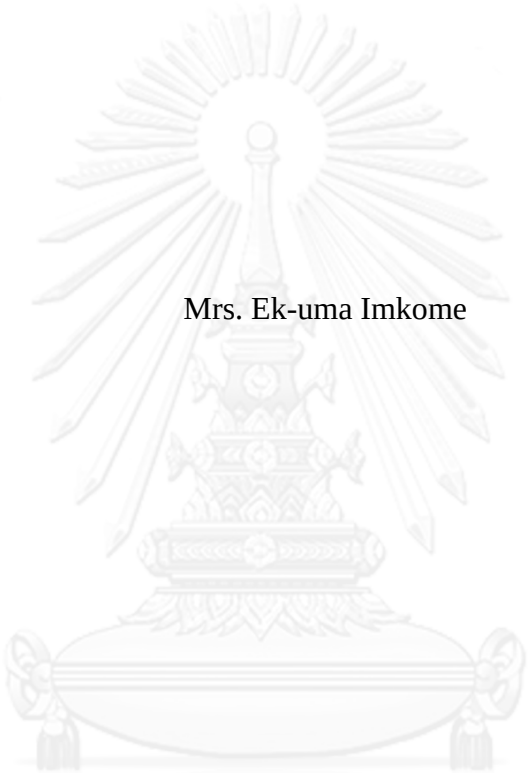
A PATH ANALYSIS OF PSYCHOTIC SYMPTOMS AMONG PERSONS WITH SCHIZOPHRENIA AND METHAMPHETAMINE MISUSE

Mrs. Ek-uma Imkome



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เอกอุมา อิ้มคำ : การวิเคราะห์เส้นทางความสัมพันธ์ของอาการทางจิตในผู้ป่วยโรคจิตเภทที่ใช้เมทแอมเฟตามีน (A PATH ANALYSIS OF PSYCHOTIC SYMPTOMS AMONG PERSONS WITH SCHIZOPHRENIA AND METHAMPHETAMINE MISUSE) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร. จินตนา ยูนิพันธุ์, อ.ที่ปรึกษาวิทยานิพนธ์ร่วม: รศ. ดร.วราภรณ์ ชัยวัฒน์, 310 หน้า.

การศึกษาภาคตัดขวางเชิงบรรยายในครั้งนี้มีวัตถุประสงค์เพื่อศึกษาความสัมพันธ์ของการเผชิญปัญหา การรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม การแสดงออกทางอารมณ์ในครอบครัว เหตุการณ์รุนแรงในชีวิต การสนับสนุนทางสังคมและการทำหน้าที่ในสังคมที่มีต่ออาการทางจิตของผู้ป่วยโรคจิตเภทที่ใช้เมทแอมเฟตามีน และเพื่อทดสอบแบบจำลองที่อธิบายความสัมพันธ์ของการเผชิญปัญหา การรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม การแสดงออกทางอารมณ์ในครอบครัว เหตุการณ์รุนแรงในชีวิต การสนับสนุนทางสังคมการและทำหน้าที่ในสังคมที่มีต่ออาการทางจิตในผู้ป่วยโรคจิตเภทที่ใช้เมทแอมเฟตามีน ใช้ทฤษฎี The Vulnerability-Stress Model of Schizophrenia (Nuechterlein & Dawson, 1984) เป็นกรอบแนวคิด ในการศึกษา ผู้เข้าร่วมการวิจัย คือ ผู้ป่วยโรคจิตเภทที่ใช้เมทแอมเฟตามีน จำนวน 313 คน เลือกกลุ่มตัวอย่างแบบหลายขั้นตอน เก็บรวบรวมข้อมูลด้วยแบบสอบถามข้อมูลส่วนบุคคล แบบวัดการเผชิญปัญหา แบบวัดการรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม แบบวัดการแสดงออกทางอารมณ์ในครอบครัว แบบสอบถามเหตุการณ์รุนแรงในชีวิต แบบสอบถามการสนับสนุนทางสังคม และแบบวัดการทาหน้าที่ในสังคม ทดสอบเส้นทางอิทธิพลของสมมติฐานการวิจัยโดยใช้โปรแกรมลิสเรล 8.72

ผลการวิจัย พบว่า แบบจำลองที่สร้างขึ้นมีความสอดคล้องกลมกลืนกับข้อมูลเชิงประจักษ์ และสามารถอธิบายความผันแปรของอาการทางจิตของผู้ป่วยโรคจิตเภทที่มีการใช้เมทแอมเฟตามีนได้ร้อยละ 54 (X^2= 8.28, df = 8, p-value = 0.41, X^2/df = 1.0, GFI = 0.99, AGFI = 0.96, CFI= 1.00 , RMSEA = 0.01) นอกจากนี้ปัจจัยที่มีอิทธิพลสูงสุดทั้งโดยรวมและอิทธิพลทางตรงอย่างมีนัยสำคัญทางสถิติต่ออาการทางจิต ได้แก่ (-0.12, p < .01) การรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม (-0.09, p < .01) และการทำหน้าที่ทางสังคม (0.08, p < .01), การแสดงออกทางอารมณ์เชิงบวก (-.04, p < .05), และเหตุการณ์รุนแรงในชีวิต (-.01, p < .05) ส่วนปัจจัยที่มีอิทธิพลทางอ้อมสูงสุดอย่างมีนัยสำคัญทางสถิติต่ออาการทางจิตโดยส่งผ่านการรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม ได้แก่ การเผชิญปัญหาแบบมุ่งจัดการกับปัญหา (-0.02, p < .01) เหตุการณ์รุนแรงในชีวิต (-0.01, p < .05) และการทำหน้าที่ทางสังคม (-0.01, p < .05) ตามลำดับ

การศึกษาในครั้งนี้แสดงให้เห็นว่าการเผชิญปัญหาแบบมุ่งจัดการกับอารมณ์ การรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม การทำหน้าที่ทางสังคม การแสดงออกทางอารมณ์เชิงบวกและเหตุการณ์รุนแรงในชีวิตเป็นปัจจัยที่มีอิทธิพลต่ออาการทางจิตของผู้ป่วยโรคจิตเภทที่มีการใช้เมทแอมเฟตามีน ดังนั้น การพยาบาลควรออกแบบโดยการจัดการปัจจัยสำคัญดังกล่าวเพื่อลดอาการทางจิตในประชากรกลุ่มนี้

สาขาวิชา พยาบาลศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2557 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

5277981036 : MAJOR NURSING SCIENCE
KEYWORDS: PSYCHOTIC SYMPTOMS / EXPRESSED EMOTION

EK-UMA IMKOME: A PATH ANALYSIS OF PSYCHOTIC SYMPTOMS AMONG PERSONS WITH SCHIZOPHRENIA AND METHAMPHETAMINE MISUSE. ADVISOR: ASSOC. PROF. DR.JINTANA YUNIBHAND, Ph.D., APN, CO-ADVISOR: ASSOC. PROF. WARAPORN CHAIYAWAT, DNS, APN, 310 pp.

This cross-sectional, descriptive correlation study aimed to explore the relationships among coping, medication use self-efficacy, expressed emotion, stressful life events, social support, and social functioning, and to test a model that explained the influences of these factors on the psychotic symptoms among schizophrenic persons that were misusing methamphetamines.

The conceptual framework was guided by the Vulnerability-Stress Model of Schizophrenia (Nuechterlein & Dawson, 1984). A sample of 313 schizophrenic persons misusing methamphetamines was recruited using multi-stage sampling. All of the participants responded to a set of seven questionnaires, including the Demographic Data Questionnaire, the Brief Psychiatric Rating Scale, the Brief COPE, the Self-efficacy for Appropriate Medication Use Scale, the Family, Expressed Emotional Scale, the Thai version of the Stressful Life Events Questionnaire, and the Social Functioning Scale. A linear structural relationship (LISREL 8.72) was used to test the hypothesized path model.

The study findings revealed that the hypothesized model fit the empirical data and explained 54% of the variance of the psychotic symptoms among schizophrenic persons and misusing methamphetamines (X^2 = 8.28, df = 8, p-value = 0.41, X^2 /df = 1.0, GFI = 0.99, AGFI = 0.96, CFI = 1.00, RMSEA = 0.01). In addition, the highest total effect and the factors directly affection the psychotic symptoms were emotionally focused coping strategies (-.12, p < .01), medication use self-efficacy (-.09, p < .01), social functioning (.07, p < .01), positively expressed emotion (-.04, p < .05), and stressful life events (-.01, p < .05). In addition, the factors with the strongest indirect effect on the psychotic symptoms through medication use self-efficacy were problem-focused coping strategies (-.02, p < .01) stressful life event (-0.01, p < .05), and social functioning (- 0.01, p < .05).

These findings demonstrated that emotional coping strategies, medication use self-efficacy, social functioning, positively expressed emotion, and stressful life events were important factors that influenced the psychotic symptoms among these individuals. Therefore, nursing interventions that are designed to manage these factors are crucial in order to reduce the psychotic symptoms in this population.

CHULALONGKORN UNIVERSITY

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Student's Signature .....
Advisor's Signature .....
Co-Advisor's Signature .....

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CHAPTER I

INTRODUCTION

Background and significance of the study

Schizophrenia is a devastating mental illness that directly affects about 1% of the population worldwide. The indirect impact has a greater effect on individuals and their families, lost wages, and health care costs (Cornblatt, Green, Walker, and Mittal, 2009). The most common time of onset for schizophrenia is late adolescence and early adulthood (Sadock, Sadock, and Ruiz, 2015).

The rates of substance use in persons with schizophrenia are particularly alarming; up to 80% of schizophrenia patients are substance users (Westermeyer, 2006; Wanda, 2013), and they are up to 5.3 times more likely to have substance use disorders than persons without mental illness (Cantor-Graae, Nordstrom, and McNeil, 2001). Currently, it appears to be common for schizophrenic persons and misusing methamphetamines. The administration of high doses of methamphetamines to persons with schizophrenia may exacerbate psychotic symptoms, resulting in a psychotic relapse (Sadock, Sadock, and Ruiz, 2015). In other words, persons with schizophrenia and methamphetamine misuse experience relapse and high levels of methamphetamine use, which is a bidirectional relationship. Additionally, it increases the prevalence of substance abuse among individuals with schizophrenia-spectrum

disorders (SSDs), increases the incidence of violence, as well as greater housing, economic, and health care access problems (Compton et al., 2005).

The hallmark symptoms of schizophrenic persons and misusing methamphetamines are psychotic symptoms that can devastate the lives of the affected persons and can severely disrupt families. The affected individuals may withdraw from the environment and display regressive behaviors, find it difficult to attend to personal hygiene or other activities in daily living, engage with others, or even notice physical illness or pain. In the longer term, the psychotic symptoms affect in daily living (Wanda, 2013), and also effect on social functioning impairment. Such severe, untreated symptoms cause marked social, familial, and occupational dysfunction; an increased prevalence of functional psychosis; an increased incidence of violence; and greater housing, economic, and health care access problems (Compton et al., 2005).

Moreover, for persons who have severe symptoms that are difficult to conceal, it is likely that they and their loved ones become stigmatized. They may also receive inadequate clinical care and rehabilitation, along with the stigma of shame and family burden. Many family members hide their relationships or consider the illness to be a source of shame and may struggle with stigma when a relative suffers from schizophrenia (Gonzalez-Torres et al., 2007; Wanda, 2013). Furthermore, many suffer the consequences of the disease, including serious adverse outcomes, frequent homelessness, and struggling for a healthy, stable existence, which affects the quality of life of both the affected persons and their family members. The advent of psychotic symptoms will result in changes in self-esteem, their ability to achieve goals, and how they are perceived by others. The societal reaction can further adversely affect the

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sufferer's self-image and achievement motivation, and, in some cases, may result in hostile behavior and a rejection of social reactions (Angermeyer and Matschinger, 2005; Robert and Alan, 2006).

A large amount of evidence suggests that schizophrenic persons and misusing methamphetamines have behavioral and neural profile impairments, such as a) hallucinations and delusions, b) signs of distractibility, c) altered patterns of neural activation that involve dopamine-rich frontostriatal brain regions (Scott, Woods, Matt et al., 2007), and d) a worsening of their schizophrenic symptoms (Sadock, Sadock, and Ruiz, 2015).

Additionally, the body of knowledge on the studied interventions aims to decrease the psychotic symptoms among schizophrenic persons and misusing methamphetamines, but it has had limited success. Moreover, specific interventions typically include the components of motivational enhancement, psycho-education, and skills training and support. Nevertheless, specific interventions are needed to approach the direct effect on the antecedence, consequence, and to directly decrease all significance factors related to psychotic symptoms.

The current study was guided by the Vulnerability-Stress Model of Schizophrenic Episodes by Neuchterlein and Dawson (1984). This model determines the factors affecting schizophrenic psychotic symptoms and integrates a holistic approach, including both biological and psychological variables, to explain the onset, course and psychotic symptoms of persons with schizophrenia (Nuechterlein et al., 1994; McGlashman and Hoffman, 2000).

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The relationship between the psychotic symptoms and related factors is complex; thus, psychotic symptoms are an essential aspect for nurses to explore. Nurses can have a significant effect on various aspects of the psychotic symptoms of persons with schizophrenia because they can help the patients adjust to the challenges of hallucination, delusion and treatment because of their interpersonal relationships (Stuart and Laraia, 2013; Varcarolis and Halter, 2015).

In order to care for persons with schizophrenia, psychiatric nurses should not only be concerned with the concept of the psychotic symptoms but should also help the patients manage the side effects of psychotherapeutic drugs and assist them with managing and living with their symptoms and their functional role. Additionally, a clear understanding of the factors and how they affect psychotic symptoms would facilitate the design of an optimal and effective nursing intervention. Moreover, at present, there is no strong evidence to support or determine the effective nursing interventions for sustainably decreasing psychotic symptoms among persons with schizophrenia, particularly in Thailand. At the same time, Thailand has seen an increase in the incidence of relapse among schizophrenic persons and misuse of methamphetamines. Furthermore, nursing interventions focus more on the human response to improving patient function and well-being. Therefore, the need to better understand the contribution of the multiple factors that affect psychotic symptoms will facilitate the design of optimally-effective nursing interventions and provide individualized interventions to maximize positive patient outcomes. Additionally, the models that test the relationships between psychotic symptoms among schizophrenic persons and misusing methamphetamines have not been studied in Thailand, whereas previous studies have investigated these models in Western countries and the findings

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from these studies could not be generalized to the Thai context because different cultural backgrounds reflect the beliefs and symptoms under mental health threat conditions. Therefore, study of the factor related psychotic symptoms is needed for basic knowledge to guide effective interventions among schizophrenic persons and misusing methamphetamines.

The current study aimed to explore the correlations between psychotic symptoms and the predicted variables by developing and testing a model that explains the influences on the psychotic symptoms among schizophrenic persons and misusing methamphetamines. The results of this research will provide a clear understanding of the factors and how they affect this perception, which will facilitate the design of an optimal and effective nursing intervention to reduce the psychotic symptoms among schizophrenic persons and misusing methamphetamines**.**

Research questions

The following research questions were proposed for this investigation:

1. What are the relationships among emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and psychotic symptoms among schizophrenic persons and misusing methamphetamines?

2. Does the hypothesized model explain the psychotic symptoms among schizophrenic persons and misusing methamphetamines, including emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping

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strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and does it adequately fit the data?

Purpose of the study

The purposes of current study are the following:

1. To explore the relationships among emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and psychotic symptoms among schizophrenic persons and misusing methamphetamines.

2. To develop and test a model that explains the influences of psychotic symptoms among schizophrenic persons and misusing methamphetamines, including emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning.

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Conceptual framework

The current study was guided by the Vulnerability-Stress Model of Schizophrenia of Nuechterlein and Dawson (1984) and focused on two types of human responses— reactions to actual health problems or illness (health-restoring

responses), and concerns about potential health problems (health-supporting responses).

The Vulnerability-Stress Model of Schizophrenia determines the factors that affect schizophrenic psychotic symptoms and integrates a holistic perspective in which both biological and psychological variables explain the onset, course and psychotic symptoms of persons with schizophrenia (McGlashman and Hoffman, 2000; Yank et al., 1993 Nuechterlein et al., 1994). Additionally, this model illustrates the interaction between four factors, which can be further subdivided (Neuchterlein, 1984) as follows:

1. Personal vulnerability factors

The factors of the model are dopaminergic dysfunction, reduced available processing resources, autonomic hyperactivity, and schizotypal personality traits.

The dopaminergic dysfunction will reduce the activation of processing resources and affect tonic autonomic hyper activation. The interaction of the personal vulnerability factors and personal protectors leads the vulnerable individual to develop prodromal symptoms of schizophrenia. However, the personal vulnerability factors are associated between the inherited genetic factors and/or early biological factors (Nuechterlein et al., 1994). These factors have been thought to contribute to vulnerability to schizophrenia and congenitally compromise brain structure and function.

This study focuses on the human responses to actual or potential health problems of the population. Therefore, the personal vulnerability factors were excluded from the current study.

2. Personal protective factors

These factors include (i) coping skills and self-efficacy, and (ii) antipsychotic drug; self-efficacy: for this study, the researcher used the terms of medical use self-efficacy for describe self-efficacy as confidence in one's ability to perform a given task such as taking antipsychotic medications as prescribed.

The strong of self-efficacy for appropriate antipsychotic use plays an important role to take antipsychotic and can be balance neurotransmitters in the brain, especially dopamine and norepinephrine, which lead to a decrease both of positive psychotic symptoms and negative psychotic symptoms.

Coping: coping is the strategies, behavioral, or cognitive efforts to manage situations that are appraised as stressful by schizophrenic persons and misusing methamphetamines in terms of problem focused coping strategies, to control the emotional distress caused by an event, which is termed the emotion-focused coping strategy, and dysfunctional coping strategy. Schizophrenic patients are often ill-prepared to cope with stress in their life and the pressure from family members because they often lack the information-processing skills to process optimum behavioral alternatives and the social skills to put these strategies into action (Eisler et al., 1974; Spivack, Platt, and Shure, 1976; Cohen, 1978; Hersen et al., 1978; Rochester, 1978; Lukoff et al., 1984).

In the current study, the researcher focuses on human response, and the self-efficacy and antipsychotic drug factors were integrated as medication use self-efficacy. Therefore, the factors of coping and medication use self-efficacy was tested in the present study.

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3. Environmental protective factors;

These factors include effective family problem solving and supportive psychosocial interventions.

Effective family problem solving means the ability of family members to solve problems, not only the individual problems of persons with schizophrenia but also the problems of all family members, which are always related to the conditions of each individual's life; his or her household, the neighborhood or town, and the larger community (Sadock, Sadock, and Ruiz, 2015). This factor was not including in this study. Additionally, after the researcher reviewed the measurement of these factors it was found that the constructs and items for the effective family problem-solving scale presented multicollinearity between coping and expressed emotion. Thus, in this study effective family problem solving was excluded.

Supportive psychosocial interventions: the combination of pharmacotherapy and psychosocial intervention has been recommended for treatment of schizophrenia. The best intervention for the acute phase of schizophrenia is the psycho-social interventions that have been reduced psychotic symptoms and the individuals can be effectively engaged in treatment. The goals of intervention reduce the stress of the patient, provide support for relapse prevention, promote adaptation of patient to living in the community, and facilitate continued decrease in symptoms and consolidation of remission (Patterson, 2008).

Regarding the supportive psychosocial interventions, this is an intervention to treat patients. However, the focus of this study was human response. Therefore, the

researcher set this variable as the demographic data that in the part of medical history of the study participants.

Social support: social support is the factor that the researcher added to the environmental protective factor of this study. The stress factors can exacerbate the psychotic symptoms. Therefore, the support from family, friends, medical specialists or clinical practitioners represents the key components in helping patients to raise the protective factors for the reduction of symptoms severity (O'Connor, 1994).

In conclusion, the environmental protective factors were the factors used to explore relationship for the current study.

4. The Environmental potentiates and stressor

These factors were the critical or emotionally over-involved attitudes toward the patient, an over-stimulating social environment, and stressful life events.

Regarding the critical or emotionally over-involved attitudes toward the patient, namely expressed emotion, according to this alternative model, there might not be a causal relationship between the high expressed emotion (EE) of significant others and relapse; they might be jointly related to a third variable, severity of illness (Mac-Millan et al., 1986). Combine these two models by postulating feedback loops from behaviors of patient to attitudes and behaviors of significant others, thereby creating bidirectional influence patterns (Nuechterlein and Dawson, 1984a; Liberman, 1986; Nuechterlein, 1987).

Regarding an over stimulating social environment, the Vulnerability-Stress Model of Schizophrenia views the social environment as stressful life events and highly-expressed emotion. The occurrence of key life events leading to a high level of

environmental stress, interacts with preexisting biological vulnerability factors, and increases the likelihood that psychotic symptoms will return (Brown et al., 1972; Leff, 1987). Additionally, critical and emotionally over-involved attitudes at least partially represent responses to the heavy burden that mental illness places on significant others, and that the persons who have a more severe, relapse-prone form of illness place the heaviest burden on significant others (Brown et al., 1972; Kanter et al., 1987; Lefley, 1989).

Regarding stressful life events, empirical data indicated that stressful life events rule on independent of the patient's behavior are more common in the weeks immediately before relapse (Brown and Birley, 1968; Leff and Vaughn, 1980; Day et al., 1987). Additionally, the initial findings showed the roles of stress factors in other aspects of the early course of schizophrenia that have significant associations with social functioning (Hogarty et al., 1988). Moreover, stressors in the form of stressful life events are realized as factors that interact with preexisting vulnerability characteristics to produce vicious circles, which lead, in turn, to psychotic episodes.

In the present study, expressed emotion, both negatively-expressed emotion and positively-emotional expressed emotion, and stressful life events, were included variables.

5. Outcomes

The outcomes variables of this model were social function, psychotic symptoms, and occupational functioning.

Regarding social function, social dysfunction is a hallmark characteristic of schizophrenia that has important implications for the development, course, and

outcome of this illness. With the advent of antipsychotic medications, individuals with schizophrenia have been effectively treated for symptoms of acute psychosis (Bustillo et al., 2001). Social dysfunction generally worsens over the course of the disorder and is often resistant to antipsychotic treatment (Addington and Addington, 2000; Pinkham et al., 2003).

Regarding psychotic symptoms, they are a central element in the diagnosis of schizophrenia and are the outcomes factors that reverse to other factors. Coping, self-efficacy, EE, stressful life events, and social functioning lead to the severity of psychotic symptoms.

Regarding occupational functioning, schizophrenia is associated with a significant decrease in such functioning. Less than 20% of individuals with schizophrenia can maintain regular employment and there is "a persistent link between psychotic symptoms and occupational functioning among persons with schizophrenia." Empirically-derived factor structures have shown that symptoms fall into five components. One such factor structure is derived the following components: positive, negative, hostility, cognitive, and emotional discomfort (Bell, Lysaker, Goulet, Milstein, and Lindenmayer, 1994; Lehman, 1995; Cook and Razzano, 2000).

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The occupational functioning factor was excluded from this study due to the condition of most patients in the hospital—that they were not employed while admitted, there was the limited on the timeline of length of stay those only 30 days in Thai psychiatric hospital that they cannot join vocational rehabilitation program, the researcher cannot perform measure within a reasonable amount of time and assessment in term of occupational functioning which defined as competency with

one's task performance associated with valued roles, sense of self-satisfaction, productivity, communication/interaction skills, leisure and rest in response to demands of the internal and/or external environment, and environments, where context, temporal factors, and physical and psychological phenomena are inseparable (Law et al., 1996; Trombly, 1993; Ranka and Chapparo, 1997; Kielhofner, 1997).

For this study, the researcher hypothesized social function as an exogenous variable. In additionally, psychotic symptoms were theorized as an endogenous variable for present study.

