in this part onwards.

Deliberate self-harm [DSH]

The total actual score of DSH ranged from 0 to 14 (M = 6.11, SD = 2.83). Ten items of direct physical self-harm were found during the past 6 months, namely, cutting wrists, arms, or body areas; burning oneself with cigarette or lighter; sticking sharp objects into the skin; biting oneself; punching oneself or banging one's head; and so on. The highest mean score (3.83, SD = 1.00) and the lowest one (2.76, SD = 1.37) were found in Item # 9 and Item # 2, respectively.

Table 4- 9 Possible and actual ranges, mean, and standard deviation of total and item scores of DSH (N = 360)

Deliberate self-harm	**Possible range**	**Actual range**	***M***	***SD***
Total	0-60	0-14	6.11	2.83
Item				
# 1	0-6	0-5	3.28	.94
# 2	0-6	1-5	2.76	1.37
# 3	0-6	1-5	3.12	1.10
# 4	0-6	1-5	3.07	1.11
# 5	0-6	0-5	3.03	1.12
# 6	0-6	1-5	3.16	1.20
# 7	0-6	0-5	2.83	1.36
# 8	0-6	1-5	2.86	1.38
# 9	0-6	0-5	3.83	1.00
# 10	0-6	0-5	3.74	.94

Family relationship

The family relationship scores in this study ranged from 91 to 137 with a mean of 113.82 (*SD* = 8.78). Its four subscales included communication in family, commitment and support, trust and appreciation, and consistency in treating. The ranges of their scores in respective order were as follows: 26 to 56 (*M* = 43.04, *SD* = 4.83), 27 to 48 (*M* = 37.28, *SD* = 3.86), 8 to 19 (*M* = 13.89, *SD* = 1.94), and 9 to 19 (*M* = 13.90, *SD* = 2.15). Details were shown in Table 4-10.

Table 4- 10 Possible and actual ranges, mean, and standard deviation of the family relationship score and its subscales (N = 360)

Family relationship	Possible range	Actual range	*M*	*SD*
Total	40-160	91-137	113.82	8.78
Subscale				
Communication in family	15-60	26-56	43.04	4.83
Commitment and support	15-60	27-48	37.28	3.86
Trust and appreciation	5-20	8-19	13.89	1.94
Consistency in treating	5-20	9-19	13.90	2.15

The Student-school connectedness

The total mean score of student-school connectedness was 74.61 (*SD* = 6.03) and ranged from 55 to 90. It was divided into three subscales: attitude, communication, and acceptance of which scores could be ranged in respective order as follows: 36 to 57 (*M* = 46.50, *SD* = 3.80), 10 to 18 (*M* = 13.29, *SD* = 1.43), and 7 to 20 (*M* = 14.82, *SD* = 2.68). Details were presented in Table 4-11.

Table 4-11 Possible and actual ranges, mean, and standard deviation of student-school connectedness scores and its subscales (N = 360)

Student-school connectedness	Possible range	Actual range	*M*	*SD*
Total	27-108	55-90	74.61	6.03
Subscale				
Attitude	17-68	36-57	46.50	3.80
Communication	5-20	10-18	13.29	1.43
Acceptance	5-20	7-20	14.82	2.68

Resilience

The total mean score of resilience was 77.74 (*SD* = 5.34) and ranged from 62 to 92. It was divided into three subscales: external supports, inner strengths as well as interpersonal and problem-solving skills. Their scores ranged in respective order as follows: 19 to 36 (*M* = 29.20, *SD* = 3.17), 12 to 32 (*M* = 22.46, *SD* = 3.19), and 17 to 32 (*M* = 24.23, *SD* = 2.59). Details were presented in Table 4-12.

Table 4-12 Possible and actual ranges, mean, and standard deviation of the resilience score and its subscales (N = 360)

Resilience	**Possible range**	**Actual range**	***M***	***SD***
Total	25-100	62-92	77.74	5.34
Subscale				
External supports	9-36	19-36	29.20	3.17
Inner strengths	8-32	12-32	22.46	3.19
Interpersonal and problem-solving skills	8-32	17-32	24.23	2.59

Self-control

The total mean scores of self-control ranged from 30 to 110 with a mean of 70.60 (*SD* = 8.52). There were four subscales of attachment, commitment, involvement and belief. In particular, their mean scores ranged from 7 to 30 (*M* = 22.76, *SD* = 4.39), 11 to 44 (*M* = 28.18, *SD* = 6.79), 3 to 15 (*M* = 9.06, *SD* = 3.01), and 6 to 23 (*M* = 14.17, *SD* = 3.59), respectively. Details were presented in Table 4-13.

Table 4-13 Possible and actual ranges, mean, and standard deviation of total and subscale scores of self-control (N = 360)

Self-control	**Possible range**	**Actual range**	***M***	***SD***
Total	23-115	30-110	70.60	8.52
Subscale				
Attachment	6-30	7-30	22.76	4.39
Commitment	9-45	11-44	28.18	6.79
Involvement	3-15	3-15	9.06	3.01
Belief	5-25	6-23	14.17	3.59

Stress

Thai version of perceived stress scale-10 had 10 items with rating scale from 0 to 4. The total score of stress ranged from 17 to 35 (*M* = 26.35, *SD* = 3.44). Item # 3 and Item # 2 had the highest mean score (3.05, *SD* = .94) and the lowest one (2.24, *SD* = .72), respectively. Details were shown in Table 4-14.

Table 4-14 Possible and actual ranges, mean, and standard deviation of the stress score and its subscales (N = 360)

Stress	**Possible range**	**Actual range**	***M***	***SD***
Total	0-40	17-35	26.35	3.44
Item				
# 1	0-4	0-4	2.39	.87
# 2	0-4	0-4	2.24	.72
# 3	0-4	0-4	3.05	.94
# 4	0-4	0-4	2.80	.96
# 5	0-4	0-4	2.73	.91
# 6	0-4	1-4	2.39	.88
# 7	0-4	0-4	2.73	.91
# 8	0-4	0-4	2.76	1.14
# 9	0-4	0-4	2.94	1.00
# 10	0-4	0-4	2.75	1.10

Part 4: Measurement model assessment of each variable

Confirmatory factor analysis [CFA] enabled each latent variable to test how well those measured variables represented the constructs. As mentioned above, those methods were called ‘the measurement model assessment’. Therefore, the analysis of the structural equation modeling consisted of measurement model assessment and structural model assessment. The measurement model was the condition of the measurement theory pointing out how constructs were operationalized by a set of measured variables. The measurement model validity depended on establishing a passable standard level of goodness of fit for the measurement model and finding specific confirmation of construct validity (Field, 2009; Hair et al., 2010; Tabachnick & Fidell, 2007).

Many literatures stated that the basics of goodness of fit [GOF] were considered on the basis of chi-square (χ^2), CMIN/ degrees of freedom [*df*], the

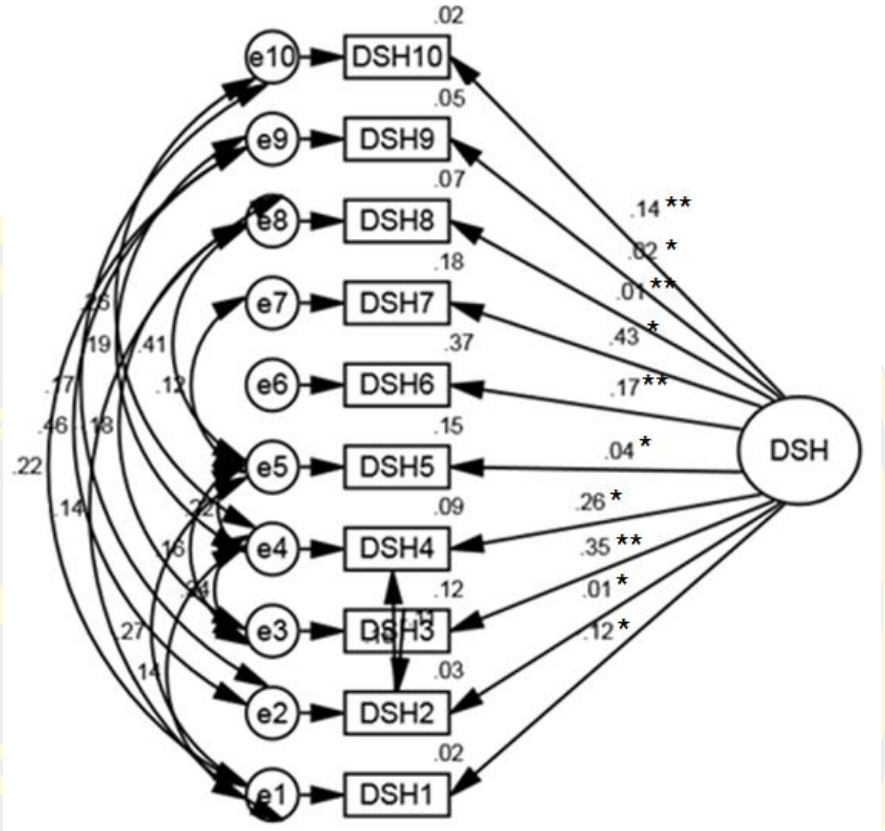
comparative fit index [CFI], the goodness of fit index [GFI], the adjusted goodness of fit index [AGFI] and the root square error of approximation [RMSEA]. The acceptance values of CMIN should be near zero or *p*-value non-significant ($p > .05$) with the CMIN/ degrees of freedom (relative chi-square) below 2, the goodness of fit index [GFI] between .90-1.00, the adjusted goodness of fit index [AGFI] between .90-1.00 and the root square error of approximation [RMSE] below .05 (Schumacker & Lomax, 2012; Tabachnick & Fidell, 2007). In addition, factor loading between the construct and each indicator was considered with the standardized factor loading. It was acceptable at the t-value of more than 1.96 indicating a significance level of .05 ($p < .05$). The t-value of more than 2.58 indicated a significance level of .01 ($p < .01$), while the t-value of more than 3.29 implied a significance level of .001 ($p < .001$) (Hair et al., 2010; Tabachnick & Fidell, 2007).

In this present study, there were six variables, including deliberate self-harm, self-control, school connectedness, family relationship as well as stress and resilience. All of them were assessed through the measurement model using the confirmatory factor analysis [CFA] as follows:

Deliberate self-harm

Deliberate self-harm [DSH] had ten items (questions) or ten indicators. According to the measurement model of deliberate self-harm, the initial results of this model showed that $\chi^2 = 47.152$, $p = 0.00$, $df = 21$, CMIN/ $df = 2.245$, GFI = 0.850, AGFI = 0.746, and RMSEA = 0.242. Hence, the measurement model was not fitted. The model fit indices of the model modification was used in model improvement by considering recommendations to adjust parameters in the model. The modified model was tested until the model had the significant goodness of fit. Finally, the model fit indices of the modified model presented a construct validity and was fitted to the empirical data at $\chi^2 = 27.557$, $p = 0.092$, $df = 19$, CMIN/ $df = 1.450$, GFI = 0.985, AGFI = 0.956, and RMSEA = 0.035. This modified model of the validation index was at an acceptable level. In addition, ten factors were statistically significant at $p < .05$ and $p < .01$, while the value of standard factor loading ranged from 0.01 to 0.43. DSH7 (Item 7) had maximum value of standard factor loading of 0.43. DSH 2 (Item 2) and DSH8 (Item 8) had minimum value of standard factor loading of 0.01. All indicators of attachment had positive values of standard factor loading which

indicated acceptable levels. Therefore, those ten items (questions) were indicators of deliberate self-harm as depicted in Figure 4-1.



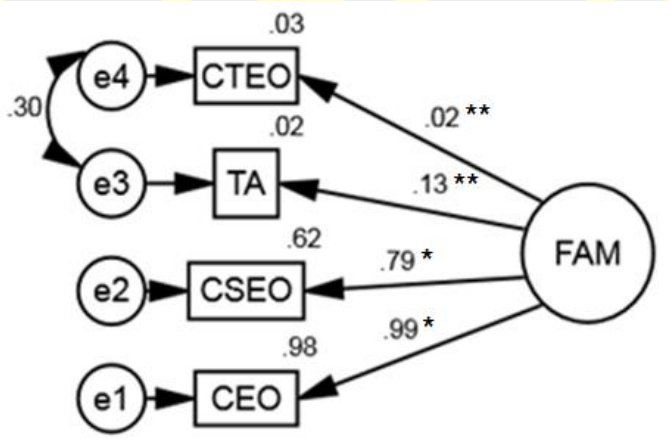
χ^2 = 27.557, p = 0.092, df = 19, CMIN/ df = 1.450, GFI = 0.985, AGFI = 0.956, RMSEA = 0.035, * = p < .05, **= p < .01

Figure 4-1 Standardized factor loading of the measurement model of deliberate self-harm

Family relationship

Family relationship [FAM] had four observed variables that consisted of communication in family [CEO], commitment and support [CSEO], trust and appreciation [TA], and consistency in treating [CTEO]. According to the measurement model of family relationship, the initial results of this model showed that χ^2 = 5.204, p = 0.00, df = 2, CMIN/ df = 2.602, GFI = 0.842, AGFI = 0.718, and RMSEA = 0.242. Hence, the measurement model was not fitted. The model fit

indices of the model modification was used in model improvement by considering recommendations to adjust parameters in the model. The modified model was tested until the model had the significant goodness of fit. Finally, the model fit indices of the modified model presented a construct validity and was fitted to the empirical data at χ^2 = 2.147, p = 0.676, df = 3, CMIN/ df = 0.716, GFI = 0.918, AGFI = 0.924, and RMSEA = 0.033. This modified model of the validation index was at an acceptable level. In addition, four variables were statistically significant at $p < .05$ and $p < .01$, while the value of standard factor loading ranged from 0.02 to 0.99. Communication in family [CEO] had maximum value of standard factor loading of 0.99. Consistency in treating [CTEO] had minimum value of standard factor loading of 0.02.
All indicators of attachment had positive values of standard factor loading which indicated acceptable levels. Therefore, four variables were indicators of family relationship as depicted in Figure 4-2.

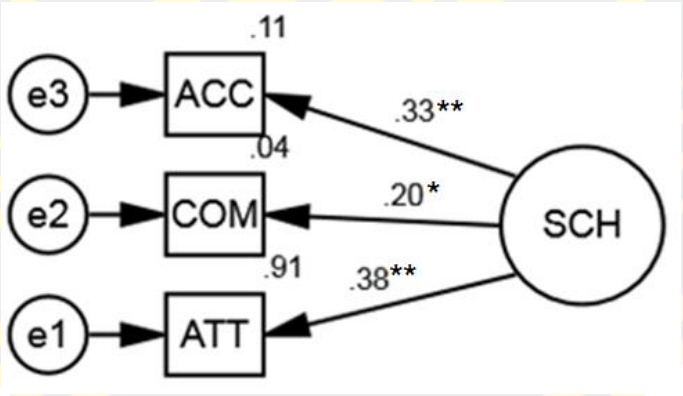


χ^2 = 2.147, p = 0.676, df = 3, CMIN/ df = 0.716, GFI = 0.918, AGFI = 0.924, RMSEA = 0.033, * = $p < .05$, **= $p < .01$

Figure 4-2 Standardized factor loading of the measurement model of family relationship

School connectedness

School connectedness [SCH] had three observed variables that consisted of attitude [ATT], communication [COM], and acceptance [ACC]. The model of school connectedness had a construct validity and was fitted to the empirical data at χ^2 = 2.953, p = 0.581, df = 2, CMIN/ df = 1.477, GFI = 0.962, AGFI = 0.951, and RMSEA = 0.043. Hence, the measurement model did fit. No model fit indices of the model modification was used in model improvement. This model of the validation index was at an acceptable level. In addition, four indicators were statistically significant at p < .05, while the value of standard factor loading ranged from 0.20 to 0.38. Attitude [ATT] had maximum value of standard factor loading of 0.38, and communication [COM] had minimum value of standard factor loading of 0.20. All indicators of self-control had positive values of standard factor loading which indicated acceptable levels. Thus, three variables were indicators of school connectedness as depicted in Figure 4-3.

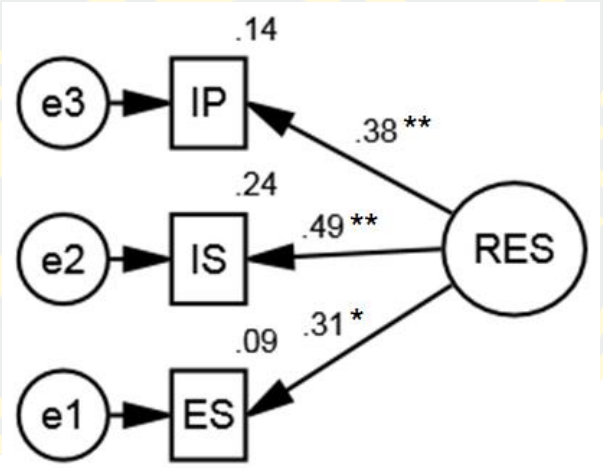


χ^2 = 2.953, p = 0.581, df = 2, CMIN/ df = 1.477, GFI = 0.962, AGFI = 0.951, RMSEA = 0.043, * = p < .05, **= p < .01

Figure 4-3 Standardized factor loading of the measurement model of school connectedness

Resilience

The measurement model of resilience [RES] had three observed variables, namely, external supports [ES], inner strengths [IS], and Interpersonal and problem-solving skills [IP]. The model of resilience had a construct validity and was fitted to the empirical data at χ^2 = 1.716, p = 0.711, df = 2, CMIN/ df = 0.858, GFI = 0.943, AGFI = 0.951, and RMSEA = 0.038. Hence, the measurement model did fit.
No model fit indices of the model modification was used in model improvement. This model of the validation index was at an acceptable level. In addition, three indicators were statistically significant at $p < .05$, while the value of standard factor loading ranged from 0.31 to 0.49. Inner strengths [IS] had maximum value of standard factor loading of 0.49. External supports [ES] had minimum value of standard factor loading of 0.31. All indicators of resilience had positive values of standard factor loading which indicated acceptable levels. Thus, three variables were indicators of resilience as depicted in Figure 4-4.

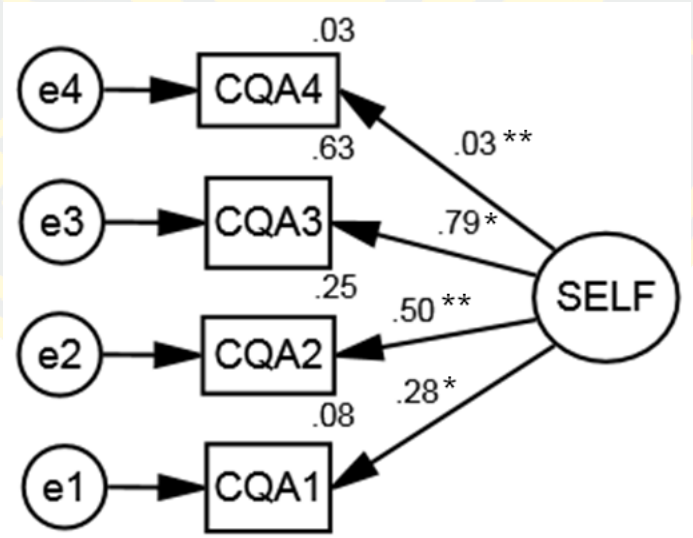


χ^2 = 1.716, p = 0.711, df = 2, CMIN/ df = 0.858, GFI = 0.943, AGFI = 0.951, RMSEA = 0.038, * = $p < .05$, **= $p < .01$

Figure 4-4 Standardized factor loading of the measurement model of resilience

Self-control

The measurement model of self-control [SELF] had four observed variables that consisted of belief [CQA1], attachment [CQA2], commitment [CQA3] and involvement [CQA4] [details for exploratory factor analysis of self-control see in appendix F]. The model of self-control had a construct validity and was fitted to the empirical data at χ^2 = 3.630, p = 0.563, df = 2, CMIN/ df = 1.815, GFI = 0.995, AGFI = 0.975, and RMSEA = 0.048. Hence, the measurement model did fit. No model fit indices of the model modification was used in model improvement. This model of the validation index was at an acceptable level. In addition, four indicators were statistically significant at $p < .05$, while the value of standard factor loading ranged from 0.03 to 0.79. Commitment [CQA3] had maximum value of standard factor loading of 0.79, and involvement [CQA4] had minimum value of standard factor loading of 0.03. All indicators of self-control had positive values of standard factor loading which indicated acceptable levels. Thus, four variables were indicators of self-control as depicted in Figure 4-5.

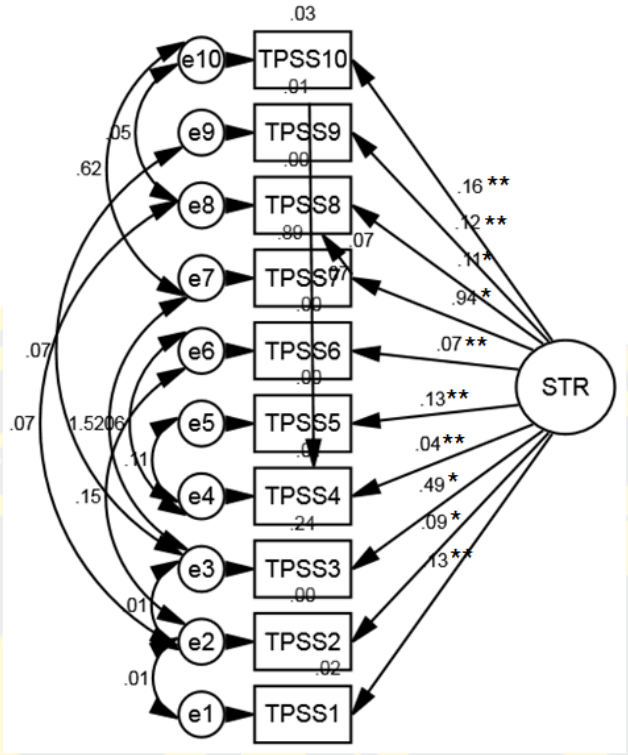


χ^2 = 3.630, p = 0.563, df = 2, CMIN/ df = 1.815, GFI = 0.995, AGFI = 0.975, RMSEA = 0.048, * = $p < .05$, **= $p < .01$

Figure 4-5 Standardized factor loading of the measurement model of self-control

Stress

The measurement model of stress [STR] had ten items (questions) or ten indicators. According to the measurement model of stress, the initial results of this model showed that χ^2 = 42.001, p = 0.00, df = 31, CMIN/ df = 1.355, GFI = 0.857, AGFI = 0.887, RMSEA = 0.515. Hence, the measurement model was not fitted.
The model fit indices of the model modification was used in model improvement by considering recommendations to adjust parameters in the model. The modified model was tested until the model had the significant goodness of fit. Finally, the model fit indices of the modified model presented a construct validity and was fitted to the empirical data at χ^2 = 39.125, p = 0.099, df = 29, CMIN/ df = 1.349, GFI = 0.979, AGFI = 0.959, and RMSEA = 0.031. This modified model of the validation index was at an acceptable level. In addition, ten factors were statistically significant at $p < .05$ and $p < .01$, while the value of standard factor loading ranged from 0.04 to 0.94. TPSS7 (Item 7) had maximum value of standard factor loading of 0.94, and TPSS4 (Item 4) had minimum value of standard factor loading of 0.04. All indicators of attachment had positive values of standard factor loading which indicated acceptable levels. Therefore, those ten items (questions) were indicators of stress as depicted in Figure 4-6.



χ^2 = 39.125, p = 0.099, df = 29, CMIN/ df = 1.349, GFI = 0.979, AGFI = 0.959, RMSEA = 0.031, * = p < .05, ** = p < .01

Figure 4-6 Standardized factor loading of the measurement model of stress

Part 5: Assessing the structural model fit

The measurement model assessment was completed successfully. The next procedure was tested using SEM technique; divided into two phases, including 1) hypothesized model testing and 2) the modification model. Subsequently, this modified model became the structural model that was fully fitted.

Hypothesized model testing

In this present study, the analysis of moment structure [AMOS] software program was used in testing the hypothesized model fit. The validation of the hypothesized model fit can be assessed by a variety of fit indices. Hence, fit indices were used in analyzing how well the empirical data fit the hypothesized model. In this analysis, the researcher used chi-square (χ^2), CMIN/ degrees of freedom (df), the goodness of fit index [GFI], the comparative fit index [CFI], the adjusted goodness of fit index [AGFI] and the root square error of approximation [RMSEA].

The acceptance values of goodness of fit [GOF] included CMIN near zero or *p*-value non-significant ($p > .05$), the CMIN/ degrees of freedom (relative chi-square) below two, the goodness of fit index [GFI] between .90-1.00, the adjusted goodness of fit index [AGFI] between .90-1.00 and the root square error of approximation [RMSEA] at below .05 (Hair et al., 2010; R. B. Kline, 2015; Schumacker & Lomax, 2012; Tabachnick & Fidell, 2007).

According to the hypothesized model testing, the initial results of this model showed that $\chi^2 = 5609.219$, $p = 0.000$, $df = 520$, CMIN/ $df = 10.787$, GFI = 0.556, AGFI = 0.462, and RMSEA = 0.165. Hence, the hypothesized model did not fit with the empirical data. Therefore, the hypothesized model was modified by modification indices until the criteria for model goodness of fit were met (R. B. Kline, 2015). Subsequently, the results for the modified model found that $\chi^2 = 333.350$, $p = 0.078$, $df = 298$, CMIN/ $df = 1.119$, GFI = 0.952, AGFI = 0.900, and RMSEA = 0.018. Therefore, the modified model had a validation index of adequacy of the model at an acceptable level as shown in Table 4-15.

