

SUICIDAL IDEATION AMONG KOREAN ADOLESCENTS

by

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“I can do everything through him who gives me strength” (Philippians 4:13).

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Abstract

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Purpose: A significantly high rate (18.3%) of Korean adolescents had suicidal ideations in 2012 (Korea Ministry of Health and Welfare, 2012) and suicidal ideation is more prevalent among adolescents than any other age group in Korea. Suicidal ideation is one of the most significant factors in predicting an increased risk for future suicide attempts. Considering the fact that suicidal ideation is the onset of the suicidal process triggering more serious suicidal behaviors including suicide intent, attempt, and completion, it is critical to examine the risk factors for suicidal ideation to prevent more risky suicidal behaviors among Korean adolescents. There have been a number of suicide studies conducted in Korea. However, the majority of studies did not use a theoretical framework. Even though some researchers built up the studies based on a theoretical background, the majority of theories were not comprehensive enough to explain the complex phenomenon of suicidality. The lack of an integrated theory results in less strong or less reliable outcomes, and may lead to ineffective interventions. Since suicide is a complex phenomenon, usually caused by the interaction of many risk factors rather than by a single, isolated factor, an integrative perspective is required to explain the diverse array of factors associated with suicidal behavior. Given the gaps in the previous

research, the current study was conducted to attain a better understanding of the contributing factors to suicidal ideation among Korean adolescents by testing a modified interpersonal theory of suicide for improved accuracy in the prediction of diverse risk factors for suicidal ideation.

Methods: The primary data collection method was written surveys. The study recruited 850 high school students in grades 10th and 11th in Pyeongtaek, Korea. Of these students, participants included 569 students (44.8% male and 55.2% female), who had received parental consent and who themselves agreed to participate. The Beck Scale for Suicidal Ideation was used to measure suicidal ideation as the outcome variable in this study. The Interpersonal Needs Questionnaire, the Beck Hopelessness Scale, the School Related Stress Scale, the Olweus Bully/Victim Questionnaire, and the Youth Risk Behavior Surveillance questions were used to measure thwarted belongingness and perceived burdensomeness, hopelessness, school related stress, bullying, and previous suicidal behaviors, respectively. The data were gathered data from November, 2013 to February, 2014. Data analyses included descriptive statistics and Structural Equation Modeling.

Results: The findings suggest that perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors have significant direct effects on suicidal ideation. Hopelessness fully mediated the relation between thwarted belongingness and suicidal ideation, and partially mediated between perceived burdensomeness, school related stress and suicidal ideation.

Implications: The findings of this study offer a detailed picture of some risk factors contributing to increased suicidal ideation among Korean adolescents. These findings suggest knowledge that may be used by practitioners working with the adolescents who are at risk for suicide or have the potential to commit suicide in order to be successful in reducing suicide rates among Korean adolescents. This study also suggests modification of the Suicide Prevention Law enacted in April 2012 in Korea to provide more specific directions for a multi-dimensional suicide prevention program based on the findings of the current study.

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Chapter 1

Introduction

Statement of the Problem

Suicide is a tragic loss of human potential with a dreadful ripple effect on surviving families, acquaintances, and the larger society. Every year, over 100,000 adolescents die all over the world from suicide (American Foundation for Suicide Prevention, 2009). With the increasing trend in suicide worldwide, suicide has also become a substantial public health issue in Korea. Korea has by far the highest suicide rate (33.3 per 100,000 in 2011) among the Organization for Economic Cooperation and Development (OECD) countries (OECD, 2013). Further, Korea had the highest increase in rate of suicide, in decades, compared to other countries around the world (OECD, 2013).

Suicide is the number one leading cause of death among the 10 to 30 year age group in Korea (Statistics Korea, 2010). The number of suicides among adolescents has continued to increase over the past decade from 696 cases in 2000 to 931 cases in 2011 (Suicide Statistics among Korean Adolescents, 2013). The suicide rate among all adolescents deaths aged 15 to 19 years has more than doubled from 13.6% in 2000 to 28.2% in 2010 (Korean Statistical Information Service [KOSIS], 2010). Statistics Korea, a representative national survey, reported that suicide was the second leading cause of death in the year 2000 in the 15 to 24 years age group (Statistics Korea, 2011a). However, suicide has currently outpaced all other causes and has been the leading cause of death since 2008 (Statistics Korea, 2010). More adolescents die from suicide than from

car accidents, cancer, heart disease, drowning accidents, and homicide (Statistics Korea, 2011a).

The 2012 Youth Health Behavior Online Survey conducted in Korea provided detailed statistics in relation to suicidal behaviors among adolescents. The survey revealed that nationwide, 18.3% of adolescents had seriously considered attempting suicide during the 12 months before the survey; 6.3% of adolescents had planned how they would attempt suicide; 4.1% of adolescents had attempted suicide one or more times during the 12 months before the survey; and 0.6% of adolescents had made a suicide attempt that resulted in an injury, overdose, or poisoning that had to be treated by a doctor or nurse (Korea Ministry of Health and Welfare [KMHW], 2012).

Death resulting from suicide, however, is only part of the problem. The situation of people who survive suicide attempts is grim. There are more people who survive suicide attempts than people who actually die (Joiner, 2005). Those who survive may have critical injuries such as brain damage, broken bones, or organ failure (Joiner 2005). They often experience social withdrawal (Cerel, Jordan, & Duberstein, 2008) and have mental health issues including depression (Centers for Disease Control and Prevention [CDC], 2010). Suicide can also be a devastating experience for those left behind. Family and friends of people who attempt suicide may experience shock, guilt, depression, and anger. According to the World Health Organization (WHO), each suicide has a serious impact on minimum of six other people. The suicide rate among bereaved family members is 4.2 times higher than suicide rate among people who do not have a family member committing suicide (WHO, 2000).

Suicides can also cause immense social and medical costs, with the economic burden falling upon the rest of the society (Center for Suicide Prevention, 2010; Jung, 2005; Lester, 1995). The medical costs and lost income caused by suicide also takes a toll on other family members. The number of people who committed suicide in 2004 resulted in \$14.31 billion in direct costs (the explicit expenses related to suicide and its aftermath) and \$3.07 trillion in indirect costs (the expenditures related to earnings lost or productivity losses caused by permanent disability or premature mortality), for a total of \$3.08 trillion (Jung, 2005). Given this scenario, it is obvious that adolescent suicide in Korea is a major public health issue that needs to be addressed. Efforts to address this social phenomenon have motivated a number of researchers to examine factors that may contribute to suicide among adolescents.

It is interesting that Korea has shown the highest suicide rate among Asian countries, even though these countries share a similar cultural background. A number of research projects have been conducted to clarify the reason why Koreans have the highest rate of suicide. Even though there has been no consistent consensus, a majority of studies stressed that Koreans have unique cultural characteristics that may work as triggers for suicide: extreme academic stress (Lee & Jang, 2011; Park & Chung, 2010), an education system that mainly focuses on the college entrance exam (Yoon, 2010), excessive competition (Shin, 2010; Yoon, 2010), bullying victimization (Hong, 2011; Park, Schepp, Jang, & Koo, 2006), and lack of social connectedness (Ha, Song, & Nam, 2010; Kim & You, 2012).

Focus of the Study

In general, suicide research focuses on four aspects of suicide: suicidal ideation, intent, attempt, and completion. The current study focuses only on suicidal ideation among Korean adolescents for two reasons. First, suicidal ideation is more prevalent among adolescents than any other age group in Korea (Korea Youth Counseling & Welfare Institute, 2007) and a significantly high rate (18.3%) of Korean adolescents had suicidal ideations in 2012 (KMHW, 2012). On the contrary, the rates of suicide intent and attempt are relatively low among high school students in Korea (KMHW, 2012). Thus, it is hard to test the suicide intent and attempt with the high school student samples unless data is gathered from clinical settings or by gathering a sizable number of participants from school settings. Second, suicidal ideation is one of the most significant factors in predicting an increased risk for future suicide attempts (Lewinsohn, Rohde, & Seeley, 1996; Nock & Banaji, 2007; Posner et al., 2011). Considering the fact that suicidal ideation is the onset of the suicidal process triggering more serious suicidal behaviors including suicide intent, attempt, and completion (Beck, Brown, Steer, Dahlsgaard, & Grisham, 1999; Brown, Beck, Steer, & Grisham, 2000; Kuo, Gallo, & Tien, 2001; Lewinsohn et al., 1996; Nock & Banaji, 2007; Posner et al., 2011), it is critical to examine the risk factors for suicidal ideation to prevent further suicide behaviors among Korean adolescents.

There have been a number of suicide research conducted in Korea. However, the majority of studies did not use a theoretical framework. Even though some built up the studies based on a theoretical background, the majority of theories were not

comprehensive enough to explain the complex phenomenon of suicidality. Those theories explain only part of the characteristics of suicidal behavior and fail to account for interaction between the diverse factors associated with suicide. The lack of integrated theory results in less strong or less reliable outcomes, leading to inconsistent implications or ineffective interventions. Since suicide is a complex phenomenon, usually caused by the interaction of many risk factors rather than by a single, isolated factor (Goo & Chung, 2012; Leenaars, 2008; Maris, Berman, & Maltzberger, 1992; Park, Lee, & Moon, 2011; Van Orden et al., 2010), an integrative perspective is required to explain the diverse array of factors associated with suicidal behavior.

In this regard, Joiner's (2005) interpersonal theory of suicide is particularly important to note due to its comprehensiveness in explaining the phenomenon of suicide. His interpersonal theory of suicide was developed based on the key points of mainstream suicide theories such as the theories of Durkheim, Shneidman, Beck, Baumeister, and Linehan (Joiner, 2005). The theory posits that an individual will commit lethal suicide attempts (i.e., self-injury with the intent to die) when the person simultaneously has the desire and capability to attempt suicide (Beck, Brown, Berchick, Stewart, & Steer, 1990; Joiner, 2005; Joiner, Van Orden, Witte, & Rudd, 2009; Shneidman, 1985; Van Orden et al., 2010). This theory stipulates the relationships among risk factors and suggests a causal pathway from suicidal ideation to engagement in serious suicidal behavior. However, the interpersonal theory of suicide has several limitations. First, the theory assumes that people commit suicide when they acquire the capability for suicide fostered by lowered fear of death and increased pain tolerance. Although the theory explains

capability as one of the main risk factors of suicide, it falls short in explaining the case of suicide that may happen without the process of acquiring capability. Second, the theory fails to include other significant risk factors, such as previous suicidal behaviors, substance use, school related stress including stress from GPA and stress from class environment, and bullying victimization that have been proven to be significant predictors of suicidal behaviors. More detailed information about Joiner's interpersonal theory of suicide is discussed in chapter 3.

Given these theoretical shortcomings, the goal of this research is to attain a better understanding of contributing factors for suicidal ideation among Korean adolescents by testing a modified interpersonal theory of suicide that fulfill the gaps of Joiner's theory. The results of this study can be used as an empirical framework to understand and help Korean adolescents who are at an increased risk for suicide. Also, the current study can be used as a preliminary study to compare risk factors for suicidal ideation to other race/ethnicity populations of Korean American, Caucasians, African American, or Hispanic adolescents who live in the US.

Definition of Key Terms

An ongoing task for researchers in the field of suicide involves refining definitions of key terms related to the constructs of suicide to improve accuracy of measurement and standardize the usage of terms across studies (Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007). In the current study, therefore, it is critical to clearly define the key terms related to suicide for precise and explicit examination.

Suicidal ideation. Suicidal ideation is defined as thoughts and desires to engage in behaviors to harm or kill oneself (O'Carroll et al., 1996). An individual who has suicidal ideation may seriously consider suicide (Thomas, Crawford, Meltzer, & Lewis, 2002).

Suicidal intent. Suicidal intent can be conceptualized as the level of suicidal desire that is most likely to translate into a suicide attempt. In this level, people may prepare and make a specific suicide plan (Joiner et al., 1997; Witte et al., 2006). Current suicidal intent is a critical component of suicide risk assessment (Brent, 2001; Jobes, 2006; Joiner, Walker, Rudd, & Jobes, 1999; Linehan, Comtois, & Murray, 2000; Reynolds, 1991; Shea, 1999; Simon, 2006) and is conceptualized as a significant component of an imminent, serious risk for suicide.

Suicide attempt. A self-inflicted destructive action with the explicit or inferred intent to die (O'Carroll et al., 1996). Suicide attempt includes nonlethal and lethal (or near lethal) suicide attempts.

Lethal (or near lethal) suicide attempt. An attempted suicide that results in a fatal outcome is a lethal suicide attempt. It is synonymous with death by suicide. A near lethal attempt is a type of nonlethal suicide attempt for which the individual who attempts

suicide, survives by chance (i.e., people, on occasion, survive jumps from the Golden Gate bridge).

Nonlethal suicide attempt. A suicide attempt with nonfatal consequences is a nonlethal suicide attempt. Nonlethal suicide attempts are remarkably more common than lethal attempts (WHO, 1998).

Suicidal desire. Suicide desire is the desire for suicide resulting from the simultaneous presence of two interpersonal constructs—thwarted belongingness and perceived burdensomeness.

Thwarted belongingness. Thwarted belongingness is social isolation (i.e., “I am alone.”), which results from an unmet need of belongingness (Baumeister & Leary, 1995). This feeling of isolation is one of the strongest and most reliable predictors of suicidal behaviors including suicidal ideation, attempts, and lethal suicidal attempts.

Perceived burdensomeness. The calculation that one’s death is worth more to others than one’s life. A sense of perceived burdensomeness is due to an unfulfilled need to contribute to the well-being of others (Joiner et al., 2002).

Capability for suicide. The competence to engage in suicidal behaviors that consists of both lowered fear of death and increased physical pain tolerance acquired through repeated exposure and habituation to physically painful and fear-inducing experiences.

Chapter 2

Literature Review

The current study is based on both theoretical frameworks and empirical studies. This chapter highlights major areas of the empirical research that support the theoretical explanations of contributing factors to suicide. Eight major areas of the suicide literature are addressed: (1) risk factors of suicide among Korean adolescents; (2) suicidal ideation; (3) substance use and suicide; (4) bullying victimization and suicide; (5) hopelessness and suicide; (6) previous suicidal behaviors and suicide; (7) school related stress and suicide, and finally (8) discussion of demographic variables and suicide. In addition, the significance of the study is discussed at the end of the chapter.

Risk Factors of Suicide among Korean Adolescents

Moon (2011) conducted a meta-analysis focusing on suicidal ideation and its influencing factors among Korean adolescents. The meta-analysis reviewed 91 articles published in academic journals and 107 masters' thesis and doctoral dissertation between the years of 2000 and 2010. Moon (2011) identified psychological, familial environment, school environment, and socio-cultural factors as the four sets of triggering factors related to adolescent suicidal ideation. The most influential factor was school environment followed by familial environment, socio-cultural, and psychological factors respectively (Moon, 2011) (see Table 1-1).

Table 1-1 Empirically demonstrated risk factors for suicide among Korean adolescents

(Moon, 2011)

| Factor | Variable | ES | MS | HS | MH-HS | ES-HS | Total | |
|----------------------|-------------------------------------|----|----|----|-------|-------|-------|---|
| Psychological factor | Depression | | 5 | 17 | 13 | 4 | 39 | |
| | Hopelessness | | 2 | 4 | 2 | 2 | 10 | |
| | Aggression | | 1 | 2 | 1 | 2 | 6 | |
| | Stress from interpersonal relations | | 2 | 3 | | 1 | 6 | |
| | Problem-solving method | | | | 2 | 2 | 1 | 5 |
| | Stress from oneself | | 1 | 3 | | | | 4 |
| | Stress from life | | | | 2 | 1 | 1 | 4 |
| | Cognitive errors | | 1 | 1 | 2 | | | 4 |
| | Impulsivity | | | | 1 | | 2 | 3 |
| | Irrational belief | | | | 3 | | | 3 |
| | Alienation | | | | 1 | 1 | | 2 |
| | Satisfaction of one's body | | | 1 | | 1 | 2 | |
| Family factor | Family abuse experience | | | 5 | 5 | 1 | 11 | |
| | Stress from family members | | 2 | 4 | 2 | 1 | 9 | |
| | Relations with parents | | | | 3 | 1 | 4 | |
| | Parenting style | | | | 2 | | 2 | |
| | Parent conflict | 1 | 1 | | | | 2 | |

Table 1-1 – *Continued*

| | | | | | | |
|----------------------------|-----------------------------------------|----|----|----|----|-----|
| School factor | Stress from study | 3 | 5 | 7 | 2 | 17 |
| | Relations with friends | 1 | 4 | 5 | 1 | 11 |
| | Stress from school life | 1 | 4 | 3 | | 8 |
| | Stress from relations with friends | 1 | 2 | 2 | 1 | 6 |
| | School violence | | 1 | 4 | | 5 |
| | Stress from relations with instructors | 1 | 1 | 1 | 1 | 4 |
| | Relations with instructors | | 1 | 2 | 1 | 4 |
| | Career decision | | 1 | | 1 | 2 |
| Social and cultural factor | Mass media problem | | 3 | 1 | | 4 |
| | Internal problem | | 2 | 1 | 1 | 4 |
| | Experience of previous suicide attempts | | 2 | 1 | 1 | 4 |
| | Stress from one's environments | 1 | 2 | | | 3 |
| | Psychological factor | 12 | 40 | 22 | 14 | 88 |
| | Family factor | 1 | 3 | 9 | 3 | 28 |
| | School factor | 7 | 19 | 24 | 7 | 57 |
| | Social and cultural factor | 1 | 9 | 3 | 2 | 15 |
| | Total | 1 | 23 | 77 | 61 | 188 |

Note. ES = elementary school student; MS = middle school student; HS = High school student.

The results of school environment factors indicated that stress from study and academic achievement, stress from relations with friends, and bullying victimization were the most significant risk factors. In the set of familial environment factor, the experience of familial abuse, followed by family stress, and relationship with parents were the most significant risk factors. The results of socio-cultural factors showed that experience of previous suicide attempts, mass media problem, and stress from one's environments were the significant triggers for suicidal ideation. The most influential triggering factors related to adolescent suicidal ideation among the set of psychological factor were hopelessness, depression, aggression, and stress of interpersonal relationship (Moon, 2011) (see Table 1-2).

Table 1-2 Empirically demonstrated risk and protective factors for suicide among Korean adolescents (Moon, 2011)

| Category | Risk factor |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Psychological factor | Depression, hopelessness, aggression, stress from interpersonal relations, problem-solving method, stress from oneself, stress from life, cognitive errors, impulsivity, irrational belief, alienation, satisfaction of one's body |
| Family factor | Family abuse experience, stress from family members, relations with parents, parenting style, parent conflict |

Table 1-2 – *Continued*

| | |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| School factor | Stress from study, relations with friends, stress from school life, stress from relations with friends, school violence, stress from relations with instructors, relations with instructors, career decision |
| Social and cultural factor | Mass media problem, internal problem, experience of previous suicide attempts, stress from one's environments |

Suicidal Ideation

Suicidal ideation was defined as thoughts or wishes of death (Lewinsohn et al., 1996). Suicidal ideation has been distinguished from suicide intent, as part of suicidal symptoms such as resolved plans or preparation for suicide (Joiner, Rudd, & Rajab, 1997; Witte et al., 2006), and also from suicide attempt, a self-inflicted destructive action with the explicit or inferred intent to die (O'Carroll et al., 1996).