In summary, taken within the framework of the Vulnerability-Stress Model of schizophrenia and present study was undertaken to human responses to actual or potential health problems of the population. Therefore, the variable of emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategies, medication use self-efficacy, negatively-expressed emotion, positively-expressed emotion, stressful life events, social support, and social functioning, which influence the psychotic symptoms among schizophrenic persons misusing methamphetamines, were chosen for the conceptual framework as shown in Figure 1.1

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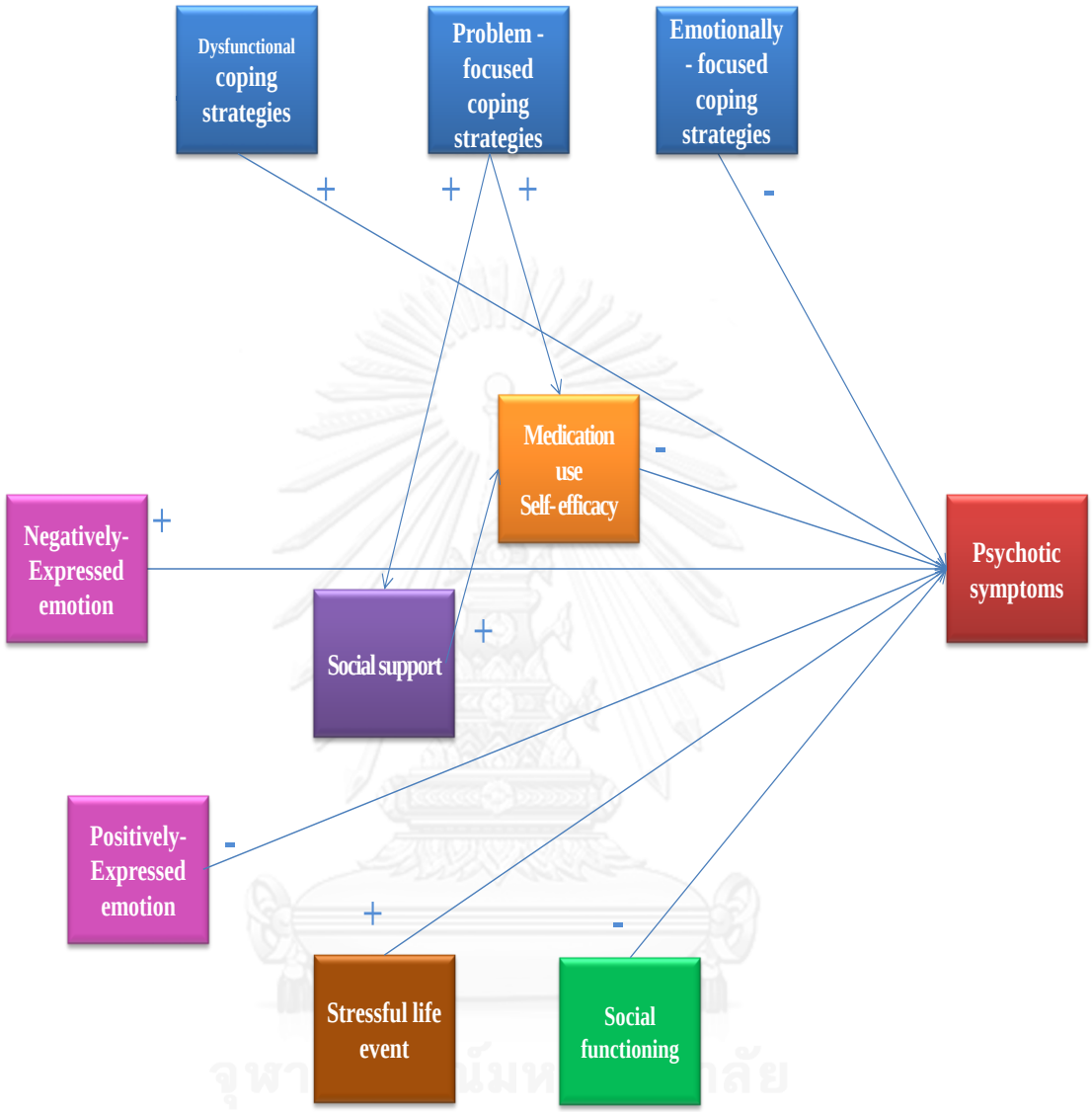

Figure 1. 1 Illustration of hypothesized model of path analysis of psychotic symptoms among schizophrenic persons misusing methamphetamines

Research hypotheses and rationale

The research hypotheses are listed as follows:

Hypothesis 1: Emotionally-focused coping strategies have a direct negative effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines

Rationale:

Emotionally-focused coping aims to reduce or control the negative feelings associated with a stressful situation; individuals often rely upon emotionally-focused coping strategies during situations perceived as immutable and uncontrollable (Folkman and Lazarus, 1980) when the situation was out of control or broke down. In other words, emotionally-focused coping strategies whose squeal spread between relatives, leading to increased experiences of burden and poor relational climate. Therefore, the persons would be out of reality and their psychotic symptoms would increase.

Hypothesis 2: Problem-focused coping strategies have a direct positive effect on the psychotic symptoms through social support and medication use self-efficacy among schizophrenic persons misusing methamphetamines.

Rationale:

Positive coping strategies predict relative decreases in symptoms over time in people with schizophrenia. Another study found that the participants that received an intervention targeting coping had decreased positive symptom severity and increased self-esteem compared to a group that did not receive the intervention (Leclerc et al., 2000). Demographics may influence the coping strategies used to deal with symptoms

of schizophrenia. Persons with schizophrenia frequently utilize more problem-focused coping strategies, such as accessing helping from social, accessing service from health care provider, and taking medication (Yanos, 2001). The characteristics of individuals with schizophrenia that tend to use better coping strategies include having a higher level of premorbid adjustment, being exposed to helpful resources, and having motivation and ability to use these helpful resources (Lee, Lieh-Mak, Yu, and Spinks, 1993).

Self-efficacy is strongly related to negative symptoms and is moderately associated with social and general function. Patients with negative symptoms reported low self-efficacy estimates for everyday tasks. In addition, low self-efficacy is one of the negative symptoms of the patient (Hill, 2012; Kurtz, Olfson, and Rose, 2013). The strength of self-efficacy regarding appropriate antipsychotic use plays an important role in taking antipsychotic to balancing neurotransmitters in the brain, especially dopamine and norepinephrine, leading to a decrease both of positive psychotic symptoms and negative psychotic symptoms. Moreover, self-efficacy for appropriate antipsychotic use plays a vital role in preventing psychotic relapse. In schizophrenia, medication use self-efficacy has a positive impact on the person's ability to control positive symptoms and to diminish the effects of negative symptoms and social withdrawal (McDermott, 1995).

Lower risk of schizophrenia and psychological distress more generally for the one who can access the greater social support. Moreover, emotional support impacts both psychological and physical health outcomes. Based on a review of the concepts and evidence related to social support at both the interpersonal and community level, it can be seen that social support enables the adoption of health-promoting behaviors

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by providing access to resources and material goods, enhancing individual and community coping responses, and buffering negative outcomes. In addition, social support is typically related to tasks that are jointly conducted with family members and friends; that is, factors to prevent the increase of psychotic symptoms among schizophrenic persons misusing methamphetamines.

Hypothesis 3: Dysfunctional coping strategies have a direct, positive effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines.

Rationale:

Schizophrenic persons misusing methamphetamines react and cope with the chronic illness by arming themselves with substance use, behavioral disengagement, denial, self-distraction, self-blame, and venting which lead to severity of psychotic symptoms. Substance use exacerbates psychotic symptoms by increasing the neurotransmitters of the brain and their behavior, such as self-blame and disengagement, which were factors in making the psychotic symptoms more severe.

Hypothesis 4: Negatively expressed emotion has a direct, positive effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines

Rationale:

Negatively-expressed emotion at a high level is correlated with psychotic symptom relapse and is based on three critical measures: the number of critical comments expressed by the relative about the patient, emotional over-involvement manifested by over-protectiveness and intrusive concerns, and hostility (Brown et al.. 1972; Vaughn and Leff, 1976).

Hypothesis 5: Positively-expressed emotion has a direct, negative effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines.

Rationale:

The positively-expressed emotion of family members can protect a sick family member from life's stresses. Additionally, emotional over-involvement may be a reaction to the stress of having a family member with a persistent and severe illness. There are some data to support this concept, but typically most studies were performed on patients whose illnesses have lasted for several years. This may bring about different reactions in family members (Brown et al., 1972; Vaughn and Leff, 1976; Vaughn et al., 19S4). Conversely, family members react and cope with the chronic illness by arming themselves with information about the illness and offering appropriate and realistic support, thus encouraging and modeling more effective coping strategies.

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Hypothesis 6: Stressful life events have a direct, positive effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines.

Rationale:

Stressful life events raise the stress level of people that are vulnerable to the disorder, and if an individual's stress tolerance level is exceeded, a psychotic episode will be triggered (Pujo, 2013). Individual perceive stress difference, some life event may leadinig to stress but for someone is not. The reactions to the situation depend on his or her personality (Sejwal, 1984). Earlier studies have suggested that stressful life events judged to be independent of the patient's behavior were more frequent in the weeks immediately before relapse (Brown and Birley, 1968; Leff and Vaughn, 1980; Day et al., 1987). In addition, major life events are the cause of environmental stress that relates with previous biological vulnerability factors to increase psychotic relapse (Brown et al., 1972; Leff, 1987).

Hypothesis 7: Social functioning has a direct, positive effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines.

Rationale:

Social functioning impairments are observed during the prodromal stages of schizophrenia, and often worsen immediately after the first episode, and persist into late life (Robinson et al., 2004). Social dysfunctions are the basic concern to patients, families, and advocacy groups, and are significance predictors of quality of life (Bellack et al., 2007). While current pharmacotherapy can often decrease the severity of psychotic symptom, social dysfunction characteristically persevere in schizophrenic patient (Robinson et al., 2004). Additionally, repeated hospitalizations

often contribute to further their social dysfunction (Yager and Ehmann, 2006). Early research on the social functioning of individuals with schizophrenia has focused on deficits in this area of functioning (Argyle, 1981; Bellack, Morrison, Wixted, and Mueser, 1990).

Scope of the study

The present study examines the factors predicting psychotic symptoms and test model of psychotic symptoms and the population is the persons who diagnosed with schizophrenia and methamphetamine misuse, had a psychotic relapse, and admitted in the hospitals in Thailand that provide care for psychiatric and substance abuse.

According to the hypothesized model, the exogenous variable is emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively-expressed emotion, positively-expressed emotion, stressful life events, social support, and social functioning. Additionally, the endogenous variable is psychotic symptoms.

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Definitions of terms

1. Psychotic symptoms were defined as the characterized of thinking and emotions that are impaired, out of reality among schizophrenic persons misusing methamphetamines. The three dimensions of psychotic symptoms included positive psychotic symptoms, negative psychotic symptoms, and affective symptoms.

a. The positive psychotic symptoms included somatic concern, conceptual disorganization, grandiosity, hostility, suspiciousness, and hallucination behavior, unusual thought content, excitement, and disorientation.

b. The negative psychotic symptoms included emotional withdrawal, mannerism and posturing, motor retardation, uncooperativeness, and blunted affect.

c. The affective symptoms included anxiety, guilt feelings, tension, inappropriate affect, and depressive mood.

The severity of psychotic symptoms was measure using the Thai version of the Brief Psychiatric Rating Scale (BPRS) by Kittirattanapiboon (2001), which was translated from the original version of Overall and Gorham (1962). The BPRS is a measurement at the interval level, where a higher BPRS total score indicates a higher level of severity of symptoms.

2. Coping was defined as the behavioral or cognitive efforts to manage situations that are appraised as stressful by schizophrenic persons misusing methamphetamines in terms of problem-focused coping strategies to control the emotional distress caused by the event, which is termed emotionally-focused coping strategies and dysfunctional coping strategies.

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a. Problem-focused coping strategies are viewed as more effective and healthy approaches to an adverse situation comprising active coping, seeking instrumental support, and planning.

b. Emotionally-focused coping strategies are oriented toward managing the emotions that accompany the perception of stress composed of seeking emotional support, positive reframing, humor, acceptance, religion.

c. Dysfunctional coping strategies are oriented toward behavioral disengagement, denial, self-distraction, self-blame, substance use, and venting.

Coping was measured using the Brief COPE. The Brief COPE (Carver, 1997) was translated into the Thai language by the researcher. It was a measurement at the interval level, where a higher Brief COPE score for each aspect indicates greater use of a particular coping strategy.

3. Medication use Self-efficacy was defined as the confidence of schizophrenic persons misusing methamphetamines in their ability to perform appropriate medication-taking under difficult and uncertain circumstances. Medication use self-efficacy covers self-efficacy of taking medications in difficult situations and self-efficacy of continuing to take medications in uncertainty situations.

For this study, medication use self-efficacy was measured using the the Thai version of the Self-efficacy for Appropriate Medication use Scale (SEAMS) (Risser, Jacobson, and Kripalani, 2007), which was translated into the Thai language by Polsook (2012). The SEAMS is a measurement at the interval level, where a higher total score depicts a higher level of self-efficacy.

4. Expressed emotion (EE) was defined as conversations, emotions, and behaviors of family caregivers directed toward the schizophrenic persons misusing methamphetamines regarding both of positively-expressed and negative-expressed emotion.

a. Positively-expressed emotion involved the appreciation, warmth, and friendliness of the family caregivers directed toward the schizophrenic persons misusing methamphetamines.

b. Negatively-expressed emotion involved the critical comments, hostility, and emotional over-involvement in the interactions of family caregivers.

In this study, EE was assessed using the The Thai version of the Family Expressed Emotional Scale (TFEES) (Wongsin, 2012), which was adapted from Pongjantarasatiean (2006) and Sunpaweravong (2006) and translated from the expressed emotional scale of Brown et al. (1972). The TFEES is a measurement at the interval level, where a higher TFEES score in each aspect indicates a higher level of expressed emotion.

5. Stressful life events were defined as the perception of the situations among schizophrenic persons misusing methamphetamines in two aspects: a) self-perceived frequency, and b) intensity of stressful life events.

Stressful life events were measured using the Stressful Life Events questionnaire which was translated into Thai by the researcher form the stressful life event questionnaire (Roohafza et al., 2011). The Thai version of the stressful life event questionnaire is a measurement at the interval level, where a higher total score indicates higher intensity and frequency of life events.

6. Social support was defined as the perception of schizophrenic persons misusing methamphetamines in receiving help from significant others: a) family members b) health care providers, and c) friends and neighbors, divided into three categories: informational support, emotional support, and tangible support from family, friends, healthcare providers, and others.

a. Information support is assist form family, friends, mental health care providers, and others in terms of the provision of advice, guidance, suggestions, or useful information from family, friends, mental health care providers, and others.

b. Emotional support is assist form family, friends, mental health care providers, and others in terms of the offering of empathy, concern, affection, love, trust, acceptance, intimacy, encouragement, or caring. It is the warmth and nurturance provided by family, friends, mental health care providers, and others.

c. Tangible support is the assist form family, friends, mental health care providers, and others in terms of provision of financial assistance, material goods, or services

In this study, social support was measured using the Thai version of Social Support Questionnaire (Hanuchareankul, 1988). This instrument was modified from the conceptualization of social support by Schaefer, Coyne, and Lazarus (1981), conceptual definitions of social support (Kahn, 1979), and definitions from network theory (Barnes, 1972).This measurement at the interval level. A higher total score indicates a better social support.

7. Social functioning was defined as the ability of persons with schizophrenic persons misusing methamphetamines in three dimensions as adaptive living skill, social appropriateness, and interpersonal skill.

Social functioning was measured using the social functioning which was translated into the Thai language by the researcher from The Social Occupational Functioning Scale (SOFS) (Saraswat et al., 2006). This measurement was at the interval level. A higher total score depicted a higher level of social functioning.

Expected outcomes and benefits of the study

The expected outcomes and benefits of the current study were as follows:

1. A model underpins the conceptual framework of the present study and will explain psychiatric and mental health nursing phenomena and contribute to the strength of nursing science. Nurses will be able to use the findings of this study to develop research and nursing interventions to help schizophrenic persons misusing methamphetamines prevent relapse of their psychotic symptoms, suicidal rate, increase compliance with treatment, and decrease inpatient stays and hospital readmissions.

2. The utility of the path model provides significant information for mental health care providers, multidisciplinary teams, and policy makers in order to offer suitable support and guidance to schizophrenic persons misusing methamphetamines and to enhance their ability to deal with psychotic symptoms while living in the community.

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3. The utility of the path model provide significant information for mental health care providers, multidisciplinary teams and policy makers in order to offer suitable support and guidance to persons with schizophrenia and methamphetamine misuse and to enhance ability to dealing with psychotic symptoms during living in community

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CHAPTER II

LITERATURE REVIEW

The current study is aimed at exploring a model of the causal relationship as it relates to the factors associated with psychotic symptoms of Thai schizophrenic persons and methamphetamine misuse. A critical review of the presented literature includes theory and empirical studies. This chapter contains the following topics:

1. Overview of schizophrenic persons misusing methamphetamines

1.1 Prevalence of schizophrenic persons misusing methamphetamines

1.2 Epidemiology of schizophrenic persons misusing methamphetamines

1.3 The impact of psychotic symptoms among schizophrenic persons misusing methamphetamines

1.4 Factors related psychotic symptoms among persons with schizophrenia

1.5 Treatment modalities among schizophrenic persons misusing methamphetamines

1.5.1 Pharmacotherapy

1.5.2 Psychosocial Interventions

1.5.3 Treatment Principles

1.5.4 Research evidence for treatment efficacy

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2. The stress vulnerability model of schizophrenia

2.1 Overview of theory

2.2 Psychotic symptoms as vulnerability-stress factors in methamphetamine misuse

2.3 Applications of the Stress Vulnerability Model of Schizophrenia

3. Psychotic symptoms among schizophrenic persons misusing methamphetamines

3.1 Definition of psychotic symptoms

3.2 Philosophical perspectives of psychotic symptoms

3.3 Theoretical perspectives of psychotic symptoms

3.4 Use of the concept of psychotic symptoms in professional fields

3.5 Attributes of psychotic symptoms

3.6 Antecedence and consequence of psychotic symptoms

3.7 Measurement/appraisal of psychotic symptoms

4 The relationships of psychotic symptoms and predicting variables based on empirical study

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1. Overview of schizophrenic persons misusing methamphetamines

Psychiatric comorbidities are common among patients with schizophrenia, especially those misusing substances. In addition, fifty-five percent of the schizophrenia patients that are medicated with antipsychotics are substance abusers (Swofford et al., 2000). People that are suffering from schizophrenia and methamphetamine misuse can precipitate and exacerbate their psychotic symptoms (Curran, Byrappa, and McBride, 2004). Additionally, both schizophrenia and methamphetamine misuse present a significance problem for health area results in that they cannot reduce or stop their consumption of methamphetamine because of the psychotic symptoms and this can have a significant neurological impact, and further, many of the neural substrates associated with substance dependence and schizophrenia overlap. Therefore, the comorbidity rates between mental illness and substance dependence are extremely high.

The repeated use of amphetamines on the part of individuals with schizophrenia results in the increase of psychotic symptoms (Angrist et al., 1980; Janowsky and Davis, 1976) and it has an impact on many aspects in humans, including cognitive dysfunction, delusions, and hallucinations (Harris and Batki, 2000; McKetin et al., 2006; Scott et al., 2007). Schizophrenia and psychosis induced by methamphetamines are an overlapping neurobiological function. One behavioral feature that occurs with both schizophrenia patients and the administration of methamphetamines is a sensorimotor gating deficit that indicates cognitive fragmentation (Braff et al., 1978; Grillon et al., 1992).

1.1 Prevalence of schizophrenia and methamphetamine misuse

Presently, persons with schizophrenia and substance abuse problem are estimated to be at 50% to 75% (Westermeyer, 2006; Wanda, 2013) and up to 31% of individuals with schizophrenia that have a history of stimulant abuse (Mueser, Yarnold and Bellack, 1998) such as methamphetamine. Additionally, the recurrent of relapse and high level of methamphetamine use has been associated with an increased prevalence in functional psychosis. It has been noted that 25% of schizophrenia patients meet the criteria for psychostimulant abuse or dependence (Compton et al., 2005). This was demonstrated in two separate studies involving prison inmates that used stimulant drugs (Farrell et al., 2002) and psychiatric patients (Dalmau, Bergman, and Brismar, 1999) with a concurrent diagnosis of misusing methamphetamine. Within these contexts, the prevalence of psychosis among individuals with amphetamine use disorder was up to 28%. A recent Australian study (McKetin, McLaren, Lubman, and Hides, 2006) showed high prevalence of psychosis among methamphetamine users compared with the general population, even among those that had no known history of schizophrenia or other psychotic disorders. Among the participants screened positive for psychosis compared with 1.2% in the general population (11 times greater in prevalence) were 13% and 23% that had experienced a clinically significant symptom of suspiciousness, unusual thought content or hallucinations in the past year. The misusing methamphetamine should raise particular concern because of its marked ability to increase psychotic symptoms (Sadock, Sadock, and Ruiz, 2015).

1.2 Epidemiology of schizophrenia and methamphetamine misuse

The knowledge about schizophrenia and substance use disorder has developed in many aspects. First, the lifetime rate between schizophrenia and substance use disorder appears to have increased 20–30%, so now about 70–80% of persons with schizophrenia have a lifetime substance use disorder. Second, substance use disorder remission has become commonplace in persons with schizophrenia, perhaps outnumbering the number of schizophrenia-only patients as well as those with active between schizophrenia and substance use disorder. Third, the rate of sustained substance use disorder remission is well demonstrated. Fourth, the topic of schizophrenia and substance use disorder is filling out our knowledge in many aspects, covers schizophrenia at risk for substance use disorder characteristics, the reasons of persons with schizophrenia seek out substances, the effects of various substances on schizophrenia course and symptoms, and the problems to substance use disorder recovery in schizophrenic patients.

In addition, misusing methamphetamines dependent were noted to be three times more likely to have experienced psychotic symptoms than their non-dependent counterparts (McKetin, McLaren, Lubman, and Hides, 2006). This clearly shows that schizophrenic persons misusing methamphetaminesare a particularly high-risk group for psychotic relapse. Additionally, persons with schizophrenia are up to 5.3 times more likely to have substance use disorders than persons without mental illness (Cantor-Graae, Nordstrom, and McNeil, 2001; Thirthalli and Benegal, 2006).

1.3 The impact of psychotic symptoms among persons with schizophrenia and methamphetamine misuse

The impacts of psychotic symptoms among schizophrenic persons misusing methamphetamines are varied and the details are as follows.

1.3.1 Impact on physiology: A large of evidence suggests that schizophrenia and substance misuse have a negative impact on the physiology and schizophrenia underlying neuropathology, which may contribute to enhanced addiction vulnerability by disrupting the neural substrates that mediate positive reinforcement (Chambers, Krystal, and Self, 2001). In addition, cognitive control deficits have been documented in a major of clinical population of schizophrenics (MacDonald, 2003; Barbalat et al., 2009) and misusing methamphetamines (Nordahl, Salo, and Leamon, 2003; Salo et al., 2009). Both schizophrenic persons and methamphetamine misuse share a similar behavioral and neural profile, in that both groups a) report hallucinations and delusions, b) exhibit signs of distractibility, and c) display altered patterns of neural activation that involve dopamine-rich frontostriatal brain regions (Scott et al., 2007), injury, HIV, hepatitis, and cardiovascular, liver, and gastrointestinal disease (Gregg, Barrowclough, and Haddock, 2007). In the longer term, the effects of psychosis and its potential disruption to perform activities in daily living (Wanda, 2013). In fact, some people suffer from side effects of psychotherapeutic drug (Sadock, Sadock, and Ruiz, 2015).

Moreover, Javier et al., (2000) conducted a study entitled the Methamphetamine-Induced Disruption of Frontostriatal Reward Learning Signals: Relation to Psychotic Symptoms. The study indicated that: 1) intravenous methamphetamine induced mild psychotic symptoms in healthy volunteers; 2)

methamphetamine significantly reduced the reward prediction error signal in the limbic striatum and significantly reduced the incentive value signal in the ventromedial prefrontal cortex; 3) methamphetamine induced behavioral changes in learning, leading to lower learning rates during reward-related reinforcement learning; 4) the degree to which methamphetamine disrupted the encoding of incentive values in the ventromedial prefrontal cortex was associated with the degree to which the drug induced psychotic symptoms at a mild level; and 5) before treatment with amisulpride alter the correlation between the ventromedial prefrontal cortex incentive value signal and psychotic symptoms in mild level.

1.3.2 Impact on psychology: The negative consequences for schizophrenic persons misusing methamphetamines on psychology are low self-esteem, poorly developed coping skills, negatively emotion, and social phobia (Gregg, Barrowclough, and Haddock, 2007), suicidal ideation (Hawton, Sutton, Haw, Sinclair, and Deeks, 2005; Gregg, Barrowclough, and Haddock, 2007), and contribute to psychosocial variability (Green, Drake, Brunette, and Noordsy, 2007). Both psychotic symptoms and misusing methamphetamines will exacerbate social alienation and increase the potential for violent lashing out. The advent of psychotic symptoms will also most certainly result in a change in the way the sufferer perceives him/herself and his/her ability to achieve goals and in the way he/she is perceived by others. The societal reaction can further adversely affect the sufferer's self-image and achievement motivation, and in some cases may result in hostile and rejecting social reactions (Angermeyer and Matschinger, 2005).

