

Thai Adolescent Suicide Risk Behaviors: Testing a Model of Negative Life Events, Rumination, Emotional Distress, Resilience and Social Support

Wareerat Thanoi, Kobkul Phancharoenworakul, Elaine A. Thompson, Rungnapa Panitrat, Dechavudh Nityasuddhi

Abstract : This study investigated, by way of a predictive model, the simultaneous influence of perceived negative life events, rumination, resilience and social support on emotional distress, and the mediating effects of emotional distress on suicide risk behaviors among Thai adolescents. Cognitive Theory and Response Style Theory of Depression served as the conceptual framework. A multi-stage, random sampling technique was used to select 1,417 adolescents attending 12 high schools in Bangkok, Thailand. Data were collected by a set of self-report questionnaires including the: Personal Profile; Thoughts, Feelings and Experiences Questionnaire; Rumination Response Scale; State-Trait Resilience Inventory; Multidimensional Scale of Perceived Social Support; and, Negative Events Scale.

The results of LISREL structural equation modeling revealed the model fit the data well (Chi-Square = 225.48; $df = 194$; $p = 0.0602$; GFI = 0.982; AGFI = 0.967; RMSEA = 0.013). The variance accounted for 41.9 % of the adolescents' suicide risk behaviors. This model showed that negative life events and rumination had significant indirect effects on suicide risk behaviors through emotional distress. Importantly, resilience and social support could reduce the influencing effects of all variables, because they mediated the effects of rumination and negative life events on emotional distress, which could lead to a decrease in suicide risk behaviors. The findings illustrate the knowledge and understanding of means that could be manipulated by nursing interventions, in order to decrease suicide risk behaviors among adolescents, as well as promote optimal mental health in this vulnerable population.

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Introduction

Adolescent suicidal behaviors have been increasing over recent decades in many regions of the world.¹ As a major mental health problem worldwide, adolescent suicidal behaviors are the third leading cause of death among American youth aged 15 to 24 years,² and one of the leading causes of death among Thai adolescents.³ The prevalence

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rate of adolescent suicidal behaviors varies across studies and countries due to differences in population characteristics and definitions used in the studies. For instance, in the United States of America (USA), a national school-based study of youth found the one year prevalence rate for suicidal ideation to be 16.9%, making a suicide plan to be 16.5% and suicide attempts to be 8.5%.⁴ In Thailand, 11.9% of students aged 15–17 years (Grades 10–12) reported having suicidal ideation.⁵ Recently, 11.4 % of 7th to 12th grade students were found to have seriously considered attempting suicide, while 11.5% had made a plan to attempt suicide and 9.3% had attempted suicide.⁶ To decrease this incidence, it is necessary for researchers to identify critical risk and protective factors associated with suicide risk behaviors which can, in turn, lead to development of effective prevention programs.

Review of Literature

Suicidal behaviors can be conceptualized on a continuum that ranges from suicidal ideation to attempted and completed suicide.⁷ Suicidal ideation precedes a suicide and is strongly associated with increased risk of attempted suicide.⁸ The experience of suicidal ideation has been found to increase the likelihood of suicide attempts and completions.⁷ Therefore, researchers often focus on suicidal ideation and suicide attempts when exploring suicide risk behaviors. However, some studies have addressed suicide related behaviors, such as positive attitudes toward suicide and communicated suicide threats.⁹ In an attempt to better understand the mechanism related to death due to suicide, this study investigated the multiple components of suicide risk behaviors, including attitude toward suicide, suicidal ideation, suicide threats and prior suicide attempts.

Based on a literature review, risk factors that contribute to suicide risk behaviors were found to include negative life events, rumination and emotional distress (depression, anxiety and hopelessness). Previous studies have indicated that *negative life events*, in particular, are related to adolescent suicide risk behaviors.^{10,11} Adolescents who automatically perceive daily life events as negative have been found to have an increased risk for suicide. In addition, negative life events have been shown to impact suicidal thoughts through feelings of hopelessness and depressive symptoms.¹² Likewise, *rumination*, having thoughts and behaviors that repetitively focus an individual's attention on his/ her negative feelings,¹³ also is a significant predictor of depression and anxiety,^{14,15} and suicide risk behaviors.¹⁶ In addition, hopelessness has been noted to mediate the relationship between rumination and suicidal ideations.¹⁶ Thus, it is possible that rumination, in response to negative affect, could lead to increased emotional distress which, in turn, could increase the risk of suicidality.

Empirical studies described in the literature have indicated the influence of negative life events and rumination on emotional distress and suicide risk behaviors. Empirical evidence also has shown that *emotional distress* (depression, hopelessness and anxiety) is a well-documented predictor of suicide risk behaviors.^{9,17} In addition, *depression* is known to be a significant predictor of suicide risk behaviors among adolescents.^{9,17} In longitudinal studies, depression significantly has predicted adolescent suicidal ideation levels and exerted a stronger influence on suicidal ideation than most of the other variables that have been examined.¹⁷ Prior studies also have demonstrated that hopelessness is a strong predictor of adolescent suicidal behaviors^{9,17} and significantly related to decreases in suicidal ideation over a one year interval.¹⁷ Additionally, adolescents who have had suicide ideation and

attempted suicide have been found to have significantly higher levels of *anxiety* than non-suicidal adolescents.¹⁸ Aside from their strong predictive relationships with suicidal behaviors, these facets of emotional distress are known to mediate associations between suicidal behaviors and other risk factors.⁹ Therefore, emotional distress may be a major mechanism through which negative life events and rumination influence adolescent suicide risk behaviors.