Table 4-15 Statistics of model fit index between the hypothesized model and the modified model (N = 360)

Model fit criterion	**Acceptable score**	**Hypothesize model**	**Modified model**
CMIN	$p > .05$	5609.219 $p = 0.000$ ($df = 520$)	333.350 $p = 0.078$ ($df = 298$)
CMIN/ *df*	< 2	10.787	1.119
GFI	0.90-1.00	0.556	0.952
AGFI	0.90-1.00	0.462	0.900
RMSEA	< 0.05	0.165	0.018

A path coefficient of the hypothesized model of deliberate self-harm in Thai adolescents was tested using the parameter estimates as depicted in Figure 4-7 and Table 4-16. In the hypothesize model of DSH, sex (girl), family relationship, and school connectedness were exogenous variables. Stress, self-control, and resilience were mediators between the exogenous variables and deliberate self-harm. Simultaneously, deliberate self-harm [DSH], stress, self-control, and resilience were endogenous variables. The path testing of the hypothesized model showed the parameter estimates and their direction to be significant at a probability level of less than .05.

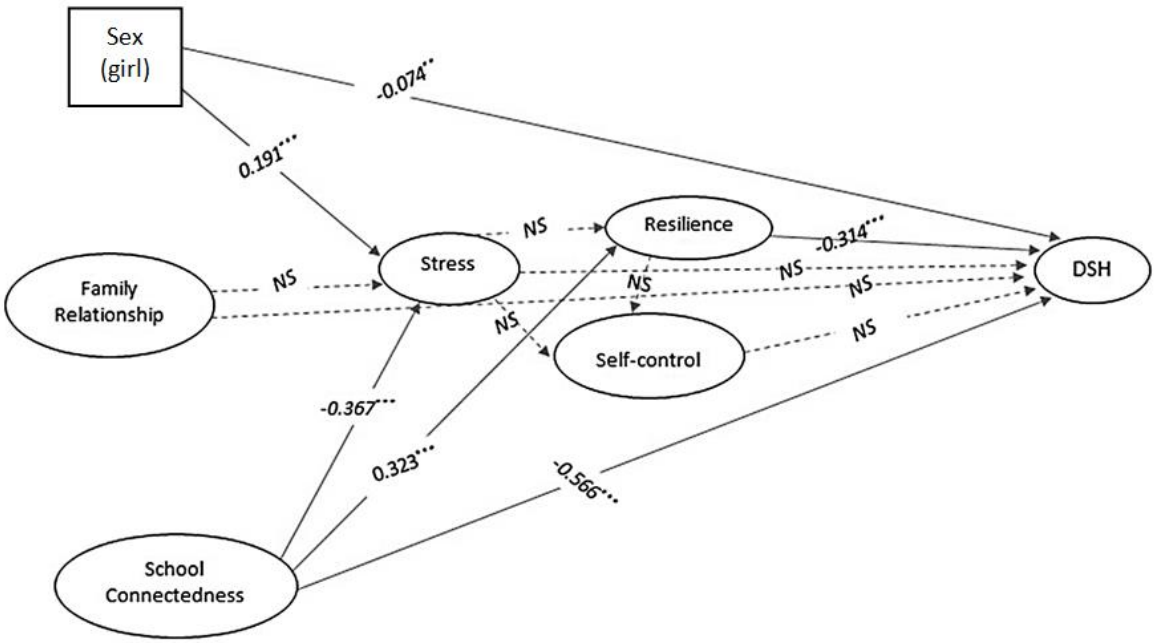
For the relationships between the exogenous and endogenous variables, there were the positive significant parameter estimates with two paths, including a path from sex (girl) to stress ($\beta = 0.191$, $p < .001$), and a path from school connectedness to resilience ($\beta = 0.323$, $p < .001$). In addition, there were the negative significant parameter estimates with four paths as well, including a path from school connectedness to stress ($\beta = -0.367$, $p < .001$), a path from school connectedness to deliberate self-harm ($\beta = -0.566$, $p < .001$), a path from resilience to deliberate self-harm ($\beta = -0.314$, $p < .001$), and a path from sex (girl) to deliberate self-harm ($\beta = -0.074$, $p < .01$) as shown in Figure 4-7 and Table 16.

However, there were no significant parameter estimates with seven paths, including a path from family relationship to stress ($\beta = -0.117$, $p > .05$), a path from stress to resilience ($\beta = -0.109$, $p > .05$), a path from stress to self-control ($\beta = -0.125$, $p > .05$), a path from resilience to self-control ($\beta = 0.026$, $p > .05$), a path from family relationship to deliberate self-harm ($\beta = -0.069$, $p > .05$), a path from stress to deliberate self-harm ($\beta = 0.062$, $p > .05$), and a path from self-control to deliberate self-harm ($\beta = -0.001$, $p > .05$) as shown in Figure 4-7 and Table 4-16.

In this correlation, stress and school connectedness accounted for 11.50% of resilience. Stress and resilience accounted for 12.80% of self-control. Sex (girl), school connectedness and family relationship accounted for 14.20% of stress. Lastly, sex (girl), family relationship, school connectedness, stress, resilience, and self-control accounted for 40.00% of deliberate self-harm. Furthermore, a summary of the direct, indirect, and total effects of hypothesized model of deliberate self-harm was presented in Table 4-17.

Table 4-16 Standardized regression weights (β), standard errors [SE], Lower bounds, Upper bounds, and *p*-value of the hypothesized model (N = 360)

Path			β	SE	Lower	Upper	*p*-value
Sex (girl)	→	Stress	0.191	0.064	-0.001	0.383	***
Family relationship	→	Stress	-0.117	0.035	-0.222	-0.012	0.874
School connectedness	→	Stress	-0.367	0.011	-0.4	-0.334	***
School connectedness	→	Resilience	0.323	0.064	0.131	0.515	***
Stress	→	Resilience	-0.109	0.28	-0.949	0.731	0.054
Stress	→	Self-control	-0.125	0.216	-0.773	0.523	0.474
Resilience	→	Self-control	0.026	0.01	-0.004	0.056	0.521
School connectedness	→	Deliberate self-harm	-0.566	0.013	-0.605	-0.527	***
Family relationship	→	Deliberate self-harm	-0.069	0.023	-0.138	0.000	0.876
Sex (girl)	→	Deliberate self-harm	-0.074	0.042	-0.052	0.200	0.009
Stress	→	Deliberate self-harm	0.062	0.076	-0.166	0.290	0.376
Resilience	→	Deliberate self-harm	-0.314	0.008	-0.338	-0.290	***
Self-control	→	Deliberate self-harm	-0.001	0.007	-0.02	0.022	0.873



χ^2 = 5609.219, p = 0.000, df = 520, CMIN/ df = 10.787, GFI = 0.556, AGFI = 0.462, and RMSEA = 0.165. (* = p < .05, ** = p < .01, *** = p < .001, NS = Non-sig)

Figure 4-7 The hypothesized model of deliberate self-harm in Thai adolescents

Table 4-17 Parameter estimates of direct, indirect, and total effects of the hypothesized model (N = 360)

Causal Variable	Stress			Resilience			Self-control			Deliberate self-harm		
	DE	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**
SEX	.191***	-	.191***	-	-.021***	-.021***	-	-.024***	-.024***	-.074**	.018**	-.092**
SCH	-.367***	-	-.367***	.323***	.040***	.363***	-	.055***	.055***	-.566***	-.137***	-.702***
FAM	-.117	-	-.117	-	.013	.013	-	.015	.015	-.069	-.011	-.08
STR	-	-	-	-.109	-	-.109	-.125	-.003	-.128	.062	.034	.096
RES	-	-	-	-	-	-	.026	-	.026	-.314***	-	-.314***
SEL	-	-	-	-	-	-	0	-	-	-.001	-	-.001
	R^2 = .142			R^2 = .115			R^2 = .128			R^2 = .400		

Note: SEX = Sex (girl), SCH = School connectedness, FAM = Family relationship, STR = Stress, RES = Resilience, SEL = Self-control,

DE = direct effect, IE = indirect effect, TE = total effect,

* = $p < .05$, **= $p < .01$, *** = $p < .001$.

The path coefficient analysis of model modification

After the hypothesized model was tested, the variety of fit indices was taken into consideration revealing that the hypothesized model did not fit with the empirical data. The modification indices [MI] was used in improving model fit. The examination of MI was based on several reasons of the analysis in which many recommendations from the statistical program was considered for adjusting parameters in the model. Simultaneously, the consideration of the index model was made on the basis of data analysis and theoretical probability (Schumacker & Lomax, 2012). When the hypothesized model was modified by MI until the criteria for goodness of fit were met, the parameter estimates and path coefficient for the modified model were presented in Table 4-18, Table 4-19, and Figure 4-8. In the modified model of DSH, sex (girl), family relationship, and school connectedness were exogenous variables. Stress, self-control, and resilience were mediators between the exogenous variables and deliberate self-harm [DSH]. Meanwhile, deliberate self-harm, stress, self-control, and resilience were endogenous variables. The relationships among the variables were as follows:

There were the positive significant parameter estimates with three paths, including a path from sex (girl) to stress ($\beta = 0.169$, $p < .01$), a path from school connectedness to resilience ($\beta = 0.326$, $p < .001$), and a path from stress to deliberate self-harm ($\beta = 0.163$, $p < .001$). In addition, there were the negative significant parameter estimates with six paths as well, including a path from family relationship to stress ($\beta = -0.528$, $p < .001$), a path from stress to resilience ($\beta = -0.295$, $p < .001$), a path from stress to self-control ($\beta = -0.208$, $p < .001$), a path from school connectedness to deliberate self-harm ($\beta = -0.671$, $p < .001$), a path from resilience to deliberate self-harm ($\beta = -0.266$, $p < .001$), and a path from sex (girl) to deliberate self-harm ($\beta = -0.139$, $p < .001$) as shown in Figure 4-8 and Table 18.

Nevertheless, there were no significant parameter estimates with four paths, including a path from school connectedness to stress ($\beta = -0.028$, $p > .05$), a path from resilience to self-control ($\beta = 0.01$, $p > .05$), a path from family relationship to deliberate self-harm ($\beta = -0.028$, $p > .05$), and a path from self-control to deliberate self-harm ($\beta = -0.007$, $p > .05$) as shown in Figure 4-8 and Table 18.

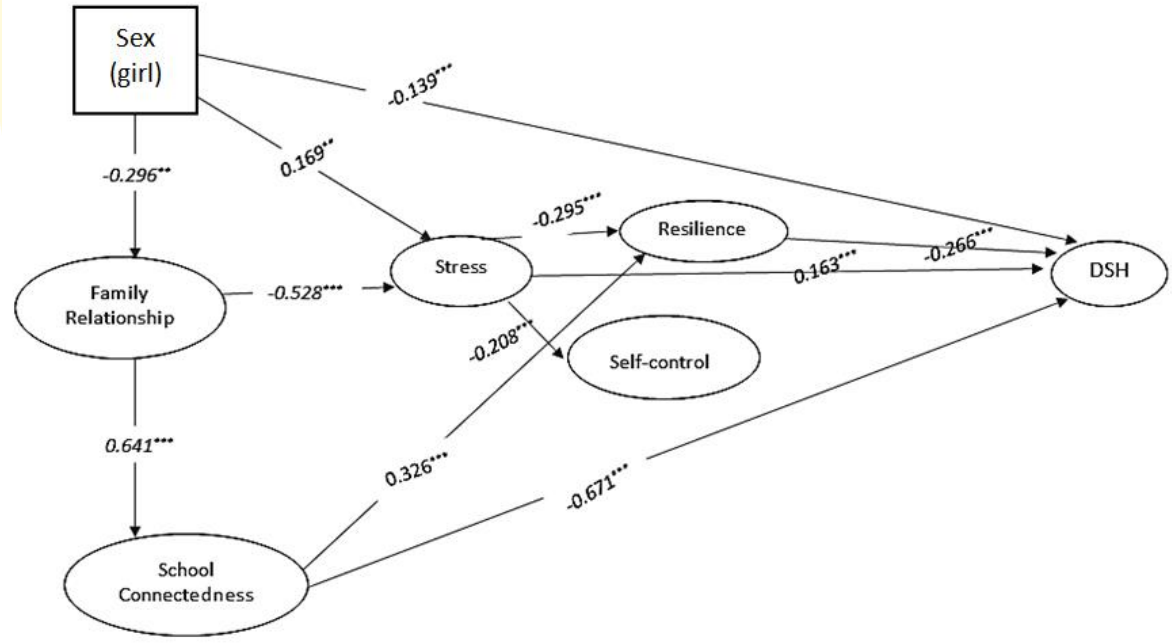
In this correlation, stress and school connectedness accounted for 26.30 percent of resilience. Stress and resilience accounted for 20.50 percent of self-control. Sex (girl), school connectedness and family relationship accounted for 18.00 percent of stress. Lastly, sex (girl), family relationship, school connectedness, stress, resilience, and self-control accounted for 65.20 percent of deliberate self-harm. Furthermore, a summary of the direct, indirect, and total effects of modification model of deliberate self-harm was presented in Table 4-19.

Table 4-18 Standardized regression weights (β), standard errors [SE], Lower bounds, Upper bounds, and *p*-value of the modified model (N = 360)

Path			**β**	**SE**	**Lower**	**Upper**	***p*-value**
Sex (girl)	→	Stress	0.169	0.071	-0.044	0.382	0.002
Family relationship	→	Stress	-0.528	0.011	-1.561	-1.495	***
School connectedness	→	Stress	-0.028	0.018	-0.026	0.082	0.727
School connectedness	→	Resilience	0.326	0.058	0.152	0.5	***
Stress	→	Resilience	-0.295	0.222	-0.961	0.371	***
Stress	→	Self-control	-0.208	0.31	-1.138	0.722	***
Resilience	→	Self-control	0.01	0.053	-0.169	0.149	0.824
School connectedness	→	Deliberate self-harm	-0.671	0.014	-0.713	-0.629	***
Family relationship	→	Deliberate self-harm	-0.028	0.003	-0.037	-0.019	0.699
Sex (girl)	→	Deliberate self-harm	-0.139	0.045	0.004	0.274	***
Stress	→	Deliberate self-harm	0.163	0.048	0.019	0.307	***
Resilience	→	Deliberate self-harm	-0.266	0.008	-0.29	-0.242	***

Table 4-18 (continued)

Path			β	SE	Lower	Upper	*p*-value
Self-control	→	Deliberate self-harm	-0.007	0.005	-0.008	0.022	0.797
Sex (girl)	→	Family relationship	-0.296	0.098	-0.054	0.388	0.003
Family relationship	→	Resilience	0.002	0.006	0.014	0.057	0.713
Sex (girl)	→	School connectedness	0.180	0.067	0.062	0.105	0.007
School connectedness	→	Family relationship	0.641	0.941	0.367	0.833	***



χ^2 = 333.350, p = 0.078, df = 298, CMIN/ df = 1.119, GFI = 0.952, AGFI = 0.900, and RMSEA = 0.018. (* = p < .05, ** = p < .01, *** = p < .001, NS = Non-sig)

Figure 4-8 The modified model of deliberate self-harm in Thai adolescents

Table 4-19 Parameter estimates of direct, indirect, and total effects of the modified model (N = 360)

Causal Variable	Stress			Resilience			Self-control			Deliberate self-harm		
	DE	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**
SEX	.169**	-	.169**	-	-.05	-.05	-	-.035	-.035	-.139***	-.041	-.18
SCH	-.028	-	.028	.326***	-.008***	.318***	-	-.009	-.009	-.671***	-.080***	-.751***
FAM	-.528***	-	-.528***	-	.451	.451	-	.314	.314	-.028	-.367	-.395
STR	-	-	-	-.295***	-	-.295***	-.208***	.003***	-.205***	.163***	.077***	.24***
RES	-	-	-	-	-	-	-.01	-	-.01	-.266***	-	-.266***
SEL	-	-	-	-	-	-	-	-	-	-.007	-	-.007
	R^2 = .180			R^2 = .263			R^2 = .205			R^2 = .652		

Note: SEX = Sex (girl), SCH = School connectedness, FAM = Family relationship, STR = Stress, RES = Resilience, SEL = Self-control,

DE = direct effect, IE = indirect effect, TE = total effect,

* = $p < .05$, * *= $p < .01$, *** = $p < .001$.

Summary of the study finding related to research hypotheses

In this present study, seven hypotheses were verified as follows:

Hypothesis 1: Sex (girl) has a positive direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.

The path coefficient between sex (girl) and DSH was negatively significant in the modified model (β = -0.139, $p < .001$). It meant that the number of adolescent boys engaging in DSH behaviors was higher than the one of girl counterparts. In addition, sex (girl) also had a positive direct effect on stress in the modified model (β = 0.169, $p < .01$). Moreover, sex (girl) had a negative direct effect on family relationship (β = -0.296, $p < .01$). Finally, the indirect effect of sex (girl) on DSH through stress (β = 0.163, $p < .001$) and also had indirect effect on DSH through both stress and resilience in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively) was found. Therefore, this hypothesis was partially supported.

Hypothesis 2: Family relationship has a negative direct effect on deliberate self-harm (DSH), and has indirect effects on DSH through stress, resilience and self-control.

The path coefficient between family relationship and DSH was not significant in the modified model (β = -0.028, $p > .05$). However, the path coefficient of family relationship had a negative direct effect on stress (β = -0.528, $p < .001$). In addition, the path coefficient of family relationship had a positive direct effect on school connectedness (β = 0.641, $p < .001$). Finally, the indirect effect of family relationship on DSH through stress (β = 0.163, $p < .001$), and also had indirect effect on DSH through both stress and resilience in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively) was found. Therefore, this hypothesis was not supported.

Hypothesis 3: School connectedness has a negative direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.

The path coefficient between school connectedness and DSH was negatively significant in the modified model (β = -0.671, $p < .001$). However, the path coefficient between school connectedness and stress was not significant in the modified model (β = -0.028, $p > .05$), whereas school connectedness had a positive direct effect on resilience in the modified model (β = 0.326, $p < .001$). Finally, the indirect effect of

school connectedness on DSH through resilience had a negative effect in the modified model (β = -0.266, $p < .001$). Therefore, the findings supported this hypothesis.

Hypothesis 4: Resilience has a negative direct effect on DSH, and has an indirect effect on DSH through self-control.

The path coefficient between resilience and DSH was negatively significant in the modified model (β = -0.266, $p < .001$). However, the path coefficient between resilience and self-control was not significant in the modified model (β = 0.010, $p > .05$) Therefore, the indirect effect of resilience on DSH through self-control in the modified model was not found. This hypothesis was partially supported.

Hypothesis 5: Self-control has a negative direct effect on DSH.

The path coefficient between self-control and DSH was not significant in the modified model (β = -0.007, $p > .05$). Therefore, this hypothesis was not supported by the findings.

Hypothesis 6: Stress has a positive direct effect on DSH, and has an indirect effect on DSH through resilience, and self-control.

The path coefficient between stress and DSH was positively significant in the modified model (β = 0.163, $p < .001$). In addition, the path coefficient between stress and self-control was negatively significant in the modified model (β = -0.208, $p < .001$), whereas that stress had a negative direct effect on resilience in the modified model (β = -0.295, $p < .001$). Although, the indirect effect of stress on DSH through self-control in the modified model was not found. However, the indirect effect of stress on DSH through resilience in the modified model (β = -0.266, $p < .001$) was found. Therefore, the findings supported this hypothesis.

Hypothesis 7: Sex, family relationship, school connectedness, stress, resilience, and self-control have influenced on DSH among Thai adolescents.

According to the hypothesized model of DSH, a path from sex (girl) to stress (β = 0.191, $p < .001$), and a path from school connectedness to resilience (β = 0.323, $p < .001$) were found. In addition, a path from school connectedness to stress (β = -0.367, $p < .001$), a path from school connectedness to deliberate self-harm (β = -0.566, $p < .001$), a path from resilience to deliberate self-harm (β = -0.314, $p < .001$), and a path from sex (girl) to deliberate self-harm (β = -0.074, $p < .01$) were also revealed. However, there were no significant parameter estimates with

seven paths, including a path from family relationship to stress (β = -0.117, $p > .05$), a path from stress to resilience (β = -0.109, $p > .05$), a path from stress to self-control (β = -0.125, $p > .05$), a path from resilience to self-control (β = 0.026, $p > .05$), a path from family relationship to deliberate self-harm (β = -0.069, $p > .05$), a path from stress to deliberate self-harm (β = 0.062, $p > .05$), and a path from self-control to deliberate self-harm (β = -0.001, $p > .05$).

Conversely, after modifying the model, there were significant parameter estimates with nine paths, including four direct effect paths, and five indirect effect paths. The path coefficient of family relationship had a negative direct effect on stress (β = -0.528, $p < .001$) and indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of school connectedness had a negative direct effect on DSH (β = -0.671, $p < .001$) and indirect effects on DSH among Thai adolescents through resilience as shown in the modified model (β = 0.326, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of sex (girl) had a negative direct effect on DSH (β = -0.139, $p < .001$) and a positive direct effect on stress (β = 0.169, $p < .01$). Moreover, there were indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of resilience had a negative direct effect on DSH (β = -0.266, $p < .001$). The path coefficient of stress had both positive direct effect on DSH (β = 0.163, $p < .001$) and negative direct effect on self-control (β = -0.208, $p < .001$). Moreover, there were indirect effects on DSH among Thai adolescents through resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). Therefore, this hypothesis was partially supported.

Summary

The research results of this chapter presented the testing of a causal model of deliberate self-harm among Thai adolescents. This model analyzed the causal relationship between exogenous variables such as sex (girl), family relationship, and school connectedness, and endogenous variables e.g. stress, resilience, self-control, and deliberate self-harm. The finding from descriptive statistics showed the characteristics of Thai adolescents, including the participants' demographic information and characteristics. The prevalence of deliberate self-harm of the sample consisted of its number, frequency, and percentages. The assumption testing of outliers, normality, linearity, and multicollinearity was verified in the preliminary analyses. The assumptions for the used statistics were found to be acceptable. The findings revealed that the hypothesized model failed to be fitted to the empirical data. Therefore, the model was modified until the goodness of fit indices had a goodness of fit level. In the final modification model, the results demonstrated that the model was fitted to the empirical data (χ^2 = 333.350, p = 0.078, df = 298, CMIN/ df = 1.119, GFI = 0.952, AGFI = 0.900, and RMSEA = 0.018). Paths of the modified model of deliberate self-harm among Thai adolescents were well fitted to the sample. The modified model failed to include path to deliberate self-harm among Thai adolescents from self-control as hypothesized. After modification, the model indicated that sex (girl), resilience, and school connectedness had a direct negative effect on deliberate self-harm. Additionally, stress had a significant direct positive effect on deliberate self-harm as well. Stress and school connectedness accounted for 26.30 percent of resilience (R^2 = .263). Stress and resilience accounted for 20.50 percent of self-control (R^2 = .205). Sex (girl), school connectedness and family relationship accounted for 18.00 percent of stress (R^2 = .180). Lastly, sex (girl), family relationship, school connectedness, stress, and resilience accounted for 65.20 percent of deliberate self-harm among Thai adolescents (R^2 = .652).

CHAPTER 5
CONCLUSION AND DISCUSSION

This chapter consists of three sections. The first section presents a summary of the study. The second section discusses the findings responding to the research hypotheses. Lastly, the limitations, implications, and recommendations are described.

Summary of the study

This study aimed to determine the prevalence of deliberate self-harm [DSH] among Thai adolescents, and test a causal model of DSH among Thai adolescents. The direct and indirect relationships between DSH and all six predictors including sex, family relationship, school connectedness, resilience, self-control, and stress were tested. A multi-stage random sampling technique was used in recruiting participants of 360 Thai adolescents who met the inclusion criteria. They were attending grade 10-12 or Mathayomsuksa 4-6 (aged 19 years old or younger) in the schools having more than 2,500 students under the Secondary Education Services Area of Chiang Mai municipality, Chiang Mai province, Thailand.

A government school of Chiang Mai province in 2019 was assessed by collecting the data for the pilot study. Therefore, this present study assessed one government school and one private school in Chiang Mai province in 2019 through data collection. Research ethics was approved by the IRB of Faculty of Nursing, Burapha University. Research instruments consisted of six questionnaires, including the deliberated self-harm inventory: 10 item version revised [DSHI-9r], the family relationship questionnaire, the student-school connectedness scale 27 items [SSCS], the resilience factors scale for Thai adolescents, the self-control questionnaire, and the Thai version of perceived stress scale-10. Their reliability of Cronbach's alpha coefficients was 0.83, 0.86, 0.81, 0.84, 0.89 and 0.82, respectively.

A total participant was 360 adolescents with about the same percentage of male and female (49.4% and 50.6%). Their age ranged from 15 to 19 years old with a

mean of 16.42 (*SD* = 0.91). The grade point average [GPA] of more than one half of participants (67.5%) was above 3.00.

The prevalence of DSH behaviors among participants who are Thai adolescents can be classified by sex was approximately equal percentage between boys (47%) and girls (44.7%). According to results of Pearson's Chi-squared test, $\chi^2 = 4.950$, $df = 1$, $p < .05$ was found. It meant that the comparison of DSH behaviors among adolescents of both sexes indicated the statistical significance level of.05. The number of male adolescents engaging in DSH behaviors was higher than the one of female counterparts. On the other hand, the prevalence of DSH behaviors among Thai adolescents by class was found that 116 students (32.2%) in grade 10 (Mathayomsuksa 4) engaged in DSH behaviors. It was the highest number in comparison to other grades. This followed by the number of 109 and 105 students (30.3% and 29.2%) in grade 11 (Mathayomsuksa 5) and grade 12 (Mathayomsuksa 6), respectively.

Similar to the classification by sex, the prevalence of DSH behaviors among Thai adolescents by school was approximately equal percentage between government (47.5%) and private school (44.2%), respectively. For the number of times with DSH behaviors, their engagement in DSH behaviors ranged from 3-14 times with a mean of 6.11, and *SD* = 2.83. The most self-harm was 6 times (16.7%) in the past 6 months, and the fewest were 14 times (0.3%). On the other hand, previous studies only stated that one time of deliberate self-harm was considered as the successful act of deliberate self-harm and repetitive deliberate self-harm behavior was the act of DSH behavior for more five times (Bjärehed & Lundh, 2008; L.-G. Lundh et al., 2011; L. g. Lundh et al., 2011). Therefore, the interpretation of previous studies showed that 60 adolescents (18.3%) engaged in DSH behaviors less than 5 times. Meanwhile, 52 (15.8%) and 218 (65.9%) of them had DSH behaviors for 5 times and more than 5 times, respectively.