1.3.3 Impact on socialization: The impact on socialization for schizophrenic persons misusing methamphetamines has been seen to be both in the short and long term. In the short term, primarily, it can devastate the lives of persons and severely disrupt families. Persons may become totally withdrawn from the environment with regressive behaviors, engage with others, or even notice physical illness or pain (Wanda, 2013), social exclusion, and homelessness (Hunt, Bergen, and Bashir, 2002; Gregg, Barrowclough, and Haddock, 2007). In the longer term, the effects of psychosis and its potential disruption the capacity to fulfill various social roles can result in further burden. Such severe, untreated symptoms can result in marked social, familial, and occupational dysfunction. Moreover, persons that have severe symptoms are likely to result in stigmatization of themselves and their loved ones, inadequate clinical care and rehabilitation, and the stigma of shame and family burden. Many family members hide their relationships or consider the illness to be a source of shame and may struggle with stigma when a relative suffers from schizophrenia (Gonzalez- Torres et al., 2007; Wanda, 2013). Furthermore, family and friends that live with, care for, or otherwise remain in interaction with these people will also experience distress, tension, and encounter within these relationships. Interpersonal conflicts are often related with dual diagnoses, and families and friends may be irritated with ongoing misusing substance that the users themselves may not see as problematical (Barrowclough, Haddock, Fitzsimmons, and Johnson, 2006).

1.3.4 Impact on treatment adherence: The negative consequences for schizophrenic persons misusing methamphetamines include increased rates of treatment noncompliance (Hunt, Bergen, Bashir, 2002; Gregg, Barrowclough, and Haddock, 2007), having less motivation to change, finding it difficult to engage,

dropping out of long-term programs, making slow progress (Drake, Mueser, Brunette, and McHugo, 2004; Mueser, Drake, Sigmon, Brunette, 2005; Barrowclough, Haddock, Fitzsimmons, and Johnson, 2006; Drake, O'Neal, and Wallach, 2008), destabilizing their illness, undermining treatment adherence, and contributing to psychosocial instability (Green, Drake, Brunette, and Noordsy, 2007).

1.4 Factors related psychotic symptoms among persons with schizophrenia and methamphetamine misuse

According to the empirical evidence, the details of relationships of psychotic symptoms among schizophrenic persons misusing methamphetamines are as below.

Ratanaporn (2014) conducted research on schizophrenia (N = 168) to test the relationship between psychotic symptoms and marital status, self-care behavior, drug compliance behaviors, stress coping, social support, family function, and substance use. The instruments were the history of the patient, self-care behavior, drug compliance behaviors, stress coping, social support, the Chulalongkorn Family Inventory and family expressed emotion. The result indicated that marital status($r=.310$, $p<.05$), self-care behavior ($r=.228$, $p<.05$) , family expressed emotion ($r=.265$, $p<.05$) substance use ($r=.218$, $p<.05$), and social support ($r=.178$, $p<.05$) has a strong relationship with psychotic symptoms.

Lee et al. (2013) explored the relationships among the factors in schizophrenia. The dependent variable was psychotic symptoms and the independent variables were impairment in reality evaluation. The measurement were as follows: 1) intellectual function was assessed using three subtests (Information, Picture Completion and Digit Span) of the Wechsler Adult Intelligence Scale-Revised (Wechsler, 1981), 2) Picture Completion (PC) subtests were used to assess working

memory and perceptual organization (Dickinson et al., 2002), 3) memory function was assessed using the Rey Auditory Verbal Learning Test (RAVLT; Rey, 1964), 4) the Rey Complex Figure Test (RCFT; Meyers and Meyers, 1995), 5) RCF Tim mediated and delayed the recall scores. Clinical symptoms were rated using the Positive and Negative Syndrome Scale (PANSS; Kay et al., 1987), and 6) auditory hallucinations and delusions were assessed using the Psychotic Symptom Rating Scales (PSYRATS; Haddock et al., 1999). The findings indicated that the patient group showed significantly lower precision in reality evaluation than the control group, and lower precision in the patient group was related to hallucinations and delusions in severe level. The accuracy of reality evaluation was negatively correlated with the PSYRATS hallucination total score only in the patient group, and these correlations remained significant after controlling for PC and RCF Tim mediate recall scores (r = - 0.49, P=0.02 and r= -0.45, P=0.03, respectively). The correlation between total score of PSYRATS delusion and accuracy of reality evaluation for the unreal pictures was significant after controlling for PC and RCF Tim mediate recall scores (r= -0.47, P=0.02).

Wongsin (2012) analyzed and ranked the variables for determine the factors related to schizophrenia relapse. The samples were Thai Muslim schizophrenic patients treated as inpatients and outpatients in hospitals. A total of 220 patients were equally divided into two groups, relapse and non-relapse. The major result was that one variable, medication adherence behaviors, could significantly discriminate relapse and non-relapse among the Thai Muslim schizophrenic patients at the .001 level (Exp (B) =2.042).

Kristin et al. (2011) studied low levels of self-esteem. The aim was to examine the impact of premorbid adjustment on self-esteem, and lowered self-esteem contributed to the development of delusions and hallucinations. A total of 113 patients from the Thematically Organized Psychosis research study (TOP) were included in the first treatment. The Positive and Negative Syndrome Scale (PANSS) was used to assess present symptoms. Premorbid adjustment was measured with the Premorbid Adjustment Scale (PAS) and self-esteem by the Rosenberg Self-Esteem Scale (RSES). The results depicted that premorbid social adjustment was significantly correlated to lower self-esteem and explained a significant proportion of the variance in self-esteem.

Docherty et al. (2011) conducted a longitudinal study. A total 27 relatively outpatients with schizophrenia spectrum were recruited for the study. The dependent variable was psychotic symptom and the independent variables were anxiety and expressed emotion. The diagnoses were determined by a clinical psychologist with extensive research diagnostic experience. Psychotic symptoms, anxiety, and all other symptoms were rated using the Positive and Negative Symptom Scale (PANSS). The results revealed that highly-critical most influential other effect on psychotic symptoms.

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Taylor et al., (2010) tested whether the perceptions of defeat and entrapment were the psychological mechanisms underlying the relationship between positive psychotic symptoms and suicidal ideation of 78 schizophrenic patients. Of this sample, 21.8% testified a single past suicide attempt and 50% reported multiple past attempts. It was depicted that defeat and entrapment are mediators between positive symptom severity and suicidal ideation, positive symptom severity and suicidal

ideation were highly correlated (r=0.56), and. defeat and entrapment were highly correlated (r=0.85)

Kanthasaibour (2001) analyzed the variables discriminating groups of relapse and non-relapse schizophrenic patients. Subjects were divided into two groups, 110 relapse and 110 non-relapse schizophrenic patients. The instrument was the interviewing questionnaires that measured self-care behaviors, health belief, drug compliance behaviors, family relationship, and family-expressed emotion. The research results shown that the self-care behaviors in the aspect of preparation for coping with problems, drug compliance behaviors, marital status, family-expressed emotion, health belief in the aspect of perceived benefit of the practice to prevent relapse (canonical correlation = .649).

Golob (2004) examined the relationship between family burden ratings and follow-up psychotic symptom levels in schizophrenia. The measurements were: 1) The Rochester Modified Format of the Camberwell Family Interview, 2) The Perceived Family Burden Scale, (PFBS), and 3) Brief Psychotic Rating Scale (BPRS). The results showed that the scores of the PFBS in extreme subjective at Time 1 significantly predicted the follow-up level of psychotic symptoms, accounting for 34% of the variance in the follow-up level of psychotic symptoms (r=.39, n=34, p=.02).

Lancon, Auquier, Reine, Bernard, and Addington (2001) explored the relationships between depression and psychotic symptoms of schizophrenia during an acute episode and stable period. The sample size was 68 and measurements were The Calgary Depression Scale for Schizophrenia (CDSS) for depression and the Positive and Negative Syndrome Scale (PANSS) for psychotic symptoms. The results revealed

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that the Calgary Depression Scale for Schizophrenia (CDSS) scores were correlated only with the Positive and Negative Syndrome Scale (PANSS) in the positive sub-scale score (Pearson's r = 0.50; P< 0.05) and total (Pearson's r = 0.49; P < 0.05) PANSS mean scores. The CDSS score was correlated with the positive as well as negative and general psychopathology sub-scale scores (Pearson's r = 0.63; P < 0.01).

Nuechterlein et al. (1992) conducted research on the path analysis to examine the relationship of age of onset, hospital admission, and expressed emotion level. The significant path relationship links were living with relatives before the index hospitalization and likelihood of high expressed emotion attitudes and the presence of highly-expressed emotion attitudes and a higher likelihood of relapse during the medicated period. The results also indicated that the attitudes, once developed, may also play a significant mediating role in relapse risk. Although the expressed emotion literature has emphasized the role of highly-critical and emotionally over-involved attitudes in raising the risk of relapse, in the data it is equally striking that the 1-year relapse rate for patients on depot medication in low-expressed emotion environments was extremely low (0 of 19 cases at this point). A social environment that involves a realistic understanding of the nature of schizophrenia and of the desirability of moderating major stressors may contribute to lowering relapse risk to levels below the typical rates on continuous maintenance antipsychotic medication.

In summary, the factors related to psychotic symptoms from the empirical data were grouped into five groups as follows:

a) Personal Vulnerability Factors: marital status (Ratanaporn, 2014; Wongsin, 2012), age (Wongsin, 2012), education (Wongsin, 2012), adequacy of income (Wongsin, 2012), High-Trait Reactivity (Docherty et al., 2009),

impairment in reality evaluation (Lee et al., 2013), substance use (Ratanaporn, 2014), suicidal ideation (Tayloret al., 2010).

b) Personal Protectors: medication compliance behavior (Ratanaporn, 2014; Wongsin, 2012; Kanthasaibour, 2001), self-care behavior (Ratanaporn, 2014; Wongsin, 2012; Kanthasaibour, 2001), stress coping (Ratanaporn, 2014; Kan thasaibour, 2001), Self-esteem (Kristin et al., 2011).

c) Environment Protectors: family function (Ratanaporn, 2014; Golob, 2004), social support (Ratanaporn, 2014; WongSin, 2012).

d) Environmental Potentiates and Stressors: Expressed emotional (Kanthasaibour, 2001; Golob, 2004; Docherty et al., 2011; Wongsin, 2012), Anxiety (Docherty et al., 2011), Defeat (Taylor et al., 2010), Depression (Lancon, Auquier, Reine, Bernard, and Addington, 2001), Entrapment (Taylor et al., 2010), Family burden (Golob, 2004), family health routines (WongSin, 2012), Health belief: perceived benefit of the practice to prevent relapse (Kanthasaibour, 2001), and Life Events (Docherty et al., 2009).

According to the evidence above, those factors were selected to support the factors of the stress vulnerability of schizophrenia to set up the hypothesized model of the current study (Figure 1.1).

1.5 Treatment modalities among schizophrenic persons misusing methamphetamines

Historically, when schizophrenic persons misusing methamphetamines had severe symptoms, they were hospitalized, stabilized psychiatrically, and then discharged with follow-up appointments at local mental health clinics. Once persons have recovered psychiatrically, then they are encouraged to start substance abuse treatment. Another

approach is parallel treatment, where both substance abuse and mental health treatment can occur at the same time but in different locations (Judd et al., 2003; Cleary, Hunt, Matheson, Siegfried, Walter, 2010).

Psychotic symptoms may inhibit progress in any treatment phase. Positive psychotic symptoms covers auditory hallucinations, delusions, concrete thinking, as can negative psychotic symptoms covers a limited range of emotional expressivity, flat affect, decreased goal-directed activity, and low energy levels (Carey, Purnine, Maisto, Carey, 2001). Clinicians have observed that schizophrenic patient have a low tolerance of stressors. Additionally, persons with misusing substance and serious mental illnesses have a narrow repertoire the skill of coping. They frequently advance idiosyncratic avoidance strategies in an effort to manage positive symptoms (delusions and hallucinations) that may become habitual and generalized (Gregg, Barrowclough, and Haddock, 2007).

1.5.1 Pharmacotherapy: Antipsychotic drugs are the standard of treatment of schizophrenia and are effective in managing symptoms. In addition, case studies demonstrate that the atypical antidepressant, olanzapine, can reduce psychotic symptoms induced by methamphetamine misuse (Misra et al., 2000).

Several lines of research have indicated that antipsychotic medications are promising treatments for substance use disorders with schizophrenia. Additionally, dopamine antagonists have demonstrated effectiveness in decreasing consumption in patients with schizophrenia and co-occurring substance use disorders (Davidson et al., 2009; Essali et al., 2009; Heard et al., 2009; Roncero et al., 2011).

Additionally, research indicated that psychotic symptoms are correlated with changes in brain chemistry. Antipsychotic medications help to restore the brain's

natural chemical balance, thereby reducing or getting rid of the psychotic symptoms. The medication can take some weeks before starting to work. Conventional antipsychotics are dopamine antagonists and target one of five subtypes of dopamine receptors in the brain. Dopamine 2 (D2) receptor antagonisms in the mesolimbic tract improves the hallucinations and delusions associated with schizophrenia but the conventional antipsychotics' blockade of all D2 receptors causes other problems. Antagonizing D2 receptors in the mesocortical dopamine pathway worsens "negative symptoms," which include avolition, anhedonia, alogia, and affective flattening. Receptor blockade of D2 in the nigrostraital dopamine pathway causes movement disorders including drug-induced Parkinsonism and tardive dyskinesia. Dopamine antagonism in the tuberoinfundibuolar dopamine pathway can cause an elevation in prolactin which can cause galactorrhea and amenorrhea (Stahl, 2000).

Atypical antipsychotics antagonize serotonin 5HT2A receptors as well as the D2 antagonism seen with conventional antipsychotics. Serotonin affects dopamine differently in each of the four pathways. In the nigrostriatal pathway serotonin antagonism causes more dopamine to be released which results in fewer reports of movement disorders. Serotonin antagonism in the tuberoinfundibular pathway eliminates serotonin's ability to increase prolactin levels and so mitigates the effect of 2 blockades in this pathway. In the mesocortical pathway, where serotonin 2A receptors predominate, antagonizing serotonin causes an increase in dopamine, which is thought to be responsible for the improved cognition, affect, and motivation seen with atypical antipsychotics. Finally, weak serotonin 2A antagonism in the mesolimbic tract cannot reverse the dopamine antagonism; therefore, the D2 receptors

remain blocked and the hallucination and delusions associated with schizophrenia are controlled as well with the atypical agents as with conventional agents (Stahl, 2000).

1.5.2 Psychosocial Interventions: Nowadays, there are varieties of psychosocial intervention. The details of the supportive psychosocial interventions are discussed below:

1.5.2.1 Individual Approaches

Motivational interviewing (MI): Motivational interviewing is a treatment technique that builds up on a therapeutic alliance and further develops it as a means to elicit change. Motivational interviewing is a patient-centered and directive therapeutic style that increases the potential to resolve ambivalence and change behaviors. A crucial concept is discovering the patient's own motivations for change (Miller and Rollnick, 2013). Motivational interviewing has been used to develop insight or coping skills, and helps make changes in health-related behaviors in patients with schizophrenia, including adherence as well as comorbid substance use disorders (Lubman, King, and Castle, 2010).

Cognitive behavioral therapy (CBT): CBT is a form of psychotherapy. The targets are support patient to solving their current problems by themself, reform thinking and behavior. CBT has been defining as behavior therapy, cognitive therapy, and therapy based upon a combination of basic behavioral and cognitive principles (Beck, 2011). The obstacles of schizophrenic patients to making significant behavior changes covers lack of motivation, cognitive impairment, and limited of social-skills. Some evidence has shown that MI as a form of CBT was the appropriate treatment for schizophrenia and substance misuse (Barrowclough, Haddock, Fitzsimmons, and Johnson, 2006; Bellack et al., 2006).

Family support: Family support may improve both individual and group treatment approaches. When the family member or friend provides practical or financial support while a dually diagnosed person is on the process of treatment (e.g., case management or assertive community with enhanced substance use treatment services), substance use can be eliminated (Clark, 2001). Family or friends who support clients are a significant impact on clinical outcomes and recovery (Haddock et al., 2003).

1.5.2.2 Group Interventions

Group interactions: Mueser and colleagues (2005) identified two advantages of group interactions for co-occurring psychosis and substance abuse: a) potential to change social attitudes and behaviors, and b) generally cost-effective. Structured behavioral and social-skills training have been utilized in rehabilitating schizophrenic patients to help them overcome their problems with concentration and learning (Mueser, Drake, and Bond, 1997). At the micro-level, programs encourage participants to explore thoughts and expectations to help or a hindrance, as well as to address interpersonal stressors and supports. Such programs aim to improve conversational skills and social functioning and to develop problem-solving skills (Jerrell and Ridgely, 1995). Schizophrenic and misusing substance have to learn to recognize high risk situations such as money management, proximity to easy drug-access locations and people, and to participate in role play to develop personalized ways of avoiding or extricating themselves from those situations (Tsuang, Fong, and Lesser, 2006).

Self-help groups: Self-help groups (Magura et al., 2003) play a significant and meaningful role in the lives of persons with dual

diagnoses. These groups offer crucial social support from others who fully understand the difficulties of remaining sober, and they provide a structure for daily living, along with a commitment to perform substance abstinence (Mueser et al., 2005; Tsuang, Fong, and Lesser, 2006). Research reveals that clients that consistently attend these self-help groups for a year or more achieve reduced substance use outcomes (Mueser et al., 2005).

Assertive community treatment (ACT): ACT is refers to a structured of health care service approach for working with dual-diagnosis clients by adapting a conventional model of case management to the needs of this client cohort (Mueser et al., 2005). The usual case-manager responsibilities are to develop a working alliance with clients, link them into relevant other services, and function as their advocate these services and other health professionals (Tsuang, Fong, and Lesser, 2006).

Case management: Case managers are central to client engagement, treatment, and retention. Drake and colleagues (1998) study the outcomes (in a New Hampshire study) of case management in standard outpatient (n = 109) with a staff-client ratio of 1:30 against an ACT cohort (n = 114) with a staff-client ratio of 1:10. Their comprehensive ACT included adherence to the essential components of a community locus, engagement of assertive, intensive outreach, availability for 24-hour, staff continuity, a multidisciplinary treatment team, and close work with support systems (McHugo, Drake, Teague, and Xie, 1999). Over a three-year period, they found that the ACT clients accomplished better outcomes with regard to substance use and quality of life, but that the groups were equivalent on all other measures (Drake et al., 1998). In a later study, however, the same team

concluded that ACT is superior to standard case management in preventing hospitalization, but only when the base rate of hospital use is high (Essock et al., 2006). Residential programs address the challenges posed by some dually diagnosed clients and offer intense, integrated treatment during the live-in stage (Drake, Mueser, Brunette, and McHugo, 2004).

1.5.3 Treatment Principles

From the abundant research published in the last decade, Drake and colleagues (2004) outlined ten principles that are essential for effective treatment for schizophrenic persons misusing methamphetamines, including: motivational counseling, engagement strategies, long-term program retention, stage-wise interventions, active treatment, integrated mental illness and substance abuse treatments, and relapse-prevention strategies. Further comprehensive services, such as family education and interventions, peer support, housing, and vocational rehabilitation, liaison with the criminal justice system, should also be provide, along with particular programs for those with more multipart disorders, cognitive impairment, and treatment resistance, as well as for minority groups (Drake et al., 2004).

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According to the review of the literature, the finest treatment is usually as simple reassurance, providing realty cues and corrections, talking the person down, and ensuring a structured, safe, and quite environment. Additionally, brief psychotic episodes are usually treated with a short course of psycho-pharmacotherapy, removal from the stressful events, the provision of a structured and environmental safety, and finally psychotherapy to classify the stressors, teach new coping skills for dealing

with them, and to assistance to deal with the painful fact that people had a psychotic episode (Sadock, Sadock. and Ruiz, 2015).

1.5.4 Research evidence for treatment efficacy

The details of the evidence for treatment efficacy are discussed below.

There are three models provide for treatment covers the sequential, parallel, and integrated. Sequential treatment model is treated for one condition, then the other, whereas the parallel model includes treatment for comorbility, though the service providers work in isolation from each other. The integrated treatment model is the coordinated contact between the mental health care team and addiction fields for working together as one team. The team works within an inclusive setting to coordinate a range of approaches, such as detoxification, medication management, CBT, and MI—which is often problematic due to limited resources and the absence of well-defined guidelines (Drake, Mueser, Brunette, and McHugo, 2004; Ziedonis et al., 2005).

Ziedonis and colleagues (2005) recommendations for treating schizophrenic patients and those misusing substances comprise three broad areas: screening, assessment, and planning; psychosocial and pharmacological treatment; and systems of service provision.

Furthermore, antipsychotic drugs may enhance adherence since the patients are associated with fewer side effects and have been shown to benefit in this population (Velligan et al., 2006; Janssen, Gaebel, Haerter, Komaharadi, Lindel, and Weinmann, 2006).

Tiet and Mausbach (2007) study the effect of cognitive-behavioral therapy (CBT) combined with motivational interviewing with schizophrenic patients and

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misusing substance. They identified seven treatment studies of this population that had no significant psychotic symptoms improvements and few interventions have shown meaningful improvement in both substance and psychiatric outcomes. They also noted that there was only weak empirical to support the normally held view that integrated treatment inevitably has greater outcomes. Therefore, strong evidence on the phenomenon of psychotic symptoms and methamphetamine is needed.

In summary, the treatments available for schizophrenic persons misusing methamphetamines are variety. However, the evidence showed that interventions for schizophrenic persons misusing methamphetamines may need to be further developed (Drake, Mueser, Brunette, and McHugo, 2004; Mueser et al., 2005; Tiet and Mausbach, 2007). In addition, schizophrenia may create vulnerability for substance use disorders as individuals with schizophrenia attempt to self-medicate symptoms with drugs. Therefore, providing optimal care and interventions for this population will require development and implementation of a best-practice protocol.

2. The Stress Vulnerability Model of Schizophrenia

The theoretical framework most often called upon to understand stress as it relates to schizophrenia by the fields of psychology and psychiatry is the vulnerability-stress model (Mueser and McGurk, 2004). Initially the vulnerability-stress model was proposed to explain why people with schizophrenia have psychotic episodes, i.e. that people have a vulnerability such as difficulties with information-processing or limitations in coping abilities that, when put under stressors such as stressful life-events, makes them more likely to experience a psychotic episode (Nuechterlein and Dawson, 1984; Zubin and Spring, 1977). The vulnerability-stress

model offers an effective means of studying vulnerability factors and environmental stressors that may lead to psychosis (Doering et al., 1998; Gispen-de Wied and Jansen, 2002; Hambrecht and Hafiier, 2000), as a model for studying substance abuse problems (Zvolensky and Leen-Feldner, 2005), and as a model for psychosocial treatment of schizophrenia (Yank, Bentley, and Hargrove, 1993).

2.1 Overview of the stress vulnerability model

The stress vulnerability model of schizophrenia was proposed by Zubin and Spring (1977). According to this model, certain people are endowed with a degree of vulnerability that, under specific conditions, is expressed in an episode of schizophrenic illness (Day, Zubin, and Steinhauer, 1987; Zubin and Spring, 1977).

This model describes schizophrenia as a disorder occurring only in etiologically-vulnerable individuals, with some type of life event stressors—either exogenous or endogenous—triggering an episode. Recurrent illness is due to the impact of life event stressors superimposed upon overall vulnerability unless some modulating variables intervene to prevent it. Overall vulnerability may result from a variety of different factors, biological and genetic to socio-environmental. The life events act as a trigger that exceeds the person's stress tolerance threshold, causing a crisis, which then develops into an episode of illness. Life event stressors labeled endogenous might include some type of physical illness, while life event stressors seen as exogenous could be a traffic accident, the death of a friend, or chronic negative, repetitive stressors such as arguments with close family members.

Zubin et al. (1983) stated that in this model the mental health of a vulnerable person is not seen as temporary respites, but rather that an episode of illness "may be a temporary interruption of an essentially healthy life." In the stress-vulnerability

framework schizophrenia becomes an episodic illness like many others. Chronic illness in terms of recidivism is explained by describing several types of patients, including those that were discharged from treatment before the end of an episode of illness and suffered a relapse, and those who recovered from an episode of illness but experienced the recurrence of a new episode. Recurrence of a series of episodes in rapid succession may be the experience of another group of patients.