Although the rate of completed suicides were generally higher among older adults (Statistics Korea, 2011a), suicidal ideation has become more prevalent among adolescents than older people (Evans, Hawton, Rodham, & Deeks, 2005; Kessler, Borges, & Walters, 1999; Korea Youth Counseling & Welfare Institute, 2007). The prevalence of adolescent suicidal ideation varied across studies because of the diverse sample characteristics and the definition of suicidal ideation adopted by different studies.

Overall, 18.3% of adolescents had suicidal ideations in 2012 (KMHW, 2012), of which females were more likely to have suicidal ideation compared to males (Becker,

Mayer, Nagenborg, El-Faddagh, & Schmidt, 2004; Judge & Billick, 2004; National Youth Policy Institute, 2011). According to the KMHWS (2012), results of a national school-based research revealed that the rates of adolescents who had seriously considered attempting suicide decreased from 22.6% in 2005 to 18.3% in 2011. While the decreased rate was an improvement in the right direction, it was still significantly high. It has become therefore, critical to monitor the prevalence of suicidal ideation because it has been shown to be the onset of the suicidal process triggering more serious suicidal behaviors (Beck et al., 1999; Brown et al., 2000; Kuo et al., 2001; Lewinsohn et al., 1996; Nock & Banaji, 2007; Posner et al., 2011).

Incongruities among researchers on the factors that ignite suicidal ideation pose another concern. Some researchers insisted that anxiety and depression were correlated to increased suicidal ideation (Choi et al., 2011; Sareen et al., 2005). Others asserted that social isolation and cognitions of self-hate were associated with suicidal ideation (Joiner et al., 2009; Van Orden, Witte, Cukrowicz, Braithwaite, Selby, & Joiner, 2010).

There has been an ongoing argument on the associations between suicidal ideation and suicide completion. While some studies posited that suicidal ideation was among the most salient risk factors for suicide completion (Beck et al., 1999; Brown et al., 2000; Posner et al., 2011), other studies either suggested no significant correlation between suicidal ideation and suicide completion (Kuo et al., 2001), or revealed an unclear association between them (Large & Nielsens, 2012). Although there was no agreement on the association between suicidal ideation and suicide completion, researchers generally agreed that suicidal ideation was one of the most significant factors

in predicting an increased risk for future suicide attempts (Lewinsohn et al., 1996; Nock & Banaji, 2007; Posner et al., 2011).

Substance Use and Suicide

Studies that reported a significant correlation between substance use and suicide among adolescents have become abundant (Caine, 1978; Conason, Oquendo, & Sher, 2005a, 2005b; McKenry, Tishler, & Kelly, 1983; Mehlenbeck, Spirito, Barnett, & Overholser, 2003). Suicidal behaviors were more likely to occur among people who used illegal drugs (Gould, Greenberg, Velting, & Shaffer, 2003; King, Schwab-Stone, & Flisher, 2001) abused alcohol (Bae, Ye, Chen, Rivers, & Singh, 2005; Chung, 2011; Shaffer & Pfeffer, 2001) or smoked cigarettes (Anteghini, Fonseca, Ireland, & Blum, 2001; Kim, Shim, Noh, Hwang, & Park, 2013).

The Substance Abuse and Mental Health Services Administration (SAMHSA, 2002) suggested that among adolescents aged 12 to 17 years who attempted suicide, approximately 20 to 30% were substance users, compared to 10% who were nonusers. This trend was similar in Korean adolescent population (Chung, 2011). Early onset of alcohol or substance use especially increased the risk for suicidal behaviors (Chung, 2011). Similarly, Buydens-Branchey and colleagues (1989) found that people who had started abusing alcohol in their adolescence were four times more likely to have attempted suicide than those who started abusing alcohol later in life. Other studies also found that early onset of heavy drinking (Chung, 2011; Hesselbrock, Hesselbrock, Syzmanski, & Weidenman, 1988) or frequent drinking (Fombonne, 1998; Nishimura,

Goebert, Mikler, & Caetano, 2005) correlated with increased risk for suicidal ideation and attempts as compared to moderate and nondrinkers.

The correlation between alcohol use/misuse and suicidal behaviors has been indicated in many studies that used different methods. Roy and colleagues (1990) reported consumption of a greater amount of alcohol during drinking episodes were associated with greater risk for suicide attempts. Hawton, Fagg, and McKeown (1989) reported that alcohol consumption was more likely to occur immediately before the suicide attempt. The majority of completed suicides involved firearms (29%), which was the method ranked first for suicide in the U.S. (Branas, Nance, Elliott, Richmond, & Schwab, 2004; Singh & Siahpush, 2002; Voaklander, Kelly, Pahal, Saar, & Dryden, 2005). Over one third of these firearm suicides occurred after alcohol consumption (Smith, Branas, & Miller, 1999), indicating a significant correlation between substance abuse and death by firearms (Branas, Richmond, Ten Have, & Wiebe, 2011; Drinking and Guns, 2013; Johnson, Cottler, Ben Abdallah, & O'Leary, 2012; Shaffer, 1988).

Bullying Victimization and Suicide

Several studies examining suicidal behaviors among adolescents included the risk factor of negative relationships with friends instigated by bullying victimization and peer violence (Cui, Cheng, Xu, Chen, & Wang, 2011; Hong, 2011; Undheim & Sund, 2013). Being bullied has been associated with low levels of psychological well-being and social adjustment and with high levels of adverse physical health symptoms and psychological distress (Olweus & Limber, 2010; Undheim & Sund, 2010). Adolescents who were victims of bullying were more likely to have suicidal ideation (Hinduja & Patchin, 2010;

Hong, 2011) and to attempt suicide, especially when there was the existence of comorbid psychopathology (Brunstein Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Brunstein Klomek, Sourander, & Gould, 2010). Roeger and colleagues (2010) posited that adolescents with a history of bullying victimization were nearly three times more likely to have suicidal ideation than those who did not have such an experience. Roeger et al. (2010) also found that there was a significant association between bullying victimization during adolescence and later suicidal ideation that persisted across the lifespan.

Both bullying and being bullied among children and adolescents were reported to be critical risk factors for depression, self-harm, and suicidal behaviors (Arseneault, Bowes, & Shakoor, 2010; Brunstein et al., 2010). Adolescents who experienced bullying, as either a victim or perpetrator, reported more psychiatric issues (Sourander et al., 2010), and more suicidal ideation and attempts than those who had not experienced such forms of peer violence (Hinduja & Patchin, 2010). Recent longitudinal studies among children and adolescents reported both perpetrators and victims of bullying were at increased risk for suicidal ideation and self-injurious behavior (Fisher et al., 2012; Kim, Leventhal, Koh, & Boyce, 2009; Winsper, Lereya, Zanarini, & Wolke, 2012).

Park, Schepp, Jang, and Koo (2006) affirmed that experience of bullying victimization was significantly associated with suicidal ideation among female students, but not among male students. Klomek et al. (2009) examined the association between childhood bullying victimization experiences at 8 years of age and suicidal behaviors including attempts and completions up to 25 years of age. Among male participants,

repeated bullying and victimization were associated with later suicide attempts and suicide completions, but this phenomenon disappeared when conduct and depressive symptoms were controlled. For female participants, repeated bullying victimization was associated with later suicide attempts and suicide completions, even after conduct and depression symptoms were controlled. Also, a Chinese study showed gender differences in suicidal ideation among bullied adolescents (Cui et al., 2011). In this study, male students who experienced being bullied were significantly more likely to report both suicidal ideation and suicide attempts than bullied female students. Based on the results of these comparison studies, gender differences appear to exist across race/ethnicity.

Hopelessness and Suicide

Hopelessness has been defined as generalized negative views or expectations of the future (Beck, Weissman, Lester, & Trexler, 1974). It has been reported as one of the most significant long-term risk factors for suicidal behaviors in clinical populations (Joiner, Brown, & Wingate, 2005). In a study of clinical decision making, psychiatrists regarded hopelessness as the greatest indicator of any single risk factor, even greater than depression or a previous suicide attempt (Truant, O'Reilly, & Donaldson, 1991). Current practice guidelines recommend that hopelessness should be measured when assessing clients' suicide risk and, if present, it should be addressed through a comprehensive treatment plan (American Psychiatric Association, 2003).

Specifically, hopelessness has been associated with suicidal ideation, verbally expressed suicidal intent, and past and future suicidal attempts among adolescents (Cole, 1989; Goldston et al., 2001; Mazza & Reynolds, 1998; Osman et al., 1998; Reinecke,

DuBois, & Schultz, 2001) and psychiatric inpatient samples (Kumar & Steer, 1995; Reinecke et al., 2001). These findings point to a central role for hopelessness in predicting suicidal behaviors.

A number of studies examining suicidal behaviors have reported that hopelessness and depression were associated, often as co-occurring constructs, but each may contribute to suicidal behavior in different ways (Huth-Bocks, Kerr, Ivey, Kramer, & King, 2007). Although most studies with adults indicated that hopelessness was a stronger risk factor than depression in predicting suicidal behaviors, findings with adolescents did not show such correlations. Several studies found depression among adolescents to more strongly predict suicidal ideations and suicide attempts as compared to hopelessness (Mazza & Reynolds, 1998; Spirito, Valeri, Boergers, & Danaldson, 2003). On the contrary, others have reported hopelessness to be a better predictor of suicidal behaviors beyond the effects of depression (Cole, 1989; Kumar & Steer, 1995; Minkoff, Bergman, & Beck, 1973; Steer, Kuman, & Beck, 1993; Wetzel, Margulies, Davis, & Karam, 1980). Given these conflicting findings, both constructs require further examination as predictors of adolescent suicidality.

Aside from its strong predictive relationship to suicidal behaviors, hopelessness also has been shown to mediate the associations between suicidal ideations and other risk factors including thwarted belongingness (Joiner, 2005; Rudd, 1990), perceived burdensomeness (Van Orden, Merrill, & Joiner, 2005; Van Orden et al., 2010), school related stress (Jang, 2010), bullying victimization (Bonanno & Hymel, 2010). These studies have contributed to the evolving knowledge base of suicide where hopelessness

may have been a mechanism through which other risk factors lead to suicidal ideation. In this regards, hopelessness could be a key mediator to explain suicidal ideation.

Previous Suicidal Behaviors and Suicide

Alvarez (1971) stated, "It is estimated that a person who has once been to the brink is perhaps three times more likely to go there again than someone who has not. Suicide is like diving off a high board: the first time is the worst" (p. 107). The risk factors related to repeated suicide attempts have been studied extensively. Most of the studies consistently indicated that suicide attempts may become a repeated pattern of behavior. Based on previous research, history of suicide attempt has become a main risk factor for completing suicide attempt (Henriques, Wenzel, Brown, & Beck, 2005; Inoue et al., 2008; Reid, 2009).

Beck claimed that previous suicidal behaviors sensitized suicidal ideation and behaviors such that previous attempters later became more accessible (Teasdale, 1988). The more accessible the modes became, the more easily the previous attempters were triggered (Joiner & Rudd, 2000). Also, Rudd, Joiner, and Rajab (1996) claimed that compared to those with suicidal ideation and those with one suicide attempt, multiple attempters experienced more intense suicidal symptoms, such as more medically damaging self-injury and eventual death by suicide. This phenomenon was the case in both self-reported and clinician-rated scales of suicidality, indicating confidence in the results was higher.

A number of previous studies have proved an association between previous and subsequent suicidal behaviors, even accounting for other key risk factors such as mental

disorders (Alavi, Sharifi, Ghanizadeh, & Dehbozorgi, 2013; Kim et al., 2010). Therefore, the correlation between previous and future suicidal behaviors cannot be fully explained with reference to aspects of mental disorders including hopelessness, impaired coping, and mental pain. Rather, there appears to be a fundamental and significant relation between past and future suicidal behaviors (Joiner, 2005).

School Related Stress and Suicide

Adolescents experienced extreme stress due to academics and social demands in school. This phenomenon has been especially prevalent in Korea. Korean adolescents have been under intense academic pressure because of the competitive college entrance examination. The nationwide college entrance examination is administered only once a year. Entering and graduating from a high-ranking university in Korea means a greater chance of obtaining a good job with high wages, a high social status, and a good spouse (Lee & Larson, 2000). Also, graduating from a tier-one university has been related to “saving-face” or in other words avoid bringing shame for the self and most importantly to one’s family. Koreans have been strongly influenced by Confucianism, and saving-face is one of the characteristics of Confucian culture. For these reasons, Korean adolescents and even their parents have been under a huge academic pressure achievement especially GPA.

Korean adolescents have also been stressed out because of class environment. In 2011, study results from the Shanghai Academy of Social Science showed that Korean high-school students spent as many as 14 to 18 hours a day studying at school or at private tutoring institutes (Asian Scientist, 2012). A very well-known proverb among

Korean 12th graders, “sleep four hours pass, sleep five hours fail,” refers to the number of hours of sleep allowable during the examination preparation (Lee & Larson, 2000). In addition, a lot of homework and exams have become other reasons that have also put Korean adolescents under a huge stress (Kong, 2011; Yoo & Min, 1998).

Previous studies have shown that the top reason for committing suicide (54%) was the pressure and anxiety related to academic performance including high academic expectations, academic workload, and academic competition among peers (Statistics Korea, 2011b). Previous studies also have found that school related stress directly and positively predicted the suicidal ideation among Korean adolescents (Lee & Jang, 2011; Park & Chung, 2010). Jang (2010) examined relationships between school related stress, hopelessness, and suicidal ideation among adolescents. The results indicated that hopelessness mediated the relationship between school related stress and suicidal ideation. The results proved that higher level of adolescents’ school related stress will cause higher level of hopelessness and it will finally increase suicidal ideation among adolescents.

Demographic Variables and Suicide

When looking at gender differences, male adolescents have had a higher rate of suicide completion than female adolescents (Joe, 2006; Park et al., 2014; Kim, Kim, Kawachi, & Cho, 2011; Shields, Hunsaker, & Hunsaker, 2006). Male adolescents also reported higher levels of suicide attempts than female adolescents (Juon, Nam, & Ensminger, 1994; Park et al., 2010). Although it has been widely accepted that male experience more suicide completion and/or suicide attempts, females have shown higher

rates of suicidal ideation (Bridge, Goldstein, & Brent, 2006; Park et al., 2010). Based on a nationwide survey conducted in Korea (Statistics Korea, 2012a), 72.2% of male adolescents “did not seriously consider suicide,” 24.6% “sometimes seriously considered suicide,” and 3.3 % “frequently thought about suicide”, compared to 57.9%, 36.4%, and 5.7% respectively among female adolescents. The results indicated that female adolescents reported higher rates of suicidal ideation than male adolescents.

According to another nationwide longitudinal survey, conducted in Korea since 2005 (Statistics Korea, 2012b), there has been no significant differences in suicidal ideation rates between middle school and high school adolescents. The average rate (from 2005 to 2012) of adolescents who seriously considered attempting suicide was 20.7% among middle school students and 20.5% among high school students. Although no significant differences in suicidal ideation appeared between middle and high school students, significant gender differences have been found. According to the study, the rate of suicidal ideation among female middle school students was 25.7%, compared to 16.3% among male middle school students. Also, female high school students reported higher suicidal ideation (24.7%) as compared to male high school students (16.8%). These results indicated that age between middle and high school may not have been a major factor but gender was a significant factor for suicidal ideation.

Significance of the Study

The main gap in the literature is the lack of comprehensive models that explain a complex phenomenon of adolescents’ suicidal ideation. Although some studies adopted theories to explain the relationship between risk factors and suicidal ideation, the theories

were not comprehensive enough to explain diverse risk factors of adolescent suicidal ideation. To fulfill the gaps in previous research, the current study examines risk factors for suicidal ideation among Korean adolescents by testing a modified interpersonal theory of suicide developed by Joiner (2005). Considering cultural differences to modify the interpersonal theory of suicide may make the model more applicable to other cultures, race, ethnicity or context. In the modified model, risk factors including school related stress, bullying victimization, previous suicidal behaviors, and substance use are added to attain a comprehensive understanding of complex suicidal ideation among Korean adolescents.

The current study is the first attempt to apply Joiner's theory to a Korean adolescent population. Even though Joiner developed the theory based on the results from multiple and diverse samples including young adults, undergraduates, and older adults, the majority of the samples were based on US populations (Joiner, 2005). This study could contribute to testing the generalizability of the theory by applying the theory to a Korean adolescent population who may have different risk factors for suicidal ideation.

The results of this study can be used as an empirical framework for social workers to understand and help adolescents who are at an increased risk for suicide. Also, the findings of the current study may be a valuable resource in developing comprehensive suicide prevention and intervention programs and establishing or revising related social policies for preventing adolescents' suicide. In addition, the current study can be used as a preliminary study to compare risk factors for suicidal ideation to other races/ethnicities

of people such as Korean American, Caucasian, African American, or Hispanic adolescents who live in the US.

Chapter 3

Theoretical Framework

Several theoretical frameworks have been developed to explain risk factors for suicide. However, the majority of them are only able to explain part of the characteristics of suicidal behaviors and fail to account for the interaction between the diverse factors associated with suicide. Although some theories propose a common risk factor of suicide, they fail to fully explain why relatively few die as a result of suicide. This fact may suggest that suicide is a complex process that cannot be explained by one or just a few risk factors. A compelling suicide theory needs to explain the process of suicide and the relative rarity of death by suicide.

In this regard, this chapter focuses on analyzing Joiner's interpersonal theory of suicide, an integrated theory of suicide based on key points of mainstream suicide theories such as the theories of Durkheim, Shneidman, Beck, Baumeister, and Linehan. Also, Joiner and his research team conducted a meta-analysis with hundreds of previous empirical research studies to find out the most frequently tested risk factors of suicide. Finally, Joiner (2005) found the common risk factors from reviews of previous theories and previous empirical research. He named them as thwarted belongingness, perceived burdensomeness, and hopelessness and they became the main axes of the interpersonal theory of suicide to explain suicide. Joiner also added the concept of acquired capability as another main key factor to predict suicide based on his empirical research with participants in clinical settings.

This chapter also discuss several limitations of Joiner's theory and, finally, a modified interpersonal theory of suicide is suggested to fulfill the limitations of Joiner's theory and promote a better understanding of the causes of suicidal ideation.

The Interpersonal Theory of Suicide

Joiner's (2005) interpersonal theory of suicide suggests that individuals commit suicide because they have both the desire to die and the capability to attempt suicide. The aim of the interpersonal theory is to explain the complex process of suicidal behaviors and to increase the understanding of the etiology of suicide. Within the framework of this theory, three constructs are essential to suicidal behaviors: two interpersonal constructs related to suicidal desire (1) thwarted belongingness and (2) perceived burdensomeness and another construct primarily related to capability—(3) acquired capability for suicide (Joiner, 2005; Van Orden et al., 2010). According to this theory, individuals who simultaneously have thwarted belongingness (i.e., "I am alone.") and perceived burdensomeness (i.e., "I am a burden.") show a passive desire for suicide (i.e., "I wish I were dead.") (See Figure 3-1). According to Joiner, thwarted belongingness refers to loneliness and absence of reciprocal care. Perceived burdensomeness is defined by misperceptions of being a burden on close people, including, but not limited to, family members.