For the number of participants' with DSH behavior by Item, the result found that the self-harm behavior most frequently used by the participants was "Bit yourself, to the extent that you broke the skin" (72.8%) with 255 and 7 of them doing once and twice, respectively. The second and third most frequent DSHs among them were "Punched yourself, to the extent that you caused a bruise to appear" (66.9%), and

"Stuck sharp objects such as needles, pins, staples, etc. into your skin" (65.3%), respectively. The least frequent one was "Cut your wrist, arms, or other area(s) of your body" (43.3%). However, the comparison of DSH behaviors between male and female adolescents by Item revealed non-statistical significance level of .05. Conversely, DSH behaviors between both sexes on the basis of 10 items were compared revealing the Pearson's Chi-squared test of $\chi^2 = 4.950$, $df = 1$, $p = .0.026$. It meant that the comparison of DSH behaviors between male and female adolescents indicated the statistical significance level of .05. More number of male adolescents engaged in DSH behaviors than the female counterparts.

The hypothesized model was not fitted to the empirical data. The model was then modified until the final model reached the goodness-of-fit criteria. Eventually, the final modified model was fitted to the empirical data ($\chi^2 = 333.350$, $p = 0.078$, $df = 298$, CMIN/ $df = 1.119$, GFI = 0.952, AGFI = 0.900, and RMSEA = 0.018).

In the modified model, there were significant parameter estimates with eleven paths, including four direct effect paths, and seven indirect effect paths. Whereas four direct effect paths including, firstly, the path coefficient between sex (girl) and DSH was negatively significant ($\beta = -0.139$, $p < .001$). Secondly, the path coefficient between school connectedness and DSH was negatively significant ($\beta = -0.671$, $p < .001$). Thirdly, the path coefficient between resilience and DSH was negatively significant ($\beta = -0.266$, $p < .001$). Fourthly, the path coefficient between stress and DSH was positively significant ($\beta = 0.163$, $p < .001$).

For seven indirect effect paths including, firstly, sex (girl) also had a positive direct effect on stress in the modified model ($\beta = 0.169$, $p < .01$). Secondly, sex (girl) had a negative direct effect on family relationship ($\beta = -0.296$, $p < .01$). Thirdly, the path coefficient of family relationship had a negative direct effect on stress ($\beta = -0.528$, $p < .001$). Fourthly, the path coefficient of family relationship had a positive direct effect on school connectedness ($\beta = 0.641$, $p < .001$). Thus, three indirect effect paths of sex (girl) and family relationship on DSH through both stress and resilience in the modified model were found. Fifthly, school connectedness had a positive direct effect on resilience ($\beta = 0.326$, $p < .001$). Sixthly, the path coefficient between stress and self-control was negatively significant ($\beta = -0.208$, $p < .001$), and seventhly, stress had a negative direct effect on resilience ($\beta = -0.295$, $p < .001$). Thus, the indirect effect of

stress on DSH through resilience was found.

Sex (girl), family relationship, school connectedness, stress, and resilience accounted for 65.20% of deliberate self-harm among Thai adolescents (R^2 = .652).

Discussion of the research findings

The findings of the study are discussed as research objectives following:

The prevalence of DSH among Thai adolescents

The prevalence of DSH behaviors among participants who are Thai adolescents were 45.9%, and can be classified by sex were approximately equal percentage between boys (47%) and girls (44.7%). According to results of Pearson's Chi-squared test, χ^2 = 4.950, df = 1, p < .05 was found. It meant that the comparison of DSH behaviors among adolescents of both sexes indicated the statistical significance level of.05. The number of male adolescents engaging in DSH behaviors was higher than the one of female counterparts. Likewise, the prevalence of DSH behaviors among Thai adolescents by school was approximately equal percentage between government (47.5%) and private school (44.2%), respectively.

While, the prevalence of DSH behaviors among Thai adolescents by class was found that 116 students (32.2%) in grade 10 (Mathayomsuksa 4) engaged in DSH behaviors. It was the highest number in comparison to other grades. This followed by the number of 109 and 105 students (30.3% and 29.2%) in grade 11 (Mathayomsuksa 5) and grade 12 (Mathayomsuksa 6), respectively. On the other hand, previous studies only stated that one time of deliberate self-harm was considered as the successful act of deliberate self-harm and repetitive deliberate self-harm behavior was the act of DSH behavior for more five times (Bjärehed & Lundh, 2008; L.-G. Lundh et al., 2011; L. g. Lundh et al., 2011). Therefore, the interpretation of previous studies showed that 60 adolescents (18.3%) engaged in DSH behaviors less than 5 times. Meanwhile, 52 (15.8%) and 218 (65.9%) of them had DSH behaviors for 5 times and more than 5 times, respectively.

Results of the present study were in agreement with studies in which the prevalence rate ranges from 35-69% (Cerutti, Manca, Presaghi, & Gratz, 2011; Gratz, 2006; Gratz, Conrad, & Roemer, 2002; L.-g. Lundh et al., 2007; Paivio & McCulloch, 2004; Rasmussen & Hawton, 2014),

For the number of times with DSH behaviors, their engagement in DSH behaviors ranged from 3-14 times with a mean of 6.11, and *SD* = 2.83. The most self-harm was 6 times (16.7%) in the past 6 months, and the fewest were 14 times (0.3%). In addition, the number of participants' with DSH behavior by Item, the result found that the self-harm behavior most frequently used by the participants was "Bit yourself, to the extent that you broke the skin" (72.8%) with 255 and 7 of them doing once and twice, respectively. The second and third most frequent DSHs among them were "Punched yourself, to the extent that you caused a bruise to appear" (66.9%), and "Stuck sharp objects such as needles, pins, staples, etc. into your skin" (65.3%), respectively. The least frequent one was "Cut your wrist, arms, or other area(s) of your body" (43.3%).

Whereas, according to McKay, Gavigan, and Kulchycky (2004), Newman and Bland (2007), and Kirkcaldy, Brown, and Siefen (2006) the prevalence rate was reported to be 55-73%. But these studies were conducted on health care service based thus explaining the high prevalence of DSH. However, these studies reported lower in comparison to current study which was conducted in normal population (among school students), which can be explained on the basis of the assessment tool used.

For example, the studies by Brunner et al. (2007) and Zoroglu et al. (2003) reported lower prevalence (15-20%), which could be explained on the basis of the assessment tool used (e.g. use of Single item from schedule for affective disorders for measuring prevalence of DSH). This relied solely on self-reports and possibility of under reporting. In an Indian study by Sidhartha and Jena (2006), the prevalence of DSH behavior in school children was reported to be 18%, which could be better explained on the basis of narrow coverage of modes of DSH in their semi-structured interview.

While comparing the prevalence of DSH across the sex, the present study has reported significant difference in prevalence of DSH across sex, the prevalence being higher in adolescent boys. DSH behaviors between both sexes on the basis of 10 items were compared revealing the Pearson's Chi-squared test of $\chi^2 = 4.950$, $df = 1$, $p = 0.026$. It meant that the comparison of DSH behaviors between male and female adolescents indicated the statistical significance level of .05. More number of male adolescents engaged in DSH behaviors than the female counterparts.

This is in contrast with the report of no significant difference in the prevalence of DSH across sex (Briere & Gil, 1998b; Kjøler & Helweg-Larsen, 2000). According to some literatures stated that girls were slightly more likely to practice DSH than boys (Law & Shek, 2013; Straiton et al., 2012). In an Indian study by Krishnakumar, Geeta, and Riyaz (2011), the majority of adolescents to have reported in hospital for treatment for DSH were boys (N = 30; Male = 21 and Female = 9). The recent work by Whitlock, Muehlenkamp, and Eckenrode (2008) have also suggested the rise in prevalence of DSH in boys and more so in social setting. The sex difference in prevalence of DSH in our study can be seen as outcome of higher rate of refusal by the guardians of female students to participate in the study (total refusal 378; 234 Female and 144 Male), which is in keeping with the earlier reports by Anderson, Yasenik, and Ross (1993) and J. C. Campbell (1998). They have emphasized that response to the questionnaire by female in prevalence study necessarily depends on the quality of ascertainment of cases which is in turn is affected by the way females are questioned. Under-reporting was found to be higher with face to face interviews, stigma attached to the area studied, probability of corroboration with other informants, mere presence of close allies and their perception of the level of confidentiality for their responses (Anderson et al., 1993; J. C. Campbell, 1998).

Their studies were a face to face interview, while the nature of act itself was socially stigmatizing, which might have resulted in under-reporting of such acts in female respondents. On the other hand, the proportion of severe self-harm is much higher among male adolescents. Self-cutting is most common among 10-14 years old girls (Griffin et al., 2018), whereas hitting, banging, pinching and firing/ burning are high among boys (Wu et al., 2016; Xiao et al., 2013).

For methods and modes employed for DSH have been an important area of research in our study, the common modes used for DSH were Biting (72.8%), punching self (66.9%), Stuck sharp objects into skins (65.3%), head banging (64.2%) preventing wounds from healing (61.7%), cutting (43.3%), etc. This is consistent with the studies reporting that the most common forms among the youth were as follows: scratching, cutting, punching, or banging objects, punching or banging oneself, biting, ripping, or tearing the skin, carving on the self, and burning with the conscious

intention of self-injury (Klonsky & Glenn, 2009; Laye-Gindhu & Schonert-Reichl, 2005; Tomar, 2011; Whitlock et al., 2006). This emphasizes the fact that there is no marked variation in the methods employed by the people with DSH behaviors.

Testing a causal model of DSH among Thai adolescents

Hypothesis 1: Sex (girl) has a positive direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.

The path coefficient between sex (girl) and DSH was negatively significant in the modified model ($\beta = -0.139$, $p < .001$). It meant that the number of adolescent boys engaging in DSH behaviors was higher than the one of girl counterparts.
In addition, sex (girl) had a positive direct effect on stress in the modified model ($\beta = 0.169$, $p < .01$). Moreover, sex (girl) had a negative direct effect on family relationship ($\beta = -0.296$, $p < .01$). Therefore, this hypothesis was not supported.

With respect to the diathesis-stress model of DSH (M. K. Nock & Cha, 2009), this theory stated that sex was a bio-psycho-social vulnerability predisposing adolescents towards negative effect. It would be possible that there were other greater influences from outside of family.

In addition, the finding revealed that sex (girl) had a positive direct effect on stress. It was consistent with previous studies in western adolescents indicating that adolescent girls who felt stress were more likely to engage in self-cutting (Bjärehed & Lundh, 2008; Sakhat, 2017). Despite the fact that research results unveiled a lower number of adolescent girls' engagement in self-harm than adolescent boys, DSH behaviors found more frequently in the former than the latter were: "Carved words, pictures, designs, or other marks into your skin" and "severely scratched yourself, to the extent that scarring or bleeding occurred."

It was found that adolescent boys had a lower resilience so they more engaged in DSH behaviors than adolescent girls. This explained why adolescent boys tended to have a higher level of deliberate self-harm than adolescent girls even though the latter had a higher score of stress than the former. This issue was consistent with the previous discussion of hypothesis 1. In other words, adolescent girls tended to have a high level of resilience resulting in possible decrease of perception of stress and more self-control than adolescent boys in refraining from DSH behaviors.

Hypothesis 2: Family relationship has a negative direct effect on deliberate self-harm [DSH], and has indirect effects on DSH through stress, resilience and self-control.

The path coefficient between family relationship and DSH was not significant in the modified model ($\beta = -0.028$, $p > .05$). However, the path coefficient of family relationship had a negative direct effect on stress ($\beta = -0.528$, $p < .001$). In addition, the result revealed that family relationship had a positive direct effect on school connectedness ($\beta = 0.641$, $p < .001$). Therefore, this hypothesis was not supported.

Hence, adolescent boys had a higher perceived of family relationship than adolescent girls but the former tended to have a higher level of deliberate self-harm than the latter. This might be due to the fact that adolescent boys had a lower resilience than adolescent girls; therefore, they more engaged in DSH behaviors than adolescent girls. This issue was consistent with the previous discussion claiming that adolescent girls tended to have a high level of resilience resulting in possible decrease of perception of stress and more self-control than adolescent boys in refraining from DSH behaviors.

From this finding, it implied that, in spite of a good score of family relationship, the quality time when all family members were able to express their love and mutual respects as well as to enjoy activities together with adolescents was not reflected. Every minute that parents spent with their children was the time to learn and understand each other's behaviors. This would affect adolescents' way of thinking, lifestyle and emotional state (Sereetrakul, 2015; Somkumlung & Kata, 2019).

Many modern parents had to work outside the home due to current economic conditions. It was undeniable that the world of hustle and competition took away the important family time. In particular, for families having children in adolescent age, family time was often replaced by school and work hours, traffic congestion or other arrangements. Besides, most adolescents also spent most of their time in schools with friends and teachers rather than with their own parents (Somkumlung & Kata, 2019).

From the diathesis-stress model of DSH (Nock & Cha, 2009) stated that family relationship might be the influential factor. It would be possible that there were other influences from outside of family, especially greater role of social media.

Most adolescents spent their time with smart phones, note books or computers. This issue agreed with the study titled ‘facebook fan page: the identity of adolescents in the social dimension’ revealed that adolescents expressed their identities the groups of friends with the same age via facebook fan page, which concluded that the computer-mediated communication was a virtual community that included the particular norms and did exist. Respecting their opinions in terms of social dimension, they did not dare to talk to their parents due to the gap in age or generations. Adolescents would assemble on the Internet as if it were their virtual community of friends sharing similar opinions or preferences. They could know the environment outside of family faster affecting their way of thinking, lifestyle, emotional state and restraint. This caused concern for family’s quality time (Thongkaew, 2017).

Besides, despite good family relationship in which parents and adolescents living in the same house and loving each other, the family would not be the main influence on Thai adolescents. This was in line with the study titled ‘Group process and family participation for reducing game addiction of Thai adolescents’, which revealed that after joining in the group process and family participation, students in the experimental group significantly showed lower scores in game addicted behavior comparing to those in the control group. This implied that group process and family participation could reduce game addiction behaviors among Thai adolescents but were unable to encourage them to stop such behavior. Therefore, it might be possible that certain factors outside the family could influence adolescents to refrain from this behavior. It would probably be the school connectedness (Charoenwanit, 2014).

Likewise, related literatures and the diathesis-stress model of DSH (M. K. Nock & Cha, 2009) stated that family relationship was a perpetuating factor that made conditions of DSH enduring or continuous. Although western literatures stated that the family was the most influential institution in modifying adolescent behavior (Friedman, 1992; Friedman et al., 2003; Toumbourou et al., 2013), much of Thai adolescents’ life was spent at school and constantly associated with learning. In addition, their weakened family relationship in the future as a result of economic downturn in 1997 would also be a major concern (Ruangkanchanasetr, Plitponkarnpim, Hetrakul, & Kongsakon, 2005).

In the context of Thai adolescents, family relationships were challenging and complicated. When a difficulty occurred, the family naturally entered into conflict. The intensified conflicts and frustrations in family members could affect adolescents' thinking, emotions and behaviors to the extent that they engaged in DSH through stress, resilience and school connectedness (Friedman, 1992; Friedman et al., 2003; Toumbourou et al., 2013).

Hypothesis 3: School connectedness has a negative direct effect on DSH, and has indirect effects on DSH through stress, resilience, and self-control.

The path coefficient between school connectedness and DSH was negatively significant in the modified model (β = -0.671, $p < .001$). However, in the modified model, school connectedness was insignificant on stress (β = -0.028, $p > .05$) and had a positive direct effect on resilience (β = 0.326, $p < .001$). Finally, the indirect effect of school connectedness on DSH through resilience in the modified model (β = -0.266, $p < .001$) was also found. Therefore, the findings supported this hypothesis. It could be concluded, therefore, that adolescents who had a high score of school connectedness tended to have a good score of family relationship and resilience resulting in possible decrease of deliberate self-harm.

From the diathesis-stress model of DSH (M. K. Nock & Cha, 2009). This theory stated that school connectedness was a perpetuating factor that caused the enduring or continuous condition of DSH because a positive school connectedness was found to be a variable against DSH among adolescents (Eisenberg et al., 2016; Klemera et al., 2017; Young et al., 2011). The perception of connectedness to safety at school has been found to reduce risk of adolescents' repetitive DSH (Taliaferro & Muehlenkamp, 2017). Conversely, a negative school connectedness was found to be a perpetuating factor that made DSH among adolescents endured or continued (Landstedt & Gillander Gådin, 2011; McMahon et al., 2012).

In addition, the finding revealed that sex (girl) had a positive indirect effect on school connectedness through family relationship. It was consistent with previous studies in Western adolescents. Dissatisfaction with school achievements was more strongly related to DSH among girls than boys. Interaction analyses suggested that an increased risk for DSH was indicated in a girl attending a vocational program who was dissatisfied with her school achievements. Among

girls, interaction effects with vocational program were also found with regard to experience of sexual harassment. For boys, dissatisfaction with school achievements was significantly associated with DSH in the adjusted model only (Bjärehed & Lundh, 2008; Landstedt & Gillander Gådin, 2011). It was consistent with this study because the finding showed that adolescent boys tended to have a low level of school connectedness leading to possible increase of deliberate self-harm.

Furthermore, the finding also pointed out that school connectedness had a positive direct effect on resilience. It was consistent with previous studies, which showed that school connectedness predicted the resilience in adolescence (Oldfield et al., 2018; Shochet et al., 2008).

Hence, in comparison to adolescent girls, adolescent boys had a lower perceived of school connectedness and a lower resilience; therefore, they tended to have a higher level of DSH behaviors than adolescent girls. One could say that the family relationship contributed to adolescent girls' tendency to have high level of resilience and a higher perceived of school connectedness resulting in possible decrease of perception of stress and more self-control than adolescent boys in refraining from DSH behaviors.

Hypothesis 4: Resilience has a negative direct effect on DSH, and has an indirect effect on DSH through self-control.

The path coefficient between resilience and DSH was negatively significant in the modified model ($\beta = -0.266$, $p < .001$). Therefore, the findings supported this hypothesis. It can be interpreted, therefore, that the person with good resilience and a high score of resilience tended to have a low level of deliberate self-harm.

This finding supported the diathesis–stress model of DSH (M. K. Nock & Cha, 2009). This theory stated that resilience was a protective factor which referred to the conditions or coping strategies used by adolescents to deal with DSH. It was consistent with previous studies in western adolescents. Adolescents with high resilience would recover to normal state quickly, while the recovery of those with low resilience would be more slowly. Nevertheless, resilience could be augmented by ourselves and surrounding people (Huang & Mossige, 2015; Oldfield et al., 2018). According to the previous study on Norwegian adolescents who had violent experiences and engaged in self-harm, their low resilience significantly and

negatively correlated with psychological problems (Huang & Mossige, 2015). Moreover, a study stated that strong resilience significantly predicted self-harming behavior and reduced the odds of engagement in self-harm (Van der Wal, 2017).

Hence, adolescent girls had a higher resilience than adolescent boys; therefore, the latter tended to have a higher level of DSH behavior than the former. This issue was consistent with the previous discussion of hypotheses, which stated that adolescent girls tended to have a high level of resilience resulting in possible more self-control than adolescent boys in refraining from DSH behaviors.

Hypothesis 5: Self-control has a negative direct effect on DSH.

The path coefficient between self-control and DSH was not significant in the modified model ($\beta = -0.007$, $p > .05$). Therefore, this hypothesis was not supported by the findings. It could be interpreted; therefore, that resilience was insignificant to DSH in Thai adolescents. It was consistent with previous studies in western country. Some literature stated that the inclusion of self-control as well as direct effect of mindfulness on trait aggression, anger, and hostility, but not on physical aggression and self-harm, remained significant. Self-control, therefore, might be a pertinent individual difference on the link between mindfulness and behaviors that were physically harmful to the self and to others (Yusainy & Lawrence, 2014).

Hypothesis 6: Stress has a positive direct effect on DSH, and has an indirect effect on DSH through resilience, and self-control.

The path coefficient between stress and DSH was positively significant in the modified model ($\beta = 0.163$, $p < .001$). In addition, stress was negatively significant in the modified model on self-control ($\beta = -0.208$, $p < .001$). Moreover, stress was negatively significant in the modified model on resilience ($\beta = -0.295$, $p < .001$). Finally, the indirect effect of stress on DSH through resilience in the modified model ($\beta = -0.266$, $p < .001$) was found. Therefore, the findings supported this hypothesis.

This finding supported the diathesis–stress model of DSH (M. K. Nock & Cha, 2009). This theory stated that stress was a precipitating factor, which involved a specific event or triggered the onset of adolescents' DSH. This finding was also supported by the research that linked DSH to stress (De Man, 1999; Hawton et al., 2006), and reflected interpersonal stressors and other distressing events to be

common precipitants of DSH. (De Leo & Heller, 2004; Harrington, 2001; Hawton et al., 2006; Ruiz-Veguilla et al., 2004).

Therefore, it could be interpreted that adolescent girls had a higher score of stress than adolescent boys but the former had a lower level of deliberate self-harm the latter. This might be due to the fact that adolescent boys had a lower resilience so they more engaged in DSH behavior than the adolescent girls. This issue was consistent with the previous discussion findings, which claimed that adolescent girls tended to have a high level of resilience resulting in possible decrease of perception of stress and more self-control than adolescent boys in refraining from DSH behaviors.

Hypothesis 7: Sex, family relationship, school connectedness, stress, resilience, and self-control have influenced on DSH among Thai adolescents.

After the model was modified, there were significant parameter estimates with nine paths, including four direct effect paths, and five indirect effect paths. The path coefficient of family relationship had a negative direct effect on stress ($\beta = -0.528$, $p < .001$) and indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model ($\beta = -0.295$, $p < .001$, $\beta = -0.266$, $p < .001$, respectively). The path coefficient of school connectedness had a negative direct effect on DSH ($\beta = -0.671$, $p < .001$), and indirect effects on DSH among Thai adolescents through resilience as depicted in the modified model ($\beta = 0.326$, $p < .001$, $\beta = -0.266$, $p < .001$, respectively). The path coefficient of sex (girl) had a negative direct effect on DSH ($\beta = -0.139$, $p < .001$), and a positive direct effect on stress ($\beta = 0.169$, $p < .01$). Moreover, there were indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model ($\beta = -0.295$, $p < .001$, $\beta = -0.266$, $p < .001$, respectively). The path coefficient of resilience had a negative direct effect on DSH ($\beta = -0.266$, $p < .001$). The path coefficient of stress had a positive direct effect on DSH ($\beta = 0.163$, $p < .001$), and a negative direct effect on self-control ($\beta = -0.208$, $p < .001$). Moreover, there were indirect effects on DSH among Thai adolescents through resilience as depicted in the modified model ($\beta = -0.295$, $p < .001$, $\beta = -0.266$, $p < .001$, respectively). Therefore, this hypothesis was partially supported.

In the modified model, there were significant parameter estimates with nine

paths, including four direct effect paths, and five indirect effect paths. The path coefficient of family relationship had a negative direct effect on stress (β = -0.528, $p < .001$), and indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of school connectedness had a negative direct effect on DSH (β = -0.671, $p < .001$), and indirect effects on DSH among Thai adolescents through resilience as depicted in the modified model (β = 0.326, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of sex (girl) had a negative direct effect on DSH (β = -0.139, $p < .001$), and a positive direct effect on stress (β = 0.169, $p <.01$). Moreover, there were indirect effects on DSH among Thai adolescents through stress, and resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). The path coefficient of resilience had a negative direct effect on DSH (β = -0.266, $p < .001$). The path coefficient of stress had a positive direct effect on DSH (β = 0.163, $p < .001$), and a negative direct effect on self-control (β = -0.208, $p < .001$). Moreover, there were indirect effects on DSH among Thai adolescents through resilience as depicted in the modified model (β = -0.295, $p < .001$, β = -0.266, $p < .001$, respectively). Therefore, this hypothesis was partially supported.

This finding supported the diathesis-stress model of DSH (M. K. Nock & Cha, 2009). This theory stated that family relationship was a perpetuating factor that caused enduring or continuous condition of DSH. It thus implied that the person with good family relationship and a high score of family relationship tended to have a low level of stress. Meanwhile, the one with a low level of stress tended to have a high level of resilience and a low level of deliberate self-harm. Therefore, family relationship was both perpetuating and protective factors that made the condition of DSH endured or inhibited DSH behavior in adolescents.

School connectedness was a perpetuating factor that created enduring or continuous condition of DSH. It meant that adolescents who had a high score of school connectedness tended to have a high level of family relationship and resilience resulting in possible decrease of deliberate self-harm. Therefore, school connectedness was both perpetuating and protective factors that made the condition of DSH endured or inhibited DSH behavior in adolescents.

Sex was a bio-psycho-social vulnerability predisposing adolescents towards negative effect. In other words, adolescent girls with a high score of school connectedness tended to have a low level of deliberate self-harm. Conversely, adolescent boys had a higher score of family relationship than school connectedness, and tended to have a higher level of deliberate self-harm than adolescent girls. Whereas, for adolescent girls who tended to have a high level of school connectedness, their perception of stress and deliberate self-harm might decrease.

The resilience, which was a protective factor involving conditions or coping strategies used by adolescents to deal with DSH. One could say that the person with good resilience and a high score of resilience tended to have a low level of deliberate self-harm.

For self-control, the path of self-control had no direct effect on DSH among Thai adolescents in both hypothesized and modified models. Therefore, the findings did not support this hypothesis. It could be concluded; therefore, that resilience was insignificant to DSH in Thai adolescents. Likewise, a previous study stated that self-control had the direct effect of mindfulness on trait aggression, anger, and hostility, but not on physical aggression and self-harm (Yusainy & Lawrence, 2014).

The stress was a precipitating factor which referred to a specific event or triggered the onset of adolescents' DSH. It meant that adolescents who have a high score of stress tended to have a low level of resilience, while their deliberate self-harm might increase.