Even though negative life events, rumination and emotional distress are associated with increased risk for suicide, other variables, including resilience and social support, play a protective role. *Resilience*, an individual attribute, is known to be negatively related to emotional distress and suicidal behaviors.¹⁹ In addition, prior findings suggest negative life events or rumination reduce emotional distress.²⁰ Adolescents who perceive events negatively and/or ruminate about such events have been found to be less resilient and, thus, more vulnerable to emotional distress. Similarly, *social support* has been reported to serve as a protective factor for youth,²¹ while adolescents who perceive high levels of social support have been shown to be less likely to experience marked emotional distress associated with suicide risk behaviors.⁹ Increased social support has been found to be associated with decreased risk for emotional distress and leads to decreased suicide risk behaviors. In other words, social support appears to be associated with fewer negative life events²² and less rumination.²³ In addition, social support has been conceptualized as mediating the relationship between: a) negative life events and emotional distress, and b) rumination and emotional distress. An association between rumination and depressive symptoms that are mediated by perceived social support was noted among 7th to 9th graders.²³ Instead of conceptualizing social support as a contextual variable, the investigators

hypothesizing that rumination contributed to decreased perceptions of social support. Their rationale was based on integrated social support in the Response Style Theory of Depression which hypothesizes rumination interferes with concentration and attention that seems to hinder effective problem solving.¹³ Thus, adolescents, who fail to solve their problems, may not seek support and experience a greater sense of helplessness in controlling their environment, which, in turn, contributes to their risk for depression. Similarly, Vongsirimas and colleagues²⁴ reported that negative life events had a significant indirect effect on depressive symptoms by way of reducing adolescents' perceived social support and self-esteem. They posited that negative life events or rumination lead to a lower sense of social support, increased emotional distress and, subsequently, suicide risk behaviors. Results from both studies show that perceived social support functions as a mediator between rumination or negative life events and emotional distress, and provide evidence that the conceptualization of social support as a contextual variable might not be accurate. Thus, this study sought to examine, specifically, the mediating role of perceived social support.

Even though Western literature reveals the influence of all of these variables, the empirical evidence, in Thailand, has shown that only depression is consistently associated with suicidal behaviors among Thai adolescents,^{5,25} and that perceived life stress is positively related to depression.^{5,24} Depression has been shown to mediate the relationship between the severity of perceived life stress and suicidal ideation.⁵ Although some investigators have examined the impact of protective factors, they have done so only in relation to adolescent depression.²⁴ Thus, the purpose of this study was to investigate, by way of a predictive model, the simultaneous influence of perceived negative life events, rumination, resilience

and social support on emotional distress, and the mediating effects of emotional distress on suicide risk behaviors among Thai adolescents.

Conceptual Framework

The Cognitive Theory of Depression, the Response Style Theory of Depression and related literature were used to build the conceptual framework for this research. In formulating his Cognitive Theory of Depression, Beck argued that people's emotions and behaviors are influenced by their interpretation and thoughts about a situation.²⁶ Individuals with dysfunctional cognitions (negative cognitive schema, cognitive distortion and negative cognitive trials) tend to perceive situations negatively, which contributes to the development and maintenance of depression.²⁶ Depressed individuals have been found to sustain a negative sense of self and be disappointed in the world and their future, all of which lead to them developing feelings of hopelessness.²⁶

The Cognitive Theory of Depression can explain the contribution of negative emotions to depression, but does not address the degree to which content activates and rehearsal contributes to depression. Thus, the Response Style Theory of Depression,¹³ which postulates that rumination (thoughts and behaviors that repetitively focus an individual's attention on his or her negative feelings) contributes to depressive symptoms, was integrated into the conceptual framework. According to the theory, rumination enhances a depressed mood, thereby facilitating memory recall of negative and pessimistic inferences about life events, as well as amplifies pessimistic thinking and interferes with attention and concentration, leading to impaired problem solving and inhibition of one's sense of control. All of which may enhance development of a depressed mood.¹³

Although these theories do not explain the relationship between depression and suicide behaviors, other studies have found depression and emotional distress to be strong predictors of suicide risk behaviors.^{5, 9, 17} Thus, to test positive individual factors and expand these theories, resilience and social support need to be added to the predictive model.

Method

Design: The research used a cross-sectional, predictive correlational design. Predicted relationships were examined via adolescents' self-reports of daily life experiences over the past month.

Subjects: Sample size was based on Daniel's²⁷ recommendations for estimating unknown population variance. The minimum sample size, based on the anticipated response rate and a low base rate for suicidal behavior, was estimated to be 407. Because of the number of parameters to be estimated in the structural equation modeling (SEM), sample size was estimated for a ratio of 10 respondents per 77 parameters.²⁸ Thus, for the SEM analysis, taking into consideration both the anticipated response rate and low base rate for the dependent variable observed in previous studies, the minimum sample size was determined to be 870.