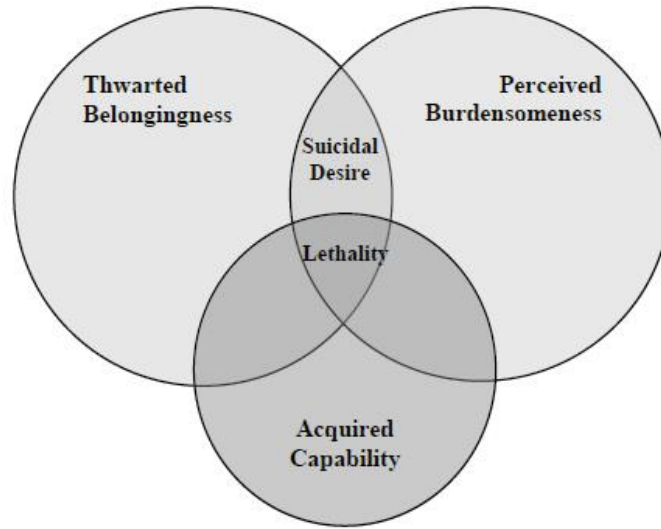


Figure 3-1 The Three Main Constructs of The Interpersonal Theory of Suicide

The previous studies on suicide reported that among those who have passive suicidal ideations, most will not have active suicidal ideations involving thoughts of killing themselves (Thomas et al., 2002). Consistent with this phenomenon, the theory assumes that in order for a passive suicidal ideation to intensify into an active desire for suicide, the thwarted need to belong should be accompanied by perceived burdensomeness, as well as hopelessness regarding these painful interpersonal states.

In the interpersonal theory of suicide, the most risky form of suicidal desire, which is lethal or near lethal suicide attempts, is caused by the simultaneous presence of two interpersonal constructs—thwarted belongingness and perceived burdensomeness—and the capability to engage in suicidal behavior—lowered fear of death and increased pain tolerance. The theory posits that lowered fear of death serves as the condition under which active suicidal desire transforms into suicidal intent. Also, elevated physical pain tolerance leads the individual with suicidal intent to the level of lethal or near lethal

suicide attempt. Van Orden et al. (2010) mentioned that the capability for suicide emerges through habituation and activation of opponent processes in response to frequent exposure to physical pains and fear-inducing experiences (See Figure 3-2).

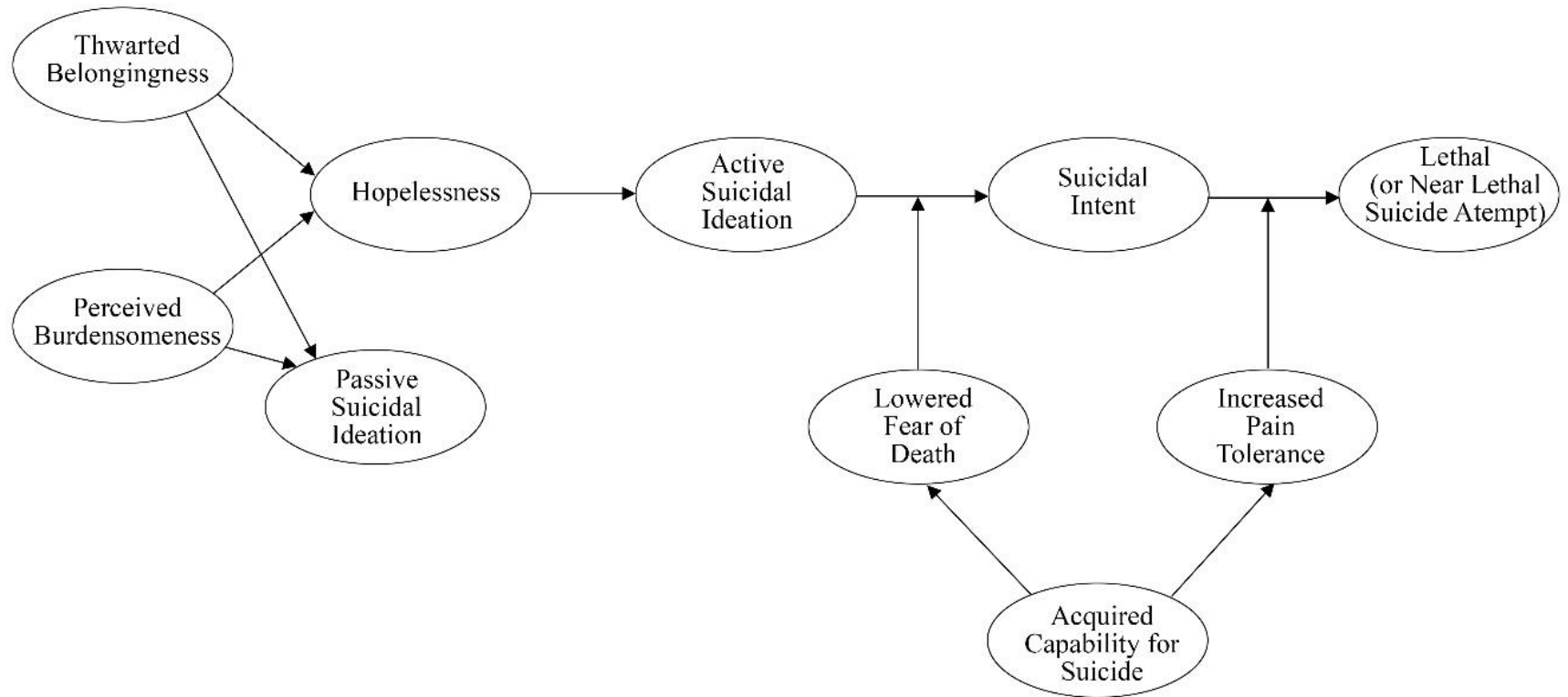


Figure 3-2 Causal Pathway to Lethal Suicidal Behavior

Joiner's interpersonal theory of suicide contributed to the advancement of suicide theory in many ways. First, the theory improved accuracy in the prediction of diverse risk factors for suicide (Van Orden et al., 2010). While previous suicide theories were able to explain only part of the characteristics of suicide and failed to account for the relationships between diverse triggers and suicide, Joiner's theory includes diverse risk factors for suicide such as loneliness, reciprocal care, self-hate, liability, hopelessness, biological/genetic vulnerability, painful and provocative events, lowered fear of death, and increased pain tolerance. Second, the interpersonal theory of suicide suggests a causal pathway for the development of suicidal ideation to engage in serious suicidal behavior. In most cases, completed suicides show a certain pattern of progress which starts from suicide ideation. Joiner's theory provides a convincing explanation to interpret the complex process of suicide through a causal path model. Third, the theory provides a possible answer to a dilemma of suicide theory that previous theories could not fully explain – why relatively few people die by suicide. Explaining a complex process of suicide path based on data from numerous clinical trials, Joiner's theory opened a new chapter in explaining why only a few people commit suicide.

The interpersonal theory of suicide, however, has some limitations that cannot be ignored. First, the theory cannot explain an impetuous suicide. This limitation stems from the premise of the theory that lethal suicide attempt is caused by the simultaneous presence of thwarted belongingness, perceived burdensomeness, and the capability to engage in suicidal behavior. Although Joiner stressed lowered fear of death and increased pain tolerance as a capability to engage in suicidal behavior, not all suicide attempters

possess those capabilities to commit suicide. For example, individuals may commit gun suicide without the process of lowering fear of death and increasing pain tolerance. Another example can be an impetuous suicide among people with severe depressive disorder. Because of cognitive fallacy caused by the depression, those people may commit suicide without the acquired capability stage.

Second, the boundary between passive and active suicide ideation is unclear. According to the interpersonal theory of suicide, when thwarted belongingness is accompanied by perceived burdensomeness and hopelessness, passive suicide ideation is intensified into an active suicide ideation. However, there is no clear criterion to divide passive and active suicide ideation. Also, previous standardized scales—Beck’s Scale for Suicidal Ideation; Harlow, Newcomb, and Bentler’s Suicide Ideation Scale; Reynolds’ Suicidal Ideation Questionnaire—which measure suicide ideation do not subdivide passive and active suicide ideation.

Third, the theory failed to include several risk factors that have been proven as significant predictors of suicide, such as substance use, bullying victimization, school related stress, and previous suicidal behaviors. The American Association of Suicidology, the American Foundation for Suicide Prevention, and the American Psychological Association show that there are over 75 risk factors for suicide (Joiner, 2005). Although a suicide theory cannot include all those factors, it is important to include at least the most significant factors of suicide.

Proposed Theoretical Model

To fill in the gaps of Joiner's interpersonal theory of suicide, a modified interpersonal theory of suicide is suggested for better prediction of suicide. One of the common issues in suicide research is the low rate of suicide attempts and deaths in the general population (Moscicki, 2001). To handle this issue, researchers may enlarge numbers of the target population or may gather data from clinical settings in which researchers easily access people with relatively high rates of suicidal behaviors. In the current study, it was assumed that the rates of suicide attempt and completion of the target population would be very low, because data were gathered from ordinary high school students in Korea. For this reason, this research removed the concept of suicidal intent and suicide attempt in the model and focused on suicidal ideation that was expected to be much prevalent than suicidal intent and attempt.

As discussed earlier, although Joiner strongly believes that acquired capability for suicide is a factor that develops suicidal ideation to attempt or completion, not all individuals who commit suicide go through the process. Also, the current study does not need to include acquired capability for suicide in the modified model because the study does not examine suicide attempt or completion. For these reasons, acquired capability for suicide, which is suggested as one of the main risk factors for suicide, is removed in the modified model. Also, because there are no clear criteria for dividing passive and active suicidal ideation, the modified interpersonal theory of suicide does not subcategorized suicidal ideation into passive and active suicidal ideation.

There are several risk factors that are not included in the interpersonal theory of suicide, although a strong correlation has been proved between those factors and suicide. Thus, the current researcher added the following risk factors in the modified theoretical model to attain a comprehensive understanding of complex suicidal ideation among Korean adolescents: previous suicidal ideation or attempt, substance use, school related stress, and bullying victimization.

There is no doubt among suicide researchers that previous suicidal ideation or attempt is the strongest predictors for future suicidality including suicidal ideation, attempt, and completion (Christiansen & Jensen, 2007; Jokinen et al., 2007; Li, Phillips, Zhang, Xu, & Yang, 2008; Limosin, Loze, Philippe, Casadebaig, & Rouillon, 2007; Pompili et al., 2009; Rudd et al., 1996). Since this study focuses only on suicidal ideation, the current researcher assumed that previous suicidal ideation or attempts among Korean adolescents may affect their current suicidal ideation.

Suicide and substance use are major public health concerns in Korean adolescents. A number of studies have proved a strong association between these issues. However, there is a lack of theory explaining the link between substance use and suicidality (Lamis & Malone, 2012). The current study added substance use as a risk factor for suicidal ideation based on empirical evidence of previous research (Caine, 1978; Conason et al., 2005a, 2005b; Kim et al., 2012; McKenry et al., 1983; Mehlenbeck et al., 2003).

The results of Moon's (2011) meta-analysis focusing on Korean adolescents' suicidal ideation and its influential factors shows that school related stress is the most

significant and frequently examined risk factor for suicidal ideation among school factors. According to Lazarus and Folkman's (1984) stress-coping theory, there are two methods of responding to stressful situations— problem-focused coping and emotion-focused coping. Problem-focused coping aims to directly confront stressful situations to solve them. Emotion-focused coping is the strategy to deal with stressful situation by using defense mechanisms. In addition, Endler and Parker (1990) added one more coping style—evasive coping which is a passive coping method. According to Endler and Parker, individuals may relieve the shock from stressful situations by escape from them. Ha and An (2008) insisted that individuals who show evasive coping can choose suicide as a method to escape from stress.

In addition to the direct relationship between school related stress and suicidal ideation, an empirical research also supports that hopelessness mediates the relationship between school related stress and suicidal ideation (Jang, 2010). The study indicates that higher levels of adolescents' school related stress causes higher level of hopelessness, which finally increases suicidal ideation among adolescents. Thus, the two paths that include direct and indirect effects of school related stress on suicidal ideation are included into the proposed model.

A number of studies examining suicidal behaviors among adolescents include the risk factor of negative relationships with friends such as bullying victimization and peer violence (Cui et al., 2011; Hong, 2011; Undheim & Sund, 2013). Based on the findings from previous research, it is assumed that bullying victimization is a significant factor that increases the level of suicidal ideation in the hypothesized model. Also, the role of

hopeless as a mediator between bullying victimization and suicidal ideation is assumed based on empirical evidence (Jang, 2010).

Based on previous research, it is apparent that there are gender differences in suicidal ideation among Korean adolescents. Although gender is a significant factor that affects suicidal ideation, it is not a main focus of the current research. Therefore, the hypothesized model controlled for gender, indicating the current study accounts for the relationships between the main risk factors and suicidal ideation regardless of gender effects. According to Lowry and Gaskin (in press), a control variable regresses on endogenous variables they may logically affect. Also, the control variable needs to be covaried with other exogenous variables. The hypothesized model of this study is illustrated in Figure 3-3.

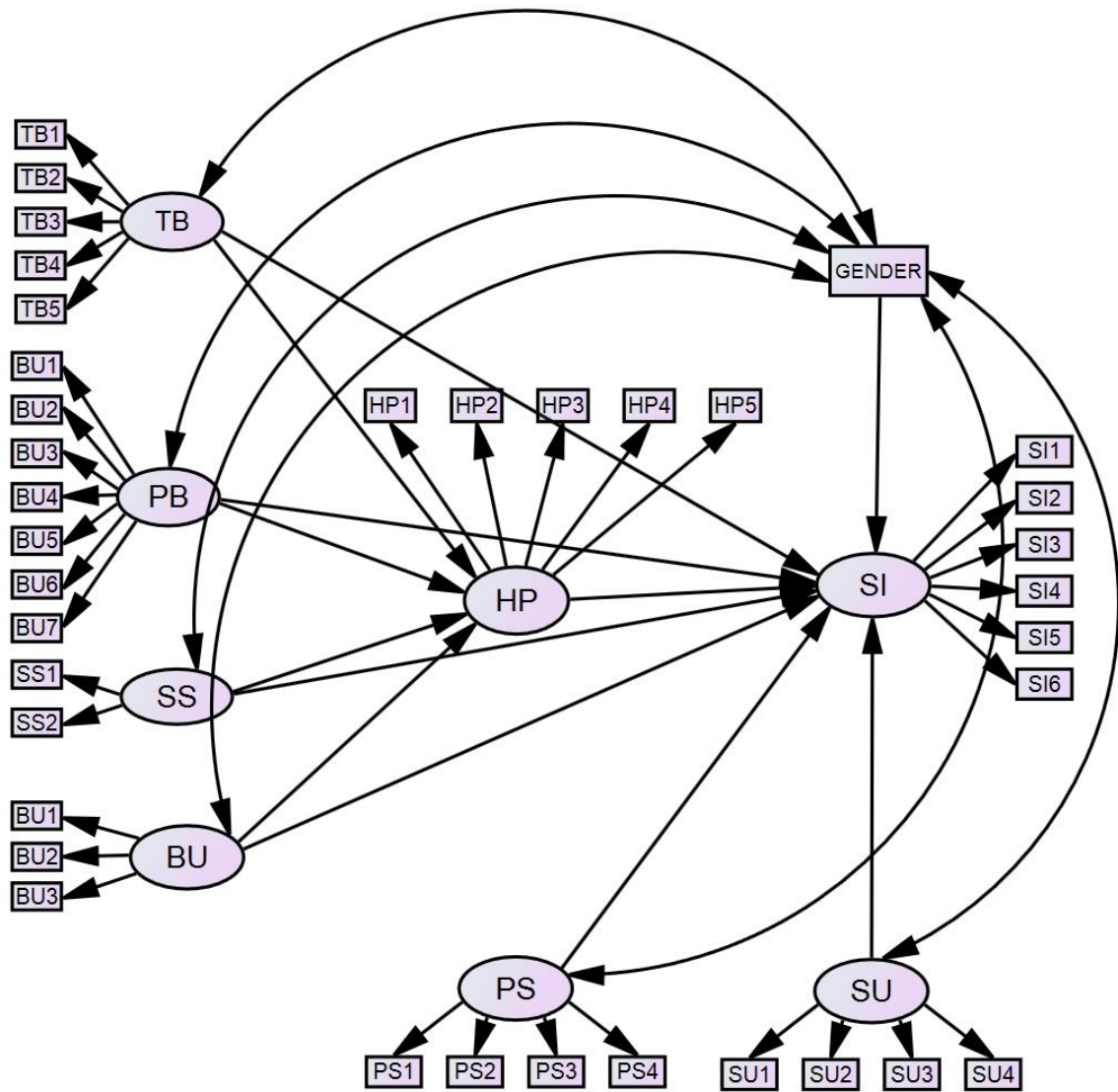


Figure 3-3 Hypothesized Model

Note. SI = suicidal ideation; TB = thwarted belongingness; PB = perceived burdensomeness; HP = hopelessness; PS = previous suicidal behaviors; BU = bullying victimization; SU = substance use; SS = school related stress.

Research Hypotheses

The hypothesized model based on theoretical framework and empirical research evidences includes a specification of the relations between several risk factors in the form of 12 hypotheses. The paths proposed in the model are as follows:

Hypothesis 1: A direct, significant positive relationship is expected between thwarted belongingness and suicidal ideation when controlling for gender.

Hypothesis 2: A direct, significant positive relationship is expected between perceived burdensomeness and suicidal ideation when controlling for gender.

Hypothesis 3: A direct, significant positive relationship is expected between hopelessness and suicidal ideation when controlling for gender.

Hypothesis 4: A direct, significant positive relationship is expected between school related stress and suicidal ideation when controlling for gender.

Hypothesis 5: A direct, significant positive relationship is expected between bullying victimization and suicidal ideation when controlling for gender.

Hypothesis 6: A direct, significant positive relationship is expected between previous suicidal behaviors and suicidal ideation when controlling for gender.

Hypothesis 7: A direct, significant positive relationship is expected between substance use and suicidal ideation when controlling for gender.

Hypothesis 8: Hopelessness will mediate the relationship between thwarted belongingness and suicidal ideation when controlling for gender.

Hypothesis 9: Hopelessness will mediate the relationship between perceived burdensomeness and suicidal ideation when controlling for gender.

Hypothesis 10: Hopelessness will mediate the relationship between school related stress and suicidal ideation when controlling for gender.

Hypothesis 11: Hopelessness will mediate the relationship between bullying victimization and suicidal ideation when controlling for gender.

Chapter 4

Methodology

This chapter details the methodology used to examine the research hypotheses regarding the proposed theoretical model among Korean adolescents. It explains, in particular, the research design, sampling, data collection, measurements, and analysis.

Research Design

A cross-sectional survey research was used to test the proposed theoretical model guided by the interpersonal theory of suicide and its relevancy to a Korean adolescent population. To analyze the data, structural equation modeling (SEM) was used. SEM is a statistical methodology that examines causal relations among latent variables and analyzes coefficients for dependent variables.

The general model in SEM consists of two submodels: a measurement model and a structural model. A measurement model defines the relationship between observed indicator variables and unobserved latent variables. In other words, the measurement model specifies the extent to which the observed indicators are linked to the latent variable (Byrne, 2010). A structural model defines the relationship among unobserved latent variables. The measurement model examines particular latent variables' direct and indirect effects (i.e., cause) on certain other latent variables in the model (Byrne, 2010). Here, we tested the hypothesized model using SEM to determine the extent to which the proposed model was consistent with the data. If goodness-of-fit was adequate, the model fitness was affirmed or the observed data matched the theoretical framework.