In these instances, DSH might be used to regulate emotions either upward or downward from the predisposing factors. In addition, social stress could also prompt episodes of DSH. For example, academic stress, conflict boy/ girlfriend, disputes with classmates, fight with friend or the disruption of interpersonal relationships could incite DSH. In these instances, DSH might be used in obtaining others' attention, communicating emotional pain or avoiding social responsibilities. It depended on the regulation of social situation and emotional experience leading to inability to effectively release tension and to cope with stress. It could thus be both precipitating and perpetuating factors.

Conclusion

The findings and theory corresponded with previous studies. Those literatures stated that DSH was typically prompted by over arousal or emotional stress, such as feelings of intense anxiety, anger, stress or psychological distress. DSH was sometimes brought about by autonomic under own adolescents' vulnerability. This included the vulnerable psychology e.g. emotional regulation and adolescent egocentrism, which was adolescents' inability to distinguish between their perception of what others thought about them and what people actually thought in reality (Elkind, 1967). Some studies reported that both vulnerability and stress contributed to occurrence of DSH. The model has been extended, for example, with respect to DSH in adolescence by proposing three central constructs: vulnerability factors, stressful environmental stimuli, and protective factors (social support, intelligence, and healthy patterns of family interaction) (Bridge et al., 2006).

Strength and limitations

The present study entails feasible research methods based on a research methodology that suits the research question. It is conducted by using a multi-stage random sampling was used to recruit a sample size adequate to achieve the power of analysis 80%, and acceptable for being calculated to represent 25% of the total population. Besides, this study showed the quality of research instruments of how the psychometric properties were assessed. The construct validity of each research instrument has been tested using confirmatory factor analysis [CFA] by means of the AMOS program to estimate the specified measurement model and the acceptability of their reliability. It is analyzed upon sufficient relevant data. This present study based on a suitable rationale and can suggest directions for future research.

For limitations, the generalization to other participants or settings might be limited because the study was carried out only in Chiang Mai province, while the data were collected from reputable and highly-competitive schools in the downtown area so the high prevalence rate might probably be found. Secondly, the limitation of result interpretation was found due to the lack of self-harm interpretation method in the original version of deliberated self-harm inventory: 10 item version revised [DSHI-9r].

The previous study of the original version only claimed that one time of deliberate self-harm was considered as the successful act of deliberate self-harm. Therefore, it impacts a high prevalence of deliberate self-harm among Thai adolescents of the present study. This also generalized a finding that might be considered with caution. Further investigations and modifications were needed. Lastly, this study measured the perceived stress, which was the measurement of internal conditions of an individual, while the stressor or motivational factor from the individual's external conditions was not measured.

Implications

1. For nursing practice

This significant finding can generate the new knowledge that clarifies the influence of significant factors of adolescents' DSH, namely, bio-psycho-social vulnerability predisposing factors (sex), perpetuating factors (school connectedness and family relationship), precipitating factors (stress), and protective factors (resilience, school connectedness and family relationship). Nurse professions and healthcare teams are also in the position to improve youth orientation and aide service, especially those in schools' medical rooms who had to understand the significant predictor of Thai adolescents' DSH behaviors. For clinical and community assessment, the screening test of Thai adolescents' DSH should be recommended. Regarding the above predictor findings, nurse professions in clinics, schools' medical rooms, and community settings should be gatekeepers who assess and diagnose signs of adolescents' DSH behaviors, especially those with repetitive DSH behaviors due to their possible engagement in risk of suicidal ideation in early adulthood. Moreover, nurse professions should encourage healthcare teams to develop their effective screening ability to assess and identify the difference between adolescents' DSH behaviors and the ones with suicidal ideation so that the efficient, fast and proper assistance should be provided to prevent DSH and suicidal ideation. The finding suggests that the promotion of significant positive factor and decrease of negative factor can reduce DSH of Thai adolescents. Nursing intervention should directly address school connectedness; promote family relationship; reduce the stress; and encourage resilience among Thai adolescent for DSH prevention.

2. For school or public health policy

The solutions for problems related to adolescents' DSH in Thailand require clear health policies. The results of this study can be an evidence-based practice in determining school or public health policy in solving adolescents' DSH, repetitive addict DSH behavior as well as a risk of suicidal ideation. These findings concern characteristics of adolescents' DSH and high prevalence of DSH in Thai society as a result of changes to Thai adolescents in the midst of high competition in the society leading to their a higher stress as well as lower resilience, school connectedness and family relationship. Therefore, policy makers should pay attention to multidisciplinary teams, especially nurse professionals who work with adolescents engaging in DSH behaviors and provide them with the closest care. This also includes strategies to communicate, prevent, and monitor this issue in communities, hospitals and schools.

3. For nursing education

Nursing researchers and healthcare teams can apply the finding of this study regarding level of stress, family relationship, and school connectedness to adolescents with DSH. The subsequent results will be the primary data for nursing researchers in effectively conducting future research on suitable program planning, randomized control trial or other interventions. Also, it will promote research-based nursing care and collaboration between nurse practitioners and nurse academicians. In addition, those findings regarding DSH prevention methods will be used by nursing educators and healthcare teams and, subsequently, the relevant results will provide the former with primary data for teaching nursing students and school teachers how to prevent students from DSH. Indeed, this will also benefit nurses in schools' medical rooms in light of suitable program planning to disseminate knowledge to adolescents in their respective schools.

Recommendations for future research

The recommendations for future research are as follows:

1. Modified factors found in this study, namely, family relationship, school connectedness, stress, and resilience should be applied in promoting the effectiveness of DSH prevention in Thai adolescents. The school-based intervention or community intervention should also be formulated, which would eventually lead to the

introduction of protocol, school policy or community policy. For example, the research findings revealed that gatekeeper or peer support had a higher impact on adolescents than family relationship. This agreed with literature review in Chapter 1 and 2. The implementation of those modified factors would be a guideline for reducing adolescents' DSH behaviors in the future research.

2. This study revealed that only one adolescent had the highest level of repetitive self-harm (14 times). The previous study of the original version of DSHI-9r only claimed that the lower the number of self-harm was, the lower the suicidal ideation tendency would become. The highest score of 60 points indicated the highest level of suicidal ideation. Therefore, the future research should use the observation method and asked class teachers about the record kept at the guidance room in order to know which adolescent need close or special care from guidance teachers, class teachers and psychologists.

3. This was a cross-sectional study. In the future, a longitudinal study to examine several influential factors on DSH in Thai adolescents should be conducted to increase the understanding in this issue.

4. The future research should replicate this present one by recruiting a larger sample size and conducting it at a worldwide level.

5. The original version of deliberated self-harm Inventory: 10 item version revised [DSHI-9r] should be revised. For example, the last question "Did you have suicidal ideation in the past six months?" to examine the link between repetitive DSH behavior link and suicidal ideation should be added.

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APPENDICES

APPENDIX A

Inviting documents of experts

ที่ อว ๘๑๐๖/๐๑๙๓

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๐ กรกฎาคม ๒๕๖๒

เรื่อง ขออนุญาตเชิญบุคลากรในสังกัดเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัย

เรียน ผู้อำนวยการสถาบันกัลยาณ์ราชนครินทร์

สิ่งที่ส่งมาด้วย เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์ ซึ่งอยู่ในขั้นตอนการเตรียมเครื่องมือเพื่อการเก็บรวบรวมข้อมูล

เนื่องจาก แพทย์หญิงกมลชนก มนตะเสวี บุคลากรในสังกัดของท่านเป็นผู้มีความเชี่ยวชาญ และประสบการณ์สูง ในการนี้ขอเรียนเชิญเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัยจากภาษาอังกฤษเป็นภาษาไทยของนิสิต จำนวน ๒ เครื่องมือ ดังนี้

๑. The Deliberated Self-Harm Inventory: ๑๐-Item Version Revised (DSHI-๙r)
๒. The Student-School Connectedness scale developed by Spanjers (๒๐๑๖)

ทั้งนี้ หากท่านมีปัญหาหรือต้องการข้อมูลเพิ่มเติม โปรดติดต่อผู้วิจัยได้ที่ โทร ๐๘ ๘๒๖๖ ๙๒๐๗

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา) กลุ่มงานการบริการการศึกษาและวิเทศสัมพันธ์
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๙๓๔๗๖
สำเนาเรียน แพทย์หญิงกมลชนก มนตะเสวี

ที่ สธ ๐๘๒๐.๑/๑๓๒๔

สถาบันกัลยาณ์ราชนครินทร์ กรมสุขภาพจิต
๒๓ หมู่ ๘ ถนนพุทธมณฑลสาย ๔
เขตทวีวัฒนา กรุงเทพมหานคร ๑๐๑๗๐

๒๕ กรกฎาคม ๒๕๖๒

เรื่อง การขออนุญาตเชิญบุคลากรในสังกัดเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

อ้างถึง หนังสือมหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์ ที่ อว ๘๑๐๖/๐๑๙๓ ลงวันที่ ๑๐ กรกฎาคม ๒๕๖๒

ตามหนังสือที่อ้างถึง มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์ ได้ขอเรียนเชิญบุคลากรในสังกัด แพทย์หญิงกมลชนก มนตะเสวี เป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัยจากภาษาอังกฤษเป็นภาษาไทย จำนวน ๒ เครื่องมือ ของนิสิต นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) ความละเอียดแจ้งแล้ว นั้น

สถาบันกัลยาณ์ราชนครินทร์พิจารณาแล้ว ไม่ขัดข้อง และยินดีอนุญาตให้ แพทย์หญิงกมลชนก มนตะเสวี เป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัยดังกล่าวได้

จึงเรียนมาเพื่อโปรดทราบ และดำเนินการในส่วนที่เกี่ยวข้องต่อไปด้วย จะเป็นพระคุณ

ขอแสดงความนับถือ

(นายศรุตพันธุ์ จักรพันธุ์ ณ อยุธยา)
ผู้อำนวยการสถาบันกัลยาณ์ราชนครินทร์

กลุ่มภารกิจนิติสุขภาพจิต
โทร. ๐ ๒๔๔๑ ๖๑๐๕
โทรสาร ๐ ๒๔๔๑ ๖๑๐๑

สำเนา

บันทึกข้อความ

ส่วนงาน มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์ งานบริการการศึกษา (บัณฑิตศึกษา) โทร ๒๘๓๖
ที่ อว ๘๑๐๖/ว ๒๘๑ **วันที่** ๑๐ กรกฎาคม พ.ศ. ๒๕๖๒
เรื่อง ขอเรียนเชิญเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัย

เรียน อาจารย์ ดร.สาวิตรี หลักทอง

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์ ซึ่งอยู่ในขั้นตอนการเตรียมเครื่องมือเพื่อการเก็บรวบรวมข้อมูล

เนื่องจากท่านเป็นผู้มีความเชี่ยวชาญ และประสบการณ์สูง ในการนี้ขอเรียนเชิญเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัยจากภาษาอังกฤษเป็นภาษาไทยของนิสิต จำนวน ๒ เครื่องมือ ดังนี้

๑. The Deliberated Self-Harm Inventory: ๑๐-Item Version Revised (DSHI-๙r)

๒. The Student-School Connectedness scale developed by Spanjers (๒๐๑๖)

ทั้งนี้ หากท่านมีปัญหาหรือต้องการข้อมูลเพิ่มเติม โปรดติดต่อผู้วิจัยได้ที่ โทร ๐๘ ๘๒๖๖ ๙๒๐๗

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์

Office of International Strategic Affairs
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MOE 8106/ 0183

July 8th ,2019

Nada Lukkahatai, PhD, MSN, RN, FAAN
Assistant Professor
Johns Hopkins University
School of Nursing
525 N. Wolfe Street
Baltimore, Maryland 21205

Subject: Invitation to be the translator of research instruments

To Assistant Professor Dr. Nada Lukkahatai

Ms. Arunothai Singtakaew is a PhD candidate at Faculty of Nursing, Burapha University, Thailand. Presently, she is in the process of preparing instruments to be used for her research entitled "*Deliberated Self-Harm among Thai Adolescents: An Empirical Test of a Casual Model*" under the supervision of Associate Professor Dr. Nujjaree Chaimongkol.
In this regard, I am writing to invite you who have an expertise and experience in this field to kindly translate her research questionnaires from Thai language to English language .
The name of research questionnaires as follows;

1. The Student-School Connectedness Scale 27 items (SSCS) (Spanjers, 2016)
2. The Deliberated Self-Harm Inventory: 10-Item Version Revised (DSHI-10r) by Lundh, Wångby-Lundh, Paaske, Ingesson, and Bjärehed (2011)

Your kind cooperation for this matter will be highly appreciated. Further information needed please contact Ms. Arunothai Singtakaew at arunothai.beebee@gmail.com.

Yours sincerely,

Assistant Professor Pornchai Jullamate, RN, PhD
Dean, Faculty of Nursing, Burapha University
Chon Buri, 20131, THAILAND
E-mail: pornchai@buu.ac.th
Tel: 66 38 102 809
Fax: 66 38 393 476

ที่ อว ๘๑๐๖/ ๐๕๕๕

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๒๗ กันยายน ๒๕๖๒

เรื่อง ขอเรียนเชิญเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัย

เรียน ผู้ช่วยศาสตราจารย์ ดร.ศิริลักษณ์ อุสาหะ

สิ่งที่ส่งมาด้วย เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์ ซึ่งอยู่ในขั้นตอนการเตรียมเครื่องมือเพื่อการเก็บรวบรวมข้อมูล

เนื่องจากท่านเป็นผู้มีความเชี่ยวชาญ และประสบการณ์สูง ในการนี้ขอเรียนเชิญท่านเป็นผู้ทรงคุณวุฒิในการแปลเครื่องมือเพื่อการวิจัยจากภาษาไทยเป็นภาษาอังกฤษของนิสิต จำนวน ๒ เครื่องมือ ดังนี้

๑. แบบสอบถามการจงใจทำร้ายตนเองสำหรับวัยรุ่น
๒. แบบสอบถามความผูกพันต่อโรงเรียน

ทั้งนี้ หากท่านมีปัญหาหรือต้องการข้อมูลเพิ่มเติม โปรดติดต่อผู้วิจัยได้ที่ โทร ๐๘ ๘๒๖๖ ๙๒๐๗

จึงเรียนมาเพื่อโปรดให้เกียรติเป็นผู้ทรงคุณวุฒิดังกล่าวด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้รักษาการแทนอธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา) กลุ่มงานการบริการการศึกษาและวิเทศสัมพันธ์
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๙๓๔๗๖

APPENDIX B

Permission instruments

Deliberated Self-Harm Inventory: 10-Item Version Revised (DSHI-9r)

Gmail Arunothai Singtakaew <arunothai.beebee@gmail.com>

Could you please permit me to use your instrument
5 ข้อความ

Arunothai Singtakaew <arunothai.beebee@gmail.com> 11 มกราคม 2562 10:19
ถึง: lars-gunnar.lundh@psychology.lu.se
สำเนาลับ: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Dear Dr. Lars-Gunnar Lundh,

My name is Arunothai Singtakaew. I am a Ph.D. candidate at Burapha University, Chonburi, Thailand. I am interesting in deliberate self-harm in adolescents and developing my dissertation proposal on the topic of "Deliberate Self-Harm (DSH) Among Thai Adolescents: An Empirical Test of a Causal Model". The Deliberate Self-Harm Inventory: 9-Item Version Revised [DSHI-9r] is a very interesting instrument to measure adolescents' DSH in my study. I would appreciate if you could permit me to use this instrument in my dissertation. Please kindly give me about details of the instrument for my oral dissertation defense.

Thank you and look forward to hear from you. Best regards,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207

DSH.pdf
1936K

Lars-Gunnar Lundh <lars-gunnar.lundh@psy.lu.se> 13 มกราคม 2562 21:14
ถึง: Arunothai Singtakaew <arunothai.beebee@gmail.com>

Dear Arunothai Singtakaew

You are free to use the DSHI-9r in your research. You may also use the DSHI-9, which is an earlier version (I attach the English translation).

The major difference between these versions is that DSHI-9r differentiates between "cutting" and "minor cutting", because the Swedish language has different words here ("skära" versus "rispa"). Which version will suit you best may probably depend on the distinctions that are made in your language.

Please let me know if you need more information.

Best regards

Lars-Gunnar Lundh

Lars-Gunnar Lundh
Professor emeritus, licensed psychologist and psychotherapist
Department of Psychology
Lund University
Box 213
SE-221 00 Lund
*E-mail: **Lars-Gunnar.Lundh@psy.lu.se***

Från: Arunothai Singtakaew <arunothai.beebee@gmail.com>
Skickat: den 11 januari 2019 04:19:41
Till: Lars-Gunnar Lundh
Ämne: Could you please permit me to use your instrument

[ข้อความที่เกี่ยวข้องถูกซ่อนไว้]

DSHI-9 English.pdf
70K

Arunothai Singtakaew <arunothai.beebee@gmail.com> 13 มกราคม 2562 21:16
ถึง: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. student 1st year, Student code 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207
[ข้อความที่เกี่ยวข้องถูกซ่อนไว้]

DSHI-9 English.pdf
70K

Arunothai Singtakaew <arunothai.beebee@gmail.com> 14 มกราคม 2562 09:58
ถึง: Lars-Gunnar Lundh <lars-gunnar.lundh@psy.lu.se>
สำเนาลับ: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Student-School Connectedness scale (SSCS)

Gmail Arunothai Singtakaew <arunothai.beebee@gmail.com>

Could you please permit me to use your instrument
2 ข้อความ

Arunothai Singtakaew <arunothai.beebee@gmail.com> 11 มกราคม 2562 09:57
ถึง: jcd12@psu.edu
สำเนาลับ: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Dear Dr. James C. DiPerna,

My name is Arunothai Singtakaew. I am PhD. candidate at Burapha University, Chonburi, Thailand. I am interesting in deliberate self-harm in adolescents and developing my dissertation proposal on the topic of "Deliberate Self-Harm (DSH) Among Thai Adolescents: An Empirical Test of a Causal Model". The Student-School Connectedness Scale (SSCS) is very interesting instrument to measure school connectedness which is influential factors of adolescents' DSH in my study. I would appreciate if you could permit me to use this instrument in my dissertation. Please kindly give me about details of the instrument for my oral dissertation defense.

Thank you and look forward to hear from you.

Best regards,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207

KSpanjers_Dissertation_final.pdf
4481K

James DiPerna <jcd12@psu.edu> 16 ตุลาคม 2562 02:19
ถึง: Arunothai Singtakaew <arunothai.beebee@gmail.com>

Hello Arunothai. I was just cleaning up some email and stumbled upon your inquiry from earlier this year. Please accept my apologies for not responding, but I believe I was out of the office when you sent this and it must have become buried in my Inbox. I am assuming you found another instrument, but if not and you still want to use this scale, that certainly would be absolutely fine. Again, please accept my apologies and I hope your dissertation is coming along well.

Best,
Jim

Gmail Arunothai Singtakaew <arunothai.beebee@gmail.com>

request to use measure in research study

7 ข้อความ

Kelsey Spanjers <kelsspan@gmail.com> 24 มกราคม 2562 21:28
ถึง: arunothai.beebee@gmail.com

Hi Arunothai,

I received an email from you via Dr. Barbara Schaefer requesting information on how to use and interpret the measure I created for my dissertation. I apologize that it has taken me so long to get back to you. It has been quite some time since I have looked at or thought about my dissertation. Of course, you are permitted to use it. I will need to look at the measure again to give you specific information about how I interpreted it.

I will get back to you with more information soon, but in the meantime, I just wanted to let you know that I did receive your email.

Take care,
Kelsey

Arunothai Singtakaew <arunothai.beebee@gmail.com> 24 มกราคม 2562 21:32
ถึง: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Best regards,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207

[ข้อความที่เกี่ยวข้องถูกซ่อนไว้]

Arunothai Singtakaew <arunothai.beebee@gmail.com> 7 กุมภาพันธ์ 2562 21:15
ถึง: Kelsey Spanjers <kelsspan@gmail.com>

With respect to my previous request for permission for the use of your research instrument, I am greatly interested in using it for collecting data from a sample size of 350 Thai adolescents. I have appreciated you permitted me to use this instrument in my dissertation. **Please kindly give me more details of the instrument for my oral dissertation defense, such as "How to interpret the result of the instrument?", validity and reliability of the instrument.** Thank you very much for your kindly support.

Respectfully,

Best regards,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),

Thai version of Perceived Stress Scale-10 (TPSS-10)

Gmail Arunothai Singtakaew <arunothai.beebee@gmail.com>

Could you please permit me to use your instrument
5 ข้อความ

Arunothai Singtakaew <arunothai.beebee@gmail.com> 11 มิถุนายน 2562 15:39
ถึง: nahathai.wongpakaran@cmu.ac.th

Dear Professor Nahathai Wongpakaran, MD, FRCPsychT.,

My name is Arunothai Singtakaew. I am a Ph.D. candidate at Burapha University, Chonburi, Thailand. I am interesting in deliberate self-harm in adolescents and developing my dissertation proposal on the topic of "Deliberate Self-Harm (DSH) Among Thai Adolescents: An Empirical Test of a Causal Model". The Thai version of the PSS-10 is a very interesting instrument to measure adolescents' stress in my study. I would appreciate if you could permit me to use this instrument in my dissertation.

Thank you and look forward to hear from you.

Best regards,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207

NAHATHAI WONGPAKARAN <nahathai.wongpakaran@cmu.ac.th> 12 มิถุนายน 2562 06:41
ถึง: Arunothai Singtakaew <arunothai.beebee@gmail.com>
สำเนา: TINAKON WONGPAKARAN <tinakon.w@cmu.ac.th>

Dear K. Arunothai,
The permission to use the Thai version (T-PSS-10, Wongpakaran N et al, 2010.) is granted as requested. The measurement and the reference can be downloaded from http://www.wongpakaran.com/index.php?lay=show&ac=article&Id=539501466(Publication No. 13)

Good luck with your research.
nahathai

ศาสตราจารย์แพทย์หญิง ณหทัย วงศ์ปการันย์
หน่วยจิตเวชศาสตร์ผู้สูงอายุ ภาควิชาจิตเวชศาสตร์ คณะแพทยศาสตร์ มช.
110 ถ.อินทวโรรส ต.ศรีภูมิ อ.เมือง เชียงใหม่ 50200

Nahathai Wongpakaran, MD, FRCPsychT

Professor of Psychiatry
Geriatric Psychiatry Unit, Department of Psychiatry, Faculty of Medicine, Chiang Mai University 110 Intawaroros Rd., T. Sriphum, A. Muang, Chiang Mai,
Kingdom of Thailand 50200; Tel: +66 53 935422 ext 320, Fax: +66 53 935426
www.wongpakaran.com, www.facebook.com/professors.wongpakaran, lg: nahathai.tinakon

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From: Arunothai Singtakaew <arunothai.beebee@gmail.com>
Sent: June 11, 2019 15:39
To: NAHATHAI WONGPAKARAN
Subject: Could you please permit me to use your instrument

[ข้อความที่เกี่ยวข้องถูกซ่อนไว้]

Arunothai Singtakaew <arunothai.beebee@gmail.com> 12 มิถุนายน 2562 06:55
ถึง: Nujjaree Chaimongkol <nujjaree@buu.ac.th>

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., RN.
Ph.D. candidate ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,
Chonburi, Thailand 20131

Tel: +6688-2669207
[ข้อความที่เกี่ยวข้องถูกซ่อนไว้]

Arunothai Singtakaew <arunothai.beebee@gmail.com> 12 มิถุนายน 2562 18:16
ถึง: NAHATHAI WONGPAKARAN <nahathai.wongpakaran@cmu.ac.th>

Dear Professor Nahathai Wongpakaran, MD, FRCPsychT.,

With respect to my previous request for permission for the use of your research instrument, I am greatly interested in using it for collecting data from a sample size of 360 Thai adolescents. I have appreciated you permitted me to use this instrument in my dissertation.

Thank you very much for your kind permission.