In addition, Zubin et al. (1983) noted that some individuals have never been able to make a satisfactory adjustment to society, and following an episode of schizophrenia, this same difficulty will be apparent. Additionally, Day et al. (1987) described a small group of people—perhaps up to 10%—that remain chronically ill without a true remission. They also identified some whose coping ability deteriorates in the face of stigma and isolation in the community or the hospital after recurrent illness.

Zubin et al. (1983) included modulating variables as being significant in the development of episodes of illness apart from specific vulnerability and life event stressors. Modulating variables either cushion the impact of stressors or allow stressors to have maximum impact. Zubin and colleagues stated that a variety of factors act in this way: the person's social status, social network, and support; the physical aspects of their environment; and individual personality structure and characteristics. Day et al. (1987) described the impact of physical and/or social environments as potentially part of the overall stressfulness of the immediate environment. They may decrease or increase the impact of a triggering life event depending on the structure and/or degree of support which those environments provide. Personality factors—competence, coping skills—are described as crucial to

the vulnerability model. These represent "the individual's capacity to actively respond to potentially stressful challenges presented by the environment" (Day et al., 1987).

Nuechterlein et al. (1992) developed a conceptual model based on vulnerability-stress theory that specifies four major input components: enduring personal vulnerability factors, personal protective factors, environmental potentiators and stressors, and environmental protective factors. According to this model, a feedback loop in the part of prodromal symptoms is hypothesized to highlight the view that prodromal symptoms often exacerbate the level of stress, evoke increases in protective factors, and might even temporarily alter levels of vulnerability factors. Hypothetically, heightened psychobiological vulnerability and stress are interaction and continues to raise intermediate states and prodromal symptoms become severe, unless protective factors are successful buffers. A threshold for improvement of psychotic symptoms is finally exceeded and a relapse of psychotic results, often accompanied by disturbances in social and occupational functioning. This elaboration of the vulnerability-stress model has been proposed as the basis for a symptom monitoring program to prevent relapse in schizophrenia (O'Connor, 1991).

The stress-vulnerability model of schizophrenia suggests that an increased sensitivity to stress increases the chance of the development of symptomology (Myin-Germeys et al., 2004; Neuchterlein and Dawson, 1984; Zubin and Spring, 1977) and it has been conceptualized as an underlying etiologic mechanism for the development of psychotic symptoms of schizophrenia because external stress is coupled with an underlying personal vulnerability. Moreover, this model also states that it is not stress that makes a person more vulnerable, but it is the way a person reacts to the stress that will lead to the development of symptoms (Myin-Germeys et al., 2004). It is known

that increased stress sensitivity is partly genetically determined (Myin-Germeys et al., 2001b). According to the threshold model of stress vulnerability, the development of schizophrenia varies from person to person and related the factors. The details of the factors of this theory are as follows.

a) The personal vulnerability factors: The factors of the model included: (i) dopaminergic dysfunction, (ii) reduced available processing resources, (iii) autonomic hyperactivity and (iv) schizotypal personality traits. All of the personal vulnerability factors were chosen to analyze for this study.

(i) Regarding dopaminergic dysfunction: the dopamine systems in the mesolimbic pathway may contribute to “positive symptoms” of schizophrenia. In addition, as amphetamines trigger the release of dopamine and excessive dopamine function is believed to be responsible for many symptoms of schizophrenia (known as the dopamine hypothesis of schizophrenia), methamphetamine increase levels of dopamine in the brain and precipitate or exacerbate psychotic symptoms, amphetamines may worsen schizophrenia symptoms. Methamphetamine, a potent neurotoxin amphetamine derivative, induces psychosis in a substantial minority of regular users which resembles paranoid schizophrenia. Higher doses of methamphetamine may be associated with the production of a more complete replication of schizophrenic symptoms (Grant, LeVan, and Wells, 2012).

In this case, the amount of methamphetamine misuse is related the psychotic symptom in persons with schizophrenia. Cognitive impairment in schizophrenia may be associated to decreased availability of information-processing resources (resource limitations hypothesis).

(ii) Reduced available processing resources cited in several studies (Gjerde, 1983; Knight and Russell, 1978; Nuechterlein and Dawson, 1984) revealed that schizophrenic patients perform relatively poorly when processing loads are higher (e.g., detection from 10-letter arrays) but show little or no impairment when loads are lower (e.g., detection from 3-letter arrays).

(iii) Autonomic hyperactivity: Schizophrenia was a learned thought disorder by autonomic hyperactivity. The tangential and irrelevant thoughts as reinforced avoidance reactions which serve to decrease autonomic arousal by diverting an individual's concentration away from anxiety producing stimuli.

(iv) Regarding schizotypal personality traits, patients with schizophrenia show abnormalities in terms of basic dimensions of personality (Gurrera et al., 2000). These personality disturbances may be a manifestation of liability to schizophrenia (Claridge, 1997). Personality disturbance is the result of the interaction of a neural integrative deficit, termed schizotaxia, with social learning during development. While schizotaxia usually resulted in schizotypal personality, only a fraction of such individuals subsequently developed schizophrenia.

In conclusion, dopaminergic dysfunction will reduce the available processing resources and effect tonic autonomic hyper activation. Both of personal vulnerability factor and personal protectors are interaction and its lead the vulnerable individual to progress prodromal symptoms. However, the personal vulnerability factors involve the inherited genetic factors and/or early biological factors. These factors have been thought to contribute to vulnerability to schizophrenia and congenitally compromise brain structure and function.

b) Personal protective factors: including (i) coping skills and self-efficacy, and (ii) antipsychotic drugs.

(i) Self-efficacy: Self-efficacy is the confidence in one's ability to perform a given task such as taking antipsychotic medications and plays an important role in supporting the patient in decreasing psychotic symptoms and preventing psychotic relapse.

(ii) Coping: Coping is the specific effort of behavioral and psychological of individuals that they employ to master, tolerate, reduce, or minimize stressful events. In addition, persons with schizophrenia are frequently ill-equipped to cope with stressful life events and family pressure because they lack the information-processing skills to process optimal behavioral alternatives and they lack the social skills to put these plans into action (Eisler et al., 1974; Spivack, Platt, and Shure, 1976; Cohen, 1978; Hersen et al., 1978; Rochester, 1978; Lukoff et al., 1984).

Additionally, people that have vulnerability such as limitations in coping abilities, self-efficacy, and compliance with antipsychotic medication, when put under stressors such as stressful life-events, it makes them more likely to experience a psychotic episode (Nuechterlein and Dawson, 1984; Zubin and Spring, 1977). In contrast, non-adherence is a major problem in the treatment of schizophrenia. It was high prevalence, potentially severe consequences and associated costs of care although antipsychotic drug was the main factor associated with psychotic symptoms.

(iii) Antipsychotic drugs: Antipsychotic medication remains a significant factor in achieving improved psychotic symptoms in patients with schizophrenia,

which will be decrease the positive and negative symptoms. Additionally, patient satisfaction with antipsychotic treatment also is an important outcome.

In terms of protective factors, medication, good coping skills on the part of patients and relatives, and supportive environments can lessen symptoms and lower the risk of relapse (Van Meijel et al., 2003a; Zubin and Spring, 1977).

c) Environmental protective factors: These factors including (i) effective family problem solving, and (ii) supportive psychosocial interventions.

(i) Effective family problem solving: This factor is the ability of family members to solve the problems not only the individual problems of the persons with schizophrenia but also the problems of all family members. In particular, family systems can encourage patients to take medications, avoid substances, develop communication and problem solving skills, and get help quickly as needed. However, this factor was a not pure environmental protective factor which was the factors that effect of each person. The environment refers to the conditions in which each individual lives—his/her household, neighborhood or town, and the larger community (Sadock, Sadock, and Ruiz, 2015). Thus, this factor was not included in this study.

(ii) Supportive psychosocial interventions: Pharmacotherapy and psychosocial intervention have been recommended for treatment of schizophrenia. Psycho-social interventions can be greatest implemented when acute symptoms have been decreased and the patient can be successfully engaged in treatment. The goals of Supportive psychosocial intervention are to reduce patient's stress , prevent relapse, promote the patient's adaptation to life in the community, and facilitate continued reduction in symptoms and consolidation of remission.

c) The Environmental Potentiates and stressor: These factors were (i) critical or emotionally over-involved attitudes toward the patient, (ii) an over-stimulating social environment, and (iii) stressful life events. These were identifying as an "intermediate internal state" that can exceed a certain threshold of gravity, leading to the development of "prodromal symptoms" which are the precursors of schizophrenic psychotic symptoms, and psychotic relapse. The feedback loops reflect the circularity of the model. In addition, this model suggests that certain characteristics of persons may serve as vulnerability factors and that environmental stressors may exerbate psychotic periods in vulnerable individuals.

(i) Critical or emotionally over-involved attitudes toward patients, namely expressed emotional: According to this alternative model, there might not be a causal relationship between high EE of significant others and relapse; they might be jointly related to a third variable, severity of illness (Mac-Millan et al., 1986). Of course, it is quite probable to add these two models by positing feedback loops from behaviors of patient to attitudes and behaviors of significant others, thereby producing bidirectional influence patterns (Nuechterlein and Dawson, 1984a; Liberman, 1986; Nuechterlein, 1987). Repeated measurement of the social environment during the initial course of schizophrenia is very important in addressing the possibility of bidirectional influence due to attitudes of significant others are particularly likely to be varying during this period as these persons adjust to the impact of the patient's psychotic symptom onset. Deficits of information-processing, autonomic reactivity anomalies, social competence, and coping limitations are viewed as potential vulnerability factors.

(ii) Over-stimulating social environment: The Vulnerability-Stress Model of Schizophrenia views the social environment as stressful life events and highly-

expressed emotion. The manifestation of major life events contributes to a high level of environmental stress, interacts with preexisting biological vulnerability factors, and increases the likelihood that psychotic symptoms will return (Brown et al., 1972; Leff ,1987). Additionally, critical and emotionally over-involved attitudes at least partially signify reactions to the heavy burden that mental illness places on significant others, and the patients that have a more severe, relapse-prone form of illness place the heaviest burden on significant others (Brown et al., 1972; Kanter et al., 1987; Lefley, 1989).

(iii) Stressful life events: Individuals with schizophrenia remain stable as long as the stress of challenging life events does not exceed the threshold of vulnerability. When stress surpasses the threshold, the person is likely to develop a psychopathological episode. Under this model, schizophrenia involves cycles of relapse and recovery in terms of vulnerability to stress (Zubin and Spring, 1977).

Stress leads to the disruptive effects of stress hormone release on the function of the brain or brain circuitry. Persistent release of cortisol can alter the activity of the neurotransmitter system and brain function and cause changes in brain structure, which can be found in individuals with schizophrenia (Corcoran et al., 2003; Howes et al., 2004).

Earlier studies have suggested that stressful life events judged to be independent of the patient's behavior are more frequent in the weeks immediately before relapse (Brown and Birley, 1968; Leff and Vaughn, 1980; Day et al., 1987). Additionally, initial findings showed the characters of stress factors in other aspects of the early course of schizophrenia have significant associations with social functioning (Hogarty et al., 1988). Moreover, stressors in the form of stressful life events as well

as the prevailing level of social environmental stress are seen as factors that interact with preexisting vulnerability characteristics to produce vicious circles, which lead, in turn, to psychotic episodes.

Briefly, stressful life events and expressed emotion were the independent variables of the current study.

e) Outcomes: The outcomes variables of this model were social function, psychotic symptoms, and occupational functioning.

i) Social function: Social dysfunction is a hallmark characteristic of schizophrenia that has important implications for the development, course, and outcome of this illness. With the advent of antipsychotic medications, individuals with schizophrenia have been effectively treated for symptoms of acute psychosis (Bustillo et al., 2001). Despite these advances, individuals with schizophrenia continue to suffer from residual negative symptoms and, in particular, impaired social functioning. Deficits in social functioning are common to many schizophrenic patients and are considered to be fundamental and diagnostic characteristics of the disorder (Sadock, Sadock, and Ruiz, 2015). Social functioning in schizophrenia is markedly impaired and is categorized as part of the constellation of impairments in one or more major areas of life functioning. This is important because social functioning contributes to overall functional outcome and ability to function in a community setting. Social functioning impairments are perceived during the prodromal stages of schizophrenia, often worsen immediately after the first episode, and persist into late life (Robinson et al., 2004). Social dysfunctioning are frequently labelled as being of primary concern to patients, families, and advocacy groups (Bellack et al., 2007). While current pharmacotherapy can often decrease psychotic

symptom severity, social dysfunction typically persist in this population (Robinson et al., 2004). Lastly, schizophrenic patients, especially those with more severe residual symptoms, often have smaller social networks than individuals without psychiatric disorder (Pattison et al., 1975; Sokolovsky et al., 1978).

ii) Psychotic symptoms: Psychotic symptoms are a central element in the diagnosis of schizophrenia and are the outcomes factors that reverse to other factors. Coping, self-efficacy, EE, stressful life event, and social functioning are leading to the severe of psychotic symptoms.

iii) Occupational functioning: Schizophrenia is associated with a significant decrease in occupational functioning. Less than 20% of individuals with schizophrenia can maintain regular employment and there is “a persistent link between psychotic symptoms and occupational functioning among persons with schizophrenia.” Empirically-derived factor structures have shown that symptoms fall into five components. One such factor structure derived the following components: positive, negative, cognitive, hostility, and emotional discomfort (Bell, Lysaker, Goulet, Milstein, and Lindenmayer, 1994; Lehman, 1995; Cook and Razzano, 2000)

For the occupational functioning factor, it was excluded from this study due to the condition of most patients in the hospital that they are not got the job during admitted. There was the limited on the timeline of length of stay those only 30 days in Thai psychiatric hospital that they cannot join vocational rehabilitation program. The researcher could not perform measure within a reasonable amount of time and assessment in terms of occupational functioning which defined as competency with one’s task performance associated with valued roles, sense of self-satisfaction, productivity, communication/interaction skills, leisure and rest in response to

demands of the internal and/or external environment, and environments, where context, temporal factors, and physical and psychological phenomena are inseparable (Law, Cooper, Strong, Stewart. Rigby and Letts, 1996; Trombly, 1993; Ranka and Chapparo, 1997; Kielhofner, 1997).

2.2 Psychotic symptoms as vulnerability-stress factors for methamphetamine misuse

Psychotic symptoms are also perceived as stress factors for substance use (Mueser, Noordsy, Drake, and Fox, 2003) when judgment and decision-making are so impaired that clients use methamphetamine. The methamphetamine, in turn, is a (dopaminergic) stressor that leads to poorer response to treatment (Linszen, Dingermans, and Lenior, 1994; McKay and Tennant, 2000). Using methamphetamine changes the brain's ability to function which in turn makes the brain more susceptible to stress. When there is a circular pattern of psychotic symptoms and substance misuse, the psychotic symptoms may be both vulnerability and a stressor.

2.3 Applications of the Stress Vulnerability Model of Schizophrenia

Based on an understanding of the stress-vulnerability model, there are many ways to help people manage their psychotic symptoms and the detailed are as below:

2.3.1 Reducing Biological Vulnerability: Biological vulnerability can be decreased in two primary ways: taking medication and avoiding alcohol or drug use. Medication can be a powerful way of reducing biological vulnerability by helping to correct the imbalances in neurotransmitters (chemicals in the brain responsible for feelings, thinking, and behavior) believed to cause psychiatric disorders. By taking medication, the symptoms of a psychiatric disorder can be lowered and the chances of having a relapse can also be reduced.

Avoiding alcohol and drug use can decrease biological vulnerability in two ways. First, because substances affect the brain, using alcohol or drugs can directly worsen those vulnerable parts of the brain related to mental illness. Second, misusing substances can interfere with the corrective effects of medication on vulnerability and leading to worse symptoms and a greater chance of relapses.

2.3.2 Increasing Resiliency against Stress: The effective ways of dealing with stress include the following:

- improve effective coping skills for managing stress and persistent symptoms
- get involved in meaningful activities that structure one's time and decrease the stress of having nothing to do
- build socially-supportive relationships to help one manage mental health illness and to remain abstinent

This means that by addressing these factors, persons can decrease symptoms, prevent relapses, and improve the course of their co-occurring disorders.

The vulnerability-stress model is a particularly useful way of understanding the etiology of schizophrenia. Zubin and Spring (1977) stated that vulnerability is a common factor utilized by all the scientific models of schizophrenia and that it offered a pragmatic method of understanding schizophrenia. In this way the authors explained that people have inborn vulnerabilities, a result of genetics, and acquired vulnerabilities that are the result of life events, all of which affect the likelihood of developing schizophrenia. These life events include both biological stressors, such as disease or toxins, and psychological stressors such as traumatic events. It is presented that each person has a level of inborn vulnerability that can be stressed by events so that the person is unable to utilize coping efforts to adapt to adverse events. A person

with schizophrenia has a permanent, enduring trait of vulnerability for psychosis that affects coping effort, competence, and coping ability (Zubin and Spring, 1977).

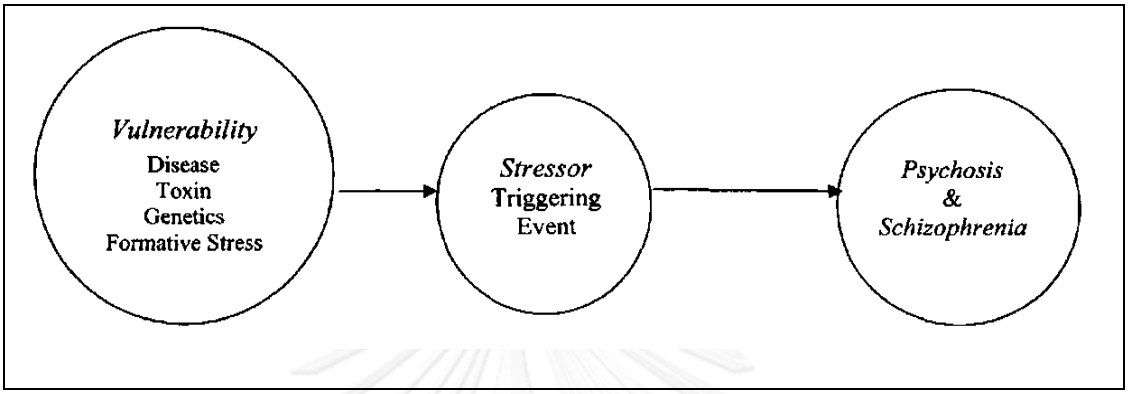

Figure 2. 1 Vulnerability-stress model

2.3.3 Unique features of the stress-vulnerability model of schizophrenia

The stress-vulnerability model of schizophrenia was used to understand the predicting factors of psychotic symptoms. The diathesis-stress model has been at the forefront of etiological models of schizophrenia-spectrum disorders for several years (Walker and Diforio, 1997). In fact, heightened sensitivity to stress and affectively laden material is often thought to signify vulnerability for psychosis in predisposed individuals (Horan and Blanchard, 2003). According to the vulnerability-stress model, an individual is born with a genetic predisposition to developing psychosis and therefore believed to be "high risk." However, not all individuals with this predisposition will develop a psychotic disorder (Meehl, 1962). Biological and environmental stressors interact with this vulnerability and are supposed to serve as impetus for the onset of psychotic symptoms (Walker and Diforio, 1997). Environmental stressors comprise pre, peri, and postnatal stressors, biological insults,

stressful life events and even negative affective states themselves (Bell, Bryson, and Lysaker, 1997; Walker and Diforio, 1997).

The hypothalamic-pituitary-adrenal axis (HPA axis) is a key system involved in an organism's reaction to stress. Persons with psychotic disorders, schizophrenia spectrum traits (e.g., Schizotypal Personality Disorder) and at-risk individuals display elevated baseline levels of cortisol (Garner et al., 2005; Ryan, Sharifi, Conderen, and Thakore, 2004; Walker and Diforio, 1997). It is important to note that research has been mixed with regard to biological indicators of stress reactivity. Stressful events caused increased cortisol release in psychotic patients (Elman et al., 1998;Walsh, Spelman, Sharifi, and Thakore, 2005). However, other studies have found an inverse correlation between stress and cortisol release (Jansen et al., 1998; Jansen, Gispen-de Wied, and Kahn, 2000; Marcelis, Cavalier, Gielen, Delespaul, andvan Os, 2004). Therefore, additional research is needed to fully elucidate the role of the HPA-axis and its possible relation to psychosis.

At the Clinical Research Center for the Study of Schizophrenia at UCLA, they developed a heuristic model that comprises multiple vulnerability factors, the model hypothesized (Fig. 3) that predisposing or vulnerability factors relevant to schizophrenia contain dopaminergic dysfunctions, reduced available information-processing resources, and autonomic hyper reactivity and schizotypal personality traits. Based on findings, the researcher hypothesized that vulnerability factors for schizophrenia were information-processing or attention abnormalities, autonomic hyper reactivity and schizotypal personality traits of prominent abnormalities in these domains among off spring or other first-degree relatives of schizophrenic patients. In this model of schizophrenic relapse and illness course, induces in either vulnerability

factors or environmental stressors or reduces in protective factors are viewed as possible sources of movement from remitted to prodromal states, with the relevance of each varying from case to case. Critical mediating roles are hypothesized for increased autonomic activation and fragmentation in the allocation of resources for effortful, attention-demanding cognitive processes. In addition, a feedback loop from prodromal symptoms is also a key module of this heuristic model, thereby recognizing that the patient's own prodromal symptoms might often contribute to environmental stressor levels and possibly to temporary raises in personal vulnerability factors. Thus, this model of relapse theorizes that genetic factors effect the progress of certain vulnerability characteristics, which interrelate with relevant environmental factors to modify the course of schizophrenia.

Lastly, the unique features of the vulnerability models of schizophrenia are reviewed, along with psychosocial rehabilitation methods addressing social competence and functional abilities. Their association is discussed with a view to emerging a framework in which biological and psychosocial approaches to schizophrenia can be combined for purposes of effective clinical intervention. Such intervention is designed to recover social competence, cognitive appraisal, and coping skills for mediation of stress in vulnerable individuals (Yank, Bentley, and Hargrove, 1993).

In summary, the theoretical framework for this study was derived from the vulnerability-stress model of schizophrenia, which provides a useful framework for understanding the predicting factors of psychotic symptoms, as depicted in Figure 2.2.