There are several reasons for using SEM to test the hypotheses of this study. SEM uses latent variables, which is one of the essential differences between SEM and the traditional path analysis. SEM can estimate and correct for both random and non-random measurement errors that are inevitable in real-world data; thus it is more realistic than regression analysis that assumes no measurement errors. Also, as mentioned earlier, SEM enables testing of the direct and indirect effects between latent variables. In addition, it is a set of multiple statistical procedures integrated into a single equation. SEM uses a visual tool to draw and show the relationships among latent variables; thus it is easy to understand the entire picture of the hypothesized model.

Sampling and Data Collection

A typical, minimum sample size to conduct SEM is 5 respondents per indicator, 10 per indicator is preferred, and a minimum of 15 per indicator is required when multivariate normality is not achieved (Westland, 2010). Considering the possibility of no multivariate normality, a priori analysis computed the necessary sample size of 540 based on 15 respondents per indicator. Therefore, a sample size of 540 for the proposed theoretical model considering no assumption of normality is deemed adequate for the structural validity analyses.

After the present study was approved by the University of Texas at Arlington and Pyeongtaek University Institutional Review Board (IRB), the current researcher recruited samples from six high schools in Pyeongtaek, South Korea. Pyeongtaek city was chosen as a study location because the rate of suicidal ideation among adolescents in Gyeonggi-do (18.5%), a province of Korea that includes Pyeongtaek city, is approximately equal to

the national average (18.3%) (Statistics Korea, 2012b). Total 850 students were contacted and 569 students participated in the study. The 281 students were excluded in the study because they did not want to participate or did not submit a signed consent or assent form. The remaining 569 participants were more than a recommended sample size based on a priori analysis. This research was conducted with the help of a research team in the Department of Child & Youth Welfare, Pyeongtaek University. The research team consisted of 12 undergraduate research assistants and two faculty members who are experts in school-based program implementation and evaluation. The 12 research assistants gathered data from November, 2013 to February, 2014 under the supervision of the current researcher and the two faculty members. Before data collection was started, the current researcher thoroughly discussed with the research team the overall plan of the research and each question in the questionnaire. The research assistants were also trained in the procedures for data collection and survey administration for more reliable results.

A two-stage cluster sampling was used to choose participants from all high school students in Pyeongtaek. According to Rubin and Babbie (2014), cluster sampling can be used when it is either impossible or impractical to access a list of a total population. Since it is more practical to get a complete list of all high schools and then achieve a complete list of all high school students in Pyeongtaek, multistage cluster sampling was utilized as the best possible technique for the current study. Among the 20 high schools in Pyeongtaek, six schools were randomly chosen using “The Research Randomizer” (Social Psychology Network, 2014). Considering the fact that there were 35 to 40 students in a class, three classes were randomly chosen from each randomly selected

school. The research assistants tried to gather data from all students in the selected classes.

The primary data collection method was a written survey. Surveys were administered at the schools to each of the participants. We received verbal agreement and letters of support from the six high schools in Pyeongtaek to assist in the implementation of data collection. Students in tenth- and eleventh-grade classrooms were asked to get a signature on an informed consent from their parents. The informed consent form included the content explaining the purpose and background of research, requirements for consent, and acknowledgment that students' responses would be kept confidential. Students who received permission from parents and who themselves agreed to participate were involved in a single group-testing session (30-40 minutes) in each classroom. Two research assistants distributed and collected the questionnaires in the classroom. Teachers stayed in the classroom to support the research assistants.

Measurements

Suicidal Ideation (Scale for Suicidal Ideation, Shin, Park, Oh, & Kim, 1990)

The Beck Scale for Suicide Ideation (SSI) is a 21-item self-report instrument that was developed to measure the level of suicide intent (Beck, Kovacs, & Weissman, 1979). The SSI has high construct validity and acceptable levels of internal consistency (Beck & Steer, 1991). The current study used the Korean version of the SSI translated by Shin et al. (1990, reliability = .89). The Korean version of the SSI consists of 19 questions and each question has response categories from "0" (Disagree) to "2" (Agree). According to Beck et al. (1993), the SSI consists of questions related to suicidal ideation, suicide plans,

and suicide attitudes. Thus, for the purpose of the current study, only the six questions related to suicidal ideation were used in the analyses (question numbers 1, 2, 7, 9, 15, and 18).

Thwarted Belongingness and Perceived Burdensomeness (The Interpersonal Needs Questionnaire, Van Orden, Witte, Gordon, Bender, & Joiner, 2008)

The Interpersonal Needs Questionnaire (INQ) was developed by Joiner's research team to measure beliefs about thwarted belongingness and perceived burdensomeness. The original version of the INQ, that is not published, used 25 items. In the current study a 12-item version of INQ was used (Van Orden et al., 2008): five items measured thwarted belongingness (e.g., "These days other people care about me") and seven items measured perceived burdensomeness (e.g., "These days the people in my life would be better off if I were gone"). The internal consistency coefficient of the thwarted belongingness items was .85 and the perceived burdensomeness items were .89 (Van Orden et al., 2008). In the current study, the Korean version of the INQ scale was used, which was translated by Jo (2010). In Jo's (2010) study, the reliability of the translated version of the INQ for the thwarted belongingness items was .87 and the perceived burdensomeness items was .94. The INQ used a 7-point Likert scale but the current researcher modified it to a 5-point Likert scale to prevent diminishing return rate (Nunnally, 1978).

Hopelessness (Beck Hopelessness Scale, Beck et al., 1974)

The Beck Hopelessness Scale (BHS) is a 20-item true/false scale that has three subcategories: affective, motivational, and cognitive expectation. The internal

consistency coefficient of the BHS is .93 (Beck et al., 1974). In the current study, the short version of BHS was used, which was translated by Shin et al. (1990, $\alpha = .88$). The short version of the BHS contained five items from original BHS (item numbers 4, 7, 8, 14, and 18) and was used to reduce excessive burden for study participants and to increase response rate (Abramson, Metalsky, & Alloy, 1989).

School Related Stress (The School Related Stress Scale, Park, 2006)

To measure the level of Korean adolescents' school related stress the School Related Stress Scale developed by Yoo and Min (1998) and modified by Park (2006) was used. This questionnaire consisted of two dimensions: stress from class environment and stress from grade point average (GPA). Kong (2011) reported that the reliability of the SRSS is .88 (0.83 for stress from class environment and 0.85 for stress from GPA). The scale is a four-point Likert scale including questions such as "I am stressed out because of my GPA;" "I am under a lot of study-related stress;" "I am stressed out because of too much homework;" "Too many exams put me under a lot of stress."

Bullying Victimization (Improved Korean Version of the Olweus' Bully/Victim Questionnaire, Lee, 2007)

The Improved Korean Version of the Olweus' Bully/Victim Questionnaire (IKVOBQ) (Lee, 2007) was used to measure bullying victimization among Korean adolescents. The IKVOBQ is a translated and modified version of the Revised Olweus Bully/Victim Questionnaire (Olweus, 1996). The IKVOBQ consists of 15 items and three dimensions: relational (4 items), verbal (6 items), and physical bullying (5 items). This

questionnaire is frequently used in Korean adolescents' bullying studies and has shown high reliability ($\alpha = .92$, Lee, 2004).

Previous Suicidal Behavior (2011 Youth Risk Behavior Surveillance, CDC, 2012)

Suicide behavior questions from the 2011 Youth Risk Behavior Surveillance (YRBS) questionnaire were used to measure previous suicidal behaviors of Korean adolescents. The YRBS has shown good test-retest reliability (Brenner et al., 2002). Four questions were used to ask about suicidal ideation, plan, attempt, and attempt that resulted in serious physical damage (i.e., "During the past 12 months, did you ever seriously consider attempting suicide?"; "During the past 12 months, did you make a plan about how you would attempt suicide?"; "During the past 12 months, how many times did you actually attempt suicide?"; "If you attempted suicide during the past 12 months, did any attempt result in an injury, poisoning, or overdose that had to be treated by a doctor or nurse?"). These questions were translated by the current author and back-translated to verify the accuracy of the translation because no translated version of the preexisting measurement was found.

Substance Use (Monitoring the Future 2009, Johnston, Bachman, & O'Malley, 2009)

To measure substance use among Korean adolescents, adolescents' own report of cigarette, alcoholic beverages, hallucinogenic drug, and inhalant drug use was assessed using four items from the Monitoring the Future Survey 2009 (Johnston et al., 2009). The following questions were asked: "How frequently have you smoked cigarettes during the last 30 days?"; "On how many occasions have you had alcoholic beverages to drink during the last 30 days?"; "On how many occasions have you taken a hallucinogenic drug

during the last 30 days?"; "On how many occasions have you taken a inhalant drug during the last 30 days?" These questions were translated by the current author and back-translated to verify the accuracy of the translation because no translated version of the preexisting measurement was found.

Data Analysis

Univariate statistics including frequencies and central tendencies were tested by using the Statistical Package for the Social Sciences (SPSS) Version 21 to describe the distribution of demographic, outcome, and predictor variables. Bivariate analyses were then conducted by using Pearson's correlations to examine the direction and size of the relationship between variables used in the study. Also, a *t*-test was computed to analyze gender and school grade differences in outcome and predictor variables. SEM was used, AMOS Version 21, to test the hypothesized model. A normality test was conducted to check if the data meet the assumption of Maximum Likelihood Estimation. Then, both measurement model and structural model are tested. To test the hypotheses, direct and indirect effects of predictor variables on outcome variables were analyzed.

Chapter 5

Results

This chapter is presented in three concrete sections. First, preliminary analysis including coefficient alpha of each variable, demographic description of the sample, and descriptive statistics of the variables of interest will be presented. Next, the process of examining the measurement models and the structural models will be discussed to examine the goodness-of-fit of the hypothesized model. Finally, the relationship between latent variables in the structural model will be presented. The structural model presents the hypothesized direct and indirect effects in the theory-driven hypothesized model discussed in Chapter 4 (see Figure 3-3)

Preliminary Analysis

Data Screening and Preparation

The participants in the original study consisted of 569 Korean adolescents living in Pyeongtaek, Korea. Prior to conducting the main analysis, the data were screened for missing values. When there are few missing values (less than 5% of the total cases number) and those values are missing at random, meaning that when the missing data have no systematic pattern, the typical method of listwise deletion can be conducted (IBM, 2011). Here, the percentage of cases with missing values in the current data were 1.4% and below. Little's Missing Completely At Random (MCAR) test was conducted to verify if the missing values had systematic patterns. The null hypothesis for Little's MCAR test assumes missing values to be completely at random. Because the significance level in the data was higher than .05, it is plausible to conclude the missing data

completely at random. Since the data are missing completely at random, it is also safe to employ listwise deletion with missing values. After listwise deletion for missing data, 440 participants were retained for the primary analysis. In addition, out of the 569 participants, 129 were removed from the sample because they did not complete the survey.

In the process of using SEM approach, an integral part of SEM is MLE. An important assumption in the conduct of MLE is the multivariate normality of the data (Arbuckle, 2007). Statistical research has shown that whereas skewness affects mean scores, kurtosis significantly impacts tests of variance and covariance (DeCarlo, 1997). Given that SEM uses variance-covariance matrix, evidence of kurtosis becomes another important issue. This is because the presence of multivariate kurtosis is significantly related to multivariate normality. Consequently, skewness and kurtosis values were computed to examine the distribution of scores for each measure. It is important to note that the cutoff points for determining skewness and kurtosis are larger in absolute value than 3.0 and 10.0, respectively (Kline, 2005). As a result, skewness and kurtosis levels were overall acceptable with the exception of previous suicidal behaviors, bullying victimization, and substance use (see Table 5-3). It can be argued that in general, real-world data do not have normal distributions (Chou, Bentler, & Satorra, 1991; Micceri, 1989). Further, normal distributions in previous suicidal behaviors, bullying victimization, and substance use in particular, are not the norm (Bae et al., 2005; Kim et al., 2009; Ministry of Health and Welfare, 2012). Although the logarithm and square root data transformations were conducted to deal with non-normality of data, no significant

changes were found. Another possible alternative was the deletion of outliers. However, the loss of information from the deletion of outliers can change the structure of the covariance compared to the case using the full sample (Gao, Mokhtarian, & Johnston, 2008). In the current study, the deletion of many observations could significantly alter several parameter estimates and change the role of suicidal behaviors, bullying victimization, and substance use in increasing suicidal ideation. Therefore, non-normality in previous suicidal behaviors, bullying victimization, and substance use was not controlled. The non-normality issue is further discussed under the limitations of the study section.

Reliabilities

Reliability analyses were examined to determine the consistency or stability of each variable administered in this study. According to Nunnally (1978), consistency reliabilities should be higher than .70 for internal research purposes. Cronbach's alpha internal consistency reliabilities were calculated for the variables administered. The Cronbach's alpha of thwarted belongingness (.78), perceived burdensomeness (.87), previous suicidal behaviors (.87), bullying victimization (.94), and school related stress (.88) were higher than the .70 cutoff point. Also, sub factors of bullying victimization including relational bullying (.94), verbal bullying (.86), and physical bullying (.93), and the sub factors of school related stress including stress from GPA (.84) and stress from class environment (.82) were higher than the cutoff point. However, the Cronbach's alphas of suicidal ideation (.64), hopelessness (.66), and substance use (.68) were under .70. The values of reliability

analysis ranged from a low of .64 for suicidal ideation to a high of .94 for bullying victimization (see Table 5-1).

Table 5-1 Reliability coefficient alphas for items administrated

| Variables | Number of Items | Cronbach's α |
|-----------------------------|-----------------|---------------------|
| Outcome variable | | |
| Suicidal ideation | 6 | .64 |
| Predictor variables | | |
| Thwarted belongingness | 5 | .78 |
| Perceived burdensomeness | 7 | .87 |
| Hopelessness | 5 | .66 |
| Previous suicidal behaviors | 4 | .87 |
| Bullying victimization | 15 | .94 |
| Relational | 4 | .94 |
| Verbal | 6 | .86 |
| Physical | 5 | .93 |
| Substance use | 4 | .68 |
| School related stress | 10 | .88 |
| GPA | 5 | .84 |
| Class environment | 5 | .82 |

Demographic Variables

There were a total of 243 females (55.2%) and 197 males (44.8%) with a mean age of 16.34 years ($SD = 0.59$, range 16 to 19 years) that participated in the study. Out of the total participants, 314 participants (71.4%) were 10th graders and 126 participants (28.6%) were 11th graders. As far as the participants' parental information is concerned, most of the participant's parents (98.2%) are alive and most of the participants (92.7%) lived with their parents. With regards to the education level of parents, 226 fathers (51.4%) completed undergraduate school or higher and 261 (59.3%) mothers completed high school as their highest degree. Further, 210 (47.7%) participants reported that their monthly family income is between \$3,000 and \$4,999. Details of these demographic information is depicted in Table 5-2.

Table 5-2 Descripted statistics of socio-demographics among Korean adolescents ($N = 440$)

| Variables | % (n) | M (SD) |
|-------------------|------------|--------------|
| Gender | | |
| Male | 44.8 (197) | |
| Female | 55.2 (243) | |
| Age | | 16.34 (0.59) |
| Grade | | |
| 10 th | 71.4 (314) | |
| 11 th | 28.6 (126) | |
| Parents existence | | |

Table 5-2 – *Continued*

| | |
|--------------------------------------|------------|
| Both are alive | 98.2 (432) |
| Father only is alive | 0.7 (3) |
| Mother only is alive | 1.1 (5) |
| Person live with | |
| Parents, grandparents, and relatives | 0.2 (1) |
| Parents and grand parents | 3.9 (17) |
| Parents | 92.7 (408) |
| Grandparents | 1.1 (5) |
| Relatives | 1.1 (5) |
| Friends | 0.5 (2) |
| Living alone | 0.5 (2) |
| Father's level of education | |
| Elementary school | 0.9 (4) |
| Middle school | 2.7 (12) |
| High school | 45.0 (198) |
| Undergraduate school | 45.9 (202) |
| Graduate school or higher | 5.5 (24) |
| Mother's level of education | |
| Middle school | 2.7 (12) |
| High school | 59.3 (261) |
| Undergraduate school | 33.9 (149) |
| Graduate school or higher | 4.1 (18) |

Table 5-2 – *Continued*

| Monthly income | |
|------------------|------------|
| \$500 or less | 0.7 (3) |
| \$500-\$999 | 2.7 (12) |
| \$1,000-\$2,999 | 20.9 (92) |
| \$3,000-\$4,999 | 47.7 (210) |
| \$5,000-\$9,999 | 23.6 (104) |
| \$10,000 or more | 4.3 (19) |

Descriptive Statistics

Descripted Statistics of Outcome and Predictor Variables among Korean Adolescents

Means and standard deviations of outcome and predictor variables are presented in Table 5-3. The continuous variables were computed for the analysis. Results indicate that approximately 48% of participants reported suicidal ideation. Among previous suicidal behaviors, the mean of suicide plan ($M = 0.18$, $SD = 0.63$) were about two times higher than suicide preparation ($M = 0.09$, $SD = 0.42$). Suicide attempt ($M = 0.07$, $SD = 0.39$) was slightly lower than suicide preparation. The mean score of suicide attempt resulted in medical treatments ($M = 0.04$, $SD = 0.34$), which was the lowest as expected. When it comes to bullying victimization, verbal bullying ($M = 1.00$, $SD = 2.90$) was more than two times prevalent than relational ($M = 0.45$, $SD = 1.77$) bullying. Among subcategories of bullying victimization, physical bullying ($M = 0.28$, $SD = 1.84$) showed the lowest mean score. The means of tobacco ($M = 1.29$, $SD = 0.92$) and alcohol use ($M = 1.30$, $SD = 0.81$) were higher than hallucinogen ($M = 1.03$, $SD = 0.81$) and inhalant ($M =$

1.03, $SD = 0.41$). There were no significant gap between school related stress from GPA ($M = 13.75$, $SD = 3.85$) and class environment ($M = 12.46$, $SD = 3.90$).