Respectfully,

Arunothai

Arunothai Singtakaew, M.Ed., B.N.S., R.N.
Ph.D. candidate, ID 60810013

Ph.D. in Nursing Science (International Program),
Burapha University

169 Longhaad Bangsaen Road,

สำเนา
บันทึกข้อความ

ส่วนงาน มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์ งานบริการการศึกษา (บัณฑิตศึกษา) โทร.๒๘๓๖
ที่ อว ๘๑๐๖/๑๒๙๐ **วันที่** ๑๐ กรกฎาคม พ.ศ. ๒๕๖๒
เรื่อง ขออนุญาตใช้เครื่องมือการวิจัย

เรียน คณบดีบัณฑิตวิทยาลัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ทั้งนี้ นางสาวอรุโณทัย สิงห์ตาแก้ว มีความประสงค์ขออนุญาตใช้เครื่องมือการวิจัย คือ แบบวัดความสัมพันธภาพในครอบครัว ซึ่งเป็นส่วนหนึ่งของงานวิทยานิพนธ์ เรื่อง "ผลการใช้โปรแกรมการฝึกความฉลาดทางอารมณ์เพื่อเพิ่มสัมพันธภาพในครอบครัวของนักเรียนระดับชั้นประถมศึกษาปีที่ ๖" ของ คุณพัชรินทร์ พันธ์วิชัย หลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาวิชาจิตวิทยาการให้คำปรึกษา พ.ศ. ๒๕๔๘ เพื่อนำมาใช้ในการเก็บข้อมูลการทำดุษฎีนิพนธ์ในครั้งนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมมต์)
คณบดีคณะพยาบาลศาสตร์

ผู้วิจัย ๐๘-๘๒๖๖๙๒๐๗

สำเนา

ที่ อว ๘๑๐๖/๐๑๙๔

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๐ กรกฎาคม ๒๕๖๒

เรื่อง ขออนุญาตใช้เครื่องมือการวิจัย

เรียน คณบดีบัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ทั้งนี้ นางสาวอรุโณทัย สิงห์ตาแก้ว มีความประสงค์ขออนุญาตใช้เครื่องมือการวิจัย คือ The Self-Control Questionnaire (Saengthongdee, ๒๐๐๗) ซึ่งเป็นส่วนหนึ่งของงานวิทยานิพนธ์ เรื่อง "ปัจจัยการควบคุมตนเอง และความผูกพันทางสังคมที่มีผลต่อการกระทำผิดในคดียาเสพติดของเด็กและเยาวชนชาย: ศึกษาเฉพาะศูนย์ฝึกและอบรมเด็กและเยาวชนชายในกรุงเทพมหานคร" ของ ร้อยตำรวจโทปริทรรศน์ แสงทองดี หลักสูตรศิลปศาสตรมหาบัณฑิต สาขาวิชาอาชญาวิทยาและงานยุติธรรม พ.ศ. ๒๕๕๐ เพื่อนำมาใช้ในการเก็บข้อมูลการทำดุษฎีนิพนธ์ในครั้งนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๗๕
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัย ๐๘-๘๒๖๖๙๒๐๗

สำเนา

ที่ อว ๘๑๐๖/๐๖๔๓

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๗ กรกฎาคม ๒๕๖๒

เรื่อง ขออนุญาตใช้เครื่องมือการวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยธรรมศาสตร์

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ทั้งนี้ นางสาวอรุโณทัย สิงห์ตาแก้ว มีความประสงค์ขออนุญาตใช้เครื่องมือการวิจัย คือ The Resilience Factors Scale for Thai adolescents (Takviriyanun, ๒๐๐๘) ซึ่งเป็นส่วนหนึ่งของงานวิจัย เรื่อง "DEVELOPMENT AND TESTING OF THE RESILIENCE FACTORS SCALE FOR THAI ADOLESCENTS" ของ รองศาสตราจารย์ ดร.นิตยา ตากวิริยะนันท์ ซึ่งตีพิมพ์ใน Nursing and Health Sciences ค.ศ. 2008 เพื่อนำมาใช้ในการเก็บข้อมูลการทำดุษฎีนิพนธ์ในครั้งนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๗๕
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัย ๐๘-๘๒๖๖๙๒๐๗

สำเนา

ที่ อว ๘๑๐๖/ ๐๖๔๒

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๖ กรกฎาคม ๒๕๖๒

เรื่อง ขออนุญาตใช้เครื่องมือการวิจัย

เรียน คณบดีคณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ทั้งนี้ นางสาวอรุโณทัย สิงห์ตาแก้ว มีความประสงค์ขออนุญาตใช้เครื่องมือการวิจัย คือ The Thai version of Perceived Stress Scale-๑๐ (Wongpakaran & Wongpakaran, ๒๐๑๐) ซึ่งเป็นส่วนหนึ่งของงานวิจัย เรื่อง "The Thai version of the PSS-10: an investigation of its psychometric properties" ของ ศาสตราจารย์แพทย์หญิงณหทัย วงศ์ปการันย์ และศาสตราจารย์นายแพทย์ทินกร วงศ์ปารันย์ ซึ่งตีพิมพ์ใน Biopsychosocial Medicine ค.ศ. 2010 เพื่อนำมาใช้ในการเก็บข้อมูลการทำดุษฎีนิพนธ์ในครั้งนี้

จึงเรียนมาเพื่อโปรดพิจารณาอนุญาตด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๗๕
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัย ๐๘-๘๒๖๖๙๒๐๗

บันทึกข้อความ

ส่วนงาน มหาวิทยาลัยบูรพา บัณฑิตวิทยาลัย โทร. ๒๗๐๐ ต่อ ๗๐๕, ๗๐๗
ที่ อว ๘๑๐๐/๐๑๙๕๔ **วันที่** ๒๕ กรกฎาคม พ.ศ. ๒๕๖๒
เรื่อง อนุญาตให้นิสิตใช้เครื่องมือวิจัยในเล่มดุษฎีนิพนธ์

เรียน คณบดีคณะพยาบาลศาสตร์

ตามหนังสือคณะพยาบาลศาสตร์ ที่ อว ๘๑๐๖/๑๒๙๐ ลงวันที่ ๑๐ กรกฎาคม พ.ศ. ๒๕๖๒ ได้ขออนุญาตให้ นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสนิสิต ๖๐๘๑๐๐๑๓ หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) ขอใช้เครื่องมือวิจัย "แบบวัดความสัมพันธภาพในครอบครัว" เป็นส่วนหนึ่งของงานนิพนธ์ เรื่อง "ผลการใช้โปรแกรมการฝึกความฉลาดทางอารมณ์เพื่อเพิ่มสัมพันธภาพในครอบครัวของนักเรียนระดับชั้นประถมศึกษาปีที่ ๖" ของคุณพัชรินทร์ พันธ์วิชัย นิสิตหลักสูตรวิทยาศาสตรมหาบัณฑิต สาขาวิชาจิตวิทยาการให้คำปรึกษา พ.ศ. ๒๕๔๘ คณะศึกษาศาสตร์ มหาวิทยาลัยบูรพา ในการทำงานวิจัยเรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" นั้น

ในการนี้ มหาวิทยาลัยบูรพา พิจารณาแล้ว และยินดีอนุญาตให้นางสาวอรุโณทัย สิงห์ตาแก้ว สามารถนำเครื่องมือวิจัยดังกล่าวมาใช้ได้ โดยให้อ้างอิงวิทยานิพนธ์ของคุณพัชรินทร์ พันธ์วิชัย ในผลงานวิจัยด้วย

จึงเรียนมาเพื่อโปรดทราบและดำเนินการต่อไปด้วย

(รองศาสตราจารย์สมนึก ธีระกุลพิศุทธิ์)
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

เรียน คณบดี

๑. เพื่อโปรดทราบ
๒. เห็นควรสำเนาแจ้ง งานฝ่ายบัณฑิตศึกษา (นางสาวพรรณนิภา) ทราบเพื่อดำเนินการแจ้งนิสิตทราบ โดยให้อ้างอิงวิทยานิพนธ์ ของ คุณพัชรินทร์ พันธ์วิชัย ในผลงานวิจัยดังกล่าวด้วย ต่อไป

อำไพ ๑ ส.ค. ๖๒

ที่ อว ๘๓๙๓(๘)/ 13013

คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่
๑๑๐ ถนนอินทวโรรส ตำบลศรีภูมิ
อำเภอเมือง จังหวัดเชียงใหม่ ๕๐๒๐๐

๑๔ ส.ค. ๒๕๖๒

เรื่อง อนุญาตให้ใช้เครื่องมือวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

ตามบันทึกที่ อว ๘๑๐๖/๐๒๔๒ ลงวันที่ ๑๘ กรกฎาคม ๒๕๖๒ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้ขออนุญาตใช้เครื่องมือวิจัย The Thai version of Perceived Stress Scale-๑๐ (Wongpakaran & Wongpakaran,๒๐๑๐) ของ ศ.พญ.ณหทัย วงศ์ปการันย์ และ ศ.นพ.ทินกร วงศ์ปการันย์ คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ นั้น

ในการนี้ คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ พิจารณาแล้วไม่ขัดข้องและยินดีให้ใช้เครื่องมือวิจัยดังกล่าว และขอความอนุเคราะห์กรอกข้อมูลในหนังสือรับรองการนำผลงานวิจัยหรืองานสร้างสรรค์ไปใช้ประโยชน์ ดังแนบมาพร้อมนี้และส่งคืนที่ งานบริหารงานวิจัย คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ ๑๑๐ ถนนอินทวโรรส ตำบลศรีภูมิ อำเภอเมือง จังหวัดเชียงใหม่ ๕๐๒๐๐ ต่อไปด้วย จักเป็นพระคุณยิ่ง

จึงเรียนมาเพื่อทราบ

ขอแสดงความนับถือ

(ศาสตราจารย์ นายแพทย์มานิต ศรีสุวรรณานนท์)
รองคณบดี ปฏิบัติการแทน
คณบดีคณะแพทยศาสตร์

เรียน คณบดี
ด้วย คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ อนุญาตให้นางสาวอรุโณทัย สิงห์ตาแก้ว ใช้เครื่องมือวิจัย The Thai version of Perceived Stress Scale-๑๐ ของ ศ.พญ.ณหทัย วงศ์ปการันย์ และ ศ.นพ.ทินกร วงศ์ปการันย์ โดยขอความอนุเคราะห์กรอกข้อมูลในหนังสือรับรองฯ ดังแนบมานี้และส่งคืนตามที่อยู่ที่กำหนด
๑. จึงเรียนมาเพื่อโปรดทราบและโปรดพิจารณา
๒. เห็นควรสำเนาแจ้งงานบัณฑิต เพื่อแจ้งนิสิตทราบ
วาสนา/ ๒๑ ส.ค. ๖๒

22/8/62

งานบริหารงานวิจัย คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่
โทรศัพท์. ๐๕๓ ๙๓๕๑๘๙ โทรสาร. ๐๕๓ ๙๓๖๖๔๓

หมายเหตุ

1. การใช้ประโยชน์ในเชิงสาธารณะ เช่น ผลงานวิจัยที่นำไปใช้ให้เกิดประโยชน์แก่สาธารณชนในเรื่องต่างๆ ที่ทำให้คุณภาพชีวิตและเศรษฐกิจของประชาชนดีขึ้น ได้แก่ การใช้ประโยชน์ด้านสาธารณสุข ด้านการบริหารจัดการสำหรับวิสาหกิจขนาดกลางและขนาดย่อม (SME) ด้านวิถีชีวิตตามหลักปรัชญาของเศรษฐกิจพอเพียง ด้านศิลปะและวัฒนธรรม เป็นต้น

2. การใช้ประโยชน์ในเชิงนโยบาย เช่น ใช้ประโยชน์จากผลงานวิจัยเชิงนโยบายในการนำไปประกอบเป็นข้อมูลการประกาศใช้กฎหมาย หรือกำหนดมาตรการ กฎเกณฑ์ต่างๆ โดยองค์กรหรือหน่วยงานภาครัฐและเอกชน เป็นต้น

3. การใช้ประโยชน์ในเชิงพาณิชย์ เช่น งานวิจัยหรืองานสร้างสรรค์ที่นำไปสู่การพัฒนาสิ่งประดิษฐ์หรือผลิตภัณฑ์ซึ่งก่อให้เกิดรายได้หรือนำไปสู่การเพิ่มประสิทธิภาพการผลิต เป็นต้น

4. การใช้ประโยชน์ทางอ้อมของงานสร้างสรรค์ ซึ่งเป็นการสร้างคุณค่าทางจิตใจ ยกระดับจิตใจ ก่อให้เกิดสุนทรียภาพ สร้างความสุข เช่น งานศิลปะที่นำไปใช้ในโรงพยาบาล ซึ่งได้มีการศึกษาและการประเมินไว้

หนังสือรับรองการนำผลงานวิจัยหรืองานสร้างสรรค์ไปใช้ประโยชน์

ปี พ.ศ. 2562

ข้าพเจ้า นางสาว อรุโณทัย สิงห์ตาแก้ว **ตำแหน่ง** Ph.D. candidate

หน่วยงาน/สถานที่ติดต่อ คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

โทรศัพท์ 088-2669207

ได้นำผลงานวิจัย/งานสร้างสรรค์ เรื่อง The Thai version of Perceived Stress Scale - 10

ที่แล้วเสร็จในปี 2553

ผู้วิจัย/ผู้สร้างสรรค์ผลงานชื่อ ศ.พญ. ณหทัย วงศ์ปการันย์ และ ศ.นพ. ทินกร วงศ์ปการันย์

สังกัด/ ภาควิชา คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่

โดยวัตถุประสงค์ของการนำไปใช้มีดังนี้

☑ การใช้ประโยชน์ในเชิงสาธารณะ โดยการ เป็นเครื่องมือที่ใช้วัดความเครียดสำหรับวัยรุ่นไทย ในดุษฎีนิพนธ์ เรื่อง "การจงใจทำร้ายตนเองในวัยรุ่นไทย : แบบจำลองเชิงสาเหตุ"

ผลที่ได้ ผลงานวิจัย ดุษฎีนิพนธ์ เรื่อง "การจงใจทำร้ายตนเองในวัยรุ่นไทย : แบบจำลองเชิงสาเหตุ" นอกจากจะช่วยเป็นข้อมูลพื้นฐาน ที่สามารถบอกถึงอัตราความชุกของการจงใจทำร้ายตนเองในวัยรุ่นไทยแล้ว ยังสามารถใช้เป็นข้อมูลสนับสนุนแผนการป้องกัน -

☐ การใช้ประโยชน์เชิงนโยบาย การทำร้ายตนเองในวัยรุ่นไทยอีกด้วย โดยอาจจะมุ่งลดปัจจัยด้านลบ และเสริมสร้างปัจจัยด้านบวก ผ่านโปรแกรม หรือ กิจกรรมทางการพยาบาลต่างๆ

ผลที่ได้

☐ การใช้ประโยชน์ในเชิงพาณิชย์ โดยการ

ผลที่ได้

☐ การใช้ประโยชน์ทางอ้อมของงานสร้างสรรค์ โดยการ

ผลที่ได้

ขอรับรองว่าข้อความข้างต้นเป็นจริงทุกประการ

ลงนาม อรุโณทัย สิงห์ตาแก้ว

ตำแหน่ง Ph.D. candidate (นิสิตปริญญาเอก ชั้นปีที่ 3)

สังกัด/หน่วยงาน คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

วันที่ 20 เดือน กันยายน พ.ศ. 2562 ที่รับรอง

ประทับตรา (ถ้ามี)

ที่ อว ๘๓๙๓(๘).๗/๘๖๗

ภาควิชาจิตเวชศาสตร์ คณะแพทยศาสตร์
มหาวิทยาลัยเชียงใหม่ ๕๐๒๐๐

๘ สิงหาคม ๒๕๖๒

เรื่อง อนุญาตให้ใช้เครื่องมือวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

อ้างถึง หนังสือเลขที่ อว ๘๑๐๖/๑๒๔๒ ลงวันที่ ๑๘ กรกฎาคม ๒๕๖๒

สิ่งที่ส่งมาด้วย แบบวัดความรู้สึกเครียดพร้อมวารสารอ้างอิง จำนวน ๑ ชุด

ตามที่ นางสาวอรุโณทัย สิงห์ตาแก้ว นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยได้ขอความอนุเคราะห์ใช้แบบสอบถามเครื่องมือวิจัย คือ แบบวัดความรู้สึกเครียด (The Perceived Stress Scale-๑๐: TPSS-๑๐) ที่พัฒนาและแปลเป็นฉบับภาษาไทย โดย ศ.พญ.ณหทัย วงศ์ปการันย์ มาใช้ประกอบการทำวิจัยในโครงการวิจัย ความแจ้งแล้วนั้น

ในการนี้ข้าพเจ้า ศ.พญ.ณหทัย วงศ์ปการันย์ พิจารณาแล้วไม่ขัดข้อง อนุญาตให้ใช้เครื่องมือในการทำวิจัยดังกล่าว ทั้งนี้ได้แนบตัวอย่างแบบวัดความรู้สึกเครียดและเอกสารอ้างอิงมาพร้อมนี้แล้ว

จึงเรียนมาเพื่อทราบและดำเนินการต่อไป

ขอแสดงความนับถือ

(ศาสตราจารย์ แพทย์หญิง ณหทัย วงศ์ปการันย์)
ศาสตราจารย์ประจำภาควิชาจิตเวชศาสตร์

ภาควิชาจิตเวชศาสตร์ คณะแพทยศาสตร์
โทร ๐ ๕๓๙๓ ๕๔๒๒
โทรสาร ๐ ๕๓๙๓ ๕๔๒๖

เรียน คณบดี

ด้วย ภาควิชาจิตเวชศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยเชียงใหม่ อนุญาตให้ นางสาวอรุโณทัย สิงห์ตาแก้ว ใช้เครื่องมือวิจัย แบบวัดความรู้สึกเครียด (The Perceived Stress Scale-๑๐: TPSS-๑๐) ที่พัฒนาและแปลเป็นฉบับภาษาไทย โดย ศ.พญ.ณหทัย วงศ์ปการันย์ ได้

๑. จึงเรียนมาเพื่อโปรดทราบและโปรดพิจารณา
๒. เห็นควรสำเนาแจ้งงานบัณฑิต เพื่อแจ้งนิสิตทราบ

วาสนา/ ๑๖ ส.ค. ๖๒

APPENDIX C

Research instruments Thai version

แบบสอบถามการวิจัย เรื่อง

“การจงใจทำร้ายตนเองในวัยรุ่นไทย: แบบจำลองเชิงสาเหตุ**”**

วัตถุประสงค์

แบบสอบถามการวิจัยนี้จัดทำขึ้นเพื่อสอบถามเกี่ยวกับปัจจัยเชิงสาเหตุของการจงใจทำร้ายตนเองในวัยรุ่นไทย ที่มีอายุ 19 ปีบริบูรณ์หรือน้อยกว่า และกำลังศึกษาอยู่ในระดับชั้นมัธยมศึกษาปีที่ 4-6 ในโรงเรียนเอกชน หรือรัฐบาลขนาดใหญ่ที่มีนักเรียนมากกว่า 2,500 คน โดยไม่เคยได้รับการรักษา หรือถูกวินิจฉัยเกี่ยวกับปัญหาทางด้านสุขภาพจิตมาก่อน ผลการศึกษาในครั้งนี้จะเป็นข้อมูลพื้นฐานในการพัฒนาแนวทางการป้องกันการจงใจทำร้ายตนเองในวัยรุ่นไทยต่อไป

แบบสอบถาม ประกอบด้วย 7 ชุด คือ

1. แบบสอบถามข้อมูลส่วนบุคคล (7 ข้อ)
2. แบบสอบถามการจงใจทำร้ายตนเองสำหรับวัยรุ่น (10 ข้อ)
3. แบบสอบถามสัมพันธภาพในครอบครัว (40 ข้อ)
4. แบบสอบถามความผูกพันต่อโรงเรียน (27 ข้อ)
5. แบบสอบถามการรับรู้ระดับความเครียด (10 ข้อ)
6. แบบสอบถามแบบประเมินปัจจัยป้องกันด้านบุคคล (25 ข้อ)
7. แบบสอบถามวัดการควบคุมตนเอง (23 ข้อ)

การใช้แบบสอบถาม

1. ผู้ตอบแบบสอบถาม กรุณาอ่านคำชี้แจงของแบบสอบถามแต่ละชุดให้เข้าใจและปฏิบัติตามคำชี้แจง หากมีข้อสงสัยสามารถสอบถามผู้วิจัยได้

2. ขอให้ท่านเลือกคำตอบที่ตรงกับความรู้สึกของท่านมากที่สุด และข้อมูลที่ท่านตอบจะถูกเก็บเป็นความลับที่สุด

++ ผู้วิจัยขอขอบคุณทุกท่านที่กรุณาสละเวลาและให้ความร่วมมือในการตอบแบบสอบถามนี้ ++

แบบสอบถามข้อมูลทั่วไป

คำชี้แจง กรุณาตอบแบบสอบถามนี้โดยทำเครื่องหมาย ✓ ลงใน ☐ หน้าข้อความหรือเติมข้อความลงในช่องว่างให้สมบูรณ์และตรงตามความเป็นจริงเกี่ยวกับตัวคุณ

1. เพศ ☐ ชาย ☐ หญิง ☐ อื่นๆ (โปรดระบุ).....

2. อายุ..... ปี เป็นบุตรคนที่.....ในจำนวนพี่น้อง.....คน

3. เกรดเฉลี่ย.....

4. ระดับการศึกษา

1. ☐ มัธยมศึกษาปีที่ 4 2. ☐ มัธยมศึกษาปีที่ 5
3. ☐ มัธยมศึกษาปีที่ 6

5. สถานภาพของบิดา-มารดา

1. ☐ อยู่ด้วยกัน 2. ☐ แยกกันอยู่
3. ☐ หย่าร้าง 4. ☐ บิดา/ มารดา เสียชีวิต

6. รายได้ของครอบครัวเฉลี่ยต่อเดือน

1. ☐ ต่ำกว่า 5,000 บาท/ เดือน
2. ☐ 5,000-9,999 บาท/ เดือน
3. ☐ 10,000-20, 000 บาท/ เดือน
4. ☐ 20, 000 บาทขึ้นไป

7. ค่าใช้จ่ายในชีวิตประจำวันเพียงพอกับความต้องการ

1. ☐ ไม่เพียงพอ
2. ☐ เพียงพอแต่ไม่เหลือเก็บ
3. ☐ เพียงพอแต่เหลือเก็บ

แบบประเมินการจงใจทำร้ายตนเอง

(DSHI-9r 10 ข้อ)

<u>คำแนะนำ:</u> แบบประเมินมีข้อคำถาม 10 ข้อ สอบถามถึงการตั้งใจทำร้ายตนเองของคุณในชีวิตที่ผ่านมา ดังนั้นโปรดอ่านคำถามแต่ละข้ออย่างละเอียดและทำเครื่องหมาย ☑ ลงในช่องที่ตรงกับความเป็นจริงมากที่สุดเพื่อประโยชน์ในการพัฒนาศักยภาพของตัวคุณเอง อย่างไรก็ตาม การตอบคำถามเหล่านี้จะช่วยให้เรามีความเข้าใจและความรู้เกี่ยวกับพฤติกรรมเหล่านี้ และเป็นวิธีที่ดีที่สุดในการช่วยเหลือทุกคน โปรดตอบใช่ ถ้าคุณได้กระทำโดยเจตนาที่จะทำร้ายตัวคุณเอง **<u>อย่าตอบว่าใช่</u>**ถ้าคุณทำอะไรแบบไม่ตั้งใจโดยบังเอิญ (เช่น คุณสะดุดล้ม และศีรษะของคุณกระแทกเพราะเป็นอุบัติเหตุ โดยที่คุณไม่ได้ตั้งใจจะให้สะดุดล้ม) และโปรดมั่นใจได้ว่าคำตอบของคุณเป็นความลับอย่างแน่นอน

โดยในช่วง 6 เดือนที่ผ่านมา คุณเคยตั้งใจทำสิ่งเหล่านี้หรือไม่.. ถ้าเคย ทำมาแล้วกี่ครั้ง... (ขอให้คุณ**วงกลมตัวเลข**จำนวนครั้งเพียงคำตอบเดียว)

ข้อ	ข้อความ	จำนวนครั้ง						
1	กรีดข้อมือ แขน หรือส่วนอื่นของร่างกาย	0	1	2	3	4	5	>5
2	ใช้บุหรี่ หรือไฟแช็ค หรือไม้ขีดจี้ตามร่างกายตัวเอง	0	1	2	3	4	5	>5
3	.....	0	1	2	3	4	5	>5
4	.....	0	1	2	3	4	5	>5
5	.....	0	1	2	3	4	5	>5
6	.....	0	1	2	3	4	5	>5
7	.....	0	1	2	3	4	5	>5
8	.....	0	1	2	3	4	5	>5
9	.....	0	1	2	3	4	5	>5
10	ทำร้ายตนเองด้วยวิธีใดวิธีหนึ่งข้างต้นจนส่งผลให้ต้องเข้ารับการรักษาตัวในโรงพยาบาลหรือรับบริการทางการแพทย์	0	1	2	3	4	5	>5

แบบวัดสัมพันธภาพในครอบครัว

<u>คำชี้แจ้ง</u>

1. แบบทดสอบฉบับนี้จัดทำขึ้นเพื่อวัดสัมพันธภาพในครอบครัวของนักเรียน ใคร่ขอความร่วมมือจากนักเรียนในการตอบแบบทดสอบตามความรู้สึกและพฤติกรรมของนักเรียนเอง

2. แบบทดสอบฉบับนี้ไม่มีข้อถูกหรือผิด เป็นเพียงความรู้สึกของนักเรียนเท่านั้น จึงขอให้นักเรียนตอบแบบทดสอบตามความเป็นจริงที่สุด

3. แบบทดสอบฉบับนี้ มีจำนวน 40 ข้อ ให้นักเรียนพิจารณาข้อความแต่ละข้อความว่าในช่วง 6 เดือนที่ผ่านมาตนเองรู้สึก หรือมีพฤติกรรมเช่นนั้นระดับใด แล้วทำเครื่องหมาย ✓ ลงในช่องระดับพฤติกรรมที่เกิดขึ้นกับนักเรียนที่กำหนดไว้

ข้อที่	ระดับพฤติกรรม			
	ไม่เคยเลย 1	นาน ๆ ครั้ง 2	บางครั้ง 3	บ่อย ๆ 4
1. ฉันและพ่อแม่มีเรื่องสนุกสนานมาพูดคุยกัน				
2. ฉันและพ่อแม่ร่วมรับรู้เรื่องราวของกันและกัน				
3. พ่อแม่มักแสดงความรำคาญเมื่อฉันเล่าเรื่องที่โรงเรียนให้คุณฟัง				
4. ฉันและพ่อแม่สอบถามทุกข์สุขกันและกัน				
5. ฉันและพ่อแม่รับรู้ความรู้สึกของกันและกันได้เมื่อฟังคำพูด				
6. ……				
……				
……..……..				
……				
……				
……				
……				
40. ฉันและพ่อแม่ ยอมรับว่าแต่ละคนต่างมีเหตุผลของตนเองในการกระทำสิ่งต่าง ๆ				

แบบสอบถามความผูกพันต่อโรงเรียน

<u>คำชี้แจ้ง</u>

ให้คุณอ่านข้อคำถามต่อไปนี้ แล้วสำรวจดูว่าในระยะ 6 เดือนที่ผ่านมา คุณมีความรู้สึก หรือมีพฤติกรรมเช่นนั้นระดับใด แล้วทำเครื่องหมาย ✓ ลงในช่องระดับความรู้สึกที่เกิดขึ้นกับคุณ โดย