A multi-stage, random sampling technique was used. Inclusion criteria included being an adolescent enrolled, in grades 10 - 12 (Mathayum 4 - 6), in one of the 12 public high schools used as data gathering sites. In order to adequately provide a representative sample of adolescents attending public high schools in Bangkok, 12 schools were random selected from two school size groups (large = 601-1500; and, extra-large = >1500) in 3 educational service areas of the city. A total of 1,417 adolescents (males: n = 476; 33.59%) and (females: n = 941; 66.41%) were recruited. They

ranged in age from 14–19 years (mean = 16.64 years; SD=0.98). Most (n = 1,141; 80.5%) lived with their parents and had a daily stipend of less than 101 baht (n = 920; 64.9%). The majority of their parents (n = 1,105; 71.6%) lived together. Less than half (n = 537; 37.9%) of their fathers' had a secondary school education, while slightly more than one-third (n = 493; 34.8 %) of their mothers had a primary school education. Most of the adolescents did not have a family history of mental illness (n = 1,383; 97.6%) or crisis event (n = 1,410; 99.5%) during the past month.

Ethical Considerations and Procedure:

Permission to conduct the study was granted by the Human Rights Related to Human Experimentation and Ethics Committee, of the primary researcher's (PI) university, and the School Board Committee of each of the 12 high schools used as data gathering sites. Once approval was obtained, the PI informed the liaison teachers, most of whom were counseling teachers, about the nature of the study. Potential subjects were identified, from randomly selected classrooms at the times allocated by the liaison teachers, and informed about the study's purpose and procedure. Those indicating interest in participating were given an information sheet about the study and an informed consent form to ask their parents to sign and return to the PI. The information sheet delineated the study's purpose and procedure, as well as how to contact the PI if they desired more information.

After the parents consented to their respective child participating in the study, each adolescent was informed about the confidential and voluntary aspects regarding participation in the study. If they agreed to participate, they were asked to sign an informed assent form. Self-reported data were collected, via anonymous questionnaires in a classroom setting at a time designated by teachers, by the PI and trained research assistants from

January March 2009. It took them 30–40 minutes to complete the questionnaires. Upon completion of the questionnaires, the subjects were provided information about sources of support available in the school, as well as given a list of names and addresses of accessible mental health service providers in Bangkok, and encouraged to make contact with them, if needed. To prevent possible tension that might arise from completing the questionnaire, a debriefing session also was provided to the adolescents after completion of the questionnaires.

Instruments: Six instruments were used to collect data. All instruments, except the Personal Profile, were standard instruments used in Western research. Three, the Negative Event Scale (NES), the Multidimensional Scale of Perceived Social Support and the State-trait Resilience Inventory (STRI), were translated from English into Thai by prior researchers^{5,29} using a back-translation method. The other three, the Rumination Response Scale (RRS)³⁰, as well as modified questionnaires from the High School Questionnaire (HSQ)³¹ and Measure of Adolescent Potential for Suicide (MAPS)³² were translated from English into Thai by the PI of this study using the back-translation method, whereby the instruments were translated from English to Thai, and then back translated from Thai to English. The original version and the back-translation version then were examined for semantic and content equivalence by five native English speakers. A pilot study, with 75 Thai adolescents who had characteristics similar to the study sample, was used to establish feasibility, acceptability and reliability.

All instruments were examined for content validity by five experts (two psychiatrists, two mental health nurses and one psychologist) using the content validity index (CVI) and examined for internal reliability based on the pilot study data. The CVI for

all instruments ranged from 0.95 – 1.00. Cronbach's alpha coefficients ranged from 0.77 – 0.94.

The Personal Profile was used to collect demographic information about the adolescents regarding their: gender, age, educational level, parental family status, living location, socioeconomic status, grade level, grade point average, father's and mother's educational level, family history of mental illness, and presence of crisis events in the past month.

Suicide risk behavior was measured by 10 self-report items within the Thoughts, Feelings and Experiences Questionnaire (TFEQ) that was modified from the High School Questionnaire (HSQ)³¹ and Measure of Adolescent Potential for Suicide (MAPS),³² both of which have established psychometric properties. The 10 items consisted of 4 subscales including: positive attitudes about suicide (1 item e.g., "I thought suicide would be an answer to life's problem for me"); suicide thoughts (6 items e.g., "I had thoughts about suicide"); communicated (direct and indirect) suicide threats (2 items e.g., "I threatened to commit suicide"); and, prior suicide attempts (1 item e.g., "I felt so bad that I attempted suicide"). The response format, depending on the item, ranged from 0 = "never," "none" or "not at all" to 6 = "always," "very much" or "six or more." The composite score of the 10 items ranged from 0–60. In this study, the CVI for this scale was 1.00 and Cronbach's alpha was 0.85.

Emotional distress was measured by 18 self-report items within the TFEQ. The scale consisted of 3 subscales measuring depression, anxiety and hopelessness. Depression was measured with seven items (e.g., "I felt lonely," "I felt that people dislike me"). Anxiety consisted of four items that assessed physical anxiousness, recurrent frightening thoughts, jumbled thoughts and feelings of uneasiness (e.g., "I felt uneasy and/ or anxious").