Table 5-3 Descripted statistics of outcome and predictor variables among Korean adolescents ($N = 440$)

| Variables | $M (SD)$ | Skewness | Kurtosis |
|--------------------------|-------------|----------|----------|
| Outcome variable | | | |
| Suicidal ideation | | | |
| SI1 | 0.49 (0.64) | 0.95 | -0.19 |
| SI2 | 0.71 (0.75) | 0.53 | -1.06 |
| SI3 | 0.56 (0.73) | 0.90 | -0.59 |
| SI4 | 0.31 (0.57) | 1.67 | 1.79 |
| SI5 | 1.57 (0.69) | -1.29 | 0.27 |
| SI6 | 0.46 (0.68) | 1.18 | 0.09 |
| Predictor variables | | | |
| Thwarted belongingness | | | |
| TB1 | 2.72 (0.94) | 0.38 | -0.04 |
| TB2 | 1.79 (1.06) | 1.05 | 0.00 |
| TB3 | 2.36 (1.15) | 0.60 | -0.45 |
| TB4 | 2.35 (1.05) | 0.69 | 0.03 |
| TB5 | 2.56 (1.25) | 0.60 | -0.54 |
| Perceived burdensomeness | | | |
| PB1 | 1.70 (1.00) | 1.10 | 0.03 |

Table 5-3 – *Continued*

| | | | |
|---------------------------------------------------------|-------------|------|--------|
| PB2 | 1.64 (0.97) | 1.25 | 0.47 |
| PB3 | 2.11 (1.10) | 0.58 | -0.73 |
| PB4 | 3.03 (0.98) | 0.24 | -0.01 |
| PB5 | 1.86 (1.07) | 0.93 | -0.11 |
| PB6 | 1.46 (0.88) | 1.70 | 1.78 |
| PB7 | 1.52 (0.91) | 1.51 | 1.05 |
| Hopelessness | | | |
| HP1 | 1.49 (0.50) | 0.05 | -2.01 |
| HP2 | 1.10 (0.30) | 2.63 | 4.96 |
| HP3 | 1.23 (0.42) | 1.32 | -0.26 |
| HP4 | 1.24 (0.43) | 1.23 | -0.49 |
| HP5 | 1.35 (0.48) | 0.62 | -1.62 |
| Previous suicidal behaviors | | | |
| PS1 (Suicide plan) | 0.18 (0.63) | 4.18 | 18.61 |
| PS2 (Suicide preparation) | 0.09 (0.42) | 5.79 | 38.11 |
| PS3 (Suicide attempt) | 0.07 (0.39) | 7.00 | 56.65 |
| PS4 (Suicide attempt resulted in medical) treatments | 0.04 (0.34) | 9.62 | 100.62 |
| Bullying victimization | | | |
| BU1 (Relational) | 0.45 (1.77) | 6.73 | 52.01 |
| BU2 (Verbal) | 1.00 (2.90) | 4.89 | 29.82 |
| BU3 (Physical) | 0.28 (1.84) | 9.12 | 91.54 |

Table 5-3 – *Continued*

Substance use

| | | | |
|--------------------|-------------|-------|--------|
| SU1 (Tobacco) | 1.29 (0.92) | 4.00 | 17.96 |
| SU2 (Alcohol) | 1.30 (0.81) | 4.36 | 24.08 |
| SU3 (Hallucinogen) | 1.03 (0.41) | 14.51 | 211.54 |
| SU4 (Inhalant) | 1.04 (0.42) | 13.40 | 186.05 |

School related stress

| | | | |
|-------------------------|--------------|-------|-------|
| SS1 (GPA) | 13.75 (3.85) | -0.59 | -0.11 |
| SS2 (Class environment) | 12.46 (3.90) | -0.01 | -0.52 |

Note. SI = suicidal ideation; TB = thwarted belongingness; PB = perceived burdensomeness; HP = hopelessness; PS = previous suicidal behaviors; BU = bullying victimization; SU = substance use; SS = school related stress.

Descriptive Statistics of Outcome and Predictor Variables among Korean Adolescents by

Gender

In order to examine the gender differences among outcome and predictor variables, *t*-test was conducted. Results indicated significant gender differences in suicidal ideation ($t[437.21] = -3.18, p < .01$), thwarted belongingness ($t[438] = 3.26, p < .01$), perceived burdensomeness ($t[438] = 2.57, p < .05$), verbal bullying ($t[246.74] = 2.68, p < .01$), physical bullying ($t[212.16] = 2.19, p < .05$), tobacco ($t[216.43] = 5.49, p < .001$), alcohol ($t[235.07] = 4.30, p < .001$), school related stress from GPA ($t[377.91] = -3.70, p < .001$), and school related stress from class environment ($t[438] = -4.11, p < .001$). Also, marginally significant mean difference was found in suicide attempts resulting in medical treatments ($t[218.14] = 1.69, p < .10$). According to these results, female participants showed significantly higher level of suicidal ideation compared to

male participants. Male participants were more likely to have thwarted belongingness and perceived burdensomeness compared to females. The mean score of male participants' suicide attempt that resulted in medical treatments was significantly higher than females. Further, male participants showed significantly higher levels of verbal and physical bullying than females. Also, male participants reported significantly higher rates of substance use including tobacco and alcohol compared to females. In terms of school related stress, female students showed higher school related stress from GPA and class environment than male students. There were no significant mean differences found in hopelessness, suicide plan, suicide preparation, suicide attempt, relational bullying, and hallucinogen and inhalant use (see Table 5-4).

Table 5-4 Descripted statistics of outcome and predictor variables among Korean adolescents by gender ($N = 440$)

| Variables | Male ($n = 197$) | Female ($n = 243$) | t -test |
|------------------------------------|--------------------|----------------------|------------------|
| | $M (SD)$ | $M (SD)$ | |
| Outcome variable | | | |
| Suicidal ideation | 3.70 (2.19) | 4.42 (2.58) | -3.18 (437.21)** |
| Predictor variables | | | |
| Thwarted belongingness | 12.47 (3.90) | 11.23 (4.00) | 3.26 (438)** |
| Perceived burdensomeness | 14.02 (5.21) | 12.75 (5.10) | 2.57 (438)* |
| Hopelessness | 6.44 (1.45) | 6.38 (1.37) | 0.40 (438) |
| Previous suicidal behaviors | | | |
| Suicide plan | 0.17 (0.62) | 0.18 (0.64) | -0.14 (438) |

Table 5-4 – *Continued*

| | | | |
|---------------------------------------------------|--------------|--------------|----------------------------|
| Suic ide preparation | 0.12 (0.52) | 0.06 (0.30) | 1.44 (299.57) |
| Suicide attempt | 0.10 (0.51) | 0.05 (0.26) | 1.07 (276.78) |
| Suicide attempt resulted in medical treatments | 0.08 (0.48) | 0.02 (0.13) | 1.69 (218.14) ⁺ |
| Bullying victimization | | | |
| Relational | 0.61 (2.49) | 0.32 (0.80) | 1.59 (228.97) |
| Verbal | 1.44 (3.93) | 0.64 (1.57) | 2.68 (246.74)** |
| Physical | 0.51 (2.65) | 0.09 (0.60) | 2.19 (212.16)* |
| Substance use | | | |
| Tobacco | 1.57 (1.27) | 1.06 (0.32) | 5.49 (216.43)*** |
| Alcohol | 1.50 (1.10) | 1.14 (0.39) | 4.30 (235.07)*** |
| Hallucinogen | 1.07 (0.61) | 1.00 (0.00) | 1.53 (196.00) |
| Inhalant | 1.08 (0.62) | 1.00 (0.06) | 1.62 (199.38) |
| School related stress | | | |
| GPA | 12.99 (4.19) | 14.37 (3.45) | -3.70 (377.91)*** |
| Class environment | 11.62 (4.01) | 13.13 (3.67) | -4.11 (438)*** |

Note. ⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Descripted Statistics of Outcome and Predictor Variables among Korean Adolescents by Grade

Table 5-5 shows the grade differences among outcome and predictor variables. Significant grade differences were found in suicidal ideation ($t[267.68] = 2.68, p < .01$), perceived burdensomeness ($t[293.92] = 4.20, p < .001$), and alcohol use ($t[163.81] = -$

2.37, $p < .01$). Also, marginally significant mean differences were found in relational bullying ($t[143.59] = -1.68, p < .10$), verbal bullying ($t[155.80] = -1.78, p < .10$), and physical bullying ($t[145.93] = -1.76, p < .10$). These results indicate that 10th graders reported significantly higher levels of suicidal ideation and perceived burdensomeness, and significantly lower levels of relational, verbal, and physical bullying and alcohol use than 11th graders. No significant mean differences were found in thwarted belongingness, hopelessness, suicide plan, suicide preparation, suicide attempt, suicide attempt resulted in medical treatments, tobacco, hallucinogen, inhalant use, and school related stress from GPA and class environment.

Table 5-5 Descripted statistics of outcome and predictor variables among Korean adolescents by grade ($N = 440$)

| Variables | 10 th ($n = 314$) | 11 th ($n = 126$) | <i>t</i> -test |
|------------------------------------|--------------------------------|--------------------------------|------------------|
| | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | |
| Outcome variable | | | |
| Suicidal ideation | 4.28 (2.52) | 3.64 (2.16) | 2.68 (267.68)** |
| Predictor variables | | | |
| Thwarted belongingness | 11.81 (4.08) | 11.73 (3.81) | 0.18 (438) |
| Perceived burdensomeness | 13.90 (5.42) | 11.87 (4.22) | 4.20 (293.92)*** |
| Hopelessness | 6.36 (1.38) | 6.52 (1.46) | -1.03 (438) |
| Previous suicidal behaviors | | | |
| Suicide plan | 0.19 (0.64) | 0.14 (0.60) | 0.73 (438) |
| Suicide preparation | 0.10 (0.42) | 0.07 (0.40) | 0.55 (438) |

Table 5-5 – *Continued*

| | | | |
|---------------------------------------------------|--------------|--------------|-----------------------------|
| Suicide attempt | 0.07 (0.36) | 0.07 (0.46) | 0.04 (438) |
| Suicide attempt resulted in medical treatments | 0.03 (0.27) | 0.08 (0.47) | -1.15 (159.59) |
| Bullying victimization | | | |
| Relational | 0.33 (1.17) | 0.75 (2.74) | -1.68 (143.59) ⁺ |
| Verbal | 0.80 (2.23) | 1.48 (4.09) | -1.78 (155.80) ⁺ |
| Physical | 0.15 (1.26) | 0.60 (2.78) | -1.76 (145.93) ⁺ |
| Substance use | | | |
| Tobacco | 1.24 (0.87) | 1.40 (1.04) | -1.48 (198.97) |
| Alcohol | 1.23 (0.66) | 1.48 (1.08) | -2.37 (163.81) [*] |
| Hallucinogen | 1.02 (0.34) | 1.06 (0.54) | -0.85 (438) |
| Inhalant | 1.02 (0.34) | 1.07 (0.57) | -0.91 (162.86) |
| School related stress | | | |
| GPA | 13.84 (3.83) | 13.54 (3.92) | 0.74 (438) |
| Class environment | 12.48 (3.85) | 12.40 (4.04) | 0.18 (438) |

Note. ⁺ $p < .10$. ^{*} $p < .05$. ^{**} $p < .01$. ^{***} $p < .001$.

Descriptive Statistics of Outcome and Predictor Variables among Male Korean

Adolescents by Grade

The grade differences among male participants in terms of outcome and predictor variables were examined. There was a significant difference in perceived burdensomeness ($t[193.60] = 4.71, p < .001$) and marginally significant differences in relational bullying ($t[129.00] = -1.94, p < .10$) and verbal bullying ($t[149.80] = -1.75, p <$

.10). The results indicate that 10th graders among male participants showed significantly higher levels of perceived burdensomeness than 11th grader males. Regarding bullying victimization, 11th grader males presented significantly higher levels of relational and verbal bullying than 10th grader males. No significant mean differences were found in suicidal ideation, thwarted belongingness, hopelessness, suicide plan, suicide preparation, suicide attempt, suicide attempt resulted in medical treatments, physical bullying, substance use including tobacco, alcohol, hallucinogen, and inhalant, and school related stress from GPA and class environment (see Table 5-6).

Table 5-6 Descripted statistics of outcome and predictor variables among male Korean adolescents by grade ($n = 197$)

| Variables | 10 th ($n = 106$) | 11 th ($n = 91$) | <i>t</i> -test |
|-----------------------------|--------------------------------|-------------------------------|------------------|
| | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | |
| Outcome variable | | | |
| Suicidal ideation | 3.87 (2.30) | 3.51 (2.04) | 1.16 (195) |
| Predictor variables | | | |
| Thwarted belongingness | 12.85(3.83) | 12.02 (3.96) | 1.49 (195) |
| Perceived burdensomeness | 15.53 (5.46) | 12.25 (4.30) | 4.71 (193.60)*** |
| Hopelessness | 6.32 (1.36) | 6.57 (1.54) | -1.20 (181.67) |
| Previous suicidal behaviors | | | |
| Suicide plan | 0.22 (0.69) | 0.12 (0.53) | 1.10 (193.01) |
| Suicide preparation | 0.16 (0.57) | 0.08 (0.45) | 1.14 (193.82) |
| Suicide attempt | 0.10 (0.50) | 0.09 (0.53) | 0.22 (195) |

Table 5-6 – *Continued*

| | | | |
|---------------------------------------------------|--------------|--------------|-----------------------------|
| Suicide attempt resulted in medical treatments | 0.07 (0.44) | 0.09 (0.53) | -0.32 (195) |
| Bullying victimization | | | |
| Relational | 0.28 (1.62) | 1.00 (3.18) | -1.94 (129.00) ⁺ |
| Verbal | 0.97 (3.05) | 1.98 (4.72) | -1.75 (149.80) ⁺ |
| Physical | 0.24 (1.97) | 0.84 (3.25) | -1.54 (143.55) |
| Substance use | | | |
| Tobacco | 1.60 (1.36) | 1.53 (1.18) | 0.42 (195) |
| Alcohol | 1.42 (0.99) | 1.58 (1.22) | -1.00 (195) |
| Hallucinogen | 1.06 (0.58) | 1.08 (0.64) | -0.23 (195) |
| Inhalant | 1.06 (0.58) | 1.10 (0.67) | -0.48 (195) |
| School related stress | | | |
| GPA | 12.77 (4.43) | 13.25 (3.90) | -0.80 (195) |
| Class environment | 11.64 (4.05) | 11.60 (3.99) | 0.07 (195) |

Note. ⁺ $p < .10$. *** $p < .001$.

Descriptive Statistics of Outcome and Predictor Variables among Female Korean

Adolescents by Grade

Table 5-7 shows the grade differences among female participants in terms of outcome and predictor variables. Significant gender differences were found in perceived burdensomeness ($t[56.96] = 2.95, p < .01$), relational bullying ($t[130.52] = 3.01, p < .01$), verbal bullying ($t[146.62] = 3.36, p < .01$), physical bullying ($t[207.00] = 2.37, p < .05$), and school related stress from class environment ($t[241] = -2.38, p < .05$). The results

showed that 10th graders among female participants reported significantly higher levels of perceived burdensomeness, relational bullying, and verbal bullying than female 11th graders. Further, female 11th graders showed significantly higher level of school related stress from class environment than female 10th graders. No significant mean differences were found in suicidal ideation, thwarted belongingness, hopelessness, suicide plan, suicide preparation, suicide attempt, suicide attempt resulted in medical treatments, tobacco, alcohol, hallucinogen, and inhalant use, and school related stress from GPA.

Compared to the results of the grade differences among male participants, 10th graders in both gender groups showed higher level of perceived burdensomeness than 11th graders. On the contrary, the level of overall bullying victimization were higher in male 11th graders and lower in female 11th graders.

Table 5-7 Descriptive statistics of outcome and predictor variables among female

Korean adolescents by grade ($n = 243$)

| Variables | 10 th ($n = 208$) | 11 th ($n = 35$) | <i>t</i> -test |
|-----------------------------|--------------------------------|-------------------------------|----------------|
| | <i>M</i> (<i>SD</i>) | <i>M</i> (<i>SD</i>) | |
| Outcome variable | | | |
| Suicidal ideation | 4.50 (2.61) | 4.00 (2.44) | 1.05 (241) |
| Predictor variables | | | |
| Thwarted belongingness | 11.27 (4.11) | 10.97 (3.29) | 0.41 (241) |
| Perceived burdensomeness | 13.07 (5.22) | 10.86 (3.88) | 2.95 (56.96)** |
| Hopelessness | 6.38 (1.39) | 6.37 (1.26) | 0.05 (241) |
| Previous suicidal behaviors | | | |

Table 5.7 -- *Continued*

| | | | |
|---------------------------------------------------|--------------|--------------|-----------------|
| Suicide plan | 0.18 (0.62) | 0.20 (0.76) | -0.19 (241) |
| Suicide preparation | 0.06 (0.31) | 0.06 (0.24) | 0.10 (241) |
| Suicide attempt | 0.06 (0.27) | 0.03 (0.17) | 0.61 (241) |
| Suicide attempt resulted in medical treatments | 0.01 (0.10) | 0.06 (0.24) | -1.18 (36.00) |
| Bullying victimization | | | |
| Relational | 0.36 (0.85) | 0.11 (0.32) | 3.01 (130.52)** |
| Verbal | 0.71 (1.67) | 0.20 (0.58) | 3.36 (146.62)** |
| Physical | 0.11 (0.64) | 0.00 (0.00) | 2.37 (207.00)* |
| Substance use | | | |
| Tobacco | 1.06 (0.32) | 1.06 (0.34) | 0.01 (241) |
| Alcohol | 1.13 (0.37) | 1.20 (0.47) | -0.93 (241) |
| Hallucinogen | 1.00 (0.00) | 1.00 (0.00) | NA |
| Inhalant | 1.00 (0.07) | 1.00 (0.00) | 0.41 (241) |
| School related stress | | | |
| GPA | 14.38 (3.37) | 14.29 (3.91) | 0.16 (241) |
| Class environment | 12.90 (3.67) | 14.49 (3.42) | -2.38 (241)* |

Note. * $p < .05$. ** $p < .01$.

Correlations for the Outcome and Predictor Variables

Bivariate correlation was conducted for examining the relationship between latent variables including suicidal ideation, thwarted belongingness, perceived burdensomeness, hopelessness, previous suicidal behaviors, bullying victimization, substance use, and

school related stress. The results suggest that 22 out of 28 correlations were statistically significant and were greater or equal to $r = +.11, p < .05$, two-tailed. Also, there were three marginally significant relationships.

There were weak to moderate, significant positive correlations between suicidal ideation and thwarted belongingness ($r = .31, n = 440, p < .001$), perceived burdensomeness ($r = .43, n = 440, p < .001$), hopelessness ($r = .35, n = 440, p < .001$), previous suicidal behaviors ($r = .47, n = 440, p < .001$), bullying victimization ($r = .26, n = 440, p < .001$), substance use ($r = .09, n = 440, p < .10$), and school related stress ($r = .21, n = 440, p < .001$). These results suggest that as the levels of predictor variables (thwarted belongingness, perceived burdensomeness, hopelessness, previous suicidal behaviors, bullying victimization, substance use, and school related stress) increase, the level of suicidal ideation also increases (see Table 5-8). All possible bivariate correlations between indicators are presented in Table 5-9.

Table 5-8 Correlations for the outcome and predictor variables

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|----------|------------------|--------|--------|------------------|--------|------|---|---|
| 1. SI | 1 | | | | | | | |
| 2. TB | .31*** | 1 | | | | | | |
| 3. PB | .43*** | .52*** | 1 | | | | | |
| 4. HP | .35*** | .26*** | .28*** | 1 | | | | |
| 5. PS | .47*** | .23*** | .13** | .18*** | 1 | | | |
| 6. BU | .26*** | .22*** | .05 | .19*** | .67*** | 1 | | |
| 7. SU | .09 ⁺ | .17*** | .11* | .09 ⁺ | .13** | .11* | 1 | |

Table 5-8 – *Continued*

| | | | | | | | | |
|-------|--------|-----|-------|--------|-----|------|-------------------|---|
| 8. SS | .21*** | .07 | .15** | .25*** | .06 | .12* | -.09 ⁺ | 1 |
|-------|--------|-----|-------|--------|-----|------|-------------------|---|

Note. SI = suicidal ideation; TB = thwarted belongingness; PB = perceived burdensomeness; HP = hopelessness; PS = previous suicidal behaviors; BU = bullying victimization; SU = substance use; SS = school related stress.

⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5-9 Correlations for all indicators

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | | |
|----------|-------|-------|-------|-------|-------|------|------|-------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|--|--|
| 1. SI1 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. SI2 | 0.59 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. SI3 | 0.60 | 0.58 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. SI4 | 0.50 | 0.54 | 0.56 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. SI5 | -0.42 | -0.44 | -0.49 | -0.38 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. SI6 | 0.56 | 0.65 | 0.53 | 0.62 | -0.45 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. TB1 | 0.25 | 0.14 | 0.21 | 0.20 | -0.10 | 0.24 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. TB2 | 0.24 | 0.20 | 0.23 | 0.18 | -0.17 | 0.22 | 0.26 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. TB3 | 0.24 | 0.17 | 0.19 | 0.29 | -0.18 | 0.23 | 0.53 | 0.30 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. TB4 | 0.22 | 0.13 | 0.25 | 0.24 | -0.17 | 0.22 | 0.60 | 0.35 | 0.63 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11. TB5 | 0.12 | 0.10 | 0.11 | 0.17 | -0.07 | 0.11 | 0.46 | 0.16 | 0.47 | 0.51 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12. PB1 | 0.37 | 0.28 | 0.30 | 0.28 | -0.22 | 0.31 | 0.25 | 0.52 | 0.34 | 0.32 | 0.20 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13. PB2 | 0.40 | 0.27 | 0.32 | 0.29 | -0.25 | 0.35 | 0.24 | 0.54 | 0.30 | 0.35 | 0.19 | 0.88 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14. PB3 | 0.27 | 0.29 | 0.25 | 0.28 | -0.18 | 0.28 | 0.14 | 0.41 | 0.19 | 0.12 | 0.07 | 0.54 | 0.54 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| 15. PB4 | 0.20 | 0.10 | 0.19 | 0.18 | -0.13 | 0.21 | 0.54 | 0.20 | 0.42 | 0.44 | 0.35 | 0.15 | 0.12 | 0.09 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | |
| 16. PB5 | 0.35 | 0.28 | 0.27 | 0.26 | -0.14 | 0.33 | 0.20 | 0.43 | 0.28 | 0.20 | 0.13 | 0.62 | 0.62 | 0.72 | 0.11 | 1.00 | | | | | | | | | | | | | | | | | | | | | | |
| 17. PB6 | 0.23 | 0.22 | 0.22 | 0.26 | -0.16 | 0.27 | 0.22 | 0.49 | 0.29 | 0.29 | 0.16 | 0.65 | 0.68 | 0.53 | 0.04 | 0.64 | 1.00 | | | | | | | | | | | | | | | | | | | | | |
| 18. PB7 | 0.27 | 0.24 | 0.24 | 0.26 | -0.13 | 0.27 | 0.23 | 0.50 | 0.27 | 0.29 | 0.14 | 0.66 | 0.69 | 0.55 | 0.07 | 0.67 | 0.78 | 1.00 | | | | | | | | | | | | | | | | | | | | |
| 19. HP1 | 0.07 | 0.13 | 0.10 | 0.05 | -0.07 | 0.07 | 0.04 | 0.03 | 0.07 | 0.10 | 0.05 | 0.03 | 0.03 | 0.06 | 0.08 | 0.04 | 0.04 | -0.02 | 1.00 | | | | | | | | | | | | | | | | | | | |
| 20. HP2 | 0.25 | 0.17 | 0.14 | 0.21 | -0.08 | 0.18 | 0.10 | 0.03 | 0.25 | 0.14 | 0.10 | 0.15 | 0.13 | 0.15 | 0.11 | 0.19 | 0.12 | 0.08 | 0.17 | 1.00 | | | | | | | | | | | | | | | | | | |
| 21. HP3 | 0.26 | 0.19 | 0.20 | 0.17 | -0.10 | 0.18 | 0.11 | 0.10 | 0.21 | 0.16 | 0.08 | 0.16 | 0.12 | 0.17 | 0.15 | 0.19 | 0.12 | 0.17 | 0.14 | 0.41 | 1.00 | | | | | | | | | | | | | | | | | |
| 22. HP4 | 0.30 | 0.19 | 0.31 | 0.25 | -0.17 | 0.24 | 0.18 | 0.11 | 0.26 | 0.21 | 0.12 | 0.20 | 0.19 | 0.19 | 0.26 | 0.21 | 0.16 | 0.14 | 0.10 | 0.41 | 0.39 | 1.00 | | | | | | | | | | | | | | | | |
| 23. HP5 | 0.29 | 0.24 | 0.24 | 0.24 | -0.23 | 0.24 | 0.20 | 0.16 | 0.21 | 0.15 | 0.07 | 0.20 | 0.17 | 0.22 | 0.22 | 0.18 | 0.12 | 0.12 | 0.25 | 0.36 | 0.34 | 0.42 | 1.00 | | | | | | | | | | | | | | | |
| 24. PS1 | 0.37 | 0.39 | 0.36 | 0.56 | -0.23 | 0.46 | 0.17 | 0.10 | 0.21 | 0.19 | 0.12 | 0.15 | 0.16 | 0.09 | 0.14 | 0.13 | 0.00 | 0.13 | 0.02 | 0.23 | 0.15 | 0.26 | 0.14 | 1.00 | | | | | | | | | | | | | | |
| 25. PS2 | 0.30 | 0.29 | 0.28 | 0.50 | -0.22 | 0.35 | 0.20 | 0.02 | 0.16 | 0.20 | 0.15 | 0.06 | 0.06 | 0.06 | 0.15 | 0.06 | 0.08 | 0.05 | 0.07 | 0.11 | 0.04 | 0.15 | 0.06 | 0.65 | 1.00 | | | | | | | | | | | | | |
| 26. PS3 | 0.28 | 0.26 | 0.26 | 0.44 | -0.18 | 0.30 | 0.18 | 0.03 | 0.16 | 0.20 | 0.14 | 0.06 | 0.04 | 0.00 | 0.14 | 0.04 | 0.06 | 0.06 | 0.07 | 0.11 | 0.01 | 0.13 | 0.06 | 0.62 | 0.87 | 1.00 | | | | | | | | | | | | |
| 27. PS4 | 0.25 | 0.18 | 0.22 | 0.32 | -0.21 | 0.25 | 0.18 | -0.04 | 0.18 | 0.21 | 0.16 | 0.01 | -0.02 | -0.02 | 0.18 | 0.01 | 0.01 | 0.02 | 0.06 | 0.14 | 0.00 | 0.17 | 0.06 | 0.50 | 0.72 | 0.82 | 1.00 | | | | | | | | | | | |
| 28. BU1 | 0.22 | 0.19 | 0.26 | 0.27 | -0.20 | 0.23 | 0.27 | 0.08 | 0.27 | 0.27 | 0.15 | 0.05 | 0.04 | 0.04 | 0.17 | 0.07 | 0.07 | 0.06 | 0.03 | 0.17 | 0.03 | 0.23 | 0.15 | 0.40 | 0.51 | 0.58 | 0.68 | 1.00 | | | | | | | | | | |
| 29. BU2 | 0.21 | 0.20 | 0.19 | 0.27 | -0.15 | 0.25 | 0.15 | 0.09 | 0.17 | 0.14 | 0.08 | 0.01 | 0.01 | 0.08 | 0.14 | 0.06 | 0.02 | 0.00 | 0.05 | 0.20 | 0.04 | 0.18 | 0.16 | 0.42 | 0.53 | 0.53 | 0.61 | 0.74 | 1.00 | | | | | | | | | |
| 30. BU3 | 0.15 | 0.12 | 0.14 | 0.22 | -0.16 | 0.18 | 0.19 | -0.04 | 0.18 | 0.19 | 0.15 | -0.04 | -0.05 | -0.07 | 0.12 | -0.03 | -0.04 | -0.06 | 0.11 | 0.13 | 0.00 | 0.13 | 0.09 | 0.40 | 0.59 | 0.69 | 0.81 | 0.71 | 0.74 | 1.00 | | | | | | | | |
| 31. SU1 | 0.04 | -0.01 | 0.03 | 0.14 | -0.06 | 0.07 | 0.07 | 0.07 | 0.19 | 0.10 | 0.10 | 0.02 | 0.03 | 0.00 | 0.10 | 0.07 | 0.08 | 0.04 | -0.06 | 0.07 | 0.12 | 0.13 | 0.01 | 0.12 | 0.17 | 0.13 | 0.17 | 0.10 | 0.15 | 0.14 | 1.00 | | | | | | | |
| 32. SU2 | 0.05 | 0.07 | 0.04 | 0.13 | -0.03 | 0.03 | 0.08 | 0.06 | 0.13 | 0.10 | 0.07 | 0.13 | 0.09 | 0.08 | 0.01 | 0.16 | 0.13 | 0.09 | 0.07 | 0.12 | 0.03 | 0.09 | 0.02 | 0.11 | 0.12 | 0.10 | 0.14 | 0.08 | 0.13 | 0.11 | 0.38 | 1.00 | | | | | | |
| 33. SU3 | 0.10 | 0.07 | 0.04 | 0.09 | -0.06 | 0.06 | 0.11 | 0.01 | 0.11 | 0.12 | 0.09 | 0.05 | 0.06 | 0.02 | -0.06 | 0.13 | 0.12 | 0.03 | 0.06 | 0.09 | -0.04 | 0.04 | 0.02 | -0.02 | -0.02 | -0.01 | -0.01 | -0.02 | -0.03 | -0.01 | 0.23 | 0.50 | 1.00 | | | | | |
| 34. SU4 | 0.09 | 0.06 | 0.03 | 0.08 | -0.06 | 0.05 | 0.08 | 0.00 | 0.10 | 0.12 | 0.09 | 0.04 | 0.04 | 0.00 | -0.06 | 0.11 | 0.10 | 0.02 | 0.05 | 0.08 | -0.03 | 0.03 | 0.00 | -0.02 | -0.02 | -0.02 | -0.01 | -0.02 | -0.03 | -0.01 | 0.22 | 0.48 | 0.97 | 1.00 | | | | |
| 35. SS1 | 0.13 | 0.17 | 0.12 | 0.12 | -0.17 | 0.19 | 0.05 | 0.04 | 0.01 | 0.02 | 0.00 | 0.07 | 0.06 | 0.15 | 0.13 | 0.10 | 0.06 | 0.05 | 0.16 | 0.11 | 0.09 | 0.13 | 0.23 | 0.02 | 0.04 | 0.02 | 0.01 | 0.09 | 0.09 | 0.02 | -0.04 | -0.11 | -0.12 | -0.11 | 1.00 | | | |
| 36. SS2 | 0.24 | 0.19 | 0.19 | 0.15 | -0.20 | 0.21 | 0.11 | 0.06 | 0.07 | 0.06 | 0.04 | 0.12 | 0.09 | 0.14 | 0.17 | 0.11 | 0.08 | 0.09 | 0.12 | 0.10 | 0.12 | 0.16 | 0.24 | 0.08 | 0.06 | 0.07 | 0.10 | 0.14 | 0.13 | 0.09 | -0.02 | -0.02 | -0.07 | -0.06 | 0.60 | 1.00 | | |

Note. SI = suicidal ideation; TB = thwarted belongingness; PB = perceived burdensomeness; HP = hopelessness; PS = previous suicidal behaviors; BU = bullying victimization; SU = substance use; SS = school related stress.

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Goodness-of-Fit Analysis

This dissertation study used SEM as the primary analysis method to examine the contributions of thwarted belongingness, perceived burdensomeness, hopelessness, previous suicidal behaviors, bullying victimization, substance use, and school related stress to suicidal ideation. Maximum Likelihood Estimation was used in order to address missing values and skewed distributions. The model fit was evaluated using the chi-square goodness-of-fit statistic. However, the chi-square statistic is sensitive to sample size. For example, with large sample sizes, the chi-square values can be inflated, thus it could incorrectly imply a poor model fit (Schumacker & Lomax, 2004). Therefore, to address the limitations of chi-square test, a variety of goodness-of-fit indices were used to supplement the chi-square statistic. These indices were the goodness of fit index (GFI), comparative fit index (CFI), and the root mean square error of approximation (RMSEA). Conventional cutoff points for determining good fitting models were used in the analysis that suggested a GFI > .90, a CFI > .90, and an RMSEA < .05 (Kline, 2005).

Results on Estimating the Measurement Model

Before estimating the measurement model, the model fit of one-factor and eight-factor model were compared to identify a better fitting model. One-factor model assumed a single factor structure in the model, signifying all indicators included in the model to be explained by one factor. Eight-factor model assumed that there is an eight-factor structure in the model. This was represented by the loadings of each item that only estimated for their expected latent factors. The chi-square of the eight-factor model (χ^2 [528, $N = 440$) = 1163.16, $p < 0.001$) was significantly lower ($\Delta\chi^2 = 6098.08$) than the one-factor model

(χ^2 [594, $N = 440$] = 7261.24, $p < 0.001$). Also, the eight-factor model produced a better fit to the data, GFI = .88; CFI = .93; RMSEA = .05, than the one-factor model, GFI = .43; CFI = .30; RMSEA = .16. These results confirmed that the eight-factor model represented the data more adequately. Thus, the subsequent analyses were conducted based on the eight-factor model.

Next, the factor loadings of each latent variable were examined. All the indicators, except PB4 and HP1 had a factor loading greater than .40, which is the traditional cutoff point of factor loadings (Wang & Wang, 2012). The indicator PB4 and HP1 had lower standardized factor loadings of .13 and .25, respectively, suggesting that those are weaker indicators of the latent factors. However, since the factor loadings were statistically significant, those indicators could be used in the model (Wang & Wang, 2012). In addition, the results showed that all of the factor loadings were statistically significant, indicating that the latent variables were adequately measured by their respective indicators (see Table 5-10).

Table 5-10 Factor loadings for the measurement model

| Measured variable | <i>b</i> | <i>SE</i> | β |
|-------------------|-------------------|-----------|----------|
| Suicidal ideation | | | |
| SI1 | 1.00 ^a | NA | 0.81*** |
| SI2 | 1.09 | 0.08 | 0.75*** |
| SI3 | 1.08 | 0.07 | 0.77*** |
| SI4 | 0.80 | 0.06 | 0.73*** |
| SI5 | -0.73 | 0.07 | -0.55*** |

Table 5-10 – *Continued*

| | | | |
|-----------------------------|-------------------|------|---------|
| SI6 | 1.09 | 0.07 | 0.83*** |
| Thwarted belongingness | | | |
| TB1 | 1.00 ^a | NA | 0.57*** |
| TB2 | 1.09 | 0.17 | 0.51*** |
| TB3 | 1.70 | 0.19 | 0.74*** |
| TB4 | 1.76 | 0.10 | 0.83*** |
| TB5 | 1.50 | 0.19 | 0.59*** |
| Perceived burdensomeness | | | |
| PB1 | 1.00 ^a | NA | 0.87*** |
| PB2 | 1.01 | 0.04 | 0.90*** |
| PB3 | 0.81 | 0.08 | 0.64*** |
| PB4 | 0.15 | 0.05 | 0.13*** |
| PB5 | 0.99 | 0.08 | 0.80*** |
| PB6 | 0.80 | 0.05 | 0.79*** |
| PB7 | 0.86 | 0.05 | 0.82*** |
| Hopelessness | | | |
| HP1 | 1.00 ^a | NA | 0.25*** |
| HP2 | 1.40 | 0.32 | 0.57*** |
| HP3 | 1.91 | 0.54 | 0.57*** |
| HP4 | 2.41 | 0.61 | 0.70*** |
| HP5 | 3.19 | 0.87 | 0.83*** |
| Previous suicidal behaviors | | | |

Table 5-10 – *Continued*

| | | | |
|------------------------------------------------------|-------------------|------|---------|
| PS1 (Suicide plan) | 1.00 ^a | NA | 0.53*** |
| PS2 (Suicide preparation) | 0.88 | 0.07 | 0.71*** |
| PS3 (Suicide attempt) | 0.95 | 0.08 | 0.82*** |
| PS4 (Suicide attempt resulted in medical treatments) | 0.94 | 0.08 | 0.93*** |
| Bullying victimization | | | |
| BU1 (Relational) | 1.00 ^a | NA | 0.77*** |
| BU2 (Verbal) | 1.48 | 0.08 | 0.69*** |
| BU3 (Physical) | 1.24 | 0.06 | 0.92*** |
| Substance use | | | |
| SU1 (Tobacco) | 1.00 ^a | NA | 0.42*** |
| SU2 (Alcohol) | 1.83 | 0.33 | 0.88*** |
| SU3 (Hallucinogen) | 0.59 | 0.08 | 0.57*** |
| SU4 (Inhalant) | 0.58 | 0.08 | 0.54*** |
| School related stress | | | |
| SS1 (GPA) | 1.00 ^a | NA | 0.78*** |
| SS2 (Class environment) | 0.99 | 0.16 | 0.77*** |

Note. SI = suicidal ideation; TB = thwarted belongingness; PB = perceived burdensomeness; HP = hopelessness; PS = previous suicidal behaviors; BU = bullying victimization; SU = substance use; SS = school related stress.

^a = parameter set to 1.0.

*** $p < .001$.

Further, confirmatory factor analysis (CFA) was conducted for each measurement model, prior to undertaking the confirmatory factor analyses of the structural model.

Because the theoretical factor structure had been established, it was appropriate to conduct the CFA to examine the theoretical model fit of the current data. Overall, measurement models produced a good fit to the data: suicidal ideation— $\chi^2(4, N = 440) = 8.18, p < 0.10$; GFI = .99; CFI = .99; RMSEA = .04; thwarted belongingness— $\chi^2(5, N = 440) = 6.74, p > 0.10$; GFI = .99; CFI = .99; RMSEA = .02; perceived burdensomeness— $\chi^2(11, N = 440) = 15.42, p > 0.10$; GFI = .99; CFI = .99; RMSEA = .03; hopelessness— $\chi^2(4, N = 440) = 8.20, p < 0.05$; GFI = .99; CFI = .98; RMSEA = .04; previous suicidal behaviors— $\chi^2(1, N = 440) = 0.48, p > 0.10$; GFI = .99; CFI = .99; RMSEA = .01; substance use— $\chi^2(1, N = 440) = 0.04, p > 0.10$; GFI = .99; CFI = .99; RMSEA = .01. The chi-square, GFI, CFI, and RMSEA were not computed for bullying victimization and school related stress because the models were saturated and under identified, respectively. The CFA analysis for each measurement model is summarized in Table 5-11.

Table 5-11 Results of confirmatory factor analyses

| Measured variable | χ^2 (df) | GFI | CFI | RMSEA |
|-----------------------------|-----------------------|-----|-----|-------|
| Suicidal ideation | 8.18 (4) ⁺ | .99 | .99 | .04 |
| Thwarted belongingness | 6.74 (5) | .99 | .99 | .02 |
| Perceived burdensomeness | 15.42 (11) | .99 | .99 | .03 |
| Hopelessness | 8.20 (4) [*] | .99 | .98 | .04 |
| Previous suicidal behaviors | 0.48 (1) | .99 | .99 | .01 |
| Bullying victimization | NA | NA | NA | NA |
| Substance use | 0.04 (1) | .99 | .99 | .01 |

Table 5-11 – *Continued*

| | | | | |
|-----------------------|----|----|----|----|
| School related stress | NA | NA | NA | NA |
|-----------------------|----|----|----|----|

Note. ⁺ $p < .10$. ^{*} $p < .05$.