ระดับของความรู้สึก

1 หมายถึง ไม่เห็นด้วย

2 หมายถึง ค่อนข้างไม่เห็นด้วย

3 หมายถึง ค่อนข้างเห็นด้วย

4 หมายถึง เห็นด้วย

ข้อ		ไม่เห็นด้วย 1	ค่อนข้างไม่เห็นด้วย 2	ค่อนข้างเห็นด้วย 3	เห็นด้วย 4
1	ฉันรู้สึกปลอดภัยเมื่ออยู่ที่โรงเรียนนี้				
2	เกือบทุกเช้าฉันเฝ้ารอที่จะไปโรงเรียน				
3	เพื่อน ๆ ที่โรงเรียนชอบฉัน				
4	กฎระเบียบในโรงเรียนของฉันส่วนใหญ่มีความยุติธรรม				
5	มีเพื่อนนักเรียนให้ห้องของฉันอย่างน้อย 1 คน ที่ฉันสามารถพูดคุยปรึกษาปัญหาของฉันได้				
6	.....				
.....	.....				
.....	.....				
.....	.....				
.....	.....				
.....	.....				
27	คุณครูของฉันให้ความช่วยเหลือเรื่องการเรียนเมื่อฉันต้องการ				

แบบสอบถามการรับรู้ระดับความเครียด

<u>คำแนะนำ:</u> ต่อไปนี้เป็นคำถามเกี่ยวกับความรู้สึก และความคิดของคุณในรอบ 6 เดือนที่ผ่านมา โปรดทำเครื่องหมาย ✓ ลงในช่องที่ตรงกับที่คุณคิด หรือรู้สึกแบบนั้น

ข้อคำถาม	ไม่เคยเลย (0)	แทบจะไม่มี (1)	มีบางครั้ง (2)	ค่อนข้างบ่อย (3)	บ่อยมาก (4)
1. บ่อยแค่ไหนที่คุณรู้สึก ไม่สบายใจเพราะมีสิ่งที่เกิดขึ้นอย่างไม่คาดคิด					
2. ……...					
3. ……...					
4. ……..……					
5. ……..……					
6. ……..……					
……..….					
……..…..					
……...					
10. บ่อยแค่ไหนที่คุณรู้สึกว่าปัญหาต่าง ๆ ทับถมมากขึ้นจนคุณไม่สามารถแก้ไขได้หมด					

แบบประเมินปัจจัยป้องกันด้านบุคคล

(The Resilience Factors Scale)

<u>คำชี้แจง</u> คำถามต่อไปนี้เป็นคำถามเกี่ยวกับความรู้สึก และความคิดในช่วง 6 เดือนที่ผ่านมา คุณจะถูกถามว่า บ่อยแค่ไหนที่คุณรู้สึกหรือคิดอย่างนั้น ให้คุณเลือกตอบโดยการคาดคะเนอย่างสมเหตุสมผลตามเกณฑ์ดังต่อไปนี้

4 = จริงอย่างยิ่ง หมายถึง ข้อความเกี่ยวกับคุณลักษณะดังกล่าว เป็นจริง และตรงกับตัวคุณมากที่สุด

3 = จริง หมายถึง ข้อความเกี่ยวกับคุณลักษณะดังกล่าว เป็นจริง และตรงกับตัวคุณค่อนข้างมาก

2 = ไม่จริง หมายถึง ข้อความเกี่ยวกับคุณลักษณะดังกล่าว ไม่จริง หรือตรงกับตัวคุณเพียงเล็กน้อย

1 = ไม่จริงอย่างยิ่ง หมายถึง ข้อความเกี่ยวกับคุณลักษณะดังกล่าว ไม่จริง และไม่ตรงกับตัวคุณเลย

ข้อความ	คะแนน			
	ไม่จริงอย่างยิ่ง 1	ไม่จริง 2	จริง 3	จริงอย่างยิ่ง 4
ฉันมี				
1. คนในครอบครัวของฉันอย่างน้อย 1 คนที่ฉันไว้วางใจและเขาเหล่านั้นรักฉันอย่างจริงใจ				
2. ……...				
3. ……...				
4. ……				
……..…				
9. ……..…				
ฉันเป็น				
10. ……				
11. คนที่รับผิดชอบต่อสิ่งที่ฉันทำและยอมรับผลที่ตามมา				
12. คนที่เชื่อมั่น มองโลกในแง่ดี และมีความหวังว่าสิ่งต่าง ๆ จะจบลงด้วยดี				
13. ……				
……..…				
17. ……				

ข้อความ	คะแนน			
	ไม่จริงอย่างยิ่ง 1	ไม่จริง 2	จริง 3	จริงอย่างยิ่ง 4
ฉันสามารถ				
18. ……				
19. นำเสนอความคิดเห็นและวิธีการทำสิ่งใหม่ ๆ และฉันยินดีที่จะเสี่ยงเพื่อทดสอบความคิดและวิธีการใหม่ ๆ เหล่านั้น				
20. จดจ่ออยู่กับงานที่ฉันรับผิดชอบจนกระทั่งงานนั้นสำเร็จ				
21. ……				
……				
25. ……				

แบบวัดการควบคุมตนเอง

ให้คุณอ่านข้อคำถามต่อไปนี้ แล้วสำรวจดูว่าในระยะ 6 เดือนที่ผ่านมา มีเหตุการณ์ในข้อใดเกิดขึ้นกับตัวคุณ โดยให้ประเมินว่าคุณมีความรู้สึกอย่างไรต่อเหตุการณ์นั้นแล้วทำเครื่องหมาย ✓ ให้ตรงช่องตามที่คุณประเมิน โดย

ระดับของการควบคุมตนเอง

1 หมายถึง ตรงกับความรู้สึกมากที่สุด
2 หมายถึง ตรงกับความรู้สึกมาก
3 หมายถึง ตรงกับความรู้สึกปานกลาง
4 หมายถึง ตรงกับความรู้สึกน้อย
5 หมายถึง ตรงกับความรู้สึกน้อยที่สุด

ข้อที่	คำถามในระยะ 6 เดือนที่ผ่านมา	ระดับของการควบคุมตนเอง				
		1	2	3	4	5
1.	คุณเลือกที่จะตอบโต้สิ่งที่มากระตุ้นหรือยั่วยุจิตใจคุณในทันทีโดยไม่มีการยั้งคิดอยู่เสมอ					
2.	คุณเป็นคนที่ขาดความมุ่งมั่น ความทุ่มเททั้งกาย และใจต่อสิ่งที่คุณปรารถนาเอาไว้อยู่เสมอ					
3.	คุณชอบทำในสิ่งที่ทำให้คุณมีความสุขเสียก่อนที่คุณจะคำนึงถึงผลเสียที่จะตามมาในภายหลัง					
4.	……					
….	……					
…..	……					
….	……					
…..	……					
…..	……					
23.	เมื่อคุณขัดแย้งกับผู้อื่นอย่างรุนแรง ก็ยากที่คุณจะควบคุมอารมณ์หรือระงับความโกรธนั้นได้					

APPENDIX D

The institutional review board and permission letter for data collection

THE INSTITUTIONAL REVIEW BOARD (IRB) FOR GRADUATE STUDIES
FACULTY OF NURSING, BURAPHA UNIVERSITY, THAILAND

Thesis Title Deliberate Self-harm among Thai Adolescent: An Empirical Test of a Causal Mod

Name Miss Arunothai Singtakaew
ID: 60810013
Doctor of Philosophy in Nursing Science (International Program)

Number of the IRB approval 04 – 05 – 2562

The Institutional Review Board (IRB) for graduate studies of Faculty of Nursing, Burapha University reviewed your submitted proposal. The contingencies have been addressed and the IRB **approves** the protocol. Work on this project may begin. This approval is for a period of one year from the date of this letter and will require continuation approval if the research project extends beyond **June 17th, 2020**.

If you make any changes to the protocol during the period of this approval, you must submit a revised protocol to the IRB committee for approval before implementing the changes.

Date of Approval June 17th, 2019

Chintana Wacharasin, R.N., Ph.D.

Chairperson of the IRB
Faculty of Nursing, Burapha University, THAILAND

Tel.: 66-038-102823
Fax: 66-038-393476
E-Mail: naruemit@buu.ac.th

สำเนา

ที่ อว ๘๑๐๖/๐๒๕๘

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๘ กรกฎาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อตรวจสอบคุณภาพเครื่องมือการวิจัย

เรียน ผู้อำนวยการโรงเรียนนวมินทราชูทิศ พายัพ

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลจากกลุ่มตัวอย่างคือ นักเรียนชั้นมัธยมศึกษาปีที่ ๔-๖ สายวิทยาศาสตร์และคณิตศาสตร์ จำนวน ๓๐ ราย โดยแบ่งเป็น ชั้นปีละ ๑๐ ราย ณ โรงเรียนนวมินทราชูทิศ พายัพ จังหวัดเชียงใหม่ ระหว่างวันที่ ๒๒ กรกฎาคม ถึงวันที่ ๑๒ สิงหาคม พ.ศ. ๒๕๖๒

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัย ๐๘-๘๒๖๖-๙๒๐๗

ที่ อว ๘๑๐๖/ ๐๔๖๐

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๗ สิงหาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน ผู้อำนวยการโรงเรียนเชียงใหม่คริสเตียน

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง " DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

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๑. นักเรียนชั้นมัธยมศึกษาปีที่ ๔ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๒. นักเรียนชั้นมัธยมศึกษาปีที่ ๕ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๓. นักเรียนชั้นมัธยมศึกษาปีที่ ๖ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัยโทร ๐๘-๘๒๖๖-๙๒๐๗

ที่ อว ๘๑๐๖/๐๒๔๖

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๘ กรกฎาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน ผู้อำนวยการโรงเรียนยุพราชวิทยาลัย

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง " DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลจากกลุ่มตัวอย่างคือ นักเรียนชั้นมัธยมศึกษาปีที่ ๔-๖ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา จำนวน ๑๘๐ ราย ณ โรงเรียนยุพราชวิทยาลัย จังหวัดเชียงใหม่ ระหว่างวันที่ ๑๓ สิงหาคม พ.ศ. ๒๕๖๒ ถึงวันที่ ๑๓ กุมภาพันธ์ พ.ศ. ๒๕๖๓ โดยกำหนดขอบเขตพื้นที่การเก็บรวบรวมข้อมูล ดังนี้

๑. นักเรียนชั้นมัธยมศึกษาปีที่ ๔ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

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จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

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โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัยโทร ๐๘-๘๒๖๖-๙๒๐๗

โรงเรียนนวมินทราชูทิศ พายัพ
เลขที่รับ 1692
วันที่ 23 ก.ค. 2562
เวลา 15.30 น.

ที่ อว ๘๑๐๖/๐๒๕๑

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๒๓ กรกฎาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อตรวจสอบคุณภาพเครื่องมือการวิจัย

เรียน ผู้อำนวยการโรงเรียนนวมินทราชูทิศ พายัพ

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรบรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง "DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

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จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

เสนอผู้อำนวยการโรงเรียน
☑ เพื่อโปรดทราบ ☐ เพื่อโปรดพิจารณา
☐ ควรแจ้งรองฯ ทุกฝ่าย
☑ ควรมอบฝ่าย บริหารวิชาการ
☐ แจ้ง.....
☑ ทราบ/ดำเนินการ
☐ พิจารณาส่งบุคลากร

(นายวีระ ศิริรัตน์)
ผู้อำนวยการโรงเรียนนวมินทราชูทิศ พายัพ
23/07/2562

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๗๓๔๓๖
ผู้วิจัย ๐๘-๔๒๗๓-๗๒๐๗

โรงเรียนเชียงใหม่คริสเตียน
ที่ ชค. ๘๙๖ / ๕
วันที่ ๒๐ ส.ค. 2562 พ.ศ.
ผู้รับ เวลา ๑๖.๐๐

ที่ อว ๘๑๐๖/ ๐๔๖๐

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๗ สิงหาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน ผู้อำนวยการโรงเรียนเชียงใหม่คริสเตียน

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง " DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

ในการนี้ คณะฯ จึงขอความอนุเคราะห์จากท่านอำนวยความสะดวกให้นิสิตเก็บรวบรวมข้อมูลจากกลุ่มตัวอย่างคือ นักเรียนชั้นมัธยมศึกษาปีที่ ๔-๖ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา จำนวน ๑๘๐ ราย ณ โรงเรียนเชียงใหม่คริสเตียน จังหวัดเชียงใหม่ ระหว่างวันที่ ๑๙ สิงหาคม พ.ศ. ๒๕๖๒ ถึงวันที่ ๑๓ กุมภาพันธ์ พ.ศ. ๒๕๖๓ โดยกำหนดขอบเขตพื้นที่การเก็บรวบรวมข้อมูล ดังนี้

๑. นักเรียนชั้นมัธยมศึกษาปีที่ ๔ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๒. นักเรียนชั้นมัธยมศึกษาปีที่ ๕ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๓. นักเรียนชั้นมัธยมศึกษาปีที่ ๖ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
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๒๑ ส.ค. ๒๕๖๒

ที่ อว ๘๑๐๖/๐๒๕๖

มหาวิทยาลัยบูรพา คณะพยาบาลศาสตร์
๑๖๙ ถนนลงหาดบางแสน ตำบลแสนสุข
อำเภอเมือง จังหวัดชลบุรี ๒๐๑๓๑

๑๘ กรกฎาคม ๒๕๖๒

เรื่อง ขอความอนุเคราะห์ให้นิสิตเก็บรวบรวมข้อมูลเพื่อดำเนินการวิจัย

เรียน ผู้อำนวยการโรงเรียนยุพราชวิทยาลัย

สิ่งที่ส่งมาด้วย ๑. ผลการพิจารณาจริยธรรมการวิจัย
๒. เครื่องมือที่ใช้ในการวิจัย

ด้วย นางสาวอรุโณทัย สิงห์ตาแก้ว รหัสประจำตัว ๖๐๘๑๐๐๑๓ นิสิตหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (หลักสูตรนานาชาติ) คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา ได้รับอนุมัติเค้าโครงดุษฎีนิพนธ์ เรื่อง " DELIBERATE SELF-HARM AMONG THAI ADOLESCENTS: AN EMPIRICAL TEST OF A CAUSAL MODEL" โดยมี รองศาสตราจารย์ ดร.นุจรี ไชยมงคล เป็นประธานกรรมการควบคุมดุษฎีนิพนธ์

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๑. นักเรียนชั้นมัธยมศึกษาปีที่ ๔ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๒. นักเรียนชั้นมัธยมศึกษาปีที่ ๕ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

๓. นักเรียนชั้นมัธยมศึกษาปีที่ ๖ สายวิทยาศาสตร์และคณิตศาสตร์ สายศิลป์-คำนวณ และสายศิลป์-ภาษา อย่างละ ๒๐ ราย

จึงเรียนมาเพื่อโปรดพิจารณาให้ความอนุเคราะห์ด้วย จะเป็นพระคุณยิ่ง

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์ ดร.พรชัย จูลเมตต์)
คณบดีคณะพยาบาลศาสตร์ ปฏิบัติการแทน
ผู้ปฏิบัติหน้าที่อธิการบดีมหาวิทยาลัยบูรพา

เสนอ ผู้อำนวยการ
- เพื่อโปรด ☐ ทราบ ☑ พิจารณา
คณะพยาบาลศาสตร์ ม.บูรพา
ขอความอนุเคราะห์ให้นิสิต
เก็บรวบรวมข้อมูลเพื่อการวิจัย
เห็นควรมอบฝ่าย/ แนะแนว
☑ นำเรียนผู้อำนวยการ ☐ อำนวยการ
☑ จัดการศึกษา ☐ บริหารทั่วไป
☐ กิจการนักเรียน ☐ นโยบายและแผน

งานบริการการศึกษา (บัณฑิตศึกษา)
โทรศัพท์ (๐๓๘) ๑๐๒๘๓๖, ๑๐๒๘๐๘
โทรสาร (๐๓๘) ๓๙๓๔๗๖
ผู้วิจัยโทร ๐๘-๔๒๖๖-๙๒๐๗

○ ทราบ ○ ลงนามแล้ว
○ อนุมัติ ☑ ดำเนินการตามเสนอ
☑ อนุญาต ○ ชะลอไว้ก่อน

ลงชื่อ.................................
(นายบุญเสริญ สุริยา)
ผู้อำนวยการโรงเรียนยุพราชวิทยาลัย

APPENDIX E

Participant’s information sheet and consent form

เอกสารชี้แจงผู้เข้าร่วมการวิจัย

(สำหรับผู้ปกครอง)

การวิจัยเรื่อง การจงใจทำร้ายตนเองในวัยรุ่นไทย : แบบจำลองเชิงสาเหตุ

รหัสจริยธรรมการวิจัย 04-05-2562

ชื่อผู้วิจัย นางสาวอรุโณทัย สิงห์ตาแก้ว

การวิจัยครั้งนี้ทำขึ้นเพื่อทดสอบรูปแบบเชิงสาเหตุของการจงใจทำร้ายตนเองในวัยรุ่นไทย

นักเรียนในปกครองของท่านได้รับเชิญให้เข้าร่วมการวิจัยครั้งนี้ เนื่องจากนักเรียนในปกครองของท่านเป็นกลุ่มตัวอย่างที่มีอายุน้อยกว่า 19 ปี หรือ 19 ปีบริบูรณ์ ซึ่งกำลังศึกษาอยู่ในระดับชั้นมัธยมศึกษาปีที่ 4-6 ในโรงเรียนเอกชน หรือรัฐบาลขนาดใหญ่ที่มีนักเรียนมากกว่า 2,500 คน โดยที่นักเรียนในปกครองของท่านไม่เคยได้รับการรักษา หรือถูกวินิจฉัยเกี่ยวกับปัญหาทางด้านสุขภาพจิตมาก่อนซึ่งระยะเวลาที่ใช้เก็บข้อมูลในการทำวิจัยครั้งนี้อยู่ระหว่างเดือนกรกฎาคม ถึง ธันวาคม 2562

เมื่อนักเรียนในปกครองท่านเข้าร่วมการวิจัยแล้ว สิ่งที่จะต้องปฏิบัติคือ ตอบแบบสอบถามตามความเป็นจริงด้วยตัวของท่านเอง แบบสอบถาม 7 ชุด คือ 1) ข้อมูลส่วนบุคคล 2) แบบสอบถามการจงใจทำร้ายตนเองสำหรับวัยรุ่น 3) แบบสอบถามสัมพันธภาพในครอบครัว 4) แบบสอบถามความผูกพันต่อโรงเรียน 5) แบบสอบถามการรับรู้ระดับความเครียด 6) แบบสอบถามแบบประเมินปัจจัยป้องกันด้านบุคคล 7) แบบสอบถามวัดการควบคุมตนเอง ซึ่งจะใช้เวลาทั้งสิ้นประมาณ 30-45 นาที

ประโยชน์ของการวิจัยครั้งนี้อาจจะไม่ได้เป็นประโยชน์กับนักเรียนในปกครองของท่านโดยตรง แต่ผลการวิจัยจะเป็นข้อมูลพื้นฐานในการพัฒนาแนวทางการป้องกันการจงใจทำร้ายตนเองในวัยรุ่นไทย และเพื่อส่งเสริมให้เกิดการดูแลแบบประคับประคองที่เป็นองค์รวมต่อไป

การเข้าร่วมการวิจัยของนักเรียนในปกครองของท่านครั้งนี้เป็นไปด้วยความสมัครใจ นักเรียนในปกครองของท่านมีสิทธิการเข้าร่วมโครงการวิจัยหรือถอนตัวออกจากโครงการวิจัยได้ตลอดเวลาโดยไม่มีมีผลกระทบใด ๆ ทั้งสิ้น และไม่ต้องแจ้งให้ผู้วิจัยทราบล่วงหน้า ผู้วิจัยจะเก็บรักษาข้อมูลของนักเรียนในปกครองของท่านโดยใช้รหัสตัวเลขแทนการระบุชื่อ ชั้น และสิ่งใด ๆ ที่อาจอ้างอิงหรือทราบได้ว่าข้อมูลนี้เป็นของนักเรียนในปกครองของท่าน ข้อมูลที่เป็นกระดาษ

แบบสอบถามจะถูกเก็บอย่างมิดชิด และปลอดภัยในตู้เก็บเอกสารและล็อคกุญแจตลอดเวลา สำหรับข้อมูลที่เก็บในคอมพิวเตอร์ของผู้วิจัยจะถูกใส่รหัสผ่าน ข้อมูลที่กล่าวมาทั้งหมดจะมีเพียงผู้วิจัยและอาจารย์ที่ปรึกษาเท่านั้นที่สามารถเข้าถึงข้อมูลได้ ผู้วิจัยจะรายงานผลการวิจัย และการเผยแพร่ผลการวิจัยในภาพรวม โดยไม่ระบุข้อมูลส่วนบุคคลของนักเรียนในปกครองของท่าน ดังนั้นผู้อ่านงานวิจัยจะทราบเฉพาะผลการวิจัยเท่านั้น สุดท้ายหลังจากผลการวิจัยได้รับการตีพิมพ์เผยแพร่ในวารสารเรียบร้อยแล้ว ข้อมูลทั้งหมดจะถูกทำลาย

หากท่านมีปัญหาหรือข้อสงสัยประการใด สามารถสอบถามได้โดยตรงจากผู้วิจัยในวันทำการรวบรวมข้อมูล หรือสามารถติดต่อสอบถามเกี่ยวกับการวิจัยครั้งนี้ได้ตลอดเวลาที่ นางสาวอรุโณทัย สิงห์ตาแก้ว หมายเลขโทรศัพท์ 088-266-9207 หรือที่ รองศาสตราจารย์ ดร.นุจรี ไชยมงคล อาจารย์ที่ปรึกษาหลัก หมายเลขโทรศัพท์ 038-102841

นางสาวอรุโณทัย สิงห์ตาแก้ว
ผู้วิจัย

หากท่านได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านจะสามารถแจ้งให้ประธานคณะกรรมการพิจารณาจริยธรรมฯ ทราบได้ที่ เลขานุการคณะกรรมการจริยธรรมฯ ฝ่ายวิจัย คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา โทร. 038-102823

เอกสารชี้แจงผู้เข้าร่วมการวิจัย

(สำหรับนักเรียนอายุ 12-19 ปี)

การวิจัยเรื่อง การจงใจทำร้ายตนเองในวัยรุ่นไทย : แบบจำลองเชิงสาเหตุ

รหัสจริยธรรมการวิจัย 04-05-2562

ชื่อผู้วิจัย นางสาวอรุโณทัย สิงห์ตาแก้ว

การวิจัยครั้งนี้ทำขึ้นเพื่อทดสอบรูปแบบเชิงสาเหตุของการจงใจทำร้ายตนเองในวัยรุ่นไทย ท่านได้รับเชิญให้เข้าร่วมการวิจัยครั้งนี้เนื่องจากท่านเป็นผู้ที่มีอายุ 19 ปีบริบูรณ์หรือน้อยกว่า และกำลังศึกษาอยู่ในระดับชั้นมัธยมศึกษาปีที่ 4-6 ในโรงเรียนเอกชน หรือรัฐบาลขนาดใหญ่ที่มีนักเรียนมากกว่า 2,500 คน โดยท่านไม่เคยได้รับการรักษา หรือถูกวินิจฉัยเกี่ยวกับปัญหาทางด้านสุขภาพจิตมาก่อนซึ่งระยะเวลาที่ใช้เก็บข้อมูลในการทำวิจัยครั้งนี้อยู่ระหว่างเดือนกรกฎาคม ถึง ธันวาคม 2562

เมื่อท่านเข้าร่วมการวิจัยแล้ว สิ่งที่ท่านจะต้องปฏิบัติคือ ตอบแบบสอบถามตามความเป็นจริงด้วยตัวของท่านเอง แบบสอบถาม 7 ชุด คือ 1) ข้อมูลส่วนบุคคล 2) แบบสอบถามการจงใจทำร้ายตนเองสำหรับวัยรุ่น 3) แบบสอบถามสัมพันธภาพในครอบครัว 4) แบบสอบถามความผูกพันต่อโรงเรียน 5) แบบสอบถามความแบบสอบถามการรับรู้ระดับความเครียด 6) แบบสอบถามแบบประเมินปัจจัยป้องกันด้านบุคคล 7) แบบสอบถามวัดการควบคุมตนเอง ซึ่งจะใช้เวลาทั้งสิ้นประมาณ 30-45 นาที

ประโยชน์ของการวิจัยครั้งนี้อาจจะไม่ได้เป็นประโยชน์กับท่านโดยตรง แต่ผลการวิจัยจะเป็นข้อมูลพื้นฐานในการพัฒนาแนวทางการป้องกันการจงใจทำร้ายตนเองในวัยรุ่นไทย และเพื่อส่งเสริมให้เกิดการดูแลแบบประคับประคองที่เป็นองค์รวมต่อไป

การเข้าร่วมการวิจัยของท่านครั้งนี้เป็นไปด้วยความสมัครใจ ท่านมีสิทธิการเข้าร่วมโครงการวิจัยหรือถอนตัวออกจากโครงการวิจัยได้ตลอดเวลาโดยไม่มีมีผลกระทบใด ๆ ทั้งสิ้น และไม่ต้องแจ้งให้ผู้วิจัยทราบล่วงหน้า ผู้วิจัยจะเก็บรักษาข้อมูลของท่านโดยใช้รหัสตัวเลขแทนการระบุชื่อ ชั้น และสิ่งใด ๆ ที่อาจอ้างอิงหรือทราบได้ว่าข้อมูลนี้เป็นของท่าน ข้อมูลของท่านที่เป็นกระดาษแบบสอบถามจะถูกเก็บอย่างมิดชิด และปลอดภัยในตู้เก็บเอกสารและล็อคกุญแจ

ตลอดเวลา สำหรับข้อมูลที่เก็บในคอมพิวเตอร์ของผู้วิจัยจะถูกใส่รหัสผ่าน ข้อมูลที่กล่าวมาทั้งหมดจะมีเพียงผู้วิจัยและอาจารย์ที่ปรึกษาหลักเท่านั้นที่สามารถเข้าถึงข้อมูลได้ ผู้วิจัยจะรายงานผลการวิจัย และการเผยแพร่ผลการวิจัยในภาพรวม โดยไม่ระบุข้อมูลส่วนบุคคลของท่าน ดังนั้นผู้อ่านงานวิจัยจะทราบเฉพาะผลการวิจัยเท่านั้น สุดท้ายหลังจากผลการวิจัยได้รับการตีพิมพ์เผยแพร่ในวารสารเรียบร้อยแล้ว ข้อมูลทั้งหมดจะถูกทำลาย

หากท่านมีปัญหาหรือข้อสงสัยประการใด สามารถสอบถามได้โดยตรงจากผู้วิจัยในวันทำการรวบรวมข้อมูล หรือสามารถติดต่อสอบถามเกี่ยวกับการวิจัยครั้งนี้ได้ตลอดเวลาที่ นางสาวอรุโณทัย สิงห์ตาแก้ว หมายเลขโทรศัพท์ 088-266-9207 หรือที่ รองศาสตราจารย์ ดร.นุจรี ไชยมงคล อาจารย์ที่ปรึกษาหลัก หมายเลขโทรศัพท์ 038-102841

นางสาวอรุโณทัย สิงห์ตาแก้ว
ผู้วิจัย

หากท่านได้รับการปฏิบัติที่ไม่ตรงตามที่ได้ระบุไว้ในเอกสารชี้แจงนี้ ท่านจะสามารถแจ้งให้ประธานคณะกรรมการพิจารณาจริยธรรมฯ ทราบได้ที่ เลขานุการคณะกรรมการจริยธรรมฯ ฝ่ายวิจัย คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา โทร. 038-102823

ใบยินยอมเข้าร่วมการวิจัย

หัวข้อวิทยานิพนธ์ เรื่อง การจงใจทำร้ายตนเองในวัยรุ่นไทย : แบบจำลองเชิงสาเหตุ

วันให้คำยินยอม วันที่ .....เดือน.....พ.ศ. .....