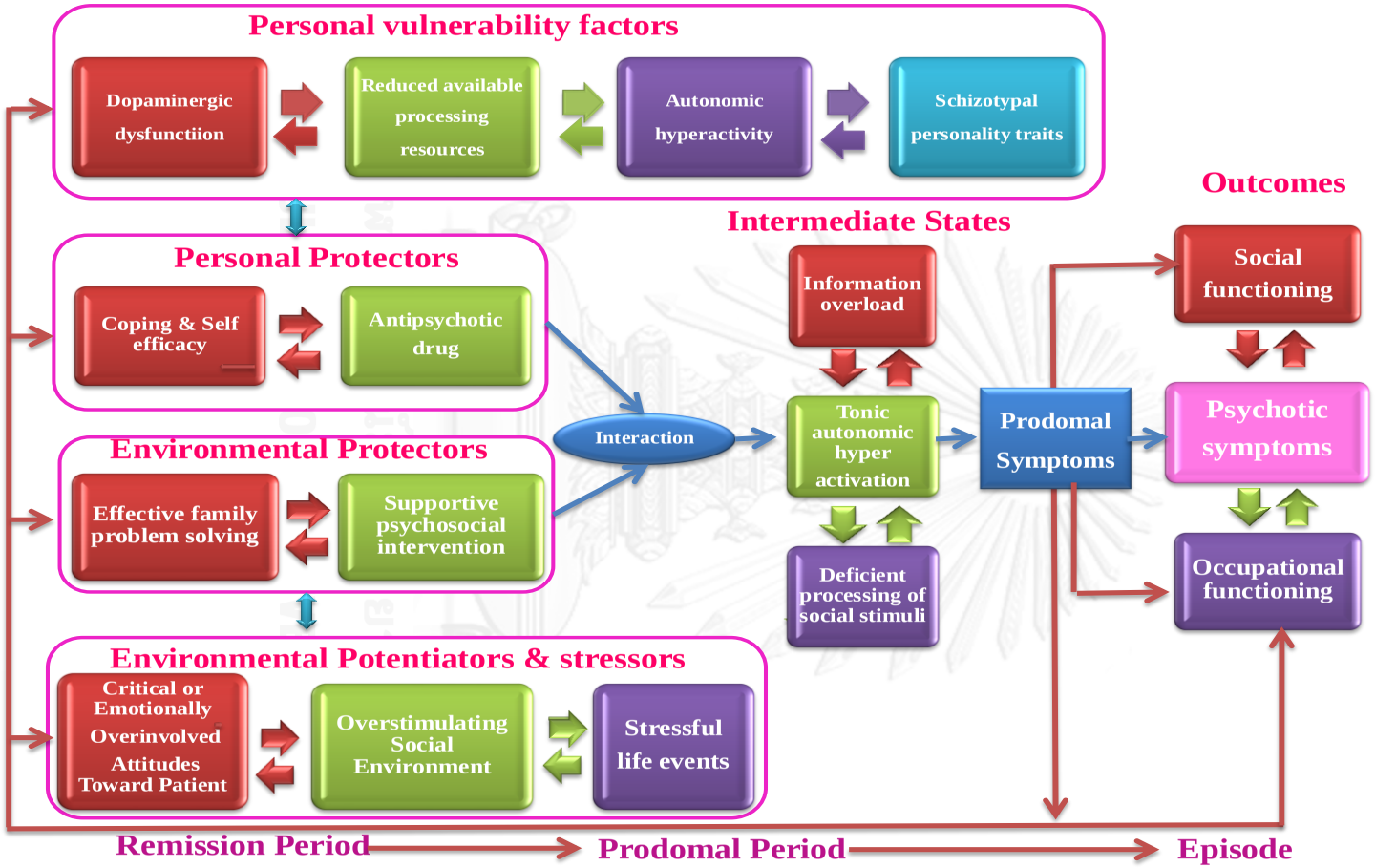

Figure 2. 2 The vulnerability-stress Framework for possible factors in development of schizophrenia episode Nuechterlein's (1987)

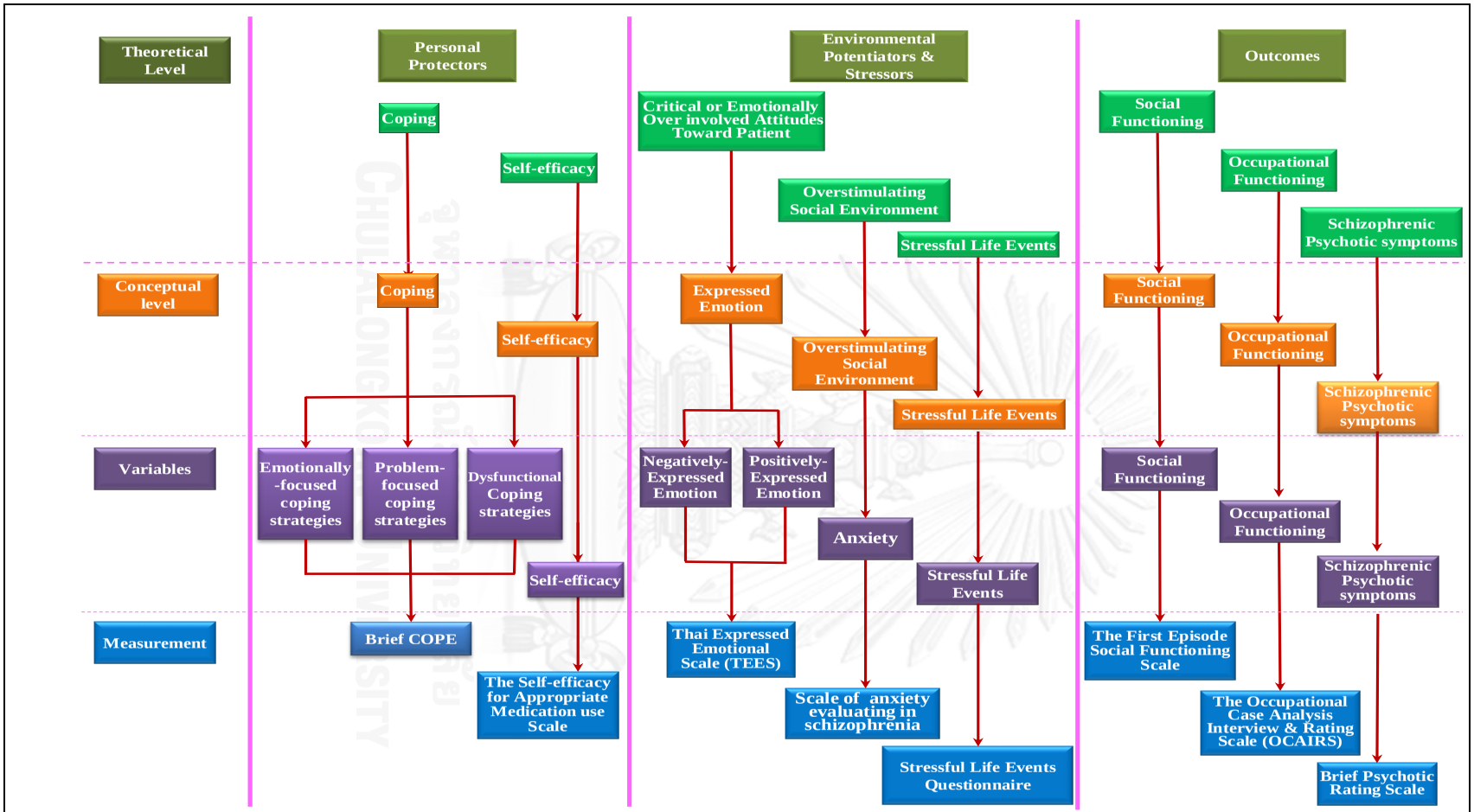

Figure 2. 3 Theoretical substruction: The Vulnerability-Stress Model by Neuchterlein (1984) (Adapted from Zubin and Spring, 1977)

3. Psychotic symptoms among persons with schizophrenia and methamphetamine misuse

The word ‘psychotic’ relates to ‘psychosis’, which is a psychiatric term, and describes experiences, such as hearing or seeing things or holding unusual beliefs, which other people don’t experience or share. In addition, people suffering from psychosis are described as *psychotic* (Gelder and Michael, 2005).

Psychotic symptoms are a class of psychiatric symptoms associated with being out of contact with reality and also known as psychosis. Psychotic symptoms can be associated with a variety of disorders including schizophrenia, schizoaffective disorder, drug-induced psychosis, personality disorder, epilepsy and autistic spectrum disorder (Deakin and Lennox, 2013).

In addition, Psychotic symptoms may also occur with other conditions and while there is an extensive body of literature which reports an association of psychotic disorders with anxiety and depressive symptoms and disorders (Spaulding,and Kucera, 1994; Yung and McGorry, 1996; Eisen, Beer, Pato, Venditto, and Rasmussen, 1997; Moller and Husby, 2000; Penn, Hope, Turnbull and Bebbington, 2001).

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3.1 Definition

According to the DSM-5, which will become the new diagnostic standard for psychiatric disorders in May, 2013, to be diagnosed with schizophrenia requiring that at least two psychotic symptoms be present in all cases with at least one of these symptoms being a delusion, hallucination, or disorganized speech (Tandon, Bruijnzeel et al. 2013). These symptoms must be present for at least a month. In addition, there must be social and/or occupational dysfunction such as a decrease in functioning in

work, interpersonal relations, or self-care markedly below the level achieved prior to the onset. The individual must have continuous symptoms for at least 6 months. The exceptions to this diagnosis include schizoaffective or mood disorder diagnoses, disturbances due to the direct physiological effects of a substance, or history of autistic disorder or another pervasive developmental disorder (APA, 2012).

The term "psychosis" lies at the heart of modern psychiatric and metal health nursing. It is frequently used by experts and professional. To explore basic information of psychotic symptoms, the use of psychotic symptoms from a general and professional dictionary, a philosophical perspective, a theoretical perspective of psychotic symptoms, and the use of the concept in sociology and professional fields are also presented.

The ICD-10 states that psychotic "simply indicates the presence of hallucinations, delusions or a limited number of several abnormalities of behavior, such as gross excitement and over activity, marked psychomotor retardation and catatonic behavior".

In the DSM-IV (2000) the term psychotic refer to the presence of certain symptoms of psychosis and the psychosis consist of delusions, hallucinations, disorganized speech, and disorganized or catatonic behavior (American Psychiatric Association, 2000).

Deakin and Lennox (2013) state that Psychotic symptoms can be associated with a variety of disorders including schizophrenia, schizoaffective disorder, drug-induced psychosis, personality disorder, epilepsy and autistic spectrum disorder (Deakin and Lennox, 2013). In addition, Psychotic symptoms may also occur with other conditions and while there is an extensive body of literature which reports an

association of psychotic disorders,and Kucera, 1994; Yung and McGorry, 1996; Eisen, Beer, Pato, Venditto, and Rasmussen, 1997; Moller and Husby, 2000; Penn, Hope, Turnbull and Bebbington, 2001).

In O'Toole's Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing and Allied Health (2005), Psychotic is defined as 1. Pertaining to characterize by, or caused by psychosis. 2. A person exhibiting psychosis the characteristic of psychosis.

In conclusion, the term of psychotic symptoms of the current study refers to the presence of certain symptoms of positive symptoms (hallucination and delusions) and negative symptoms (flat expressions or little emotion, poverty of speech, inability to experience pleasure, lack of desire to form relationships, and lack of motivation).

3.2 Philosophical Perspectives of Psychotic symptoms

It has long been recognized that there are similarities between spiritual and psychotic experiences. Both kinds of experience are "altered states," and a wide variety of phenomena are common to both. The Greek word, *psyche*, means life or soul. Any analysis traditionally begins with definitions of the terms used and both of spiritual experiences and psychoses come in many varieties. Thus, there is no universally agreed definition of the terms themselves. However, in practice there is broad agreement as to which individuals are described as *psychotic*, and there are certain commonalties found across diverse accounts of spiritual experiences that allow generalizations to be made about these kinds of states.

The preoccupation of philosophy with madness can be traced back till the Greek antiquity. For many philosophers like Descartes psychotic phenomena were symbols for the fragility of human mental powers, while others like Plato or Nietzsche saw madness as a way to escape the constraints of rationality.

After 1960 three direction of contemporary philosophy dealt with the topics madness--schizophrenia—psychosis and considered schizophrenia as the societal oppressed reverse of modern rationality, a notion which had a strong influence on the anti-psychiatric movement. Philosophical phenomenology primarily focused on ontological problems of the psychotic existence. Finally Philosophy of Mind, the modern Anglo-American version of analytical philosophy, analyzed the logical coherence of psychotic inferences and experiences. Especially the insights of analytical philosophy may be important for a more sophisticated interpretation of psychopathological research as well as of the new findings of neuroscience (StompeandRitter, 2009).

3.3 Theoretical Perspectives of Psychotic symptoms

Psychosis is highly heritable and exerts strong negative fitness effects. Despite this apparent disadvantage, schizophrenia maintains a relatively stable prevalence worldwide. Several theories drawing on the Darwinian paradigm of selective advantage have been formulated to explain the persistence of psychosis in the human population. Crow's 'speciation' hypothesis argues that psychosis is the 'price that Homo sapiens pays' for development of language (Crow, 1997).

Recently, Dodgson and Gordon (2009) have proposed that certain types of hallucinations could be viewed as evolutionary by-products of a cognitive system designed to detect threat since, from a survival perspective, it is much worse to fail to recognize a threat such as the sound of an approaching predator than to mistakenly believe that a predator is approaching when it is not. Evolution may therefore favor a selective skew towards propagation of genes that promote false positives over false negatives, thus resulting in 'hyper vigilance hallucinations' in the population.

3.4 Use of the Concept of Psychotic symptoms in Professional Fields

Psychosis, in the Continental Europe an perspective, is an irreducible construct, referring to being afflicted by a radical irrationality, i.e. a serious displacement out of the social consensus (inter subjectivity). Psychos is may manifest itself *explicitly*, through propositionally expressible mental contents (delusions) oritis (non-propositionally) *implicit* in the alterations of other anthropological dimensions, e.g., expression, action and affectivity. Psychosis is a phenomenological descriptive term with no biological marker of its presence.

From both clinical and research perspectives, psychosis forms a characteristic Gestalt in the each of our provisional oncological groupings (e.g. schizophrenia spectrum, bipolar disorders). Following are cently formulated philosophical perspective on psychiatric classification (KendlerandZachar2010), Kendler and Zachar (2010) may suggest that although psychosis is *not* a natural kind term, i.e.al awfully determined, causally individuated, objectively existing *essence* (such as elephant, planet Earth or General Paresis), it can neither be consider ease purely nominalist, social construct. Its ontological status is perhaps best compatible with the Property Cluster Kind (Boyd1991), an entity that is no naturally carved essence, yet possesses ascertain degree of stable individuality and objectivity. Each prototype of psychosis is perhaps constituted by its distinct and specific phenomenological structure ("generative disorder") (Parnasetal.2002, Parnas and Sass2008), e.g.al treed structure of self-awareness in the schizophrenia spectrum disorders (SassandParnas2003) and altered structure of time-consciousness in the bipolar illness. Such clinical prototypes may, in turn, be correlated with relatively specific biological factors.

3.5 Attributes of psychotic symptoms

Psychotic symptoms are a central element in the diagnosis of schizophrenia, although their precise definition has varied through the multiple iterations of DSM and the ICD. Schneiderian first-rank symptoms (FRS) have received a particularly prominent position in the diagnostic criteria of schizophrenia since ICD-9 and DSM-III. In the current iteration of DSM (DSM-IV-TR), whereas two characteristic symptoms are ordinarily required to meet criterion A, only a single symptom is necessary if the psychotic symptom happens to be a FRS, notably a bizarre delusion or auditory hallucination of a running commentary or 'conversing voices'.

Because of limited data in support of the special treatment of FRS,DSM-5 has made changes to criterion A, requiring that at least two psychotic symptoms be present in all cases with at least one of these symptoms being a delusion, hallucination, or disorganized speech (Tandon, Bruijnzeel et al. 2013).

Psychotic symptoms are divided into 3 aspects:

(1) Positive symptoms

- **Hallucinations:** A hallucination is defined as sensory perception in the absence of external stimuli. Hallucinations are different from illusions, or perceptual distortions, which are the misperception of external stimuli. Hallucinations may occur in any of the five senses and take on almost any form, which may include simple sensations (such as lights, colors, tastes, and smells) to experiences such as seeing and interacting with fully formed animals and people, hearing voices, and having complex tactile sensations.

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Auditory hallucinations, particularly experiences of hearing voices, are a common and often prominent feature of psychotic symptom, can be gustatory, olfactory, tactile, visual and/or auditory. Professionals and patients routinely describe auditory hallucinations as “hearing voices.” The American Psychiatric Association (2000) asserted that hearing voices conversing or commenting on thoughts or behaviors is “considered to be particularly characteristic of Schizophrenia”.

Auditory hallucinations may talk about, or to, the person, and may involve several speakers with distinct personas. Auditory hallucinations tend to be particularly distressing when they are derogatory, commanding or preoccupying. However, the experience of hearing voices need not always be a negative one. One research study has shown that the majority of people who hear voices are not in need of psychiatric help. The Hearing Voices Movement has subsequently been created to support voice hearers, regardless of whether they are considered to have a mental illness or not.

Delusions: Psychosis may involve delusional beliefs, some of which are paranoid in nature. Put simply, delusions are false beliefs which a person holds on to, without adequate evidence. Common themes of delusions are persecutory (person believes that others are out to harm him/her), grandiose (person believing that he or she has special powers or skills) etc.

(2) Negative symptoms

Negative symptoms are associated with disruptions to normal emotions and behaviors. These symptoms are harder to recognize as part of the disorder and can b.e mistaken for depression or other conditions. These symptoms includes a) "Flat affect" (a person's face does not move or he or she talks in a dull or

monotonous voice), b) Lack of pleasure in everyday life, c) Lack of ability to begin and sustain planned activities, and d) Speaking little, even when forced to interact.

People with negative symptoms need help with everyday tasks. They often neglect basic personal hygiene. This may make them seem lazy or unwilling to help themselves, but the problems are symptoms caused by the schizophrenia.

(3) Affective symptoms including, anxiety, guilt feelings, tension, inappropriate affect and depressive mood.

In summary, the critical attributes of the concept of psychotic symptoms include: positive symptoms, negative symptoms, and affective symptoms.

3.1.6 Antecedents and Consequences of psychotic symptoms

3.1.6.1 Antecedents of psychotic symptoms: Antecedents are the events or incidents that happen before the existing concept (Walker and Avant, 1995). Environmental, biological and social act as antecedents related to the concept of psychotic symptoms. These three antecedents are interrelated.

Environmental Causes: Psychosis can be triggered by the use of alcohol and illegal drugs, including stimulants such as methamphetamine (meth). Hallucinogenic drugs like LSD (acid) often cause users to see things that are not really there, but this effect is temporary. People who do not get enough sleep for long periods of time can experience symptoms of psychosis. Some prescription drugs like

Biological cause:

The Illnesses cause of psychosis were brain diseases such as Parkinson's disease, Huntington's disease, and some chromosomal disorders, brain tumors or cysts, dementia (including Alzheimer's disease), HIV, syphilis, and other

infections that attack the brain, some types of epilepsy, and stroke. In addition, dopamine is one of many neurotransmitters that are used to pass information from one brain cell (neuron) to another. Most pleasurable experiences and most illicit drugs cause dopamine to be released in the brain. The chemical also has a role in memory, attention and problem-solving and is involved in controlling movements (people with Parkinson's disease have too little dopamine). Moreover, childhood adversity and trauma: A number of research studies have shown that people who have experienced psychosis may also have experienced abuse or trauma of some kind during their childhood. This includes loss of a parent (by death or separation), bullying by peers, growing up in institutional care, sexual, physical and emotional abuse by adults.

Stress: Persons who have a serious mental illness and experience the symptoms of psychosis often find it very difficult to cope with stressful situations. Research has also shown that stressful situations can play an important role in triggering a first episode of psychosis. When anyone experiences stress, the hormone cortisol is produced by the adrenal glands.

Social cause: City life, migration and social adversity: Long-term studies in countries in the West have consistently shown that people who are born and live in cities are more likely to develop schizophrenia than people who live in the country. Researchers are continuing to study why this is: one theory is that it’s easier to become isolated and lonely in a city because of the stresses of urban life, and that drug use is more common.

3.1.6.2 Consequences of psychotic symptoms

The experience of a psychotic breakdown can result in significant personal consequences both in the short and long term. Initially the psychotic experience will result in confusion and intense emotional and potentially traumatic reactions as a result of disturbances of thought and perception, which will be further compounded by the effects of hospitalization, restraint and treatment. In the context of a confused state of mind the actions of the psychiatric services can provoke intense fear and helplessness. In the longer term the effects of psychosis and its potential disruption to functioning and the capacity to fulfill various social roles can result in further burden. The advent of a psychotic illness will also most certainly result in a change in the way the sufferer perceives themselves and their ability to achieve goals and in the way they are perceived by others. The societal reaction can further adversely affect the sufferer’s self-image and achievement motivation, and in some cases may result in hostile and rejecting social reactions (Angermeyer and Matschinger 2003, 2005).

Conclusion

In brief, psychotic symptoms have been recognized as a serious problem by both patients and health care providers. Nursing studies and literature also present evidence of the consequences of psychotic symptoms. However, learning about decrease psychotic symptoms seems to be an ongoing process. It's beneficial to psychiatric and mental health nurses and other health care providers in gaining a better understanding of the concept of psychotic symptoms and in implementing appropriate nursing activities to decrease psychotic symptoms.

3.1.7 Measurement of psychotic symptoms

Schizophrenic persons misusing methamphetamines who had the severity of psychotic there are most common risk of harm to self and others. Once in the duty of nurse, their progress needs to be monitored, in order to assess treatment and nursing outcomes efficiency. In order to assess the outcome of any treatment (i.e. medication, psychotherapy, etc.), efficient, valid and reliable scales are required. According to review literature, the scale to measure the psychotic symptoms as positive and negative Syndrome Scale (PANSS), Brief psychiatric rating scale (BPRS), and the Psychotic Symptom rating Scale (PSRS) and the detailed as below:

Kay (1992) developed the Positive and Negative Syndrome Scale (PANSS). It is a medical scale used for measuring positive symptoms, which refer to an excess or distortion of normal functions (e.g., hallucinations and delusions), and negative symptoms, which represent a diminution or loss of normal functions of patients with schizophrenia. PANSS comprise 3 constructs: a) Positive symptoms (delusions, conceptual disorganization, hallucinations, hyperactivity, grandiosity, suspiciousness/persecution, and hostility; b) Negative symptoms (Blunted affect, Emotional withdrawal, Poor rapport, Passive/ apathetic social withdrawal, Difficulty in abstract thinking, Lack of spontaneity and flow of conversation, stereotyped thinking; c) General Psychopathology (somatic concern, anxiety, guilt feelings, tension, mannerisms and posturing, depression, motor retardation, Uncooperativeness, Unusual thought content, Disorientation, Poor attention, Lack of judgment and insight, Disturbance of volition, Poor impulse control, Preoccupation, Active social avoidance). The 30 items: 7 items make up the positive scale; 7 items make up negative scale; and16 items that make up the general pathology scale. PANSS ratings

are made after the completion of semi structured interview, using additional reports of daily function from caregivers or family members and review of available clinical material. It takes 30-40 minutes to administer and score the PANSS interview. The PANSS is designed to be administrator by trained mental health professionals (e.g., psychiatrists, psychiatric nurse, psychologist, clinical social workers). Users of the PANSS should have clinical experience working with the patient with schizophrenia and related psychotic disorder, and training in psychiatric interview technique. Reliability: Numerous investigators have been able to establish good to excellent joint reliability with the PANSS, with ICCs above 0.80 for the positive, Negative, and general Psychopathology scale readily attainable (kay, 1990). Internal consistency as measured by Cronbach α =0.73 for the positive Scale, 0.83 for the Negative Scale, and 0.87 for the general psychopathology Scale (Kay et al., 1987). Concurrent ratings were made during joint interviews with the PANSS and BPRS. There was moderater agreement of the individual items, with the ICC greater than 0.70 for the 14 corresponding items rating anxiety (ICC=0.57), unicooperativeness (ICC=0.51), mannerism and posturing (ICC=0.68), and emotional withdrawal (ICC=0.43) (Bell et al. 1992). The PANSS used in clinical settings to assess severity of symptoms, and to quantify severity of relapse. In particular, the PANSS is potential useful as a quantified monitor of response to treatment interventions.

Over all, Gorham (1962) developed Brief psychiatric rating scale (BPRS) to measure psychiatric symptoms comprises 3 constructs: a) Positive symptoms (somatic concern, conceptual disorganization, grandiosity, hostility, suspiciousness, hallucinations behavior, unusual thought content, excitement, and disorientation), b) Negative symptoms (emotional withdrawal, mannerism, posturing, motor retardation,

uncooperativeness, and blunted affect, and c) Affective symptoms (anxiety, guilt feelings, tension, inappropriate affect, depressive mood). The 18 –items ratings range from 1-7 with higher rating indicating more severe symptoms. It usually take 20-30 minutes to administrator the BPRS and used by clinician experience in the evaluation and treatment of psychotic disorder. BPRS is based on the clinician's interview with the patient and observations of the patient's behavior over the previous 2-3 days. The patient's family can also provide the behavior report. Reliability: Cronbach $\alpha = 0.81$ and 0.91 respectively (Nicholson et al. 1995). Validity: BPRS is generally high when it is compare with the PANSS (r=0.92, 0.82).

Haddock (1999) developed The Psychotic Symptom rating Scale (PSRS) to assess the subjective characteristics of hallucinations and delusions comprising 2 constructs: a) auditory hallucinations (Frequency, duration, location, loudness, origin, negativity (Amount/Degree), distress (amount/intensity), disruption, and controllability), and b) delusion (preoccupation (amount/duration), conviction, distress (amount/intensity), and disruption). The total scale score ranges from 18-126, with a 7-point response option ranging from not present to extremely severe, with greater scores indicating more severe psychotic symptoms. Rating on the BPRS scale is based upon observation and verbal report by the persons. It usually take 10-20 minutes to administrator the PSRS and used by clinician experience. PSRS show average Intra-Class Correlations (ICCs; two way random effects models; Bartko and Carpenter, 1976) between raters for subscales and totals were excellent (DS 0.99 to 1.00, AH 0.99 to 1.00, total PSYRATS 0.99 to 1.00). PSRS show significantly correlated (Spearman's) with the PANSS delusion item (0.43), positive subscale (0.20) and total score (0.18). The Significantly correlated (Spearman's) with the

PANSS hallucination item (0.81), positive subscale (0.31) and PANSS total (0.26). The PSRS used to quantify reliably and objectively the severity of psychotic symptoms. As research tools, The PSRS have proved utility in numerous studies of phenomenology and clinical trial.