Hopelessness was assessed using seven items that measured feelings of hopelessness about life (e.g., "I felt hopeless about my life"). The response format ranged from 0 = "never" to 6 = "always." The composite score for this scale ranged from 0 to 108. For this study, the CVI of the scale was 1.00 and Cronbach's alpha was 0.90.

Negative life events were measured using The Negative Event Scale (NES),³³ a 42-item self-report questionnaire that was back-translated into Thai by Boonyamalik.⁵ The scale measures perceived life stress commonly experienced by adolescents and includes 10 subscales capturing adolescent life event problems with: 1) friends; 2) boy/girl friends; 3) money; 4) courses; 5) teachers; 6) parents; 7) other students; 8) relatives; 9) health; and, 10) academic limitations and course interests. Responses are based on a 6-point Likert-like scale ranging from 0 = "did not occur" to 5 = "event occurred with extreme hassle." The total score can range from 0 – 210. The NES has been found to be acceptable for use with Thai adolescents, with alpha coefficients ranging from 0.94 – 0.96.^{5,24} In this study, the CVI was 1.00 and Cronbach's alpha was 0.94.

Social Support was measured using The Multidimensional Scale of Perceived Social Support (MSPSS)³⁴ that was back-translated by Boonyamalik.⁵ The MSPSS, a 12-item self-report questionnaire, was designed to assess individuals' perceptions of social support received from family, friends and significant others (e.g., "My family really tries to help me," and "There is a special person in my life who cares about my feelings."). Response options are based on a 7-point scale that ranges from 1 = "very strongly disagree" to 7 = "very strongly agree." Subscale scores are obtained by summing across the respective items. The total score ranges from 12 – 84, with higher scores indicating a higher level of perceived social support. The MSPSS

is a widely used social support measure and has demonstrated psychometric properties. The MSPSS has been found to have acceptable reliability among Thai adolescents, with a Cronbach's alpha coefficient of 0.89.⁵ In this study, the CVI was 1.00 and Cronbach's alpha was 0.88.

Resilience was measured using The State-Trait Resilience Inventory (STRI)³⁵ that was back-translated by Chowsilpa.²⁹ The STRI consists of two forms: a) the State Resilience Scale (SRC), which contains 15 questions, and b) the Childhood Trait Resilience Scale (TRC), which contains 18 questions. A 5-point Likert-like scale (1 = "strongly disagree" to 5 = "strongly agree") is used. The measure captures three components of resilience: 1) "I am," being personal characteristic derived from internal strength; 2) "I can," reflecting personal characteristic derived from social and interpersonal skills; and, 3) "I have," being personal characteristic derived from external supports and resources. Subscale scores are obtained by summing across the respective items. The total score is created by summing items across both forms, with a possible range of 33 - 165. Higher scores represent greater resilience. The instrument has demonstrated reliability ranging from 0.73 - 0.92.^{6, 33} Internal consistency, with Thai adolescents, has been found to range from 0.81 - 0.92.^{6, 29} For this study, the CVI was 1.00 and Cronbach's alpha was 0.91.

Rumination was measured using the original 22-item Rumination Response Scale (RRS) of the Response Styles Questionnaire (RSQ)³⁰ that focuses on responses to depressive symptoms, and their possible causes and consequences covering current feelings, self-evaluation and recent situations. The RRS consists of three components: brooding (5 items), reflection (5 items) and depression (12 items). Sample items include: "Think about all my shortcomings, failings, faults and mistakes" and

"Think about how I don't feel up to doing anything." Items are rated on a Likert-like, 4-point scale ranging from 1 = "never" or "almost never" to 4 = "always" or "almost always." The total possible score ranges from 22 - 88, with higher values indicating greater ruminative response style. The instrument has demonstrated reliability (0.89)³⁰ For this study, the CVI was 0.95 and Cronbach's alpha was 0.90.

Data Analysis: Descriptive statistics were used to characterize the sample and examine the distributional properties of the variables. Confirmatory factor analyses were conducted to estimate measurement models for each latent variable. Structural equation modeling (SEM) was used to estimate the direct and indirect effects of all variables on suicide risk behaviors. A type I error rate of 0.05 was used to evaluate parameter estimates of the model.

Results

Diagnostic indices, using structural equation modeling with LISREL, indicated the data fit the proposed model (chi-square = 215.22, $df = 183$, p value = 0.052, RMSEA = 0.011, GFI = 0.988, AGFI = 0.978). The correlation matrix for latent variables is shown in **Table 1**. The model paths consist of factor loadings and predicted effects between variables (see **Tables 2 & 3**). Indicator factor loadings for the six latent variables, all significant at the 0.01 level, are noted in **Table 3**.