ก่อนที่จะลงนามในใบยินยอมเข้าร่วมการวิจัยนี้ ข้าพเจ้าได้รับการอธิบายจากผู้วิจัยถึงวัตถุประสงค์ของการวิจัย วิธีการวิจัย ประโยชน์ที่จะเกิดขึ้นจากการวิจัยอย่างละเอียดและมีความเข้าใจดีแล้ว ข้าพเจ้ายินดีเข้าร่วมโครงการวิจัยนี้ด้วยความสมัครใจ และข้าพเจ้ามีสิทธิที่จะบอกเลิกการเข้าร่วมในโครงการวิจัยนี้เมื่อใดก็ได้ และการบอกเลิกการเข้าร่วมการวิจัยนี้ จะไม่มีผลกระทบใด ๆ ต่อข้าพเจ้า

ผู้วิจัยรับรองว่าจะตอบคำถามต่าง ๆ ที่ข้าพเจ้าสงสัยด้วยความเต็มใจ ไม่ปิดบังซ่อนเร้นจนข้าพเจ้าพอใจ ข้อมูลเฉพาะเกี่ยวกับตัวข้าพเจ้าจะถูกเก็บเป็นความลับและจะเปิดเผยในภาพรวมที่เป็นการสรุปผลการวิจัย

ข้าพเจ้าได้อ่านข้อความข้างต้นแล้ว และมีความเข้าใจดีทุกประการ และได้ลงนามในใบยินยอมนี้ด้วยความเต็มใจ

ลงนาม.....ผู้ยินยอม

(.....)

ลงนาม.....พยาน

(.....)

ลงนาม.....ผู้วิจัย

(.....)

ในกรณีที่ท่านยังไม่บรรลุนิติภาวะ จะต้องได้รับการยินยอมจากผู้ปกครองหรือผู้แทนโดยชอบธรรม (เกี่ยวข้องกับท่านโดยเป็น……..……)

ในกรณีที่ท่านยังไม่บรรลุนิติภาวะ จะต้องได้รับการยินยอมจากผู้ปกครองหรือผู้แทนโดยชอบธรรม (เกี่ยวข้องกับท่านโดยเป็น……..……)

ลงนาม……ผู้ปกครอง/ ผู้แทนโดยชอบธรรม

(……)

ลงนาม……พยาน

(……)

ลงนาม……ผู้วิจัย

(……)

APPENDIX F

Evaluation of assumptions

Table Appendix-1 Missing data

Variable	N	Mean	Std. Deviation	Missing	
				Count	Percent
SEL	360	70.60	8.524	0	.0
SCH	360	74.61	6.033	0	.0
STR	360	26.35	3.441	0	.0
RES	360	77.74	5.343	0	.0
FAM	360	113.82	8.776	0	.0
DSH	360	6.11	2.830	0	.0

SEL= Self-control, SCH= School connectedness, STR= Stress, RES= Resilience, FAM= Family relationship, DSH= Deliberate self-harm

Table Appendix-2 Standardized scores of continuous variables for testing univariate Outlier (N = 360)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
1	-1.244	0.728	-1.554	-1.636	-0.435	0.886
2	0.282	0.562	-1.554	-0.513	0.021	-0.189
3	-0.892	0.728	-1.554	-2.572	-0.435	1.423
4	-0.070	0.728	-1.554	-1.636	-0.891	0.617
5	-0.422	0.728	-0.973	-1.636	-0.093	0.886
6	0.047	0.562	-1.554	0.610	0.704	-0.457
7	0.868	0.894	-1.554	0.610	0.704	0.080
8	-0.774	0.562	-1.554	0.610	1.046	-0.189
9	1.455	0.894	0.480	0.610	0.590	-0.189
10	1.807	0.562	-2.426	0.610	0.135	0.617
11	0.634	0.728	-1.554	0.423	0.818	0.617
12	0.282	0.728	0.480	-0.513	-0.093	-1.532
13	1.103	0.728	0.480	0.423	1.502	0.617
14	0.751	0.728	-0.682	-0.513	-0.093	-1.532
15	0.164	0.728	0.480	0.423	0.818	-0.457
16	0.047	1.059	0.480	0.984	0.818	1.960
17	-0.774	0.728	0.190	-1.636	0.135	1.423
18	-0.422	1.059	0.771	0.423	0.818	-0.457

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
19	0.634	1.225	0.771	0.423	0.818	-0.726
20	-0.188	1.225	0.480	0.610	0.362	0.617
21	-0.305	1.059	1.934	0.423	0.818	-0.994
22	-0.422	0.065	-1.554	-0.513	0.021	-1.532
23	1.455	0.231	-0.101	-0.513	0.476	1.423
24	0.516	0.065	-1.845	-1.636	-0.549	0.886
25	-0.305	0.065	-2.135	-0.513	0.362	-0.994
26	-0.540	0.065	-0.392	-0.513	0.248	-0.994
27	-0.774	1.225	-0.682	0.984	0.818	2.228
28	-0.188	1.059	0.480	-0.326	0.932	1.691
29	1.337	1.391	-0.682	0.236	0.818	-0.189
30	1.572	0.231	0.480	0.236	1.160	-0.457
31	-0.657	-0.930	-0.392	-0.513	0.704	-0.994
32	-0.305	-0.930	-0.973	-1.823	0.476	0.617
33	0.282	-0.930	-0.101	-0.513	-0.093	-0.726
34	1.103	-0.930	0.190	-0.513	0.021	-0.726
35	0.868	1.059	0.480	0.423	0.932	-0.726
36	1.337	-0.930	-1.845	-2.572	-0.093	0.348
37	-0.657	0.065	-1.554	-1.823	-0.093	0.617
38	1.103	0.065	0.190	-0.513	0.135	-0.457
39	0.164	0.894	0.190	0.423	0.932	-0.457
40	1.103	1.391	-2.426	0.423	1.160	-0.726
41	0.399	0.065	0.190	-0.513	0.248	-0.726
42	0.516	1.391	1.643	-0.326	0.932	0.886
43	0.047	0.065	0.771	-1.823	-0.321	0.617
44	0.047	0.065	0.480	-2.385	-0.435	0.617
45	1.103	0.065	0.190	-2.385	0.248	0.080
46	2.393	1.391	-0.392	-0.139	0.362	-0.457
47	0.047	0.065	0.480	-2.385	0.248	0.080
48	1.455	0.894	-2.426	-0.326	0.818	0.617
49	1.337	1.723	-0.682	-0.326	0.818	1.423
50	0.634	1.888	-0.101	-0.139	0.476	1.423
51	0.047	0.065	0.771	-0.326	-0.093	-0.726

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
52	1.220	0.065	-0.973	-0.326	-0.663	-1.532
53	1.455	1.723	0.480	0.048	0.704	-1.263
54	-0.657	1.391	-0.101	0.048	1.160	-1.263
55	1.807	1.391	1.352	0.048	0.362	-1.263
56	0.399	0.065	0.771	-0.326	0.248	-0.726
57	1.337	-0.432	-0.392	-0.326	-0.093	-1.532
58	-0.774	1.391	-0.392	0.984	0.362	1.960
59	0.868	0.065	-0.392	-0.326	-0.207	-1.532
60	0.516	0.065	1.352	-0.326	0.135	-1.532
61	0.047	0.065	0.480	-2.198	-0.093	-0.457
62	0.399	0.065	0.190	-2.198	-0.093	0.348
63	0.634	0.231	1.643	-2.198	-0.207	-0.189
64	-0.422	-0.432	1.934	-2.946	-0.663	-0.189
65	1.337	2.054	1.352	-0.139	0.704	1.154
66	2.159	1.888	0.480	-0.326	0.704	0.617
67	1.807	1.225	1.643	-0.326	0.704	1.423
68	0.634	0.231	1.643	-2.198	-0.207	-0.189
69	0.516	0.065	0.771	-0.326	-0.321	-1.263
70	-0.422	0.065	-2.717	0.423	-0.207	0.617
71	-0.422	0.065	1.062	0.423	-0.207	0.080
72	-0.657	0.065	-0.101	0.610	-0.321	1.154
73	0.399	0.065	0.190	-0.326	-0.777	-2.337
74	-0.892	0.065	1.643	0.423	-0.207	0.617
75	-0.540	0.065	0.771	0.236	-0.777	0.348
76	0.634	-0.432	0.190	-0.326	0.135	-1.532
77	0.751	1.391	-0.392	-0.326	0.590	0.348
78	2.159	1.391	-1.264	-0.326	0.932	0.348
79	-1.009	1.391	-1.845	0.984	0.135	1.691
80	1.924	1.391	1.352	-0.326	0.932	0.080
81	1.572	1.391	0.190	-0.326	1.274	0.617
82	1.807	1.391	-0.101	-0.139	1.274	-0.189
83	-1.244	-1.427	-0.101	-0.139	0.590	-0.189
84	1.103	-1.593	0.771	-0.139	1.160	-0.726

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
85	1.455	-1.427	1.352	-0.139	0.590	0.348
86	-0.188	-0.930	0.771	-0.139	0.818	0.348
87	1.572	2.054	0.771	-0.139	0.704	0.080
88	0.516	1.723	-0.101	-0.139	0.021	-0.994
89	0.164	2.220	0.480	-0.326	0.818	-1.263
90	1.103	-0.598	-0.682	-0.326	0.704	-0.994
91	-1.126	0.562	-0.392	-2.011	-0.549	0.886
92	-1.361	-0.598	0.771	-0.326	0.362	-1.263
93	0.985	-0.432	0.771	-0.326	0.362	-0.994
94	1.103	-0.930	0.771	-0.326	0.818	-0.994
95	-0.774	0.728	0.480	0.236	-1.119	0.617
96	-0.892	-0.432	0.771	-0.139	0.818	0.617
97	-0.657	0.894	-2.717	0.236	0.021	0.080
98	-1.009	0.894	0.190	0.236	-0.549	0.348
99	-0.540	1.059	1.352	0.236	0.021	0.080
100	-0.540	-2.256	-0.682	0.236	0.248	-0.994
101	0.868	-0.101	0.771	-0.139	0.590	0.886
102	0.634	-1.593	-0.682	-0.326	-0.321	-1.532
103	0.985	-0.101	-0.682	-0.326	0.590	-0.994
104	-0.070	-0.764	0.480	-0.139	0.476	-1.532
105	-0.774	0.728	-0.101	-0.139	0.135	0.348
106	0.399	-1.427	-1.554	-0.326	-0.435	-0.994
107	1.924	0.894	0.771	-0.139	0.362	-0.457
108	0.047	0.894	-0.973	-0.139	0.021	0.617
109	2.041	-0.598	2.515	-0.139	0.590	0.617
110	0.047	-2.421	-0.101	0.236	-0.663	-0.994
111	-0.305	0.728	0.480	-0.139	0.248	-0.457
112	-1.595	0.396	-0.682	-0.139	-0.093	0.080
113	1.572	-1.427	-0.682	-0.326	-0.435	-0.994
114	-0.774	-0.764	0.190	0.236	-0.777	-0.994
115	1.807	0.894	0.190	0.048	0.590	0.080
116	1.337	-0.101	-0.973	0.048	0.362	0.080
117	-0.305	0.396	0.190	0.048	0.362	0.348

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
118	-1.478	0.231	-0.973	-0.139	0.248	0.080
119	1.337	0.231	0.771	2.669	0.704	-0.189
120	-0.305	-1.095	-0.682	0.236	-0.663	-0.189
121	1.924	1.225	-0.682	2.482	0.362	-0.189
122	-0.540	-1.095	-0.682	-1.449	-0.663	0.617
123	1.924	0.894	0.480	2.294	-0.207	-0.994
124	-0.774	-1.095	-0.682	-0.513	-1.005	-1.800
125	-1.478	0.065	-1.845	-0.139	0.362	0.348
126	-0.305	-0.930	-0.973	-0.513	-0.891	-1.263
127	0.282	-0.930	-0.682	0.236	-0.777	-0.457
128	-1.361	0.065	1.062	-0.139	0.818	0.886
129	0.282	-0.598	0.480	-0.513	-0.207	-1.532
130	-0.422	-0.764	0.480	-0.513	-0.777	-1.263
131	-1.595	0.065	-0.101	-0.139	-0.435	0.348
132	0.751	-0.764	0.190	-0.513	-0.321	-1.532
133	1.103	0.894	0.190	-0.139	0.135	0.886
134	0.868	0.065	-0.101	-0.326	0.362	0.886
135	1.455	0.231	-0.682	-0.326	0.818	-0.457
136	-0.070	1.391	0.480	-0.326	0.021	0.348
137	1.103	1.059	1.062	-0.326	0.476	0.886
138	-0.305	1.391	1.062	-1.075	0.021	-0.189
139	1.924	1.391	1.062	2.294	0.135	-0.994
140	1.689	1.059	0.771	2.294	-0.321	-1.263
141	1.924	1.723	0.771	2.294	0.135	-1.532
142	0.516	-0.101	1.352	0.048	-0.891	-0.457
143	0.164	-0.764	-1.264	0.236	-0.663	-0.994
144	0.164	-0.764	0.480	0.236	-0.549	-0.189
145	-0.305	-0.764	-0.973	0.236	-0.663	-0.726
146	-0.305	-0.598	-0.682	-0.513	-0.435	-2.069
147	-0.188	-0.764	0.190	-0.326	-0.321	-2.069
148	0.634	-0.764	0.480	-0.326	-0.777	-1.800
149	-1.244	-0.764	0.480	-0.326	-0.777	-1.800
150	1.689	1.723	0.190	2.294	0.021	-1.800

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
151	1.103	1.391	-0.101	2.294	0.021	-1.800
152	0.516	-0.764	-0.101	0.236	-0.549	-0.457
153	1.220	1.059	-0.682	2.294	-0.321	-1.263
154	0.516	1.723	0.480	2.294	-0.321	-1.800
155	0.164	-0.432	-1.264	0.236	-1.005	-0.457
156	1.103	1.557	-1.264	2.294	-0.093	-0.457
157	-0.070	-0.764	0.480	0.236	-0.549	-0.726
158	-2.065	1.557	0.771	-1.075	0.476	0.080
159	0.164	1.557	0.480	2.294	-0.093	-0.457
160	0.634	-0.267	0.480	-1.262	-1.347	0.886
161	-0.188	-0.764	0.190	0.236	-1.005	-0.994
162	1.103	2.386	0.480	2.294	-0.549	-0.994
163	0.164	-0.432	-0.682	2.294	-0.777	-1.532
164	0.985	-0.930	-0.973	2.294	-0.777	-1.532
165	0.868	-0.764	1.352	0.236	-1.005	-1.263
166	-0.305	-0.764	-0.392	0.236	-1.005	-2.606
167	0.047	-0.764	0.190	0.048	-1.005	-2.606
168	0.751	-0.764	-1.264	2.107	0.021	-1.263
169	0.399	0.396	-0.682	2.107	0.476	0.348
170	0.868	-0.598	-0.682	-0.326	-0.207	-1.800
171	-0.188	0.065	-0.101	2.107	0.248	0.348
172	0.164	0.894	1.352	2.107	-0.093	0.080
173	0.634	-0.101	1.352	2.107	-0.321	0.617
174	0.516	0.396	1.352	0.984	0.362	1.154
175	-0.188	-0.432	0.771	0.048	-0.891	-0.457
176	0.047	-0.432	0.771	-0.326	-0.891	-0.726
177	0.634	0.396	-1.264	2.107	-0.435	-0.457
178	-2.182	0.728	-0.101	0.984	0.818	0.886
179	-0.422	-0.764	0.480	-0.326	-0.663	-0.189
180	0.868	-0.764	-0.682	0.048	-1.347	-0.189
181	-0.305	2.220	-0.392	-0.139	-0.435	0.617
182	0.868	2.386	-0.392	-0.139	-0.207	1.423
183	0.868	-0.764	-0.973	-0.326	-1.119	0.348

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
184	0.164	-0.267	0.771	-0.139	0.135	1.423
185	0.282	-0.432	-0.682	-0.326	-0.549	0.348
186	1.337	0.562	-1.554	1.171	0.476	0.886
187	-0.892	1.557	-1.554	0.610	-0.663	1.423
188	-0.774	1.557	-1.554	2.107	-0.549	-0.726
189	1.103	-0.101	-1.554	0.048	-1.347	-0.189
190	-2.065	1.557	-1.554	1.920	0.248	-1.263
191	-1.009	0.894	-1.554	1.920	0.248	-0.994
192	-1.126	2.386	-1.554	0.610	-0.435	1.423
193	1.924	-1.924	-1.554	2.107	-0.207	-1.263
194	1.572	0.396	-0.392	0.236	-1.461	-0.994
195	0.751	-1.924	0.480	2.107	0.476	-0.994
196	-0.774	0.396	-0.101	0.236	-1.005	-1.532
197	-1.244	0.065	-0.101	-0.326	-1.233	0.080
198	-0.070	0.065	-0.101	0.236	-1.005	-1.800
199	1.337	0.396	0.190	0.048	-1.461	-0.994
200	0.399	-1.924	-0.392	1.359	0.476	1.423
201	-2.182	-1.924	1.352	0.797	0.021	0.886
202	-0.070	-1.427	-0.101	1.171	0.704	-1.263
203	0.516	-0.930	1.934	1.359	-0.207	-0.994
204	0.047	-0.930	1.643	0.984	0.021	1.423
205	0.399	-0.930	-0.101	0.984	0.021	1.691
206	-0.422	0.396	-0.392	-0.139	-0.777	-1.800
207	0.164	0.562	-0.392	-0.139	-1.575	-1.532
208	-1.244	0.562	-0.101	-0.326	-1.461	-1.800
209	-1.244	-0.598	0.771	-0.326	-1.005	0.886
210	0.751	-0.930	0.480	1.359	-0.207	-0.994
211	0.751	0.396	0.480	-0.326	-1.119	-0.726
212	0.399	-0.101	-0.392	-0.513	-1.233	-0.189
213	-0.305	0.231	-0.682	-0.326	-0.777	0.617
214	-0.540	0.396	-0.682	-0.326	-1.119	0.617
215	0.985	-0.764	0.480	1.359	-0.093	-1.532
216	0.751	0.396	0.190	-0.326	-1.233	0.886

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
217	-0.188	-0.598	1.352	-0.326	-1.461	1.154
218	-0.540	-1.593	0.771	1.546	-0.435	-1.263
219	-1.595	-1.095	0.771	1.359	-0.663	0.348
220	-0.657	0.728	0.771	-0.700	-1.119	0.080
221	-1.126	0.231	-0.392	0.236	-1.233	0.348
222	0.399	0.562	1.643	-0.326	-1.689	0.617
223	-2.065	0.728	1.934	0.236	-1.347	0.080
224	0.516	0.728	1.352	0.236	-1.005	0.080
225	0.164	-1.427	0.480	1.359	-0.777	-0.189
226	0.282	-1.427	0.190	0.984	-0.207	1.691
227	0.868	0.231	0.190	0.236	-1.461	0.080
228	-1.361	-1.427	-0.973	1.359	-0.321	0.080
229	0.516	0.231	1.062	0.236	-1.461	1.423
230	-0.892	0.231	1.062	0.048	-1.575	1.423
231	-0.774	-1.427	-0.392	1.171	0.021	1.691
232	-0.540	-1.427	-1.845	1.546	-0.663	0.348
233	0.985	-1.427	-0.682	1.359	0.021	1.423
234	-0.188	0.231	0.480	0.048	-1.689	0.886
235	-1.244	-1.427	-0.392	1.546	1.046	0.080
236	1.689	-1.427	1.062	1.359	-0.891	1.154
237	-1.244	-1.427	1.352	-1.823	0.476	1.423
238	0.164	-1.427	1.643	-1.636	-0.321	0.348
239	-0.774	0.231	1.062	0.048	-1.689	0.886
240	-0.774	0.231	-0.101	0.048	-2.144	1.154
241	-1.244	0.231	-0.392	-1.075	-1.575	0.617
242	-0.540	0.728	0.771	0.048	-1.916	1.691
243	0.751	-0.267	0.771	-2.011	-0.435	1.423
244	0.047	-0.432	1.352	-1.823	0.362	1.691
245	-0.774	0.065	0.190	-1.075	-0.093	-0.457
246	-1.126	0.728	0.480	0.236	-2.144	0.886
247	-1.713	0.231	-0.973	0.236	-2.144	1.154
248	0.868	0.231	-0.101	-0.326	-1.689	0.348
249	-1.361	0.065	-0.973	-1.449	-0.321	0.617

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
250	-1.009	0.231	-0.973	0.236	-2.372	0.348
251	-0.422	0.231	-0.973	0.236	-2.144	1.423
252	-1.126	0.562	-0.973	0.236	-2.600	0.348
253	-1.126	0.562	0.190	0.236	-2.258	0.886
254	-0.540	0.728	1.643	-1.449	-0.093	0.886
255	-0.422	0.231	-0.392	0.236	-2.144	1.423
256	-0.540	0.562	-0.392	-1.075	0.021	0.080
257	0.868	0.728	1.643	-1.449	-0.321	1.423
258	0.634	0.396	0.190	-0.326	-2.372	0.080
259	-0.540	0.562	0.190	-1.262	-0.093	0.617
260	-1.126	0.562	-0.973	-1.075	-0.207	0.617
261	-0.422	0.231	-0.392	0.236	-2.144	1.423
262	-1.595	1.225	2.224	0.048	-2.600	1.691
263	-0.540	0.728	-0.973	-0.326	-0.663	-0.189
264	-0.892	0.562	-0.101	-1.075	-0.663	0.617
265	-0.070	0.728	-0.392	-0.326	-0.093	0.080
266	-0.540	0.728	0.190	0.048	-0.435	1.423
267	-0.657	1.557	0.190	0.048	-0.549	1.960
268	-0.422	0.728	-0.392	-0.326	-1.005	-0.457
269	-0.305	0.728	-0.682	-0.326	2.413	-0.726
270	-1.830	0.396	2.515	-0.700	0.135	-0.726
271	-0.070	1.557	0.480	0.048	2.641	2.228
272	-1.244	1.557	0.480	-0.326	2.299	0.080
273	-0.422	0.231	0.190	0.236	-2.144	1.423
274	-1.713	-2.256	1.643	-0.513	-0.435	-0.457
275	-0.774	-2.421	0.771	-0.513	-0.549	-0.994
276	-2.534	-1.924	0.480	-0.513	-0.663	-1.263
277	-0.188	1.391	1.062	-0.326	2.527	-0.189
278	-1.478	0.065	1.352	-0.326	2.299	0.080
279	-0.657	-1.095	-0.101	-0.888	-0.093	0.617
280	-1.126	-2.587	-1.845	0.048	2.641	1.691
281	-1.126	-2.421	-1.554	-0.326	2.413	-0.189
282	1.455	-1.427	-0.392	0.610	2.527	-0.726

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
283	-0.892	-1.593	1.643	0.048	2.072	1.691
284	-0.540	-1.095	1.643	0.048	1.844	1.691
285	-0.774	-0.930	-0.392	0.048	2.186	1.154
286	-0.188	-1.261	-0.101	0.048	2.072	1.154
287	-1.126	-1.261	1.934	0.048	1.958	1.423
288	-1.126	-1.427	-0.392	0.610	1.616	-0.726
289	-1.009	-1.758	0.480	-0.326	-0.663	-0.994
290	-0.422	-0.764	0.190	0.048	1.730	0.617
291	-0.892	-0.930	0.771	0.048	1.616	-0.457
292	-1.126	-1.427	0.771	-0.888	-0.321	0.886
293	-0.188	-1.427	-0.101	0.610	1.388	-0.726
294	-0.305	-2.090	-0.682	-0.326	-0.663	-0.994
295	-1.713	-0.764	-0.101	0.610	1.730	-0.726
296	0.047	-1.427	-0.973	0.610	1.844	-0.726
297	1.572	-1.427	0.190	0.048	1.274	0.080
298	0.751	-0.598	-0.101	-0.326	-0.321	1.691
299	-1.244	-1.261	0.771	-0.888	-0.093	1.154
300	-0.305	-1.593	1.643	-0.888	-1.005	0.617
301	-0.774	-0.764	-1.845	-0.888	0.021	1.154
302	-0.540	-1.427	0.480	-0.888	-1.119	1.154
303	-1.244	-1.095	0.480	-0.513	-0.777	-0.189
304	0.282	-1.593	-0.101	-0.326	-0.777	-0.457
305	0.282	-1.593	0.480	-0.326	-0.663	-0.457
306	0.164	-0.764	-1.264	-0.326	-0.435	-0.189
307	0.516	-1.095	-0.101	-0.326	-0.435	0.080
308	-0.774	-1.427	-0.682	0.048	0.476	0.080
309	-0.188	-0.432	0.190	0.236	0.704	0.080
310	1.455	-0.764	0.480	0.797	1.730	-0.726
311	0.751	-0.598	0.480	0.797	1.274	-0.457
312	-0.657	-0.598	0.771	0.610	1.502	-0.726
313	-0.540	-0.598	0.771	0.797	1.730	-0.457
314	-0.422	-0.598	-1.264	0.048	1.616	0.080
315	-0.657	-0.598	1.352	0.797	1.844	-0.726