Kittirattanapiboon (2001) translated Brief Psychiatric Rating Scale (BPRS) into Thai language to measure psychiatric symptoms comprising 3 constructs: a) Positive symptoms (somatic concern, conceptual disorganization, grandiosity, hostility, suspiciousness, hallucinations behavior, unusual thought content, excitement, and disorientation), b) Negative symptoms (emotional withdrawal, mannerism, posturing, motor retardation, uncooperativeness, and blunted affect , and c) Affective symptoms (anxiety, guilt feelings, tension, inappropriate affect, depressive mood). 18 –items ratings range from 1-7 with higher rating indicating more severe symptoms. The total scale score ranges from 18-126, with a 7-point response option ranging from not present to extremely severe, with greater scores indicating more severe psychotic symptoms. It usually takes 20-30 minutes to administrator. The Thai version of Brief Psychiatric Rating Scale (BPRS) was translated from the original version of The Brief Psychiatric Rating Scale (BPRS; Overall and Gorham, 1962). BPRS is a one-page, semi structured interview, 18-item rating scale which was the goal standard to assess psychotic symptoms of persons with the diagnosis of schizophrenia (Overall and Gorham, 1962 cited in Kenedy, 1994). Rating on the BPRS scale is based upon observation and verbal report by the persons. BPRS show good reliability: Cronbach α =.87. (Stithyudhakarn, 2009) and inter-rater was .85 (Stithyudhakarn, 2009). BPRS is generally high when it is compare with the PANSS (r=0.92, 0.82).

As demonstrated by the above studies, BPRS is widely used psychotic manifestation evaluation scale of psychotic symptoms for schizophrenia. Besides, the psychometric properties of this instrument from the previous studies were good, demonstrated acceptable psychometric properties, and the format for item responses appropriate to measure psychotic symptoms. BPRS is not used as a diagnostic tool, but rather as instruments to evaluating psychopathology in persons with schizophrenia. So, this instrument appropriate for assess psychotic symptoms among persons with schizophrenia and methamphetamine misuse.

4. The relationships of psychotic symptoms and predicting variable based on empirical study

Based on the empirical literature review, the predictor variables to explain psychotic symptoms among persons with schizophrenia and methamphetamine misuse are as follows:

Coping

Persons with schizophrenia often report chronic difficulty coping effectively with both major and minor stresses (Corrigan and Toomey, 1995; Frese, 1993; Mueser et. al., 1997). They may possess a relatively limited repertoire of coping strategies (Rollins et al., 1999) and tend to avoid rather than actively attempt to solve problems (Farhall and Gehrke, 1997; Lysaker et al., 2003b; Wilder-Willis, et al., 2002). The various definitions and theoretical positions that exist regarding coping and the detail as below:

Krok (2008) define Coping as the way in which a person evaluates and responds to an event or situation that he or she perceives as a stressor. As an individual

assess the impact of the stressor, he or she begin to formulate ways in which to most effectively buffer, understand, and remedy the situation.

Schuster, Hammitt, and Moore (2006) defined Coping as the adaptation of one's self to the environment or regulation of environment on the basis of desires.

Menninger (1963) defined Coping as the tools which an individual uses to assist them in meeting the demands of a threat to their psychological equilibrium.

Aldwin (1994) defined Coping as a set of strategies for understanding and reacting to actual or anticipated problems and the resulting negative affect. Thus, coping is both a behavioral and cognitive response to an external stressor.

Lazarus and Folkman (1987) defined Coping as the specific efforts, both behavioral and psychological, that people employ to master, tolerate, reduce, or minimize stressful events. Two general coping strategies have been distinguished: problem-solving strategies are efforts to do something active to alleviate stressful circumstances, whereas emotion-focused coping strategies involve efforts to regulate the emotional consequences of stressful or potentially stressful events.

Carver (1977) defined coping as the strategies of people to manage situations that are appraised as stressful. The coping strategies divided into 14 categories as self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame.

For this study, coping refers to behavioral or cognitive efforts to manage situations that are appraised as stressful of persons with schizophrenia and methamphetamine misuse in terms of problem focused coping strategies, to control

the emotional distress caused by the event, which is termed emotion-focused coping strategies, and the dysfunctional coping strategies.

Relationship between coping and psychotic symptoms:

In regard to cognitive appraisal and coping, it is suggested that schizophrenics may over evaluate the threatening potential of both major and minor life events, and, in addition, may rely on a very limited number of cognitive coping strategies that are probably unproductive for the long-term solution of problems. The vulnerability models propose that the diathesis is stable and may be based on genetics, while stress is thought to be the triggering factor, which determines whether this vulnerability will actually result in schizophrenia or relapse of schizophrenia symptoms. An individual's adaptation is independent of his/her vulnerability. How an individual responds to stress (adequately vs. inadequately) is his/her ability to adapt and consists of coping effort, competence, and coping ability (Nicholson and Neufeld, 1992; Yank, Bentley, Hargrove, 1993). For example, the dynamic vulnerability formulation (DVF) is a diathesis-stress model of schizophrenia (Nicholson and Neufeld, 1992). In this model, genetic endowment affects not only the individual's vulnerability but also both cognitive appraisal and coping ability. In the DVF, the "expression of one's genetic endowment" may change over time, and symptoms of schizophrenia are affected by vulnerability. Increased symptomatology also has a detrimental effect on an individual's ability to appraise situations accurately and can lower coping abilities. Types of symptoms may differentially affect both appraisal and coping. For example, positive symptoms like hallucinations and delusions may impact appraisal and coping differently than cognitive deficits which furthermore may have a different impact than negative symptoms. In this DVF model stressors also affect appraisal and coping and may even bring about more stressful events. Meyer (2001) measured symptoms and coping during an inpatient

hospitalization and six weeks after discharge and found that planning, acceptance, and seeking support were negatively correlated with symptom severity.

Furthermore, positive coping strategies predicted relative decreases in symptoms over time in people with schizophrenia. Another study found that participants who received an intervention targeting coping had decreased positive symptom severity and increased self-esteem compared to a group who did not receive the intervention (Leclerc et al., 2000). Demographics may influence coping strategies used to deal with symptoms of schizophrenia. Persons with schizophrenia, frequently utilize more proactive coping strategies such as accessing social support, using professional services, and taking medication (Yanos, 2001). Characteristics of individuals with schizophrenia who tend to use better coping strategies include having a higher level of premorbid adjustment, being exposed to helpful resources, and having motivation and ability to use these helpful resources (Lee, Lieh-Mak, Yu, and Spinks, 1993).

Coping has also been linked to neurocognition in schizophrenia. Individuals with schizophrenia who demonstrate neurocognitive impairments appear to be less flexible in their use of various coping strategies. Deficits in executive functioning were related to decreased use of active coping strategies even after controlling for general intelligence. In addition, recognition memory is able to predict both active coping and seeking help from others even after controlling for negative symptoms (Wilder-Willis, Shear, Steffen, and Borkin, 2002). Pallanti, Quercioli, and Pazzagli (1997) found that persons with schizophrenia who relapsed in the absence of external stressors had more subjective complaints about cognition, lower P300 amplitude (a measure thought to be indicative of fewer cognitive resources), and more dysfunctional non-problem focused coping strategies. Ventura and colleagues (1999) have reported that poorer performance on a measure of sustained attention predicted less cognitively oriented problem solving

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strategies. Van den Bosh and Rombouts (1997) performed a factor analysis of a combined depression and schizophrenia group and found that objective and subjective measures of impairments in attention were related to poorer problem solving, heightened avoidance, and less help-seeking coping strategies.'

Another study found that coping was related to how competent people with schizophrenia perceive themselves to be in dealing with psychosocial problems. Specifically, they found that those who sought social support and used positive reappraisal viewed themselves as being more competent (Semple et al., 1999).

Measurement of coping: There are many instruments for assessing coping. From literature reviews the instruments to evaluate coping had been documented as follow:

Coyne, Aldwin, and Lazarus (1981) developed The Ways of Coping Questionnaire (WCQ) to identify the cognitive and behavioral strategies an individual has used to cope with various stressful encounters. WCQ compricing 8 constructs: Confrontation Coping, Distancing, Self-Controlling, Seeking Social Support, Accepting Responsibility, Escape-Avoidance, Planful Problem Solving, and Positive Reappraisal. The Ways of Coping (Revised) is a 66-item questionnaire containing a wide range of thoughts and acts that people use to deal with the internal and/or external demands of specific stressful encounters. Additionally, The Ways of Coping Questionnaire can be identifies the processes people use in coping with stressful situations, can be completed in approximately 10 minutes, and can be administered to people of high school age through adult. WCQ show all subscale scores had discrete internal consistency ($\alpha > 0.67$) ranging from 0.67 (for the SRSF) to 0.84 (for the KS). Concurrent validity was assessed by correlating WCQ subscales with RSES, positive

affect and negative affect sub- scales of PANAS and BDI. The correlations were generally consistent with the expectations of which domains measuring the most similar constructs would have the highest correlations.

Moos (1993) develop The Coping Responses Inventory (CRI) to identify and monitor the coping strategies in youths and adults. CRI comprising 2 constructs: a) approach coping (logical analysis, positive reappraisal, seeking guidance and support, problem solving), and b) avoidance coping (avoidance, cognitive Avoidance, acceptance or resignation, seeking alternative rewards, and emotional discharge. All items were rated on a 5-point likert scale from 0 = not at all to 4 = fairly often. The CRI-Adult (older than 18 years of age) is a 48-item questionnaire assessing two broad types of coping responses: Approach Coping and Avoidance Coping. It takes 10-15 minutes to administer and score. The CRI can be used in in counseling, stress management education, and other settings to identify and monitor coping strategies in adults and adolescents, to develop better clinical case descriptions, and to plan and evaluate the outcome of treatment. CRI demonstrate the internal consistence was moderate. Cronbach's alpha coefficients fluctuating between .74 and .61 for men (average alpha= .67) and between .71 and .58 for women (average alpha .64). The association among the eight scales was in general positive and moderate (averages for men=.29 and for women = .25). The correlation coefficients fluctuated between .57 (Logical Analysis with Problem Solving) and -.09 (Problem Solving with Acceptation-Resignation) among men and between .49 (Logical Analysis with Problem Solving) and -.11 (Problem Solving with Acceptation-Resignation) for women. The correlations between the four approach strategies (average r= .47 for men and average R = .42 for women) are higher than those between the four avoidance

strategies (average r = .29 for men and average r = .24 for women). The average stability of coping scales after 12 months was .49 for men and .47 for women. Positive Reappraisal, Seeking Guidance and Support, Cognitive Avoidance, and Emotional Discharge were the most stable scales (average rs = .49 for men and rs = .47 for women). Additionally, convergent validity of the CRI-Adult by means of its correlation with previous versions of the test. The correlation coefficients between the scales that were conceptually comparable fluctuated between r = .95 (Seeking Guidance and Support) and r = .56 (Emotional Discharge).

Carver (1997) develop the Brief Cope to assess a number of different coping behaviors and thoughts a person may have in response to a specific situation among adults for all condition, illnesses or non-illnesses over the past few weeks. The Brief Cope Scale consists of 28 items covering 14 dimensions: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame. Each of the 14 scales is captured by two items, and responses are made on 4-point scales (0 – I haven't been doing this at all; 3–I've been doing this a lot). The three main coping scores were calculated: emotion-oriented subscales (sum of seeking emotional support, positive reframing, humor, acceptance, religion, and with possible scores ranging from 0 to 30); problem-oriented subscales (sum of active coping, seeking instrumental support, and planning scales, with possible scores ranging from 0 to 18); and dysfunctional subscale (sum of behavioral disengagement, denial, self-distraction, self-blame, substance use scales, , venting, , with possible scores ranging from 0 to 36). It takes 40-60 minutes to administer and score. The three main coping scores were calculated: emotion-oriented subscales (sum of seeking

emotional support, positive reframing, humor, acceptance, religion, and with possible scores ranging from 0 to 30); problem-oriented subscales (sum of active coping, seeking instrumental support, and planning scales, with possible scores ranging from 0 to 18); and dysfunctional subscale (sum of behavioral disengagement, denial, self-distraction, self-blame, substance use scales, , venting, , with possible scores ranging from 0- 36).

The scores range from 0-84. The higher score represents greater coping strategies used by the respondents (Carver, 1997). In addition, subscales representing adaptive and maladaptive coping were summed separately, with higher scores indicating more frequent use of that strategy.

Internal consistencies ranged from 0.51 to 0.99. The test-retest Intraclass Correlation Coefficient (ICC) ranged from <0.00 to 0.98. Sensitivity of the scale was observed in nearly all of the domains with Effect Size Index (ESI) ranged from 0.00 to 0.49. Internal consistency for the two coping categories was adequate (α= .81 for emotion-oriented coping; α= .84 for problem-oriented coping). Internal reliabilities for the 14 subscales range from alpha = 0.57-0.90 (Carver, 1997).

In short, the Brief COPE denotes adequate psychometric properties and it can measure both of cognitive and behavioral strategies. In addition, it captures problem focus strategies and emotional focus strategies dimensions of coping that are mentioned in the coping process. Thus, Brief COPE is the instrument to measure coping variable of this study.

Self-efficacy

Self-efficacy has a regulatory function in different health domains, such as adherence to medical recommendations (e.g., adoption of a physically active

lifestyle), positive and negative affect, dealing with pain, and coping with stress. The concept of self-efficacy has recently produced considerable interest among mental illness researchers. Self-efficacy was found to be associated with the number of hospitalizations, social adjustment, rehabilitation outcome, and levels of positive symptoms among individuals with schizophrenia. In addition, Self-efficacy is one of patient-related factors which were related to medication adherence. The detail of definition, relationship, and instrument of self-efficacy were as follow:

Bandura (1977) defines self-efficacy as an individual's belief in his or her own ability to perform specific behaviors required to produce a desired result.

Self-efficacy may vary in magnitude, generality, and strength (Bandura, 1977). Magnitude refers to the extent to winch self-efficacy is present for a range of simple to complex tasks. Generality refers to the variety of tasks for which one incorporates a sense of self-efficacy. The strength of self-efficacy is the extent to which self-efficacy is maintained despite obstacles such as difficult experiences and negative feedback. In Bandura's model, self-efficacy impacts one's choice of activities, expectations of success and persistence or implementation of coping efforts during performance of the task (Bandura, Adams, and Beyer, 1977).

For persons with schizophrenia, one's sense of self-efficacy has been significantly impacted due to symptoms, treatment roles, and cognitive dysfunction (Davidson, 1999, Ritsner, et al., 2000). First, the onset of psychotic symptoms leads to a questioning of reality and a loss of one's sense of mastery. Second, hospitalization leads to a reliance on others and strengthens one's belief in the inability to rely on oneself (McCay and Seeman, 1998). Even outpatient treatments encourage, or at least allow, a certain level of dependency. Third, cognitive impairments, particularly

impairments in executive functioning may lead to difficulties in redeveloping one's sense of self-efficacy. Goal setting and self-monitoring have been found to be integral to the development of self-efficacy (Bandura and Cervone, 1983), but persons with schizophrenia have impairments in these executive functions. In order to aid in the rebuilding of self-efficacy for persons with schizophrenia, specific treatment techniques need to be developed. An emphasis on the retraining of self-efficacy is very important for persons with schizophrenia.

Bandura (1997) stated that in order for individuals to have the incentive to act they must believe that their actions will produce effects. He went on to define self-efficacy as one's "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments".

Self-efficacy is not concerned with "the skills one has but with judgments of what one can do with whatever skills one possesses" (Bandura, 1986).

Variations in self-efficacy arise from the level of performance required, specific features of the specific situation, the commonality of the skills possessed how self-efficacy. In schizophrenia, self-efficacy has a positive impact on the person's ability to control positive symptoms, and diminish the effects of negative symptoms and social withdrawal (McDermott, 1995).

For current study, Self-efficacy refers to the confidence of persons to perform medication-taking according to prescription include of 1) Self-efficacy for taking medications under difficult circumstances and 2) Self-efficacy for continuing to take medications when circumstances surrounding medication-taking are uncertain**.**

Relationship between self-efficacy and psychotic symptoms: self-efficacy, the confidence in one's ability to perform a given task such as taking antipsychotic

medications, play an importance role to support the patient to decrease psychotic symptoms and prevent psychotic relapse. The stronger self-efficacy is more likely to engage in healthy behaviors, to maintain them, and to recover after setbacks. In addition, self-efficacy strongly related to negative symptoms and moderate associated with social and general function. Patient with negative symptoms reported low self-efficacy estimates for everyday tasks, which they performed less frequently than the control. Overall, the results suggest that low self-efficacy is characteristic of negative symptom patient (Hill, 2012; Kurtz, Olfson, and Rose, 2013). The strong of self-efficacy for appropriate antipsychotic use plays an importance role to take antipsychotic and can be balance nerotrasmitter in the brain especially dopamine and norepnephrine which leading to decrease both of positive psychotic symptoms and negative psychotic symptoms. Moreover, self-efficacy for appropriate antipsychotic use plays a vital role to prevent psychotic relapse. In schizophrenia, self-efficacy has a positive impact on the person's ability to control positive symptoms, and diminish the effects of negative symptoms and social withdrawal (McDermott, 1995).

Measurement of self-efficacy: The measurement of self-efficacy has usually been specific to different illnesses or situations, as Bandura originally intended (Bandura, 1986, 1997). Indeed, scales for measuring self-efficacy in this study were identified as below:

McDermott (1986) develop The Revised Self-efficacy Scale (RSES) to assess the participants' confidence in their abilities to control symptoms associated with their illness in order to perform specific tasks or behaviors in schizophrenic patient. RSES comprising 3 constructs: a) ability to perform social behaviors, b) Ability to manage positive symptoms, and c) ability to manage negative symptoms. RSES designed

specifically for use with people with schizophrenia was used to assess the participants' confidence in their abilities to control symptoms associated with their illness in order to perform specific tasks or behaviors. The scale containing 57 items rated on an 11 point Likert-type scale. It takes 40-60 minutes to administer and score. RSES, designed for individuals with schizophrenia, ratings are based on a 100-point scale, in which a rating of “0” indicates no confidence, and a rating of “100” indicates total confidence in one's ability to complete the task or behavior. The scale consists of fifty-seven items that are divided into three subscales, each consisting of nineteen items. The subscales measure confidence in one's ability to perform social behaviors and to manage positive and negative symptoms, as well as an overall self-efficacy score, representing a mean score of the three subscales. RSES show Coefficient α for the RSES at baseline was .91. Internal consistency for the subscales on the RSES in the current sample was high (a =.912 for social behavior subscale; a =.914 for negative symptom subscale; a =.934 for positive symptom subscale; a =.954 for the combined negative symptom and social behavior subscale) (McDermott, 1986)

Sherer and colleagues (1982) develop The Self-efficacy Scale (SES) to assess general self- efficacy expectations, consists of two subscales: general self-efficacy and social self-efficacy. SES comprising 2 constructs of general self-efficacy and social self-efficacy. SES was developed based on Bandura's (1977) self-efficacy theory. It consists of 30 items rated on a 5 point Likert-type scale. SES taking approximately 15 minutes to complete. It contains two subscales of general self-efficacy and social self-efficacy (with internal alpha coefficients of .86 and .71 respectively). Furthermore, it has been used successfully in a study of relatives of individuals with schizophrenia (Solomon, Draine, Mannion, and Meisel, 1996). SES

show The SES was found to have a good reliability (coefficient alpha = .78). Internal consistency show to be moderate to high (α = .76 to .89) (Chen et al., 2001) . Significant correlation with engulfment (r = -.66) in 100 individuals with schizophrenia (McCay and Seeman, 1998).

Risser, Jacobson, and Kripalani (2007) developed the Self-efficacy for Appropriate Medication Use Scale (SEAMS) to measure self-efficacy for taking medicine in difficult circumstance and uncertain situation. SEAMS comprising 2 constructs: a) Self-efficacy for taking medications under difficult circumstances, and b) Self-efficacy for continuing to take medications when circumstances surrounding medication-taking are uncertain. A SEAM is 13-item scale. Patients were asked about how confident they were that they could take their medications accurately (unconfident = 1, fairly confident = 2, and extremely confident = 3). The lowest possible score of the 13-item questionnaire was 13, and the highest possible score was 39; the high score indicated that the participants were highly confident about taking medication. SEAMS taking approximately 5-10 minutes to complete and score. The SEAMS was developed based on Bandura's social cognitive theory. SEAM Test-retest reliability showed correlations ranging from 0.7 to 0.9. Cronbach's alpha=0.89. The result of factor analysis indicated that a two-factor solution was found, explaining 52.3%. Criterion-related validity was strongly correlated with medication adherence as assessed by the Morisky scale (Spearman p =0.51, p=.0001).

Polsook1, Aungsuroch, Thanasilp1, ,and Joanne (2014) developed The Thai Version Self-efficacy for Appropriate Medication Use Scale To measure self-efficacy for taking medicine in difficult circumstance and uncertain situation. SEAM comprising of 2 constructs: a) Self-efficacy for taking medications under difficult

circumstances, and b) self-efficacy for continuing to take medications when circumstances surrounding medication-taking are uncertain. A SEAM is 13-item scale. Patients were asked about how confident they were that they could take their medications accurately. The SEAMS was developed based on Bandura's social cognitive theory and take 5-10 minutes to complete and score. SEAMS rate on 3 likert scale (unconfident = 1, fairly confident = 2, and extremely confident = 3). The lowest possible score of the 13-item questionnaire was 13, and the highest possible score was 39; the high score indicated that the participants were highly confident about taking medication. Test-retest reliability of SEAMS showed correlations ranging from 0.7 to 0.9. Cronbach's alpha=0.90. Factor analysis show that a two-factor solution was found, explaining 52.3%. Criterion-related validity was strongly correlated with medication adherence as assessed by the Morisky scale (Spearman p =0.51, p=.0001). Items total and inter correlation efficiency were =.54 to .73, r = .13 to .81, respectively. The correlation coefficient was > .3. Bartlett's Test of Sphericity indicated a sufficient correlation matrix among the variables (X^2 = 273.016, df = 78, p = 0.00). Principal component analysis extraction method was used for extract factors. The SEAMS was orthogonally rotated by varimax rotation. Three factors explaining 72.53% of the total variance were identified. Com- munalities in each factor ranged from .59 to .88. Factors 1 to 3 explained 29.51%, 21.67%, and 21.35% of the variance, respectively.

The present study employed The Thai version of Self-efficacy for Appropriate Medication Use Scale (SEAMS) (Polsook, Aungsuroch, Thanasilp, ,and Joanne, 2014) to measure self-efficacy for medication use because it can assess an extensive view of medication use and it is specific to the target sample, who were schizophrenia

and methamphetamine misuse. Additionally, The Thai version of Self-efficacy for Appropriate Medication Use Scale was a good reliability and validity for measure medication adherence and also develops in psychiatric patient. Therefore, SEAMS is needed to use for the present study.

Expressed emotion

Expressed emotion is the one of the main contributors and reliable predictors to psychotic relapse in schizophrenia (Hooley, 2007). There are various definitions and theoretical positions that exist regarding expressed emotion and the detail as below:

Expressed emotion (EE) refers to criticism, hostility, and emotional overinvolvement the family members expressed in their feeling, attitude, and behavior toward the psychiatric patients (Brown, Birley, and Wing, 1972; Van Humbeeck, Van Audenhove, De Hert, Pieters, and Storms, 2002).

Arthur and Nursing Research Group (2002) defined Expressed emotional as the circumstances in which family members express critical, hostile, or over-involved attitudes toward the persons with schizophrenia and their emotions have been linked to relapse and re-hospitalization and are collectively

Van, De, Pieters and Stroms (2004) defined Expressed emotional as the family's affective attitudes and behaviors toward the persons.

Sunpaweravong (2007) defined Expressed emotional as a classification of emotional attitude and behaviors of family caregivers directed toward the patient, such as criticism, hostility or an emotionally over-involved manner.

For present study, Expressed emotion (EE) is defined as a classification of emotional attitudes and behaviors of family caregivers directed toward the persons

with schizophrenia and methamphetamine misuse both of positive expressed emotion and negative expressed emotion.

1. Positive expressed emotion involved appreciation, warm, and friendly of family caregivers directed toward the patient.

2. Negative expressed emotion involved critical comments, hostility, and emotional over-involvement in the interactions of family caregivers.