As shown in Figure 1, negative life events and emotional distress had significant direct positive effects on suicide risk behaviors ($\beta = .152$, $p < .01$ and $\beta = .502$, $p < .01$); whereas, rumination did not ($\beta = .043$, ns). Negative life events and rumination had significant indirect effects on suicide risk

Table 1 Correlation Matrix of Latent Variables (n=1,417)

Variables	RRS	NES	RES	MSPSS	EMOD	SRB
Rumination (RRS)	1.000					
Negative Life Events (NES)	0.503**	1.000				
Resilience (RES)	-0.222**	-0.260**	1.000			
Social Support (MSPSS)	-0.258**	-0.225**	0.590**	1.000		
Emotional Distress (EMOD)	0.736**	0.560**	-0.420**	-0.392**	1.000	
Suicide Risk Behaviors (SRB)	0.460**	0.417**	-0.284**	-0.291**	-0.576**	1.000

** $p < 0.01$

behavior through emotional distress ($\beta = .155, p < .01$ and $\beta = .316, p < .01$, respectively). In addition, negative life events and rumination had significant negative direct effects on resilience and social support ($\beta = -.192, p < .01$; $\beta = -.156, p < .01$; $\beta = -.173, p < .01$; $\beta = -.244, p < .01$, respectively) and significant indirect effects on emotional distress through resilience and social support ($\beta = .076, p < .01$ and $\beta = .101, p < .01$, respectively). Resilience and social support had significant indirect effects on suicide risk behavior through emotional distress ($\beta = -0.072, p < 0.01$ and $\beta = -0.158, p < 0.01$, respectively).

Discussion

Causal relationships among factors related to suicide risk behaviors in Thai adolescents were examined based on integration of the Cognitive Theory of Depression and the Response Style Theory of Depression. The findings revealed a relationship between the two risk factors, negative life events and rumination, and suicide risk behaviors. These relationships were mediated by emotional distress and two protective factors, resilience and social

support. The results are congruent with previous findings showing that rumination indirectly influences suicide risk behaviors through resilience, social support and emotional distress; whereas, negative life events had direct and indirect effects on suicide risk behaviors through the three mediators.

The findings also support and expand the Cognitive Theory of Depression postulating that individuals who automatically perceive stress negatively are more likely to be depressed, anxious and hopeless. It might be that perceived negative life events contribute to decrements in perceived control and increased feelings of depression, anxiety and hopelessness. In addition, congruent with previous studies, the findings indicate emotional distress is a strong predictor of adolescent suicide risk behaviors. For example, Lui and Tein³⁶ found negative life events were associated with increased risk for depression and anxiety, which also were significantly associated with elevated risk for suicidal behaviors. Likewise, Boonyamalik's⁵ study of Thai high school students demonstrated that depressive symptoms completely mediated the relationship between perceived life stress and suicidal ideations.

Table 2 First-Order Measurement Model of Studied Variables (n=1,417)

Observed variables	b	SE	t	SC	R ²
Suicide Risk Behaviors					
srbb	0.463	-	-	0.779	0.606
srbi	0.951	0.041	23.009	0.829	0.687
srbt	0.353	0.020	18.054	0.626	0.392
srba	0.269	0.017	15.453	0.518	0.268
Rumination					
rsqd	5.661	0.128	44.363	0.962	0.925
rsqb	2.196	0.066	33.148	0.770	0.593
rsqr	2.293	0.076	30.030	0.762	0.581
Perceived Negative Life Events					
nes1	3.007	0.125	24.034	0.679	0.461
nes2	2.994	0.187	16.010	0.468	0.219
nes3	2.925	0.131	22.345	0.610	0.372
nes4	2.349	0.145	16.254	0.456	0.208
nes5	2.172	0.129	16.832	0.467	0.218
nes6	3.257	0.142	22.869	0.637	0.406
nes7	1.949	0.112	17.459	0.500	0.250
nes8	2.032	0.109	18.715	0.512	0.262
nes9	2.502	0.121	20.686	0.586	0.343
nes10	3.683	0.164	22.424	0.620	0.384
Resilience					
resa	6.855	-	-	0.999	0.998
resc	3.754	0.224	16.790	0.777	0.604
resh	3.083	0.073	42.308	0.745	0.555
Social Support					
ssfr	4.350	-	-	0.953	0.908
ssff	2.184	0.280	7.803	0.494	0.244
ssfo	1.945	0.232	8.364	0.392	0.153
Emotional Distress					
deps	7.003	-	-	0.953	0.908
anxi	3.344	0.084	39.661	0.816	0.667
hope	5.134	0.143	36.024	0.783	0.613

Note: b = Estimated parameter, SE = Standard Error, t = t-value,
R² = Construct Reliability, SC = Completely Standardized Value of Factor Loading

rsqd	=	depression related	resa	=	I am
rsqb	=	brooding	resc	=	I can
rsqr	=	reflecting	resh	=	I have
nes1	=	problems with friend	ssfr	=	social support from family
nes2	=	problems with boy/girl friend	ssff	=	social support from friend
nes3	=	problems with money	ssso	=	social support from others
nes4	=	problems with courses	deps	=	depression
nes5	=	problems with teachers	anxi	=	anxiety
nes6	=	problems with parents	hope	=	hopelessness
nes7	=	problems with other students	srbb	=	attitude toward suicide
nes8	=	problems with relatives	srbi	=	suicidal idea
nes9	=	health problems	srbt	=	suicide threats
nes10	=	academic limitations and course interest	srba	=	attempted suicide

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Table 3 Standardized Direct Effects (DE), Indirect Effects (IE) and Total Effects (TE) of Latent Variables on Suicide Risk Behaviors (Modified Model, n = 1,417)