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
316	-1.009	-0.598	-0.682	0.797	1.730	-0.189
317	0.751	0.562	-0.682	0.048	1.502	-0.189
318	0.399	-0.101	-0.682	0.048	1.274	-0.189
319	-0.540	-0.930	0.480	-0.326	-1.005	-0.726
320	-1.009	-0.598	-0.392	0.797	1.274	-0.726
321	-0.774	0.562	-0.392	0.797	1.502	-0.726
322	-0.070	-0.432	-0.101	-0.326	-1.575	-0.726
323	-0.305	-0.432	-0.973	-0.888	-0.321	1.423
324	0.047	-0.432	-2.717	-0.888	-0.093	0.886
325	-0.657	0.562	0.771	0.048	1.046	-0.457
326	0.047	-0.764	-1.845	0.048	1.844	-0.457
327	-1.713	-0.267	-2.426	-0.326	-0.891	0.617
328	-0.070	-0.101	0.480	0.797	1.616	-0.726
329	-1.126	0.065	0.480	-0.139	-0.663	0.617
330	0.282	-1.427	1.352	-0.326	-0.549	1.423
331	-2.065	-0.267	1.352	-1.075	-0.549	0.348
332	-1.830	-0.432	-0.101	0.797	1.160	-0.189
333	-0.657	0.065	-0.101	-1.075	-0.207	0.617
334	-0.422	-0.267	0.480	-1.075	-0.321	-0.189
335	-0.892	0.231	-1.554	0.048	1.502	-0.457
336	0.751	-0.101	-1.264	0.797	1.160	0.348
337	-0.774	-0.267	0.190	0.048	-0.321	0.886
338	-0.657	-0.267	-0.392	0.048	-0.321	1.154
339	-0.188	0.065	-0.392	0.048	1.160	-0.726
340	-0.188	0.231	0.190	0.048	1.046	-1.800
341	-0.540	-0.930	-0.392	-0.888	-0.207	1.154
342	-1.478	-0.432	0.190	-2.759	-0.321	1.154
343	-0.657	0.396	-0.392	0.048	1.730	0.617
344	-2.182	-0.930	-0.392	-2.572	-0.549	1.154
345	-0.892	0.065	-0.392	0.048	0.704	-0.457
346	-0.188	0.728	-0.973	-0.700	1.274	0.886
347	-0.070	0.065	0.771	0.236	1.502	-0.726
348	1.807	0.065	-1.264	0.797	0.704	1.154

Table Appendix-2 (continued)

ID	ZSELF	ZSCH	ZSTRES	ZSRES	ZFAM	ZDSH
349	-1.478	-0.930	0.190	-2.572	-1.233	1.154
350	1.689	0.894	-0.101	0.797	1.274	1.423
351	-0.305	0.396	-1.264	0.048	0.818	0.617
352	1.220	-0.101	1.352	0.797	0.248	0.886
353	-1.947	-0.930	1.352	-2.572	-1.233	0.886
354	-0.305	0.396	0.480	0.048	0.818	0.617
355	-0.657	0.396	0.480	0.048	1.730	0.617
356	0.985	-0.267	0.771	0.610	0.704	0.348
357	2.745	0.894	1.062	0.610	0.362	0.080
358	0.164	0.728	1.352	0.610	0.248	-0.457
359	-1.126	0.065	-0.682	-0.888	-1.347	0.617
360	1.572	1.059	-2.717	0.423	0.818	0.617

Table Appendix-3 Test of multivariate outliers by using mahalanobis distance (N = 360)

ID	MAH	P_MAH	ID	MAH	P_MAH	ID	MAH	P_MAH
1	5.95854	0.43	26	12.20321	0.06	51	3.38705	0.76
2	3.05851	0.80	27	6.41520	0.38	52	3.38705	0.76
3	5.08892	0.53	28	11.61662	0.07	53	4.06492	0.67
4	12.48816	0.05	29	0.99175	0.99	54	3.62811	0.73
5	8.16772	0.23	30	8.24087	0.22	55	3.62811	0.73
6	7.26992	0.30	31	12.80848	0.05	56	4.91544	0.55
7	7.58137	0.27	32	8.66577	0.19	57	3.32937	0.77
8	5.13584	0.53	33	2.88649	0.82	58	6.66960	0.35
9	3.16049	0.79	34	1.29367	0.97	59	6.60609	0.36
10	9.17335	0.16	35	3.14590	0.79	60	9.54852	0.14
11	4.03824	0.67	36	5.66836	0.46	61	0.92280	0.99
12	1.61630	0.95	37	8.51138	0.20	62	5.41221	0.49
13	6.72939	0.35	38	4.23832	0.64	63	2.07420	0.91
14	5.12179	0.53	39	5.27179	0.51	64	1.33663	0.97
15	7.43577	0.28	40	8.13147	0.23	65	4.51514	0.61

Table Appendix-3 (continued)

ID	MAH	P_MAH	ID	MAH	P_MAH	ID	MAH	P_MAH
16	5.18113	0.52	41	2.97249	0.81	66	7.39911	0.29
17	2.75775	0.84	42	7.48451	0.28	67	7.34653	0.29
18	7.31853	0.29	43	4.09421	0.66	68	2.07420	0.91
19	10.63077	0.10	44	10.61161	0.10	69	6.88862	0.33
20	7.26296	0.30	45	4.42277	0.62	70	2.35615	0.88
21	4.45001	0.62	46	6.57567	0.36	71	2.39541	0.88
22	2.00283	0.92	47	9.82991	0.13	72	1.40476	0.97
23	2.68183	0.85	48	6.33929	0.39	73	1.18999	0.98
24	3.30939	0.77	49	9.62916	0.14	74	3.77126	0.71
25	4.72923	0.58	50	2.00242	0.92	75	3.77126	0.71
76	2.73394	0.84	114	5.61685	0.47	152	6.28063	0.39
77	9.24143	0.16	115	2.80649	0.83	153	3.86495	0.69
78	6.01282	0.42	116	10.38639	0.11	154	7.97964	0.24
79	6.41520	0.38	117	7.51348	0.28	155	1.77304	0.94
80	5.42912	0.49	118	5.04568	0.54	156	12.65205	0.05
81	1.51030	0.96	119	2.93401	0.82	157	4.37328	0.63
82	6.89635	0.33	120	12.07981	0.06	158	2.91997	0.82
83	6.28276	0.39	121	9.31710	0.16	159	10.33996	0.11
84	8.73755	0.19	122	5.95651	0.43	160	5.21373	0.52
85	5.20084	0.52	123	8.15480	0.23	161	4.64513	0.59
86	8.91080	0.18	124	4.42850	0.62	162	4.16253	0.65
87	3.75195	0.71	125	1.62227	0.95	163	3.53320	0.74
88	3.75195	0.71	126	3.08048	0.80	164	3.53320	0.74
89	5.43652	0.49	127	5.92451	0.43	165	9.29501	0.16
90	1.36015	0.97	128	4.42766	0.62	166	7.23879	0.30
91	5.21373	0.52	129	2.93401	0.82	167	12.49255	0.05
92	8.37756	0.21	130	3.35682	0.76	168	2.09608	0.91
93	3.91074	0.69	131	5.85983	0.44	169	2.49438	0.87
94	2.88649	0.82	132	3.35682	0.76	170	6.72613	0.35
95	6.06073	0.42	133	2.72186	0.84	171	11.40368	0.08
96	8.56034	0.20	134	5.46539	0.49	172	2.95204	0.81
97	1.97484	0.92	135	2.56897	0.86	173	5.26701	0.51
98	3.18607	0.79	136	3.39819	0.76	174	2.03562	0.92

Table Appendix-3 (continued)

ID	MAH	P_MAH	ID	MAH	P_MAH	ID	MAH	P_MAH
99	3.35648	0.76	137	3.39819	0.76	175	3.07610	0.80
100	3.35648	0.76	138	4.17554	0.65	176	8.82104	0.18
101	6.28164	0.39	139	5.68974	0.46	177	6.23447	0.40
102	5.26838	0.51	140	0.98895	0.99	178	2.36890	0.88
103	2.87652	0.82	141	5.09055	0.53	179	2.41414	0.88
104	3.14590	0.79	142	3.22011	0.78	180	1.73870	0.94
105	2.90484	0.82	143	8.08234	0.23	181	6.03050	0.42
106	2.87668	0.82	144	3.34402	0.76	182	9.72986	0.14
107	2.33951	0.89	145	3.34402	0.76	183	11.20371	0.08
108	1.63899	0.95	146	12.58196	0.05	184	3.05222	0.80
109	2.88602	0.82	147	3.86735	0.69	185	11.78132	0.07
110	12.65114	0.05	148	3.86735	0.69	186	6.48023	0.37
111	4.42945	0.62	149	5.72174	0.46	187	2.52317	0.87
112	8.30199	0.22	150	4.83329	0.57	188	2.97249	0.81
113	0.94607	0.99	151	3.86495	0.69	189	5.41890	0.49
190	2.91839	0.82	228	1.41843	0.96	266	1.86920	0.93
191	5.92251	0.43	229	6.13809	0.41	267	1.11589	0.98
192	5.14589	0.53	230	7.26611	0.30	268	2.94591	0.82
193	3.04750	0.80	231	4.21693	0.65	269	1.34939	0.97
194	7.08597	0.31	232	4.86556	0.56	270	8.15480	0.23
195	11.38086	0.08	233	4.93280	0.55	271	2.38089	0.88
196	5.88035	0.44	234	7.62109	0.27	272	2.95313	0.81
197	4.36049	0.63	235	5.87500	0.44	273	3.33445	0.77
198	1.16198	0.98	236	8.24493	0.22	274	9.00453	0.17
199	5.46705	0.49	237	6.54102	0.37	275	5.32345	0.50
200	5.05775	0.54	238	10.46332	0.11	276	8.24438	0.22
201	5.24328	0.51	239	2.48489	0.87	277	3.88551	0.69
202	7.14577	0.31	240	10.26333	0.11	278	1.26247	0.97
203	8.41866	0.21	241	7.64905	0.26	279	8.14742	0.23
204	6.12150	0.41	242	10.47872	0.11	280	1.44798	0.96
205	8.63496	0.20	243	5.81828	0.44	281	2.96276	0.81
206	3.67859	0.72	244	5.07444	0.53	282	2.94111	0.82
207	3.67859	0.72	245	3.04750	0.80	283	9.46822	0.15

Table Appendix-3 (continued)

ID	MAH	P_MAH	ID	MAH	P_MAH	ID	MAH	P_MAH
208	9.01118	0.17	246	1.48897	0.96	284	2.45163	0.87
209	10.27084	0.11	247	6.63439	0.36	285	7.96125	0.24
210	2.88602	0.82	248	7.44538	0.28	286	1.94825	0.92
211	4.06818	0.67	249	8.51460	0.20	287	6.84913	0.34
214	3.82428	0.70	252	5.27817	0.51	290	5.67564	0.46
215	6.51631	0.37	253	5.05807	0.54	291	6.29138	0.39
216	3.45555	0.75	254	11.73550	0.07	292	6.29841	0.39
217	3.45555	0.75	255	3.33445	0.77	293	1.52909	0.96
218	3.82738	0.70	256	8.83257	0.18	294	8.43078	0.21
219	3.82738	0.70	257	7.54702	0.27	295	3.30980	0.77
220	4.07880	0.67	258	7.60784	0.27	296	2.89503	0.82
221	11.80382	0.07	259	4.61965	0.59	297	4.06692	0.67
222	8.62209	0.20	260	3.74593	0.71	298	5.18113	0.52
223	3.58325	0.73	261	3.33445	0.77	299	6.52691	0.37
224	3.58325	0.73	262	10.73245	0.10	300	8.06929	0.23
225	9.70651	0.14	263	2.31204	0.89	301	4.15370	0.66
226	7.42162	0.28	264	3.74593	0.71	302	3.03740	0.80
227	2.77172	0.84	265	2.95332	0.81	303	6.23705	0.40
304	3.50057	0.74	323	5.41995	0.49	342	6.60341	0.36
305	3.50057	0.74	324	1.80033	0.94	343	5.59342	0.47
306	4.35734	0.63	325	7.38845	0.29	344	5.49488	0.48
307	1.22796	0.98	326	5.12416	0.53	345	1.61225	0.95
308	3.27779	0.77	327	4.90917	0.56	346	5.84306	0.44
309	4.22651	0.65	328	2.97249	0.81	347	1.26598	0.97
310	8.31520	0.22	329	0.67528	1.00	348	7.47028	0.28
311	2.95330	0.81	330	5.05319	0.54	349	4.90198	0.56
312	2.88649	0.82	331	5.23496	0.51	350	6.82289	0.34
313	3.14826	0.79	332	7.82063	0.25	351	10.30487	0.11
314	8.89962	0.18	333	3.57934	0.73	352	6.00568	0.42
315	3.75313	0.71	334	3.57934	0.73	353	6.91164	0.33
316	3.75313	0.71	335	3.16747	0.79	354	10.30487	0.11
317	9.12285	0.17	336	9.81296	0.13	355	5.59342	0.47
318	4.70406	0.58	337	6.59039	0.36	356	3.65942	0.72

Table Appendix-3 (continued)

ID	MAH	P_MAH	ID	MAH	P_MAH	ID	MAH	P_MAH
319	4.52717	0.61	338	7.54266	0.27	357	3.24157	0.78
320	2.97249	0.81	339	7.29219	0.29	358	2.67591	0.85
321	3.06742	0.80	340	9.18683	0.16	359	5.00250	0.54
322	3.91394	0.69	341	8.03713	0.24	360	4.69813	0.58

Table Appendix-4 Test of normality of the study variables (N = 360)

	SELF	SSCS	STRE	RES	FAM	DSH
Skewness	.140	-.073	-.268	.055	.129	-.095
Std. Error of Skewness	.129	.129	.129	.129	.129	.129
Kurtosis	-.499	-.437	-.105	1.062	.090	-.728
Std. Error of Kurtosis	.256	.256	.256	.256	.256	.256
ZSkewness	1.085	-.566	-2.778	.426	1	-.736
ZKurtosis	1.949	-1.707	-.410	4.148	.352	-2.844

SELF= Self-control, SSCS= School connectedness, STRE= Stress, RES= Resilience, FAM= Family relationship, DSH= Deliberate self-harm

Table Appendix-5 Correlation matrix of study variables (N = 360)

		OVERALL	SELF	SSCS	STRE	RES	FAM	DSH
OVERALL	Pearson Correlation	1						
SELF	Pearson Correlation	.678**	1					
SSCS	Pearson Correlation	.494**	.206**	1				
STRE	Pearson Correlation	-.399**	-.282**	-.370**	1			
RES	Pearson Correlation	.459**	.218**	.099	-.296**	1		
FAM	Pearson Correlation	.580**	.134*	.030	-.484**	.130*	1	
DSH	Pearson Correlation	.138**	-.179**	.114*	.100	-.208**	-.010	1

SELF= Self-control, SSCS= School connectedness, STRE= Stress, RES= Resilience, FAM= Family relationship, DSH= Deliberate self-harm

Table Appendix-6 Test for multicolinerity of the predictor variables (N = 360)

Variable	Collinearity Statistics	
	Tolerance	VIF
SELF	.253	2.151
SSCS	.284	1.927
STRE	.502	3.308
RES	.822	2.903
FAM	.363	1.989

SELF= Self-control, SSCS= School connectedness, STRE= Stress, RES= Resilience, FAM= Family relationship

Exploratory Factor Analysis of Self-control

Self-control questionnaire, developed according to self-control theory of Hirschi and Gottfredson (1983) self-control assessment. It had 23 five-rating scale questions, which were not categorized in respective aspect. Therefore, the exploratory factor analysis (EFA) of self-control was needed to explore the relationship of all observed variables. This indicated which items were interrelated and could be grouped into the same factor. According to the theory of Travis Hirschi, one of the most influential self-control theorists and author of 'Causes of Delinquency' (1969), self-control was divided into four parts: attachment, commitment, involvement, and belief.

Self-control was the only latent variable to be studied in terms of variables' relationship structure. The reduction of variables was needed before the execution of confirmatory factor analysis [CFA]. Then, prior to EFA, critical assumptions must be tested underlying the factor analysis including outliers, normality, and linearity. The test and discussion could be found under 'assumption test for the structural equation model (SEM)' topic. Besides, the other 2 critical assumptions (homogeneity, and factorability) were shown in Table F-7 KMO and Bartlett's Test.

Table Appendix-7 KMO and Bartlett's Test

O and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.770
Bartlett's Test of Sphericity	Approx. Chi-square	2443.479
	df	253
	Sig.	.000

The homogeneity of variance was commonly tested by means of Bartlett's test. The above table showed Sig. value = .000, which meant Sig <.05 indicating the proportionality of residual covariance matrix to an identity matrix.

Factorability is the test using measures of sampling adequacy [MSAs] in making decision on how suitable were the data for EFA. According to the above table, Bartlett's test with sig. <.05 was found indicating sufficient correlation among variables and MSA (or KMO > .50 was acceptable). Also, KMO = .770 was acceptable for both overall test and each individual variable. Therefore, the data were suitable for EFA.

After assumption test, EFA was conducted beginning with communalities values. The proportion of variance of each variable was explained by the extracted factors ranging from 0 to 1. The extraction method was based on principal component analysis (PCA), while the analysis showed that each communalities value was higher than .50. Therefore, all 23 variables or components retained with high communality (Table F-8).

Table Appendix-8 Communalities

	Initial	Extraction
SCQ3	1.000	.526
SCQ4	1.000	.569
SCQ5	1.000	.608
SCQ7	1.000	.562
SCQ8	1.000	.541
SCQ1	1.000	.651
SCQ9	1.000	.517
SCQ10	1.000	.767
SCQ11	1.000	.774
SCQ12	1.000	.715
SCQ13	1.000	.526
SCQ14	1.000	.562
SCQ15	1.000	.679
SCQ16	1.000	.619
SCQ2	1.000	.566
SCQ6	1.000	.695
SCQ17	1.000	.576
SCQ18	1.000	.629
SCQ19	1.000	.731
SCQ21	1.000	.574
SCQ20	1.000	.602
SCQ22	1.000	.713
SCQ23	1.000	.612

Extraction method: Principal component analysis.

The researcher decided to use Initial Eigenvalues and Scree plot. Firstly, the factor extraction method was selected using principal component analysis (PCA) to analyze all variances. Then, with a focus on total initial Eigenvalues > 1 (Kaiser's criterion) (Hair et al., 2010; Tabachnick & Fidell, 2007), only six components were

extracted by the statistical program. Although Scree plot showed cut-off where additional factors failed to add appreciably to the cumulative explanation of variance at the component number 5, only four components were selected by the researcher to be extracted as the cut-point. These 4 components were according to Travis Hirschi's theory. The cumulative percentage (with an aim to achieve 50-75% of variance of 1/4-1/3 of factors/ variables or items) was equivalent to 53.615, which was acceptable. Figure F-1 showed Scree plot of EFA.

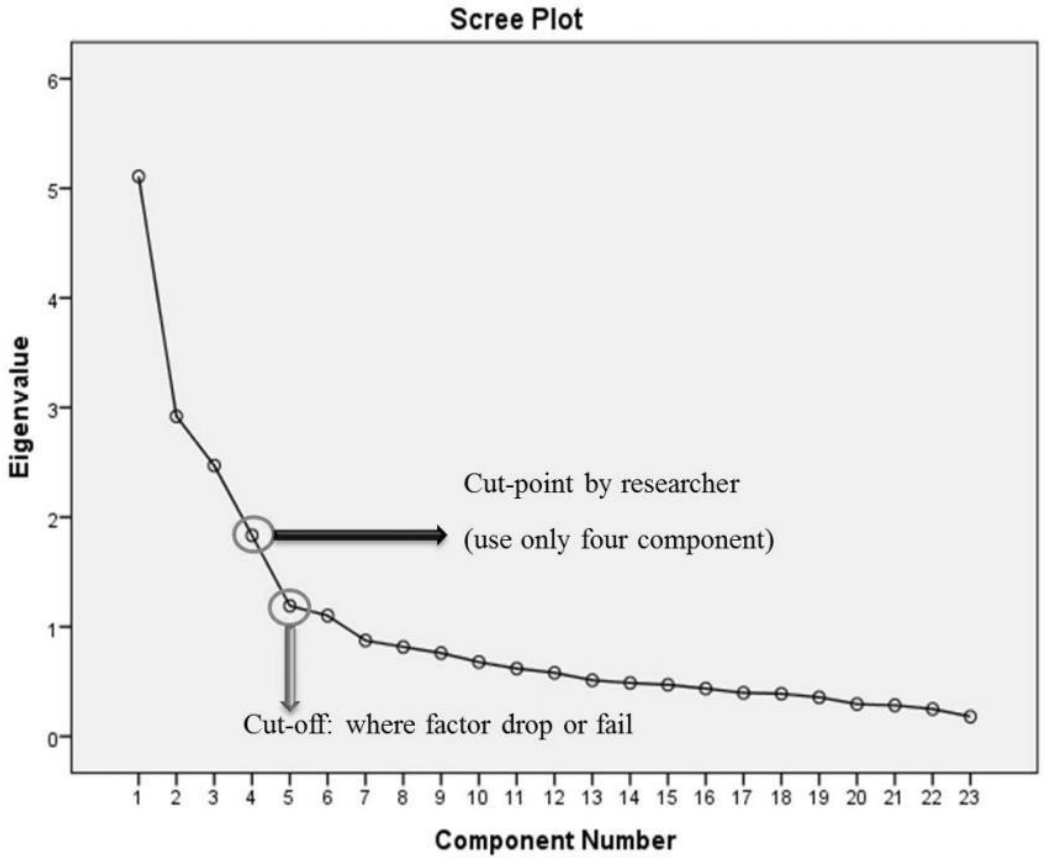

Figure Appendix-1 Scree plot of EFA

EFA identified the factor loading of > .40, which was considered significant (Field, 2009; Hair et al., 2010; Tabachnick & Fidell, 2007). The factor matrix (component matrix) showed the factor loadings prior to rotation factor matrix. They were difficult to interpret because many of them were considered significant and had cross-loadings. Therefore, the researcher needed to use rotation and suppress small

coefficients to help with interpretation in the next phase and to differentiate between unrotated factors structure and rotation of factors. Then, the author made the decision to use just only one variable from the rotation of factors so both unrotated factors structure and rotation of factors could not be used in the combined interpretation. As a result, using rotation and suppressing small coefficients helped with interpretation due to the considerable improvement of structure after rotation (Field, 2009; Hair et al., 2010; Tabachnick & Fidell, 2007). As some variables had cross-loading, the factor loadings showed that the factors were fairly desirable with at least (bare minimum) 2 variables per factors (or components). Therefore, the component number 5 and 6 were eliminated because both of them had just one variable so there were only 4 components (4 components remained). Stronger loadings indicated greater reliability and this was in accordance with self-control theory of Travis Hirschi.

In conclusion, EFA revealed that self-control had 4 observed variables and 23 items. In particular, Factor 1 (Commitment) comprised Item 1, 9, 10, 11, 12, 13, 14, 15 and 16; Factor 2 (Attachment) consisted of Item 2, 6, 17, 18, 19 and 21; Factor 3 (Belief) contained Item 3, 4, 5, 7 and 8; and Factor 4 (Involvement) included Item 20, 22, and 23. All details pertinent to self-control after being analyzed by means of EFA were shown in Table F-9 Total Variance Explained and Table F-10 Rotated Component Matrix[a].

Table Appendix-9 Total variance explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.108	22.209	22.209	5.108	22.209	22.209	4.208	18.296	18.296
2	2.920	12.694	34.903	2.920	12.694	34.903	3.274	14.235	32.530
3	2.471	10.742	45.645	2.471	10.742	45.645	2.535	11.021	43.551
4	1.833	7.971	53.615	1.833	7.971	53.615	2.315	10.064	53.615
5	1.191	5.179	58.794						
6	1.101	4.787	63.581						
7	.874	3.801	67.382						
8	.816	3.547	70.929						
9	.759	3.302	74.231						
10	.677	2.944	77.175						
11	.619	2.691	79.866						
12	.579	2.518	82.384						
13	.511	2.224	84.607						
14	.487	2.119	86.727						
15	.470	2.045	88.772						
16	.435	1.893	90.665						
17	.396	1.723	92.387						
18	.389	1.692	94.079						
19	.356	1.550	95.629						
20	.294	1.277	96.905						
21	.283	1.231	98.136						
22	.249	1.082	99.218						
23	.180	.782	100.000						

Extraction method: Principal component analysis.

Table Appendix-10 Rotated component matrix[a]

	Component			
	Commitment	Attachment	Belief	Involvement
SCQ11	.819			
SCQ10	.812			
SCQ12	.796			
SCQ9	.703			
SCQ14	.580			
SCQ13	.580			
SCQ16	.518			
SCQ1	.430			
SCQ18		.757		
SCQ19		.696		
SCQ17		.683		
SCQ21		.613		
SCQ2		.518		
SCQ6		.491		
SCQ15	.419			
SCQ7			.689	
SCQ4			.646	
SCQ8			.640	
SCQ5			.619	
SCQ3			.513	
SCQ22				.786
SCQ20				.768
SCQ23				.648

Extraction method: Principal component analysis.

Rotation method: Varimax with Kaiser Normalization.[a]

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