Goodness-of-Fit of the Hypothesized Structural Model

After the CFA was estimated, the hypothesized model was examined to verify the model fit. One of the standards to assess the goodness-of-fit of the structural model was the chi-square statistic, which indicated the degree to which the data fit the hypothesized model. The hypothesized model showed a significant p value, $\chi^2 (574, N = 440) = 1382.39, p < 0.001$, indicating that the model and data differ significantly. However, as mentioned earlier, since the chi-square statistic is sensitive to sample size, it could incorrectly imply a poor model fit (Schumacker & Lomax, 2004). To address the limitations of chi-square, GFI, CFI, and RMSEA were used as alternative goodness-of-fit indices. The structural model had an acceptable model fit with the value of GFI = .86, CFI = .92, and RMSEA = .05. Based on the results of the goodness-of-fit indices, it can be concluded that the proposed structural model is consistent with the observed data.

Results of the Path Proposed in the Hypothesized Structural Model

Direct Parameter Estimates for the Hypothesized Structural Model

Figure 3-3 illustrates the hypothesized structural model explaining the direct and indirect effects of risk factors on suicidal ideation. Both unstandardized and standardized regression weights were reported in Table 5-12. A total of 11 direct paths were estimated and that the results showed eight paths to be statistically significant. These paths were: perceived burdensomeness to suicidal ideation; hopelessness to suicidal ideation; school related stress to suicidal ideation; previous suicidal behaviors to suicidal ideation;

thwarted belongingness to hopelessness; perceived burdensomeness to hopelessness; school related stress to hopelessness; bullying victimization to hopelessness. Also, a marginally significant path was found in the relationship between thwarted belongingness and suicidal ideation.

Table 5-12 Results of direct effects for the hypothesized structural model

| Independent variable | | Dependent variable | <i>b</i> | <i>SE</i> | β |
|-----------------------------|---|--------------------|----------|-----------|-------------------|
| Thwarted belongingness | → | Suicidal ideation | 0.08 | 0.04 | 0.09 ⁺ |
| Perceived burdensomeness | → | Suicidal ideation | 0.12 | 0.03 | 0.33*** |
| Hopelessness | → | Suicidal ideation | 1.04 | 0.30 | 0.29*** |
| School related stress | → | Suicidal ideation | 0.03 | 0.01 | 0.09** |
| Bullying victimization | → | Suicidal ideation | -0.02 | 0.02 | -0.06 |
| Previous suicidal behaviors | → | Suicidal ideation | 0.48 | 0.10 | .39*** |
| Substance use | → | Suicidal ideation | 0.06 | 0.05 | 0.06 |
| Thwarted belongingness | → | Hopelessness | 0.06 | 0.02 | 0.25** |
| Perceived burdensomeness | → | Hopelessness | 0.03 | 0.01 | 0.16* |
| School related stress | → | Hopelessness | 0.01 | 0.00 | 0.27** |
| Bullying victimization | → | Hopelessness | 0.01 | 0.01 | 0.13* |

Note. ⁺*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

Indirect Parameter Estimates for the Hypothesized Structural Model

Further, mediation test was conducted by using bootstrapping methods with AMOS. Bootstrapping is a resampling technique that generates pseudo multiple samples. In the current study, a total of 1,000 bootstrap samples were generated. Bootstrapping

requires no assumption of normality in the sampling distribution (Shrout & Bolger, 2002). It can be utilized for small to moderate sample sizes with higher confidence than Sobel's test. Bootstrapping provides confidence intervals (CIs) to test significance of parameters. The range of CIs that do not include zero indicate significant effect at $p < .05$ (for 95% CIs). Bias corrected bootstrap CIs at the $p < .05$ level was used in the study.

In the relationship between thwarted belongingness and suicidal ideation through hopelessness, the direct effect of thwarted belongingness on suicidal ideation without the mediator ($\beta = 0.11$) was significant ($p < .05$), but the same relationship with mediator was marginally significant ($\beta = 0.09$). Indirect effect ($\beta = 0.08$) between thwarted belongingness and suicidal behavior was significant based on the results of 95% bias corrected bootstrap CIs that did not include zero (95% CI [0.08, 0.09]). These results indicated that there were full mediation effects of hopelessness between thwarted belongingness and suicidal ideation.

Further, the effect of perceived belongingness on suicidal ideation through hopelessness was tested. The direct effect of perceived belongingness on suicidal ideation without the mediator ($\beta = 0.34$) was significant ($p < .001$). Also, the same relationship with mediator ($\beta = 0.33$) was significant ($p < .001$). Indirect effect ($\beta = 0.04$) between perceived burdensomeness and suicidal behavior was significant based on the range of CIs that did not include zero (95% CI [0.04, 0.05]). These results proved that there were partial mediation effects of hopelessness between perceived burdensomeness and suicidal ideation.

Next, the relationship between school related stress and suicidal ideation through hopelessness was examined. The direct effect of school related stress on suicidal ideation without the mediator ($\beta = 0.11$) was significant ($p < .05$). After the addition of the mediator, the relationship between school related stress and suicidal ideation ($\beta = 0.09$) was still significant ($p < .01$). Indirect effect ($\beta = 0.08$) between school related stress and suicidal behavior was significant based on the range of CIs (95% CI [0.08, 0.09]). These results indicate that hopelessness partially mediates the effects of school related stress on suicidal ideation.

No mediation effect was found in the relationship between bullying victimization and suicidal ideation through hopelessness because the direct effect without mediator was not significant. Baron and Kenny (1986) suggested that a mediation model can be tested when there is a significant relationship between independent and dependent variable.

Table 5-13 Results of mediation effects for the hypothesized structural model

| Independent variable | Mediating variable | Dependent variable | Direct effect without mediator | Direct effect with mediator | Indirect effect | 95% CI |
|----------------------|--------------------|--------------------|--------------------------------|-----------------------------|-----------------|--------------|
| TB | → HP | → SI | 0.11* | 0.09 ⁺ | 0.08** | [0.08, 0.09] |
| PB | → HP | → SI | 0.34*** | 0.33*** | 0.04** | [0.04, 0.05] |
| SS | → HP | → SI | 0.11* | 0.09** | 0.08** | [0.08, 0.09] |
| BU | → HP | → SI | -0.03 | -0.04 | 0.06** | [0.04, 0.05] |

Note. CI = confidence interval.

BU = bullying victimization; TB = thwarted belongingness; SI = suicidal ideation; HP = hopelessness; PB = perceived burdensomeness; SS = school related stress; PS = previous suicidal behaviors.

⁺ $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Evaluation of the Hypotheses

Moving forward, the hypotheses were evaluated with the results of the study. The hypotheses and the respective results are shown below:

Hypothesis 1: A direct, significant positive relationship is expected between thwarted belongingness and suicidal ideation when controlling for gender.

Result: As hypothesized, a direct, marginally significant positive relationship was identified between thwarted belongingness and suicidal ideation ($\beta = 0.09, p < .10$). The results indicated that respondents who experienced more thwarted belongingness were more likely to have suicidal ideation.

Hypothesis 2: A direct, significant positive relationship is expected between perceived burdensomeness and suicidal ideation when controlling for gender.

Result: As hypothesized, a direct, significant positive relationship was identified between perceived burdensomeness and suicidal ideation ($\beta = 0.33, p < .001$). The results indicated that respondents who perceived more burden were more likely to have suicidal ideation.

Hypothesis 3: A direct, significant positive relationship is expected between hopelessness and suicidal ideation when controlling for gender.

Result: As hypothesized, a direct, significant positive relationship was identified between hopelessness and suicidal ideation ($\beta = 0.29, p < .001$). The results indicated that respondents who felt more hopeless were more likely to have suicidal ideation.

Hypothesis 4: A direct, significant positive relationship is expected between school related stress and suicidal ideation when controlling for gender.

Result: As hypothesized, a direct, significant positive relationship was identified between school related stress and suicidal ideation ($\beta = 0.09, p < .01$). The results indicated that respondents who experienced more school related stress were more likely to have suicidal ideation.

Hypothesis 5: A direct, significant positive relationship is expected between bullying victimization and suicidal ideation when controlling for gender.

Result: Results showed a direct and insignificant relationship between bullying victimization and suicidal ideation. This indicates that the degree of bullying victimization was not related to suicidal ideation.

Hypothesis 6: A direct, significant positive relationship is expected between previous suicidal behaviors and suicidal ideation when controlling for gender.

Result: As hypothesized, a direct, significant positive relationship was identified between previous suicidal behaviors and suicidal ideation ($\beta = 0.39, p < .001$). The results indicated that respondents who experienced more previous suicidal behaviors were more likely to have suicidal ideation.

Hypothesis 7: A direct, significant positive relationship is expected between substance use and suicidal ideation when controlling for gender.

Result: A direct and insignificant negative relationship was found between substance use and suicidal ideation. This indicates that the degree of substance use was not related to suicidal ideation.

Hypothesis 8: Hopelessness will mediate the relationship between thwarted belongingness and suicidal ideation when controlling for gender.

Result: As hypothesized, thwarted belongingness was posited to influence suicidal ideation indirectly through hopelessness ($\beta = 0.08, p < .01$). The results indicated that hopelessness fully mediates the relationship between thwarted belongingness and suicidal ideation.

Hypothesis 9: Hopelessness will mediate the relationship between perceived burdensomeness and suicidal ideation when controlling for gender.

Result As hypothesized, perceived burdensomeness was posited to influence suicidal ideation indirectly through hopelessness ($\beta = 0.04, p < .01$). The results indicated that hopelessness partially mediates the relationship between perceived burdensomeness and suicidal ideation.

Hypothesis 10: Hopelessness will mediate the relationship between school related stress and suicidal ideation when controlling for gender.

Result: As hypothesized, school related stress was posited to influence suicidal ideation indirectly through hopelessness ($\beta = 0.08, p < .01$). The results indicated that hopelessness partially mediates the relationship between school related stress and suicidal ideation.

Hypothesis 11: Hopelessness will mediate the relationship between bullying victimization and suicidal ideation when controlling for gender.

Result: No mediation effect was found in the relationship between bullying victimization and suicidal ideation through hopelessness.

Chapter 6

Discussion

The main focus of this study was to test a theoretical model of adolescents' suicidal ideation based on the modified interpersonal theory of suicide. The hypothesized structural model was tested by using SEM to verify how the various risk factors were posited to effect adolescent suicidal ideation. The risk factors, which have frequently been tested as triggers for suicidal ideation, included thwarted belongingness, perceived burdensomeness, hopelessness, previous suicidal behaviors, bullying victimization, substance use, and school related stress. The central hypotheses were supported: the risk factors, including thwarted belongingness, perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors, posited to positively influence suicidal ideation among Korean adolescents; the risk factors, including thwarted belongingness, perceived burdensomeness, and school related stress, posited to influence suicidal ideation indirectly through hopelessness.

The specific results of this study, presented in Chapter 5, serve as the foundation for the purpose of this chapter: to discuss the findings with respect to the (1) underlying theoretical framework and prior empirical findings, (2) strengths and limitations of the study, and (3) key implications. First, the preliminary analysis findings are discussed to enhance the comprehensive understanding of the key variables ingrained in Korean adolescents. Then, the major findings are discussed in the categories of consistent and new findings. Next, methodological strengths and limitations are addressed to clarify the boundary conditions and generalizability of the study findings; and then finally,

implications for theory, practice, policy, and future research are discussed based on the key findings. The chapter ends with a brief summary and conclusion.

Examining Demographic Variables

Gender Effects on Suicidal Ideation

Previous research has suggested that gender differences are one of the important indicators related to suicidal ideation among adolescents (Bridge et al., 2006; Park et al., 2010; Statistics Korea, 2012a, 2012b). The findings of the preliminary analysis are consistent with the previous studies as follows: there is a significant effect for gender on suicidal ideation, with female participants reporting higher scores on suicidal ideation than male participants (see Table 5-4).

Grade Effects on Suicidal Ideation

According to a nationwide longitudinal research conducted in Korea since 2005 (Statistics Korea, 2012b), there have been no significant differences in suicidal ideation rates between middle and high school students. Since all the participants in the current study are high school students (10th and 11th grade), it is not possible to compare the levels of suicidal ideation between middle and high school students. However, the results of the current study found no significant grade effects on suicidal ideation between 10th and 11th graders for male participants and female participant respectively (see Table 5-6 and 5.7). Although, significant grade effect on suicidal ideation was found before dividing participants into male and female groups (see Table 5-5), the effects of grade may not be huge considering the results from male and female groups. These results partially support the findings of previous research.

Major Findings

The results of the SEM indicate that Joiner's interpersonal theory of suicide may be generally applicable to Korean adolescent populations. The findings of the current study support the following assumptions of the interpersonal theory of suicide: (1) people show a suicidal ideation (i.e., "I wish I were dead.") when they have thwarted belongingness (i.e., "I am alone.") and perceived burdensomeness (i.e., "I am a burden."); (2) hopelessness is also a significant trigger for people with thwarted belongingness and perceived burdensomeness to have suicidal ideation (Joiner, 2005). The study findings also provide a comprehensive understanding of complex suicidal ideation among Korean adolescents by adding the following risk factors into the modified interpersonal theory of suicide: previous suicidal ideation or attempt, substance use, school related stress, and bullying victimization. The major findings are discussed below in detail within the categories of consistent and new findings.

Consistent Findings

The finding that perceived burdensomeness has a positive relationship with suicidal ideation is consistent with other empirical research findings. For example, Van Orden, Cukrowicz, Witte, and Joiner (2012) sampled 912 undergraduate students where the level of suicidal ideation was associated with higher level of perceived burdensomeness. Similarly, in Zhang, Lester, Zhao, and Zhou's study (2013) of 439 participants aged 17 to 24, perceived burdensomeness to be associated with current suicidal ideation. Thus, the result of this study supports that perceived burdensomeness functions to increase the level of suicidal ideation.

The expected influences of hopelessness on suicidal ideation are confirmed in the model. This finding adds to the body of knowledge about the positive effect of hopelessness on suicidal ideation (Cole, 1989; Goldston et al., 2001; Mazza & Reynolds, 1998; Osman et al., 1998; Reinecke et al., 2001). Hopelessness also mediated the relationship between several risk factors and suicidal ideation in the current study. This finding is discussed later in detail (see 6.2.2 *New Findings*).

The hypothesis that school related stress will produce greater suicidal ideation is supported in this study. The findings are consistent with prior studies reporting a relationship between school related stress and suicidal ideation (Jang, 2010; Lee & Jang, 2011; Park & Chung, 2010). Importantly, the results of the current study provide additional evidence that stress from class environment and GPA are significantly related to school related stress among Korean adolescents and lead to increased suicidal ideation.

Previous suicidal behaviors have a strong positive impact on suicidal ideation, thereby increasing suicidal ideation. This supports the findings from a number of previous studies that showed a significant association between previous suicidal ideation with an attempt and current suicidal ideation (Joiner, 2005; Joiner & Rudd, 2000; Rudd et al., 1996; Teasdale, 1988). The findings of the current study prove that the more accessible the modes become, the more easily the previous attempters are triggered (Joiner & Rudd, 2000).

New Findings

The most unexpected finding of this study is the relationship between thwarted belongingness and suicidal ideation. It was hypothesized that there is a direct, significant

positive relationship between thwarted belongingness and suicidal ideation (H₁). However, the results indicate a direct, marginally significant positive relationship between thwarted belongingness and suicidal ideation. The result indicates thwarted belongingness as a less strong predictor of suicidal ideation among Korean adolescents than other predictor variables tested in the model, such as perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors. According to the results, hopelessness works as a full mediator in the relationship between thwarted belongingness and suicidal ideation, indicating thwarted belongingness affects suicidal ideation through hopelessness. In this regard, the effects of thwarted belongingness on suicidal ideation are explained well when hopelessness is included as a mediator between the relationship.

A significant positive relationship between bullying victimization and suicidal ideation was hypothesized. However, this hypothesis (H₅) is not supported. The results of the current study indicate an insignificant relationship between bullying victimization and suicidal ideation. This finding is not congruent with the previous studies that maintained a significant association between bullying victimization and suicidal ideation (Fisher et al., 2012; Hinduja & Patchin, 2010; Hong, 2011; Kim et al., 2009; Roeger et al., 2010; Winsper et al., 2012). One plausible reason for the discrepancy in findings could be that there is the possibility for participants to under-report their experiences of bullying victimization in the questionnaire, leading to unexpected and inaccurate results. Adolescents who are bullied may not report their bullying victimization issues to others for two reasons: fear of reprisal and distrust in the hope of being rescued by family,

friends, or teachers (Ahn, 1998; Korean Educational Development Institute, 1998).

Another possible explanation is that adolescents who are bullied could have suicidal ideation later in their lives. According to Klomek et al. (2009), children who experienced bullying victimization at 8 years of age showed suicidal behaviors, including attempts and completions, up to 25 years of age. Thus, the participants of the current study who experienced being bullied may have suicidal ideation later in their lives. In addition, there can be other possibilities that could cause these unexpected results: the use of unreliable scales, social desirability, and careless responses to the survey.

Another new finding is the role of hopelessness as a mediator between several risk factors and suicidal ideation. Although it was expected by using the interpersonal theory of suicide that thwarted belongingness and perceived burdensomeness have an effect on suicidal ideation through hopelessness, the results of this study show that hopelessness also mediates the effects of school related stress on suicidal ideation among Korean adolescents. Given these findings, it can be concluded that hopelessness itself is not only a significant predictor of suicidal ideation, but it is also a key factor that mediates other risk factors including thwarted belongingness, perceived burdensomeness, and school related stress. Although the mediation effect of hopelessness between bullying victimization and suicidal ideation was assumed, no mediation effect was found because the direct effect without a mediator was not significant as discussed in chapter 5.

In addition, the results indicate that substance use is not a significant risk factor for suicidal ideation. This finding is not consistent with the prior studies that reported a significant association between substance use and suicidal ideation (Conason et al.,

2005a, 2005b; Kim et al., 2012; Mehlenbeck et al., 2003). Some may argue that substance use affects suicidal ideation through a mediator such as family support rather than directly affecting suicidal ideation. This explanation indicates that substance use may decrease family support and it could lead to increased suicidal ideation (Kim, Kim, & Park, 2007; Light, Grube, Madden, & Gover, 2003; Tarantino, Kuperminc, Parrott, & Latzman, 2013). Another possible explanation is that two indicators in substance use variable tested in the hypothesized model were related to hallucinogenic and inhalant drug use. Compared to cigarette and alcohol use, the rates of hallucinogenic and inhalant drug use among Korean adolescents were relatively low (Korea CDC, 2013). This phenomenon could affect the relationship between substance use and suicidal ideation in the current study.

Strengths and Limitations

Strengths

This study has several strengths that set it apart from other research. First, one of the strengths of this study includes SEM procedures used for the analyses. SEM is one of the most efficient and least problematic methods to test a mediating model (Hoyle & Smith, 1994). SEM also enables estimation and correction for both random and non-random measurement errors that are inevitable in real-world data. Also, SEM procedures fit the purpose of the current study, testing direct and indirect effects of predictor variables on outcome variables.

Second, another strengths is using a relatively large sample size. Considering the possibility of no multivariate normality, a priori analysis computed a necessary sample

size of 540 based on the 15 respondents per indicator (Westland, 2010). The current study recruited total 569 participants for the proposed theoretical model considering no assumption of normality. The large sample size increases confidence in the generalizability of study findings to Korean adolescents.