Relationship between expressed emotion and psychotic symptoms:

Emotional express is a significant and robust predictor of relapse in schizophrenia. Additional analyses demonstrated that the EE-relapse relationship was strongest for patients with more chronic schizophrenic illness. (Azhar, and Varma, 1996; Ronald, Butzlaff, Jill, Hooley, DPhil., 1998; Lopez, Hipke, Polo, A. J., Jenkins, Karno, Vaughn, and Snyder, 2004; Peterson, and Docherty, 2004; Li, and Arthur, 2005). Moreover, persons with schizophrenia from high EE homes have a poorer illness prognosis than do patients from low EE homes (Wasserman et al., 2012).

Kanthasaibour, P. (2001) conducted research to determine variables, which were able to discriminate the groups of relapse and non-relapse schizophrenic patients. Research subjects were schizophrenic patients. Research instruments were the interviewing questionnaires which were developed by the researcher to measure self-care behaviors, health belief, drug compliance behaviors, family relationship, and family expressed emotion. Major findings shown that the significantly discriminated variables the groups of relapse and non-relapse schizophrenic patients, at the .05 level, were 5 variables includes family expressed emotion, self-care behaviors in the aspect of preparation for coping with problems, drug compliance behaviors, marital

status, and health belief in the aspect of perceived benefit of the practice to prevent relapse.

Another line of research in understanding the role of EE has investigated the relationship between family burden ratings and follow-up psychotic symptom levels in schizophrenia (Golob, 2004). The purpose of this sub-study was the further exploration of the PFBS and its relationship to the psychotic symptom status of patients. Findings of this sub-study suggest that although individual item scores of the PFBS are not predictive of patients' symptomatic status at follow-up, the extreme subjective scores of the PFBS, together with patients' psychotic symptom levels at Time 1, significantly predict the follow-up level of psychotic symptoms, accounting for 34% of the variance in the follow-up level of psychotic symptoms.

Measurement: A search of the literature reveals many existing instruments that can be used for measuring emotional express in the families of persons with schizophrenia as show in table 5:

Cole and Kazarian (1988) developed Level of Expressed Emotion Scale (LEE) to assess the level of expressed emotion in the subject's most influential relationship. LEE is 60- items, self- report test, consists of 4 dimensions: intrusiveness, emotional response, negative attitude towards the illness, tolerance and expectation concerning. LEE take 10-15 minutes to administered and score and sound psychometric properties. LEE show internal consistency was 0.84-0.89, Test retest were 0.67-0.82. Concurrent validity: CFI: CC of the CFI and intrusiveness ($r=0.40$, $P<0.05$) and tolerance ($r=0.40$, $P< 0.05$). Predictive validity: Only for the total score ($\chi 2 = 9.58$, $P< 0.05$) and the intrusiveness scale ($\chi 2 = 7.25$, $P<0.01$).

Baker, Helmes, and Kazarian (1984) Influential Relationships Questionnaire (IRQ) to measure of the perceived interpersonal characteristics of overprotection, care, and criticism. IRQ consist of 3 constructs: a) criticism/hostility, b) care, and c) protection. IRQ is 37 items, consists of 3 dimensions: criticism/hostility, care, and protection. IRQ take 5-10 minutes to administered and score. IRQ modification of the parental bounding instrument (Parker, Tupling, and Brown, 1979) and uses a 4-point rating scale. Patients were asked to rate the two most influential people in their lives over the past 18 months separately on the items of the IRQ and to indicate the amount of contact per week they had with these people. IRQ show internal consistency were 0.76-0.91, test retest were 0.53-0.85, concurrent validity: CFI, EOI and criticism of the IRQ ($r=0.48$, $P<0.05$). Predictive validity show discriminate between relapse and no relapse (different studies: $0/03<P\leq0.001$).

Hooley and Teasdale, (1989) developed Perceived Criticism Scale (PCS) to assess Perceived Criticism. PCS consists of two 10-point Likert scales asking the respondent to rate how critical (‘‘not at all’’ to ‘‘extremely’’) his/her designated significant other is towards him or her and how sensitive or upset (‘‘not at all’’ to ‘‘extremely’’) the respondent is to the criticism. PCS take 1-5 minutes to administered and score. The patient was asked to select up to three relatives or friends with whom he or she had at least 4 h/week of contact and who were involved in his or her health care. The patient filled out one PCS form on each of these relatives. It is filled out in reference to another individual and consists of one item: “How critical do you think this person is of you?” PCS demonstrate internal consistency ($r=0.79$) (White et al., 1998), test retest were $R=0.75$, $P<0.001$ (Hooley and Teasdale, 1989), concurrent validity: PSC and cut-off score of the CFI ($r=0.51$, $P<0.05$), and predictive validity: r

= -0.64; P≤0.001. PCS ratings are independent of patients' concurrent depression or anxiety symptoms, personality disorder scores, age, gender, or type of relative being rated (Hooley and Teasdale, 1989; Riso et al., 1996; Chambless and Steketee, 1999).

Shields, Franks, Harp, McDaniel, and Campbell (1992) developed Family Emotional Involvement and Criticism Scale (FEICS) to measure expressed emotion. The FEICS. The 14-item FEICS has two subscales of Perceived Criticism (PC) and intensity of Emotional Involvement (EI). The 7 even-numbered items relate to the PC subscale and the odd-numbered items relate to the EI subscale. Respondents are asked to describe their family and rate them on a 5-point Likert scale from almost never to almost always. FEICS take 1-3 minutes to administered and score. PEICS as a brief self-report. The scale is scored separately for PC and EI. Higher scores on the scales indicate higher levels of EE.

FEICS show internal consistency (r = 0.76-0.82), alpha coefficient was 0.82 Shields et al. (1992. The PC subscale was significantly correlated with depression and anxiety (r = .42 and .39, respectively) (Shields et al., 1992). The PC scale was correlated with depression (r = .27) and hostility (r = .30) (Fiscella and Campbell ,1999).

Wongsin (2012) modify Thai version of Family Expressed Emotional Scale (TFEES) to measure expressed emotions in Thai family caregivers of persons with schizophrenia. This measurement comprising of 5 constructs: a) critical comments, b) hostility, c) positive remarks, d) warmth, and e) emotional over-involvement in the interactions of family caregivers. TFEES is a 33-item; on a four-point Likert scale, ranging from strongly agrees, agrees, not agree, and strongly not agree. The Thai version of Family Expressed Emotional Scale was modify from The Thai version of

Expressed emotion of Family caregiver, positive and negative aspects Scale (TEEFC-PNAS) which was modify by Pongjantarasatien (2006) from TEES which developed by Sunpaveravong (2007) by the concept of Brown et al. (1972). TEES show alpha coefficient was .89 (positive aspect was .89, negative aspect was .76) (Rungruangsiripan, 2009) and content validity was .90. (Rungruangsiripan, 2009).

The Thai version of Family Expressed Emotional Scale (Wongsin, 2012) which adapted from Pongjantarasatiean (2006) and Sunpaweravong (2006) translated from the Expressed emotional scale of Brown et al. (1972) was used to assess EE in this study because it can measure the 5 constructs of expressed emotions in Thai family caregivers of persons with schizophrenia. Lastly, this measurement was translated into the Thai language and has an acceptable psychometric property when used with Thai schizophrenic patients.

Stressful life events

Stressful life events are related to the emergence of psychotic symptoms and possibly contribute to symptom exacerbation (Norman and Malla, 1993; Weinberger, 1987; Day et al., 1987). According to the literature review, the detailed of definition, relationship, and measurement are as below:

Settersten and Mayer (1997) defined stressful life events as a life event is a significant occurrence involving a relatively abrupt change that may produce serious and long lasting effects". It refers to the happening itself and not to the transitions that will occur because of the happenings.

Brown and Harris (1978); Holmes and Rahe (1967) defined Stressful life events as the situations or occurrences that entail a negative or positive change in

personal circumstance indicative of or requiring significant change in the ongoing life pattern of the individual.

For this study, stressful life events are defines as the perception of persons in two aspects: (1) the self-perceived frequency and (2) intensity of stressful life events

Relationship between stressful life events and psychotic symptoms:

The relationship between stress and symptom exacerbation in schizophrenia is well documented. Stressful life events play a triggering role in schizophrenic episodes has supported a vulnerability/stress model. It posits that stressful life events raise the stress level of people who are vulnerable to the disorder, and if an individual’s stress tolerance level is exceeded, a psychotic episode will be triggered (Pujo, 2013).

There is growing body of literature on the role of stressful life events in producing variety of mental illness. However, majority of persons undergoing stressful life events do not develop psychological illness. The notions of 'vulnerability' and ' diathesis' are of particular significance in understanding the impact of stressful life events on mental health. 'Diathesis' as described by Meehl (1962) refers primarily to inherited predisposition factors, and 'vulnerability' has been expanded to include predisposition environmental factors (Zubin and Spring, 1977; Spring and Coons, 1982). An individual with a high predisposition is at high risk of developing illness symptoms. Perception of stress is a subjective phenomenon, as the same life event may be stressful to one individual but not to another. Individual's personality makeup influences his perception and appraisal of the situation and this in turn determines his reaction to the same (Sejwal, 1984).

Earlier studies have suggested that stressful life events judged to be independent of the patient's behavior are more frequent in the weeks immediately before relapse (Brown and Birley 1968; Leff and Vaughn 1980; Day et al. 1987). It is possible that these attitudes, like the occurrence of major life events, contribute to a high level of environmental stress that interacts with preexisting biological vulnerability factors to increase the likelihood that psychotic symptoms will return (Brown et al. 1972; Leff 1987).

Recent studies found the role of stressful life events in the emergence and course of psychotic symptoms of schizophrenia (Myin-Germeys and van Os, 2007). Evidence suggests that patients with schizophrenia may be more susceptible to stressors such as criticism within the family environment (Bebbington et al, 1993; Butzlaff and Hooley, 1998).

Some studies have found a significant increase in "independent" stressful life events which are events uninfluenced by patient's own behavior. Bleuler (1911) considered life situations and emotional conflicts are causal factors in the onset of at least some cases of schizophrenia. Valliant (1964) and Lukoff et al. (1984) observed that 60% of their schizophrenic patients had life events 3 weeks prior to onset of schizophrenia. Non-independent life events (being fired from a job, divorce, failing in an exam) may reflect the prodromal period or an ongoing schizophrenic process.

Zubin and Spring (1977) have labeled the processes by which schizophrenic patients often bring an excess of life events upon themselves as "stress prone patterns of living". Although both onset as well as relapse in schizophrenia has been associated with an increased report of life events, these events are mostly of the non-independent types. This increases an already inflated stress level and so influences the

timing if not probability of illness onset (Rabkin, 1980). A study by Serban (1975) found that chronic schizophrenics experienced maximum stress, while acute schizophrenics experienced medium stress, compared to the normal population. Das et al. (1997) had reported higher number of life events in the one year preceding relapse in relapsed schizophrenics as compared to stable schizophrenics. Besides, both vulnerability and stress factors, and not just the latter, contribute to the onset and course of schizophrenia Ventura et al. (1989).

Measurement: Life Events Questionnaire

The definition of stressful life events is very essential to consider the measurement to measure this variable. The detail of definition and measurements for stressful life events were as follow:

Cohen et al. (1983) developed The Perceived Stress Scale (PSS) to assess perceived stress. PSS comprising of 3 construct: a) unpredictability, b) lack of control, and c) burden overload stressful life circumstance. The PSS is a 14-item self-report measure on which participants rate the frequency over the past month with which they experience situations in their life as stressful. Seven out of the 14 items of PSS-14 are worded negative (1, 2, 3, 8, 11, 12, and 14), and the remaining seven are positive (4, 5, 6, 7, 9, 10, and 13). Each item was rated on a five-point Likert-type scale (0 = never to 4 = very often). The PSS is a global assessment of an individual's perception of psychological stress during the past month. PSS has been admistered in both oral and written (telephone) formats. Total scores are calculated after reversing positive items' scores and then summing up all scores. Possible total scores for PSS-14 range from 0 to 56. A higher score indicates greater stress. PSS show internal consistency were 0.80, alpha coefficience = 0.83 (Ezzati et al., 2013), depression was

positively associated with total stress score (rs = 0.39, p < 0.001); it was positively correlated with the NF (rs = 0.32, p < 0.001) and inversely associated with the PF (rs= 0.32, p < 0.001). In addition, anxiety was positively associated with total stress score (rs = 0.29, p < 0.001), negatively associated with the PF (rs = 0.18, p < 0.001), and positively associated with the NF (rs= 0.35, p < 0.001) (Ezzati et al., 2013). Divergent validity: correlations between PSS and the SF-36 bodily pain measure—which was not intended to measure perceived stress—were low (PSS: rs = 0.18, p < 0.001; PF: rs = 0.14, p < 0.001; NF: rs= 0.17, p < 0.001) (Ezzati et al., 2013).

Derogatis (1987) developed Derogatis stress profile (DSP) to assess stress in three dimensions namely; environmental events, personality mediators, and emotional responses composed of 3 Constructs: a) environmental events, b) personality mediators, and c) emotional responses. The DSP targets 11 dimensions and three domains of stress. DSP, a 77-item Likert scale paper-and-pencil self-report questionnaire. The scale takes approximately 12 to 13 minutes to complete under normal conditions, although some individuals make require a few minutes longer. Each item of the DSP is rated on a 5-point scale ranging from 0="not-at-all true of me", to 4 ="extremely true of me". The DSP is a Clinical/Research Instrument, Self-Report and derived from the concept of stress and based on an interactional stress theory paradigm which holds stress to be a phenomenon arising from a dynamic interaction between environmental events, personality characteristics and emotional responses. Each stress domain or dimension is scored as the sum of its corresponding items, following reflection of required individual items. DSP show coefficient alpha was 0.75 (Derogatis, 1987), internal consistency across the stress dimensions used in this analysis as determined using coefficient alpha was 0.75 for patients and 0.82 for

healthy volunteers (Derogatis, 1987), internal Relationships Among DSP Scales: the average r among the 5 Personality Mediator dimensions with the domain score was .71, while the average correlation of this set of measures with non-corresponding domains was 0.41 . The mean coefficient for Environmental Events dimensions was 0.70 with the corresponding domain, but only .39 with divergent domains. Dimensions comprising the Emotional Response domain showed a mean correlation of .80 with the Emotional Response score, but only .41 with other domains. Confirmation of Dimensional Structure: Four factors were identified accounting for approximately 70% of the variance in the matrix. The initial factor was loaded almost exclusively by the five dimensions of the Personality Mediators domain, while the second factor clearly represented the Emotional Response domain. Hostility, Anxiety and Depression all showed substantial loadings on Factor II. The third factor identified had significant correlations with Vocational Environment and Domestic Environment. The third Environmental Event measure, Health Environment, did not correlate with this factor, instead, forming a unique, separate factor on which it revealed a highly saturated loading and accounted for approximately 8% of the variance in the matrix. In general, this analysis provides a substantial degree of corroboration for the hypothesized dimensional structure of the DSP®: 10 of the 11 dimensions conform to the designed structure of the test.

Criterion Validity: the DSP, demonstrating empirical relationships with external criteria which confirm the test as a valid interactional measure of stress. The Principal Citations which follow contain references to much of this work.

Roohafza, Rameani et al. (2011) developed the stressful life event questionnaire (SLE) to measure stressful life events. SLE comprising of 2 constructs:

a) the self-perceived frequency of stressful life events and b) the self-perceived intensity of stressful life events. SLE questionnaire is 46 items on 6-point Likert scales (0 = never, 1 = very mild, 2 = mild, 3 = moderate, 4 = severe, 5 = very sever). under the eleven domains as below: home life, financial problems, social relations, personal conflicts, job conflicts, educational concerns, job security, loss and separation, sexual life, daily life, health concerns.

The SLE questionnaire is a Self-Report and takes 30-45 minutes to administer. There were 7 items under the Home life domain, 5 items under the Financial problems domain, 4 items under the Social Relations domain, 5 items under the Personal Conflicts domain, 4 items under the Job Conflicts domain, 4 items under the Educational Concerns domain, 5 items under the Job Security domain, 4 items under the Loss and Separation domain, 4 items under the Sexual life domain, 2 items under the Daily life domain, and 2 items under the Health Concerns domain. If participants had not experienced the stressful life events, they answered never. But others had stressful life events at 6 months ago, their responses to express stress intensity were rated from 1 = very mild to 5 = very sever. The total score of each domain was the sum of the raw score of the 46 items.

SLE show coefficient alpha was 0.92 (Roohafza, Rameani et al., 2011), correlation coefficient was moderately significant among domains of the SLE questionnaire and moderately between the SLE questionnaire and GHQ-12score. Concurrent criterion validity of the stressful life events questionnaire was computed by correlating the total scores of each domain with GHQ-12. The correlation between stressful life events questionnaire and GHQ-12 score was moderately significant (r =

0.31, P\0.001). Discriminate validity analysis were promising. In addition, standardized Cronbach'alpha was 92%.

In conclusion, the stressful life event questionnaire (SLE) (Roohafza, Rameani et al., 2011) has been demonstrated to possess good retest reliability and internal consistency. Additionally, it measure the 2 Constructs of The self-perceived frequency of stressful life events and the self-perceived intensity of stressful life events which Specific for this study. Therefore, SLE questionnaire was the instrument to measure stressful life events for this study.

Social Support

Social support had a various conceptualizations and many components that have been presented in this literature as below:

Cobb (1976) define social support as the giving information that leads people to believe they are cared for, loved, esteemed, and valued, and that they belong to a network of communication and mutual obligation.

Lugton (1997) define social support as a complex and multidimensional phenomenon including both quantity of social ties and quality of relationships. Another way to define social support is to consider function of an individual‟s well-being and coping mechanisms enhanced by their involvement with others and perception of the supportive interactions available (Brashers et al, 2004).

Burelson (2009) define social support as verbal and nonverbal behaviors intended to provide assistance to others in need of aid or as functions performed for an individual in distress. In sum, social support is the support systems that provide assistance and encouragement to individuals with physical or emotional disabilities in order that they may better cope.

Cobb (1976) has clarified characters of social support as emotional support, esteem support, and network support.

Weiss (1974 cited in Drageset and Lindstrøm, 2005) has identified construct of social support including the provision for attachment, social integration, and reassurance of worth, opportunity for nurturance, reliable alliance, and guidance.

House (1981) has described four main components of social support including emotional, appraisal, informational, and instrumental support. Emotional support (love, respect, sympathy, understanding, and overall empathy) generally comes from family and friends and is the most important type of support for improving individual's coping and psychosocial adjustment (House, 1981; Schroevers et al., 2003; Thoits, 1986). Appraisal support involves transmission of information in the form of affirmation, feedback, and social comparison that is often evaluated from family, friends, colleagues, and community source (House, 1981). Besides this, informational support includes advice, suggestions, or directives that assist the person to respond to personal or situational demands (House, 1981). Informational support includes health information or advice to help individuals in their day-to-day lives or during stressful experiences (Fridfinnsdottir, 1997). Instrumental support is the most concrete direct form of social support, encompassing tangible aids, goods, or services (House, 1981).

For current study, social support define as emotional, appraisal, informational, and instrumental support that persons with schizophrenia and Methamphetamine misuse receive from family, friends, healthcare providers, and others.

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Relationship between social support and psychotic symptoms:

The causes of psychotic symptoms exacerbation were stress factors and protective factors. The support from family, friends, medical specialists or clinical practitioners in addition to the provision of advice are key components in helping patients to increase protective factors for the reduction of symptoms severity (O'Connor, 1994). Additionally, the strongest associations between social support (particularly emotional support) and a health outcome are psychological well-being. Lower risk for schizophrenia and psychological distress was social support in particular emotional support that impacts both psychological and physical health outcomes. Person who lacked family support are at increased risk for substance abuse.

The strongest associations between social support (particularly emotional support) and a health outcome are psychological well-being. Besides, lower risk for schizophrenia and for psychological distress more generally for those who enjoy greater social support. Moreover, emotional support impacts both psychological and physical health outcomes. Based on a review of concepts and evidence related to social supports on both interpersonally and at the community level, social support enables the adoption of health promoting behaviors by providing access to resources and material goods, enhancing individual and community coping responses, and buffering negative outcomes. In addition, social support is typically related to tasks that are jointly conducted with family members and friends.

Measurement:

The measurements to measure Social support are variety and the researcher review the related instrument of this population depict as below:

Sherbourne and Stewart (1991) developed Medical Outcomes Study:

Social Support Survey - MOS-SSS to assess four components of perceived availability of social support includes emotional support/ Informational support, tangible support (including material support), positive social interaction (does person have friends that are available to have fun), and affectionate support (including loving and nurturing relationships). MOS-SSS is 19 items, self-administered. Emotional support/Informational support scale includes (8) items, Affectionate support subscale includes (3) items, Tangible support scale includes (4) items, and Positive interaction scale includes (3) items. There is one item, the last item on the survey, which is not part of a specific subscale. MOS-SSS was developed for use in the Medical Outcomes Study (MOS), a two-year study of patients with chronic health conditions. Total score and subscale scores may be calculated. A high score indicates more support Overall, it has strong overall psychometric properties. It not only is available in English, but also Spanish, Portuguese and Chinese, and there have been studies examining the psychometric properties of the versions in other languages. It also has been used with culturally and linguistically diverse and low-income populations.

Measure assesses multiple facets of social support and the subscales may be used separately. Also, measure is free and easily accessible. MOSS-SSS show internal consistency in overall support (.97), emotional/ Infor mational support (.96), tangible support (.92), affectionate support (.91) and positive interaction (.94) (Sherbourne and Stewart, 1991). Test-retest reliability show the coefficients ranged from .72-.76 for the subscales and the coefficient was .78 for the overall scale (Sherbourne and Stewart, 1991). The MOS-SSS subscales and determined that they are highly correlated with each other (.69-.82) (Sherbourne and Stewart, 1991).

Procidano and Heller (1983) developed the Perceived Social Support Scale – PSSS to assess perceived social support from friends (subscale PSS-Fr) and family (subscale PSSFa). PSS-Fr comprising of 2 constructs: perceive social support from friend, perceive social support from family. The 20 items per subscale, for a total of 40 items ask about whether or not the respondent has encountered certain thoughts or experiences with family or friends. There are three possible responses: "Yes," "No," and "I don't know." In addition, Responses that represent positive social support are scored 1, and item scores are summed, so that total subscale scores range from 0 (no perceived support) to 20 (maximum support). Some items are reverse-scored. An overall score is not typically calculated. Internal consistency, subscale scores: PSS-Fa subscale = .88; PSS-Fr subscale = .90 (Procidano and Heller, 1983). Construct validity: .40 correlations between the PSS-Fr and PSS-Fa, though the correlation was only .18 for one of the other samples (Lyons, Perrotta, and Hancher-Kvam, 1998). Concurrent validity in an early study demonstrated both PSS-Fa and PSS-Fr scales were significantly and negatively associated with a survey screening of psychiatric symptoms (Procidano and Heller, 1983). Besides, concurrent validity was no significant relationships between PSS-Fa or PSS-Fr and positive or negative life events (Procidano and Heller, 1983).

Broadhead, Gehlbach, DeGruy, and Kaplan (1988) developed Duke-UNC Functional Social Support Questionnaire – DUFSS to measures the amount and type of perceived emotional social support. DUFSS comprising 2 constructs: a) confidant Support (having someone to talk to, social with, receive advice from) and b) affective Support (being shown love and affection). DUFSS was 8 items; Self-administered or Interview. Responses on 5 point Likert scale, ranging from 5 (as much as I would

like) to 1 (much less than I would like). Scores may be calculated for each subscale and for a total score. A total score is calculated by summing all of the responses. Subscale scores may be calculated by summing items of the Confidant Support scale (3, 4, 5, 6, 7) and by summing items of the Affective Support scale (1, 2, 8). Higher scores indicate greater satisfaction with perceived social support. The DUFSS has been used with culturally and linguistically diverse and low-income populations. The measure is very brief and adaptations of the scale have demonstrated evidence for establishing concurrent validity.

DUFSS show internal consistency: Item-remainder Pearson product-moment correlations were calculated, and any variable with a correlation coefficient greater than .50 was included in the factor. For the Confidant Support scale, the average item-remainder correlation was .62; for the Affective Support scale, the correlation was .64 (Broadhead et al., 1988). The test-retest at between one and four weeks, the final reliability coefficient was .66 (Broadhead, Gehlbach, DeGruy, and Kaplan, 1988). This was the average test-retest correlation of 11 items. The initial reliability coefficient was calculated on the 14 item scale. Concurrent validity: The Confidant Support and Affective Support scales were each significantly correlated with social activity measures, including a social contacts subscale of a social activities questionnaire and two measures of social function from a health profile questionnaire (Broadhead, et al., 1988). Concurrent validity: Parents reporting more positive attitudes towards emotional expression also reported significantly higher social support (Castle, Slade, Barranco-Wadlow and Rogers, 2008). Predictive validity: Both mothers and fathers reporting higher perceived social support prenatally reported significantly lower levels of distress postnatally (Castle et al., 2008).