Causal Variable	Variable Influenced					
	RES			MSPSS		
	DE	IE	TE	DE	IE	TE
RRS	-0.173*** (0.032)	-	-0.173*** (0.032)	-0.244*** (0.032)	-	-0.244*** (0.032)
NES	-0.192*** (0.032)	-	-0.192*** (0.032)	-0.156*** (0.035)	-	-0.156*** (0.035)
Explained Variance	R² = 0.104			R² = 0.126		
Causal Variable	Variable Influenced					
	EMOD			SRB		
	DE	IE	TE	DE	IE	TE
RRS	0.527*** (0.028)	0.101*** (0.017)	0.629*** (0.026)	0.043 (0.044)	0.316*** (0.036)	0.358*** (0.034)
NES	0.233*** (0.025)	0.076*** (0.016)	0.310*** (0.024)	0.152*** (0.036)	0.155*** (0.020)	0.308*** (0.035)
RES	-0.142*** (0.019)	-	-0.142*** (0.019)	-	-0.072*** (0.011)	-0.072*** (0.011)
MSPSS	-0.314*** (0.042)	-	-0.314*** (0.042)	-	-0.158*** (0.026)	-0.158*** (0.026)
EMOD	-	-	-	0.502*** (0.054)	-	0.502*** (0.054)
Explained Variance	R² = 0.810			R² = 0.419		

Note: The values in the table are standardized values; values in parenthesis are standard errors.

RRS = Rumination

NES = Negative Life Events

RES = Resilience

MSPSS = Social Support

EMOD = Emotional Distress

SRB = Suicide Risk Behaviors

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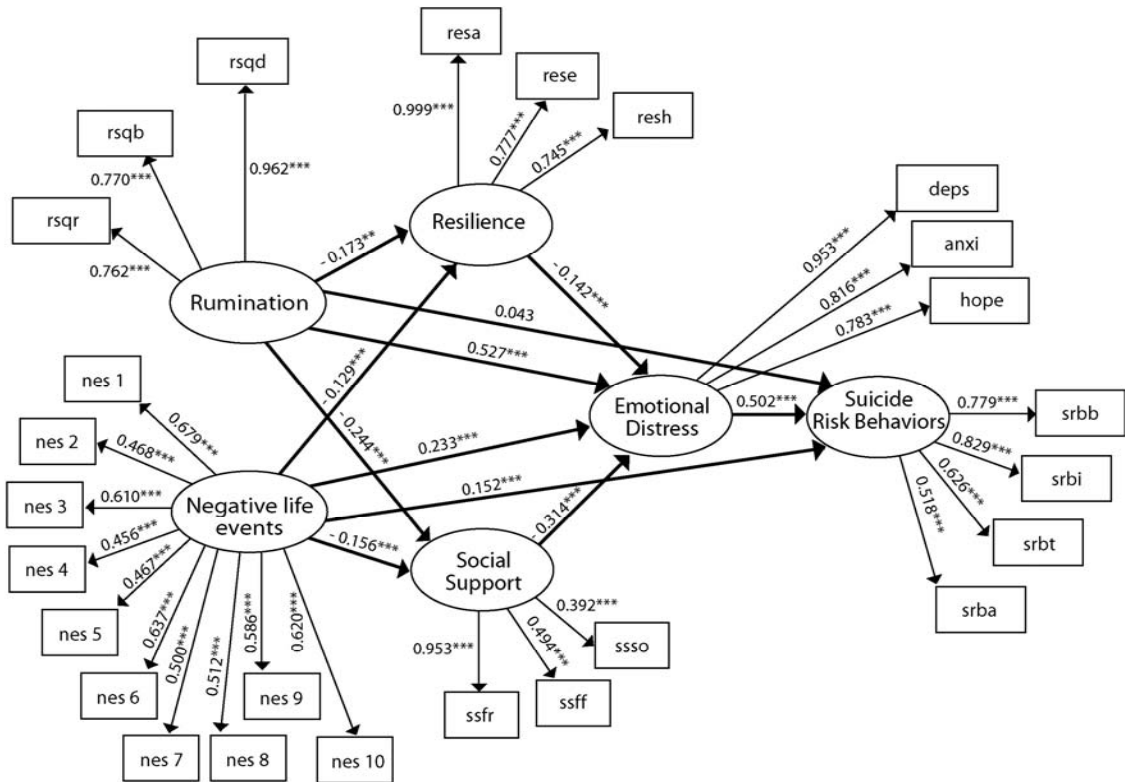


Figure 1 Modified Mediation Model of Adolescent Suicide Risk Behaviors (n=1,417)

Chi-square = 215.215, df = 183, p-value = 0.0517, RMSEA = 0.011, GFI = 0.988, AGFI = 0.978

rsqr = reflecting
 rsqb = brooding
 rsqd = depression related
 nes1 = problems with friend
 nes2 = problems with boy/girl friend
 nes3 = problems with money
 nes4 = problems with courses
 nes5 = problems with teachers
 nes6 = problems with parents
 nes7 = problems with other students
 nes8 = problems with relatives
 nes9 = health problems
 nes10 = academic limitations
 and course interest

resa = I am
 resc = I can
 resh = I have
 ssfr = social support from family
 ssff = social support from friend
 sssso = social support from others
 deps = depression
 anxi = anxiety
 hope = hopelessness
 srbb = attitude toward suicide
 srbi = suicidal idea
 srbt = suicide threats
 srba = attempted suicide