Third, the current study is the first attempt to apply Joiner's interpersonal theory of suicide to the Korean adolescent population. By adding school related stress and bullying victimization, which are significant risk factors for Korean adolescents, into Joiner's model, the current study provides more comprehensive explanations about the relationship between risk factors and suicidal ideation among Korean adolescents.

Fourth, the response rate of the current research was fairly high. About 67% of members of the sample responded to a questionnaire, which was 569 out of 850. The high response rate may be due to the fact that survey coordinators (two faculty members from Pyeongtaek University research team) already have a good relationship with the school principals of the selected schools. Also, survey coordinators and research assistants visited the six high schools selected to meet the school principals, teachers, and the student participants in advance to explain about the research objectives, informed consent, procedures, and the confidentiality.

Limitations

To clarify the generalizability of the findings, it is beneficial to discuss the methodological limitations of the study. First, only high school students (10th and 11th graders) were recruited. Considering that there may be different characteristics in risk factors between middle and high school students and the fact that rates of suicidal

ideation in vocational school students are higher than ordinary school students (Statistics Korea, 2012b), this may have limited representativeness of participants.

Second, there are normality issues for previous suicidal behaviors, bullying victimization, and substance use. Although some may argue that real-world data do not have normal distributions (Chou, Bentler, & Satorra, 1991; Micceri, 1989), the data did not meet the assumption of maximum likelihood estimation in SEM. It could affect the results of SEM analysis.

Third, all the collected data are self-reported, resulting in increased possibility for participants to under- or over-report their behaviors in sensitive questions such as suicidal ideation, substance use, or bullying victimization. Thus, data gathered from the self-reported survey method could lead to imprecise and unexpected results.

Fourth, the current study used data gathered from six high schools in Pyeongtaek, Korea. Even though the rate of suicidal ideation among adolescents in Gyeonggi-do (18.5%), the province in Korea that includes Pyeongtaek city, is approximately equal to the national average (18.3%) (Statistics Korea, 2012b), there can be demographic differences among provinces or even among schools in Pyeongtaek. The province and school differences could decrease the generalizability of study findings.

Implications

Implications for Theory

This study is the first attempt to apply Joiner's interpersonal theory of suicide to Korean adolescents. Based on the findings of the current study, some implications for the theory are suggested here. Considering the different cultures, (populations may have

different risk factors for suicide) it may be beneficial to modify the interpersonal theory of suicide to make the model more applicable to other cultures, race/ethnicity, or context of population. Because Joiner developed his interpersonal theory of suicide mainly based on the population who reside in the US, his theoretical framework has particular characteristics geared towards the US perspectives. In this regards, future studies are recommended to add other significant risk factors that are unique for the specific group of the population or to modify the interpersonal theory of suicide to develop a more precisely delineated model that is specialized for the population.

As an extension of the first theory implication, it is recommended to apply Joiner's interpersonal theory of suicide to different cultures, race/ethnicity, or context of populations. By doing so, it is possible to compare which variables in interpersonal theory of suicide are significant risk factors to suicidal ideation or which risk factors are more or less significant than other variables to explain suicidal ideation. For example, Korean, Korean American, Caucasian, African American, and Hispanic adolescents can be compared by using the framework of interpersonal theory of suicide to find out a more delineated model for each race/ethnicity.

Implications for Social Work Practice

This study suggests implications for the practitioners working with the adolescents who are at risk for suicide or have potential to commit suicide. First, practitioners need to have in depth knowledge and understanding about adolescent suicide and its risk factors. As examined in this study, practitioners are expected to recognize the possible risk factors of suicidal ideation among Korean adolescents

including thwarted belongingness, perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors. Having these comprehensive understandings will be a foundation to broaden practitioners' perspectives and develop coping skills to prevent adolescents' suicide issues.

Second, designing a multiple-factors-based suicide prevention program is recommended. Suicide prevention programs in Korea mainly focus on individual or group counseling and general suicide education (Nam, 2011; The Commission on Youth Protection, 2003). In addition, the majority of the suicide prevention programs have no theoretical background (Nam, 2011; The Commission on Youth Protection, 2003). Based on the finding of the current study, it is recommended to develop a multiple-factors-based suicide prevention program that monitors and deals with the risk factors such as thwarted belongingness, perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors. The multiple-factors-based suicide prevention program should address the following program goals: (1) focusing more on monitoring students overwhelmed by a feeling of hopelessness (2) setting up support systems among students; (3) counseling the alienated students; (3) decreasing school related stress; (4) monitoring students who have an experience of suicidal behavior.

Implications for Policy

In Korea, the Suicide Prevention Law was enacted in April 2012 (Kim, Oh, & Lee, 2013). The purpose of the Suicide Prevention Law is to protect life and support a culture that respects the value of human life (National Law Information Center, 2012). The basic policy direction is to focus on multi-dimensional suicide prevention guidelines

that take into consideration the specific circumstances of people who are at risk for suicide including gender, age, and a motive for suicide (National Law Information Center, 2012). Although the Suicide Prevention Law has good intentions, the direction of the multi-dimensional suicide prevention guidelines is not clear and specific. The Suicide Prevention Law therefore, needs to be modified so that it provides more specific direction for a multi-dimensional suicide prevention program based on the findings of the current study. The multi-dimensional suicide prevention policies need to consider the risk factors for people that may increase the level of suicidal ideation. The risk factors include thwarted belongingness, perceived burdensomeness, hopelessness, academic stress, and previous suicidal behaviors.

Education policy makers are expected to consider revising the current education system that mainly focuses on the college entrance exam. Korean adolescents are under intense academic pressure because of this competitive college entrance exam. The findings of the current research and a number of previous research have proved consistently that there is a significant association between academic stress and suicide. Thus, the excessively competitive education system needs to be revised to less competitive and cooperative environment.

In addition, in order to prevent suicide among adolescents, funding needs to be allocated to develop and expand suicide prevention programs designed to monitor adolescents' hopelessness, reduce school related stress, and counsel the alienated students or the students who have history of suicidal behaviors. It is also important that more funding is allocated to assure that adolescents at suicide risk can easily access the suicide

prevention programs in schools or in the community. Finally, policy makers need to pay more attention to support further research on suicide among adolescents to have more accurate and comprehensive understandings of adolescents' suicide issues.

Suggestions for Future Research

Four major research implications are recommended to guide future research on adolescent suicidal ideation. First, based on the previous research that indicated gender differences in suicidal ideation (Statistics Korea, 2012a, 2012b), it is strongly recommended to examine gender differences in risk factors for male and female adolescents.

Second, this study recruited participants from ordinary high school only. However, given the fact that there have been significant gaps in suicide rates between ordinary school and vocational school (Statistics Korea, 2012b), it would be worthwhile to include students from both type of schools to compare the risk factors of suicidal ideation.

Third, future studies need to follow a longitudinal design. Although relatively large, 569 Korean adolescents participated in the study, it was planned as a cross-sectional study. A longitudinal study will allow researchers to detect changes in outcomes over a period of time to show individual patterns of change. Also, a longitudinal design is recommended for future studies to identify a causal relationship between risk factors and suicidal ideation.

Fourth, one of the possible limitations of the current research is a generalizability of study findings caused by province and school differences. To handle the

generalizability issue, future studies are needed to conduct Hierarchical Linear Modeling to examine province and school differences because those are hierarchical structures that could influence the study results

Summary and Conclusion

The aim of this study has been to attain a better understanding of contributing factors for suicidal ideation among Korean adolescents. A cross-sectional survey research was used to test the hypothesized model, a modified test of Joiner's interpersonal theory of suicide. By using a two-stage cluster sampling, 569 high school students living in Pyeongtaek, Korea were recruited and voluntarily participated in the study. Several statistical procedures were involved in accomplishing the aim of the study. First, Univariate statistics including frequencies and central tendencies were tested to know descriptive statistics of participants. Also, *t*-test was computed to analyze gender and school grade differences. Bivariate analyses were then conducted by using Pearson's correlations to examine the direction and size of the relationship between the variables. Finally, SEM was used to test the hypothesized model. Both measurement model and structural model were tested.

The study findings generally supported the hypotheses of the study: the risk factors, including thwarted belongingness, perceived burdensomeness, hopelessness, school related stress, and previous suicidal behaviors, were posited to positively influence suicidal ideation among Korean adolescents; the risk factors, including thwarted belongingness, perceived burdensomeness, and school related stress, were posited to influence suicidal ideation indirectly through hopeless. The most important findings of

this study is that hopelessness itself is a significant risk factor of suicidal ideation and also functions as a mediator between several risk factors and suicidal ideation, including thwarted belongingness, perceived burdensomeness, and school related stress.

Although there are some limitations such as recruiting participants from ordinary high schools only, non-normality issues, self-reported survey method, and generalizability issues caused by province and school differences, this study provides comprehensive understandings about Korean adolescents' suicidal ideation and its risk factors. Also, the study proves an applicability of Joiner's interpersonal theory of suicide to Korean adolescent population.

Appendix A
Informed Consent and Assent Document

INFORMED CONSENT AND ASSENT DOCUMENT

PRINCIPAL INVESTIGATOR

Yi Jin Kim. (University of Texas at Arlington, School of Social Work, PhD student, yi-jin.kim@mavs.uta.edu, 866-272-3181)

TITLE OF PROJECT

Suicidal Ideation among Korean Adolescents

INTRODUCTION

You are being asked to participate in a research study about suicide. Your participation is voluntary. Refusal to participate or discontinuing your participation at any time will involve no penalty or loss of benefits to which you are otherwise entitled. Please ask questions if there is anything you do not understand.

PURPOSE

This project is intended to attain a better understanding of contributing factors for suicidal ideation among Korean adolescents.

DURATION

Participation in this study will last approximately 30-45 minutes.

NUMBER OF PARTICIPANTS

The number of anticipated participants in this research study is 850.

PROCEDURES

The primary data collection method used will be through written surveys. Surveys will be administered by Dr. Lee at school to each of the participants. The questionnaire includes measures on the followings: demographic information; thwarted belongingness; perceived burdensomeness; hopelessness; school related stress; bullying victimization; previous suicidal behaviors; substance use; suicidal ideation. Dr. Lee and his research assistants will gather data.

POSSIBLE BENEFITS

You will be expected to have increased knowledge about suicidal behaviors.

POSSIBLE RISKS/DISCOMFORTS

Since we will be touching on sensitive topics, such as suicidal behaviors, there is the potential for psychological distress. Participants may be particularly distressed when asked to recall their personal experiences. This potential risk will be minimized in several ways. If you are bothered by any question, you can skip it or stop the survey. During or after the survey, if you feel uncomfortable about what you discussed, you will be given the contact information to a crisis counselor. All research assistants will be carefully

trained to handle any situation where the survey participants appear to be upsetting. Also, students who seem upset during the research will be referred to school social workers.

COMPENSATION

This is a voluntary survey. There is no compensation.

ALTERNATIVE PROCEDURES

There are no alternative procedures offered for this study.

VOLUNTARY PARTICIPATION

Students who receive permission from parents and who themselves agree to participate will be involved in a survey. Participant may elect not to participate or may quit at any time with no consequences.

CONFIDENTIALITY

To ensure confidentiality, the curriculum facilitators will immediately place completed surveys in sealed folders as they receive them and will immediately send the surveys to the evaluators. Data will be coded, entered into a computerized data file, and will be not include any individual information. The survey does not solicit any personal identifiers. Each survey will be assigned a generic code prior to the data collection and that code will be written on the participant's consent form. All data will be maintained in a locked file cabinet in the locked office of the PI located at the School of Social Work Building 407-1 for 4 years after all study procedures have been completed. Only the research team will have access to the data for the purpose of research.

CONTACT FOR QUESTIONS

Questions about this research or your rights as a research subject may be directed to Yi Jin Kim at 866-272-3181 or yi-jin.kim@mavs.uta.edu.

As a representative of this study, I have explained the purpose, the procedures, the benefits, and the risks that are involved in this research study:

Signature and printed name of principal investigator or person obtaining consent

Date

CONSENT

By signing below, you confirm that you are 18 years of age or older and have read or had this document read to you. You have been informed about this study’s purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. You may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

SIGNATURE OF VOLUNTEER

DATE

ASSENT

By signing below, you confirm that you have read or had this document read to you. You have been informed about this study’s purpose, procedures, possible benefits and risks, and you have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time. You understand that since you are under 18 years of age that your parent(s)/legal guardian(s) have consented for your participation.

You voluntarily agree to participate in this study. By signing this form, you are not waiving any of your legal rights. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefits, to which you are otherwise entitled.

SIGNATURE OF PARENT/LEGAL GUARDIAN

DATE

SIGNATURE OF MINOR VOLUNTEER

DATE

부모 및 학생 동의서

주 연구자 **PRINCIPAL INVESTIGATOR**

김이진 (University of Texas at Arlington, 사회복지학과, 박사과정 학생, yijin.kim@mavs.uta.edu, 866-272-3181)

연구 제목 **TITLE OF PROJECT**

한국 청소년의 자살생각

연구개요 **INTRODUCTION**

귀하께서는 청소년의 자살생각에 대한 연구에 참여하시게 됩니다. 본 동의서에 서명하는 것은 귀하께서 인터뷰 참여에 동의한다는 의사를 뜻합니다. 귀하의 모든 답변은 설문지에 기록될 것입니다. 연구에 대한 참여를 원치 않으시거나 연구 도중에 멈추기 원하시는 경우에도 어떠한 손해나 피해를 입지 않습니다. 잘 이해가 되지 않으시는 부분이 있으시면 질문해 주시기 바랍니다.

연구목적 **PURPOSE**

본 연구는 한국 청소년들의 자살생각에 영향을 미치는 위험요소에 대한 분석에 그 목적이 있습니다.

연구기간 **DURATION**

본 설문에 참여하는 데 소요되는 시간은 대략 30 분에서 45 분 정도입니다.

참여자 명수 **NUMBER OF PARTICIPANTS**

본 연구에는 850 명의 고등학생이 참여할 예정입니다.

연구과정 **PROCEDURES**

본 연구는 설문조사를 바탕으로 이루어 집니다. 이 설문조사에 참여하시면 다음과 같은 내용을 질문 받게 됩니다: 신상정보; 소속감; 상대에게 짐이 된다는 느낌; 절망감; 학과 관련 스트레스; 왕따; 이전 자살행동; 약물사용; 자살생각. 이장현 교수와 연구팀이 데이터를 걷을 것입니다.

가능한 이익 **POSSIBLE BENEFITS**

이 연구의 결과는 궁극적으로 한국 청소년들의 자살행동에 대한 이해를 도움 것으로 기대하고 있습니다.

가능한 위험 POSSIBLE RISKS/DISCOMFORTS

본 연구는 자살행동과 같은 예민할 수 있는 주제를 다루고 있으므로 심리적 스트레스를 유발할 잠재적 가능성이 있습니다. 연구 참여자들은 특히 자신의 과거 기억을 떠올릴 때 스트레스를 받을 수 있습니다. 이러한 잠재적 위험은 여러 방법을 통해 통제될 수 있습니다. 설문지 문항에 의해 스트레스를 받으신다면 그 문제를 건너 뛰거나 아니면 설문을 중단할 수 있습니다. 설문 중이나 후에 당신이 참여한 연구에 대해서 불편하게 생각이 된다면 제공되는 상담사 연락처로 연락을 취하여 상담 서비스를 신청할 수 있습니다. 모든 연구보조인들은 설문 참여자들이 당황하거나 스트레스를 받을 때 도움을 드릴 수 있도록 철저하게 훈련을 받았습니다. 또한, 설문 중 과도한 스트레스를 경험한 연구 참여자는 학교 사회복지사에게 상담서비스를 받을 수 있습니다.

보상 COMPENSATION

본 연구는 자발적 참여에 의한 것으로 연구 참여로 인한 특별한 보상은 없습니다.

대안적 참여 ALTERNATIVE PROCEDURES

설문조사 시간 외에 따로 연구에 참여하실 수 있는 기회는 없습니다.

자발적 참여 VOLUNTARY PARTICIPATION

본 설문은 자발적으로 참여를 원칙으로 합니다. 부모님께 동의를 얻은 분 중에서 본인이 원하는 분에 한하여 연구에 참여하실 수 있습니다. 설문에 참여하기 원하는 학생에 한하여 참여를 할 수 있고 어느 때라도 참여를 중단하고 싶으시면 아무런 손해 없이 참여를 중단할 수 있습니다.

비밀보장 CONFIDENTIALITY

비밀보장을 위해서 설문 담당자는 설문이 끝난 이후 즉시 동봉하여 연구 담당자에게 제출합니다. 데이터는 코딩 과정을 거쳐 컴퓨터 파일로 기록되는데 어떠한 개인식별 데이터도 남지 않습니다. 따라서 설문 결과로 개인을 식별할 수 없습니다. 각 설문지는 고유의 일련번호를 부여 받게 되고 동일한 번호가 동의서에도 제공이 됩니다. 모든 데이터는 이장현 교수의 사무실인 평택대 사회복지학과 건물 407-1 호에서 4년간 보관된 이후 파기됩니다. 연구 팀원만이 데이터에 접근할 수 있습니다.

연락처 CONTACT FOR QUESTIONS

연구에 관한 질문이 있으신 분은 담당 연구원인 김이진에게 연락을 주시면 됩니다.
(전화: 866-272-3181 / 이메일: yi-jin.kim@mavs.uta.edu)

본 연구의 대표자로서, 나는 연구의 목적, 과정, 이익, 위험에 대해서 설명했다:

데이터를 걷은 사람 혹은 주 연구원의 이름과 서명

날짜

동의서 (부모) CONSENT

아래 공란에 서명함으로써 당신은 18 세 이상인 것과 본 문서를 읽은 것을 확인하게 됩니다. 당신은 연구의 목적, 과정, 이익과 위험에 대해 설명을 들었고 이 문서의 복사본을 받았습니다. 당신은 이 문서에 서명하기 전에 질문할 수 있는 기회가 있었고 어느 때라도 원하면 질문할 기회가 있었습니다.

당신은 자발적으로 본 연구에 참여하는 데 동의하였습니다. 본 문서에 서명함으로써 인해 당신은 어떠한 법적 권리도 잃지 않습니다. 연구 참여를 거부할 때에도 어떠한 손해를 입지 않습니다. 당신은 원하는 어느 때에라도 어떠한 손해 없이 연구 참여를 멈출 수 있습니다.

자원자 서명

날짜

동의서 (학생) ASSENT

아래 공란에 서명함으로써 당신은 본 문서를 읽은 것을 확인하게 됩니다. 당신은 연구의 목적, 과정, 이익과 위험에 대해 설명을 들었고 이 문서의 복사본을 받았습니다. 당신은 이 문서에 서명하기 전에 질문할 수 있는 기회가 있었고 어느 때라도 원하면 질문할 기회가 있었습니다. 당신은 당신이 18 세 이하이기 때문에 당신의 부모나 법적 보호자가 당신의 연구 참여에 승낙해야 한다는 것을 이해했습니다.

당신은 자발적으로 본 연구에 참여하는 데 동의하였습니다. 본 문서에 서명함으로써 인해 당신은 어떠한 법적 권리도 잃지 않습니다. 연구 참여를 거부할 때에도 어떠한 손해를 입지 않습니다. 당신은 원하는 어느 때에라도 어떠한 손해 없이 연구 참여를 멈출 수 있습니다.

부모/법적 보호자 서명

날짜

미성년자 서명

날짜

Appendix B
Measurements

All measurements that were utilized in the current study are not provided as appendices because of copyright issues.

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