In addition, the findings support and expand the Response Style Theory of Depression. The results indicate rumination was significantly associated with depression, as well as with emotional distress (anxiety and hopelessness). Emotional distress also was found to be strongly associated with suicide risk behaviors. It appears that rumination enhances adolescents' negative affect by amplifying the recall of negative memories and pessimistic interferences about life stress, which hamper attention and concentration leading to ineffective problem solving. Also, an inhibited sense of control increases failure and a greater sense of hopelessness, which can contribute to depression.¹³ Adolescents who have a tendency to ruminate on a negative mood, might attenuate their problem solving and mood regulation capacities which, in turn, could lead to increased suicide vulnerability.³⁷

Besides the explanation based on the Response Style Theory of Depression, the findings are congruent with previous Western studies. Calms and Roberts¹⁴ found rumination predicted adolescent depression and anxiety over time, whereas Lam and colleagues³⁸ found rumination to be associated with depression and hopelessness in adolescents. In addition, prior studies have indicated emotional distress is a strong predictor of suicide risk behavior.^{5,9,17} Congruent with recent Western research that demonstrate hopelessness mediates the relationship between rumination and the duration of suicide ideation,¹⁶ emotional distress, in this study, was found to mediate the relationship between rumination and suicide risk behaviors.

In addition, the protective factors, resilience and social support, were found to have significant negative direct effects on emotional distress and indirect effects on suicide risk behaviors, through emotional distress. This means adolescents who have high levels of resilience and social support could directly decrease their likelihood toward high

levels of emotional distress, as well as indirectly decrease their likelihood toward suicide risk behaviors. These findings are congruent with empirical studies that have demonstrated high levels of resilience and social support tend to protect against emotional distress.^{19,21} Previous findings indicate emotional distress strongly predicts adolescent suicide risk behaviors.^{5,9,17} This was the first study, however, to demonstrate, among adolescents, the mediating effects of emotional distress between: 1) resilience and suicide risk behaviors, and 2) social support and suicide risk behaviors.

This study tested the mediating role of two protective factors, resilience and social support. The findings demonstrate mediating effects of resilience between: 1) negative life events and emotional distress, and 2) rumination and emotional distress. This suggests adolescents experiencing high distress, associated with negative life events or increased tendency toward rumination, are likely to be less resilient, which, in turn, increases their vulnerability toward emotional distress. These results are consistent with other empirical studies revealing that adolescents exposed to high levels of stress are less resilient and have elevated emotional distress.^{21,24} In addition, similar to prior research,²⁰ adolescents, in study, who had increased tendencies toward rumination also reported less resilience, which contributed to their elevated emotional distress. The Response Style Theory of Depression argues that rumination interferes with effective problem solving, which contributes to reducing optimism, thereby, leading to depressive symptoms.¹³ In this study's proposed model, low optimism was captured in the emotional distress measure of hopelessness. Thus, consistency exists between this study's findings and the hypotheses generated from the Response Style Theory of Depression.

Testing the mediating effects of social support revealed negative life events and rumination

had significant indirect negative effects on emotional distress, through perceived social support. This means adolescents, who experienced particularly distressing negative life events or tended to ruminate, also perceived less social support, which served to heighten their emotional distress. Interestingly, researchers have argued negative life events can impact perceived social support, impair one's ability to manage or handle stress effectively,³⁹ and serve as an additional contributing source to emotional distress.²³ Developmentally, adolescents are known to be likely to experience profound effects of negative life events, particularly those involving relationship difficulties. Thus, adolescents who tend to interpret life experiences in a negative light might perceive less social support and, thereby, sustain a negative world view. Adolescents who perceive less social support have been found to tend to isolate themselves from others, thereby reducing their opportunities to consider alternatives to life difficulties and development of effective problem solving skills, and contributing to their emotional distress²³ and increased risk for suicidality.^{5,9}

In terms of rumination, adolescent ruminators seeking social support have been found to tend to behave in ways that are counterproductive in regards to their social relationships with family, friends and others.^{21,40} In addition, adolescent ruminators, who have negative perceptions of the social environment, are less likely to seek social support.²¹ According to the Response Style Theory of Depression, rumination is thought to be related to social support because individuals who ruminate may have undesirable personality characteristics, including manifestations of extreme dependency or aggressiveness, that are alienating with respect to social relationships.⁴⁰

In conclusion, this study's findings provide evidence for an integrative framework, based on Cognitive Theory and the Response Style Theory of Depression, for better understanding suicidality

among Thai adolescents. The findings confirm and extend hypotheses, derived from these theories, that negative life events, automatic and negative thoughts about daily life events, and ruminations are important risk factors associated with emotional distress. Moreover, as hypothesized, emotional distress was found to mediate the relationship between the adolescents' cognitions and their suicide risk behaviors. Negative cognitions coupled with a ruminative thought process appeared to contribute significantly to emotional distress and, thus, indirectly to suicide risk behaviors among the subjects. This investigation also extended the understanding of two protective factors, resilience and social support. Resilience and social support appeared to mediate the relationship between the adolescents' cognition and their emotional distress. Thus, since resilience and perceived social support are malleable, the design of a preventive intervention programs for Thai adolescents needs to emphasize skill development for strengthening these protective factors, so as to decrease their risk of emotional distress and suicide risk behaviors.

Limitations

A number of study limitations, however, warrant discussion. Obviously, subjects were limited to one group known to be at risk for suicide behaviors, that is, adolescents attending specific high schools in Bangkok. Other age groups, as well as other adolescents may not show similar results. Hence, generalization is limited to adolescents similar to the study participants. In addition, since a cross-sectional methodology was used, one cannot infer causality. The findings, however, point to important factors that need to be taken into consideration when developing intervention studies. Longitudinal studies are needed to determine whether pre-existing cognitive styles influence the

severity of emotional distress and suicide risk behaviors, and to gain a clearer understanding of how personal and social factors interact. One cannot overlook the fact this study primarily relied on self-report measures, as well as measures of emotional distress and suicide risk behaviors that address sensitive and potentially stigmatizing issues. In light of this limitation, absolute confidentiality and survey anonymity, so as to minimize problems associated with self-reports, were carried out.

Recommendations for Future Studies

Drawing from known research shortcomings cited in the literature and limitations identified in this study, further research, using the conceptual model of this study, is needed to examine key predictors associated with suicide risk behaviors not addressed in this study. To establish generalizability, additional studies are needed to explore the stability of this study's model among other adolescent populations. In addition, future studies, with the same population as this study, need to be conducted using longitudinal and intervention study designs to test the established relationship of causality hypothesized in this study's model.

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พฤติกรรมเสี่ยงต่อการฆ่าตัวตายของวัยรุ่นไทย: การทดสอบโมเดลเชิงประจักษ์ ในเหตุการณ์ในชีวิตเชิงลบ การครุ่นคิด ความตึงเครียดทางอารมณ์ ความเข้มแข็งในชีวิต และการสนับสนุนทางสังคม

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บทคัดย่อ: วัตถุประสงค์การศึกษาวิจัยในครั้งนี้เพื่อศึกษาโมเดลการทำนายซึ่งแสดงถึงความสัมพันธ์ร่วมกันของเหตุการณ์ในชีวิตเชิงลบ ความครุ่นคิด ความเข้มแข็งในชีวิตและการสนับสนุนทางสังคมต่อความตึงเครียดทางอารมณ์ และ อิทธิพลส่งผ่านของความตึงเครียดทางอารมณ์ต่อพฤติกรรมเสี่ยงในการฆ่าตัวตายในวัยรุ่นไทย กรอบแนวคิดของ Cognitive Theory of Depression และ Response Style Theory of Depression ได้ถูกนำมาใช้เป็นกรอบแนวคิดของการวิจัย กลุ่มตัวอย่างได้จากการสุ่มแบบหลายขั้นตอนจากวัยรุ่นที่กำลังศึกษาในโรงเรียนมัธยม 12 แห่งในกรุงเทพมหานคร จำนวน 1,417 คน การเก็บรวบรวมข้อมูลได้จากการใช้ชุดแบบสอบถามการประเมินตนเองซึ่งประกอบด้วยแบบวัดความคิด ความรู้สึกและประสบการณ์ของวัยรุ่น แบบวัดการตอบสนองทางความคิดต่อสถานการณ์ แบบวัดความช่วยเหลือทางสังคมแบบพหุมิติ แบบวัดความเข้มแข็งในชีวิต และแบบวัดเหตุการณ์ที่สร้างความยุ่งยากใจ

ผลการศึกษาพบว่าโมเดลเชิงโครงสร้างมีความสอดคล้องกับข้อมูลเชิงประจักษ์ ($\chi^2 = 225.48$, $df = 194$, $p = 0.0602$, $GFI = 0.982$, $AGFI = 0.967$, $RMSEA = 0.013$) โดยสามารถอธิบายความแปรปรวนของพฤติกรรมเสี่ยงในการฆ่าตัวตายของวัยรุ่นไทยได้ถึงร้อยละ 41.9 โดยพบว่า เหตุการณ์ในชีวิตเชิงลบ และความครุ่นคิด มีอิทธิพลต่อพฤติกรรมเสี่ยงในการฆ่าตัวตายของวัยรุ่นโดยส่งผ่านตัวแปรความตึงเครียดทางอารมณ์ ที่สำคัญคือความเข้มแข็งในชีวิต และการสนับสนุนทางสังคมสามารถช่วยลดอิทธิพลของตัวแปรทุกตัวแปรเนื่องจากความเข้มแข็งในชีวิต และการสนับสนุนทางสังคมทำหน้าที่เป็นตัวแปรส่งผ่านที่ช่วยลดการเกิดความตึงเครียดทางอารมณ์อันจะส่งผลให้พฤติกรรมเสี่ยงในการฆ่าตัวตายของวัยรุ่นลดลงเช่นกัน ผลที่ได้จากการศึกษานี้สามารถนำไปสู่วิธีการปฏิบัติการพยาบาลในการป้องกันการเกิดพฤติกรรมเสี่ยงในการฆ่าตัวตายของวัยรุ่นรวมทั้งส่งเสริมให้วัยรุ่นกลุ่มนี้มีสุขภาพจิตที่ดีต่อไป

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