Barrera (1980) developed Arizona Social Support Inventory Schedule (ASSIS) to assess Perceived social support (both perceived available social support network size and reported receipt of social support), Satisfaction with social support received, reported Need for social support, as well as Interpersonal conflict.

ASSIS comprising of 6 constructs: a) material aid, b) physical assistance (sharing of tasks), c) intimate interaction (in terms of verbal communication), d) advice, e) positive feedback, and f) social participation. ASSIS was 30 items and 7 likert scale. The interviewer asks 30 questions about the individual's social support network. Questions refer to support that was available and/or received within the last month. For each support category, the respondent also rates his or her level of Need for support and Satisfaction with support on 7-point Likert scales. The Need for support scale ranges from (1) no need at all to (7) verygreat need. The Satisfaction with support scale ranges from (1) very dissatisfied to (7) very satisfied.

The interview takes between 15 – 20 minutes, depending on the number of people included in the network and how much a respondent shares about network members. The ASSIS captures multiple dimensions of support, including types of support, source of support, quality of support, and quantity of support; support need and support satisfaction. The measure also identifies supportive relationships that are also sources of conflict. Measure is more open-ended than many questionnaires, and may allow more time for considered responses. ASSIS show internal consistency for both perceived and actual support, the internal consistencies of the six positive support categories were calculated. For Available social support, the Chronbach's alpha was .78; for Actual social support received, the Chronbach's alpha was .74. Test-retest: correlations were significant, ranging from .37 to .87 (Barrera, 1980).

Barrera (1985) compared responses of mental health outpatient of their support network about support received by the participant. Clients and support network members were asked whether or not support, within a specific category, had been received by the clients. Significant coefficients were detected for all categories of social support and ranged from a low of .30 (Intimate Interaction) to a high of .94 (Physical Assistance).

Moser (2012), the eight-item modified Medical Outcomes Study Social Support Survey to assess social support. The eight-item mMOS-SS The mMOS-SS has two subscales covering two domains (emotional and instrumental [tangible] social support) composed of four items each designed to maintain the theoretical structure of the MOS-SS and identify potentially modifiable social support deficits. The availability of a psychometrically valid brief social support measure presents an opportunity to reduce respondent. Because it is proven as a self- or interviewer-administered instrument, mMOS-SS also provides flexibility in assessment technique. No less importantly, the two mMOS-SS subscales of emotional and instrumental support quickly identify potentially modifiable social deficits as points of intervention. Identifying and intervening on social deficits could improve older adults' ability to cope with a serious life stressor (e.g., cancer diagnosis). The very high response rates across all populations and stability of the measure demonstrated by sensitivity analyses for missing data also point to the feasibility and potential clinical utility of the mMOS-SS. It is also conceivable that mMOS-SS could play a role in predicting poor outcomes and guiding therapeutic decision making. A major strength of the eight-item mMOS-SS is the psychometric properties of the eight-item mMOS-SS were excellent and similar to those of the original 19-item instrument.

The eight-item mMOS-SS Cronbach's alpha was 0.9, exploratory factor analysis (EFA) [56.63% variance, KMO=0.904; v2=4396.27], confirmatory factor analysis (CFA) [CFI=0.95; NNFI (TLI) =0.97; SRMR=0.05; v2=296.81; RMSEA=0.17] showed a one factor structure, and mMOS-SS construct and discriminant validity were similar across populations and comparable to MOS-SS.

Zimet, Dahlem, Zimet, and Farley (1988) developed Multi-dimensional Scale of Perceived Social Support – MSPSS to assess perceived social support. MSPSS 12 items, with 7 point Likert scale (1) very strongly disagree to (7) very strongly agree Calculate total score and scores for 3 subscales (Family, Friends or Significant Others). Sum responses to items 1, 2, 5, 10: Significant Other subscale score, Sum responses to items 3, 4, 8, 11: Family subscale score, Sum responses to items 6, 7, 9, 12: Friends subscale score; higher scores indicate higher levels of perceived support (Calvete and Connor-Smith, 2006). MSPSS show internal consistency in total scale and subscales consistently >= .85, test-retest reliabilities ranged from .72 - .85, at 2-3 months (Zimet et al., 1988), factor analyses consistently support 3 factor structure, construct validity testing with MSPSS global perceived support score: total score has been significantly and negatively correlated with depression scores (Kazarian and McCabe, 1991; Zimet et al., 1988) and a social support behavior scale (Kazarian and McCabe, 1991).

In summary, the psychometric properties of the eight-item mMOS-SS were excellent and similar to those of the original 19-item instrument. It's brief and easy to administer. Therefore the eight-item mMOS-SS was the measurement for measure social support for present study.

Social Functioning

There are various definitions and theoretical positions that exist regarding social functioning and the detail as below:

Sarawat, Rao et al. (2006) defined social functioning as comprising of self-care and activities of daily living, communication and interpersonal relations, instrumental living skills and work.

Tyrer et al. (2005) defined social functioning as individual's ability to interact in ways that are typical/usual for the society in which that person lives and can be used as an indicator for quality of life.

Bleuler E. (1950) and Kraepelin E. (1919) defined social functioning as a person's ability to work, to engage in social relationship, to attend to self-care, and to participate in recreational and community activities. Since the earliest descriptions of schizophrenia, impairments in social functioning contributing to poor quality of life were noted to be the rule rather than the exception.

Green's (1996) defined social functioning including of: independent living, employment, interpersonal relationships, and recreation.

APA (1994) defined social functioning included covers three broad domains: work/academic, interpersonal relations and self-care.

Mueser and Tarrier (1998) define social functioning as "the ability of Individuals to meet societally defined roles (such as student, mother, and friend). In addition, individuals' satisfaction with their ability to meet these roles, their ability to care for themselves, and the extent of their leisure and recreation activities are often subsumed under the rubric of social functioning."

Leary et al. (1991) define social functioning as characteristic of schizophrenia deficits include difficulties in the ability to work to engage in social relationships, to attend to self- to engage in social relationships, to attend to self- care, and to participate in recreational and community activities munity activities.

For this study, social functioning is defined as the ability of the individual with schizophrenic and methamphetamine misuse to interact in the normal or usual way in society comprising of 1) socially useful activities, including work and study, 2) personal and social relationships, 3) self –care, and 4) disturbing and aggressive behaviors.

Relationship between social functioning and psychotic symptoms:

The Diagnostic and Statistical Manual of Mental Disorders (5th ed.; DSM–5; American Psychiatric Association, 2013) has made significant adjustments to the definition of schizophrenia. Individuals with schizophrenia will display symptoms of delusions, hallucinations, disorganized speech and behavior, and other symptoms that cause social and/or occupational dysfunction. Therefore, social functioning still plays a significance role in schizophrenic patient.

Social dysfunction is a hallmark characteristic of schizophrenia that has important implications for the development, course, and outcome of this illness. In fact, the social dysfunction found in schizophrenia is greater than any other psychiatric disorder. Social functioning in schizophrenia is markedly impaired and is categorized as part of the constellation of impairments in one or more major areas of life functioning. This is important because social functioning contributes to overall functional outcome and ability to function in a community setting.

Social functioning impairments are observed during the prodromal stages of schizophrenia, often worsen immediately after the first episode, and persist into late life (Robinson et al., 2004). Deficits in social functioning are frequently described as being of primary concern to patients, families, and advocacy groups, and are important predictors of quality of life (Bellack et al., 2007). While current pharmacologic treatments can often reduce psychotic symptom severity, deficits in social functioning typically persist in this population (Robinson et al., 2004). Besides, repeated hospitalizations often contribute to further their social dysfunction (Yager and Ehmann, 2006) and correlation between employment and quality of life was the result of social connection and support associated with employment. Employment and social relationships as main factors for greater quality of life (Rüesch and colleagues, 2004).

Measurement:

Regard to individuals with schizophrenia, research suggests that measures of social functioning should be specific and measure areas of independence, social interaction styles, and daily activities (Birchwood et al., 1990; Dickerson, Boronow, Ringel, and Parente, 1999). The details of measurements for social functioning were as follow:

APA (1994) developed Global Assessment of Functioning (GAF) to measure of an Individual's overall functioning; the evaluation integrated the aspects of psychological, social and occupational functioning. The 3 Constructs (social and interpersonal functioning, occupational functioning, and psychological functioning) provides a global rating of clinical severity across psychiatric diagnoses with three areas examined by the GAF are: a) Psychological - obsessions, panic

attacks, b) Social and Interpersonal - maintaining friendships, personal hygiene, etc., and occupational work attendance, ability to follow directions. GAF a single measure of overall impairment caused by mental factors and was introduced by APA (1987) within the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM), a reference publication used to standardize diagnostic categories and conditions. The GAF Scale represents the fifth stage of the multi-axial assessment process that clinicians and physicians may use to determine an individual's level of psychosocial functioning: axis I - Clinical Disorders (anxiety, dementia, etc.), axis II - Personality Disorders (OCD, aggressive, etc.), axis III - General Medical Conditions (diabetes, heart disease, etc.), axis IV - Social and Environmental Problems (life stressors, family issues, etc.), and axis V - Global Assessment of Functioning.

The GAF takes 10–15 min to administer The GAF scoring system works on a numeric scale from 0-100, broken down into groups of ten. Sum scores with lower levels reflecting more disablement within the dimension that is most adversely affected. The GAF indicated sound psychometric properties, pearson's correlation coefficients between the baseline GAF score by the clinician and the baseline GAF score by the test nurse was 0.26 ($P < 0.001$) and between the baseline, GAF score by the clinician and the follow-up GAF score by the test nurse was 0.19 ($P < 0.001$). Significant associations were found between the clinicians' GAF score and diverse scales measuring disease severity of depressive symptoms, being the Montgomery-Äsberg depression Rating Scale (MADRS), the Beck Depression Inventory-revised (BDI-II) and the Brief Symptom Inventory (BSI) total score

Tyrer (1990) developed The Social Functioning Questionnaire (SFQ) to measure of general social functioning 5 Constructs: a) self-care skills, b) domestic

skills, c) community skills, d) social skills, and e) responsibility. SFQ, an eight-item self-report scale (score range 0–24). SFQ It is divided into 5 sections, each containing 8 items to be completed for each person: Self-care Skills, Domestic Skills, Community Skills, Social Skills and Responsibility. SFQ rate on their functioning according to how they have been feeling over the past 2 weeks on a scale of 1 to 4 (1 = Most of the time, 2 = Quite often, 3 = Sometimes, 4 = Not at all). Additionally, SFQ was developed from the Social Functioning Schedule (SFS), a semi-structured interview. The questionnaire is to be completed by care staff on the basis of the person's observed performance in the past month. SFQ takes less than 4 minutes to complete. SFQ show cronbach's α = .64 (Oltmanns, Melley, and Turkheimer, 2002).

Remington and Tyrer (1979) developed The Social Functioning Schedule (SFS) to assessing social functioning is described which is particularly suited for assessing non-psychotic patients. The 8 Constructs were individual concerned, household tasks, financial matters, child care, relationship with parents, sexual relationships, social contacts, and spare time activities. SFS, a semi-structured interview covering 14 domains of function each rated on visual analogue scales (0–100mm), SFS took between 20 and 30 minutes to complete. SFS, a mean score calculated for all those domains that apply to the individual concerned); work (occupation), household tasks, financial matters, child care, relationship with parents, sexual relationships, social contacts, and spare time activities (with separate ratings of performance and stress components for work, household tasks, financial matters and spare time) (Remington and Tyrer, 1979). SFS demonstrate good psychometric properties, Interrater reliability by the intraclass correlation coefficient for each part of the schedule ranged from 0.45to 0.81 on audiotape ratings and from 0.50 to 0.80 with

independent interviews. A version of the schedule for informants gave similar levels of agreement. Ratings from patients and informants taken independently revealed highly significant agreement on all sections of the schedule ($p < 0.01$) (Remington and Tyrer, 1979).

Birchwood et al. (1990) developed The Social Functioning Scale (SFS) to enable assessment of social functioning, relevant to the needs and impairments of individuals with schizophrenia. SFS was developed to measure different areas of functioning that are crucial to the community living of individuals with schizophrenia. The scale was designed with two requirements in mind: (1) to provide a detailed assessment of patients' strengths and weaknesses, both to guide an intervention and to provide the clinician with possible specific goals, and (2) the ability to synthesize such detailed reporting into coherent, reliable scales (Birchwood, Smith, Cochrane, Wetton and Copestake, 1990). The SFS consists of 71 items measuring about patients' abilities and performance in seven areas: Social Engagement, Interpersonal Behavior, Independence-Performance, Recreation, Pro-Social, Independence-Competence, and Employment / Vocation. Items are rated on a 4-point Likert scale that ranges from very poor (1) to exceptional (4). The method of assessment used is based on the enumeration of a series of skills and/or basic social behaviors whose presence or frequency is reported, avoiding, when possible, the judgments of the informants. It takes 20–30 min to administer the scale. Among its characteristics, it is worth mentioning the differentiation — not sufficiently clarified by other scales — between: a) Competence and performance in the area of Independence: it distinguishes between the capacity of autonomic confidence (competence) and the practical performance of this autonomy (performance); b) Leisure activities and

prosocial activities: it allows independent assessment of solitary leisure activities and those that imply participation and social interaction. SFS depicts cronbach alphas for the seven subscales ranged from 0.60 to 0.88 with a score of 0.81 for the full scale. Mean item-total correlations varied between 0.36 and 0.51 within the seven subscales, with 0.66 for the full scale. Mean inter-item correlations were somewhat lower; ranging from 0.17 to 0.37 within the subscales, and with 0.51 for the full scale. The full scale correlated $r > 0.65$ with all subscales. The SFS full scale score correlated significantly with the GAF Function score in both clinical groups with medium to large size effects (SZ: $r = 0.27$, $p < 0.05$; BD: $r = 0.46$, $p < 0.01$)

Sarawat, Rao et al. (2006) develops the Social and Occupational Functioning Assessment Scale (SOFAS) to measures purely the level of social and occupational functioning, without taking symptoms into account. The SOFAS is a new scale that differs from the Global Assessment of Functioning (GAF) Scale in that it focuses exclusively on the individual's level of social and occupational functioning and is not directly influenced by the overall severity of the individual's psychological symptoms. Also in contrast to the GAF Scale, any impairment in social and occupational functioning that is due to general medical conditions is considered in making the SOFAS rating. The SOFS is an observer rating scale and can be used by mental health professionals, family carers or professional care providers who are familiar with the patient. Ratings should be based on patient's behavior during the last 1 month. The 3 constructs cover self-care and activities of daily living, communication and interpersonal relations, and instrumental living skills and work.

SOFAS rate on 5 likert scale; 1=no impairment, 2=mild impairment, 3=moderate impairment, 4=severe impairment, 5=extreme impairment. A description

of each anchor point is provided to reduce ambiguity and arbitrariness in responding. Higher scores on the SOFS indicate greater impairment in social functioning. The higher scores reflect better functioning. SOFAS show the coefficient was 0.91 for the total scale. Test–retest reliability for the total SOFS score as indicated by the intraclass coefficient (ICC) was 0.95 and for individual items it ranged from 0.73 to 0.96. Additionally, SOFS total score was significantly negatively correlated with the SOFAS score (r =0.70, P b0.001) indicating that it is tapping the domain of social functioning. SOFS total score was significantly positively correlated with the PANSS (r =0.39, P b0.001) and the negative symptom score (r =0.70, P b0.001). Discriminant validity show significant after the analysis of covariance (F =17.60, p b000, df =6.63).

Morosini et al. (2000) developed The Personal and Social Performance scale (PSP) to assessment social functioning of four main domains (socially useful activities, personal and social relationships, self-care and disturbing and aggressive behaviours) in schizophrenia. The PSP is a 100-point single-item rating scale, subdivided into 10 equal intervals. The ratings are based mainly on the assessment of patient's functioning in four main areas: socially useful activities, personal and social relationships, self-care, and disturbing and aggressive behaviors. PSP provides a score between 1 and 100 using a 6-point severity scale for each domain. Higher scores represent better personal and social functioning. The recall period is the past month. The scale takes approximately 10 – 15 min to complete. The newer PSP scale has been developed as a further improvement over the GAF and SOFAS, demonstrating good reliability and validity in patients with severe mental illness in an inpatient rehabilitation program and a stable outpatient population. Unlike the

SOFAS, the PSP scale specifies four areas to be rated, enabling the clinician to specifically identify where patients are impaired within the spectrum of these four functional domains that are representative of the spectrum of functioning in schizophrenia. A single-scale rating based on these four domains can also be independently assessed. Unlike the GAF and SOFAS, the PSP scale has demonstrated an ability to measure a functional construct of the disease, showing greater correlation with SLOF than the moderate correlations with the symptom-oriented PANSS or CGI-S scale. Furthermore, sensitivity to change of the PSP scale has been demonstrated after treatment interventions. A change on the PSP scale has been correlated with changes in symptomatology on the CGI-S and PANSS total scales pointing to some degree of relationship between this measure of functioning and psychotic symptoms. PSP indicated good psychometric properties, cronbach's alpha was 0.84, intraclass correlation coefficient=0.79, the inter-rater reliability was found to be high for PSP total score (ICC was 0.94, p =0.000) and the kappa value on 10 equal 10-point intervals was 0.56 (Z =17.92, p =0.000, n=16) and on a three-grouped level (mild, disabled and poor) was 0.82 (Z=14.97, p=0.000). The correlation between PSP and PANSS, CGI-S, QLS and GAF were significant but modest correlations between PSP and all measures (PSP and PANSS, ($r=-0.31$, $p\leq0.01$), PSP and CGI-S ($r=-0.27$, $p \leq 0.02$), PSP and QLS ($r=0.37$, $p \leq 0.01$) and PSP and GAF ($r=0.35$, $p \leq 0.01$)). The negative correlations between PSP and PANSS and PSP and CGI-S are as expected as a high score on PSP (better functioning) should correlate with a lower score on PANSS (patient is less symptomatic) and on CGI-S (less severe). As predicted in the hypotheses, there were significant modest relationships between the CGI-S and the PSP and other functional measures.

SOFS is a brief measure of functional status in persons with schizophrenia and easy to administer measure of social functioning for use in clinical settings. It has adequate psychometric properties in terms of reliability and validity. Besides, SOFS assess social functioning independent of symptoms and is behavioral anchors or an objective description of the degree of impairment. Moreover, SOFS not only assess the ability to look after oneself and maintain daily activities but also assess the instrumental and social skills to manage one-self and live in the community. Therefore, SOFS is the instrument to measure social functioning for this study.

Summary

The literature shows that there has been some of research investigating the phenomenon of psychotic symptoms for persons with schizophrenia. The majority of reports guide the conceptual framework of the study and the measurement.

For the current study, the predictor variables are coping, medical use Self-efficacy, expressed emotion, stressful life events, social support, and social functioning. Additionally, the outcome variables are psychotic symptoms.

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CHAPTER III

Methodology

This chapter describes the research design and methodology used in the current study. The research design, population and sample, instrumentation, protection of the rights of human subjects, data collection, and data analysis are detailed.

Research design

In the current study, a cross-sectional descriptive correlation design was employed to examine the predicting factors of psychotic symptom among Thai schizophrenic persons misusing methamphetamines.

Population and sample

Population

The target population was individuals who had a principle diagnosis of schizophrenia and had misused methamphetamine for more than 30 days before admission, and who had attended at an inpatient unit in Thailand hospital, aged 19-60 years old. The study settings were tertiary hospitals with a large number of persons with schizophrenia and methamphetamine misuse.

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Sample

Schizophrenic persons misusing methamphetamines who attended at an inpatient unit in 1 of 8 setting of psychiatric and substance misuse service in Thailand were invited to participate in this study using multi-stage sampling technique. The study's inclusion criteria were as follows.

1) Aged between 19-60 years
2) Principle diagnosis of schizophrenia based on the DSM IV criteria (APA, 2000) and evidence of methamphetamine misuse.
3) A Brief Psychotic Rating Scale score less than 36.
4) Admission as an inpatient case
5) Mentally alert
6) Able to communicate in Thai
7) Willing to participate in this study

Participants were excluded if they had any of the following criteria

1) Have major medical complications such as hypotension, seizure, and tremor
2) Have physically unstable at 72 hours after admission
3) Developed an severe psychiatry such as delusion and hallucination

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Sample size determination

In general, SEM requires a larger sample relative to other multivariate approaches. The most common SEM estimation procedure is Maximum Likelihood Estimation (MLE) which is the procedure that iteratively improves parameter estimates to minimize a specified fit function. Sample size in the range of 100-400 is suggested. In addition, communalities represent the average amount of variation among the measurement/indicator variables explained by the measurement model. Larger sample size is requiring as communalities become smaller. Models containing multiple constructs with communalities less than 0.5 also require larger sizes for convergence and model stability. Sample sizes of 300 are requiring (Hair, 2010).

In summary, the hypothesized model of current study contained 10 observed variables and 10% of the total sample size was added to take into account from drop outs. Thus, a total number of samples were 220. However, to decrease data deviate more from the assumption of multivariate normality and the communalities become small. Over 300 samples were recommended. Therefore, 300 samples were required for this study.

In this study, sample size of first round of screening was 354. A total of 343 meet the criteria of BPRS (< 36) and 324 persons with schizophrenia and methamphetamine misuse were collected. Eleven participants dropped out from the study, which four participants dropped out because of lack of concentration, three participants dropped out because of side effect of antipsychotic drug, and four dropped out because unsecure to complete the questionnaire and expose themselves of addiction.

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Sampling method

A multi-stage sampling procedure was used for a probability sample of persons with schizophrenia and methamphetamine misuse. Step to recruit the participants are as follows

i) There are four regions in Thailand: Central, Northern, North-Eastern, and Southern regions (Regional Data Exchange System (RDES), 2008). The criteria for the probability hospital/institute were: a) Government hospital; b) Tertiary care hospital; c) has psychiatric and substance abuse services.

ii) Based on the health are services in Thailand, three military hospital, eleven psychiatric hospitals, and seven drug dependence treatment centers in Thailand were random sampling based on Thai type of hospital justification. Whereas, there were 4, 1, 2, and 1 hospital/institute that meet the criteria in Central, Northern, North-Eastern, and Southern regions, respectively.

iii) The participants were recruited from eight settings. The list of participants was obtained from the psychiatrist or psychiatric nurse of the selected hospital. The participants were selected by purposive sampling technique based on the inclusion criteria.

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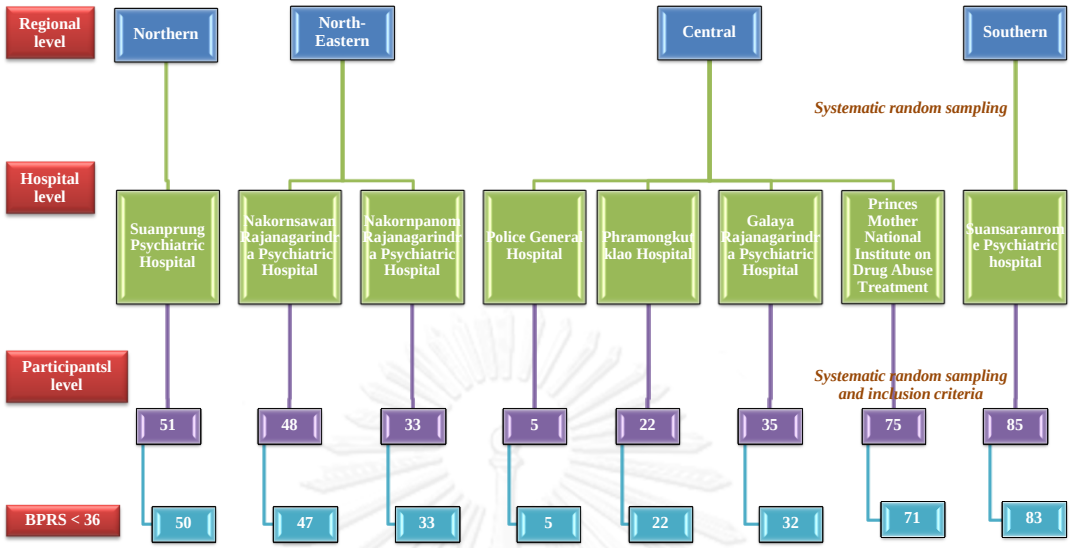

Figure 3. 1 he sampling selection with a multi-stage sampling

Instrumentation

The instruments in this study consisted of: 1) demographic characteristics questionnaire, 2) Brief Psychiatric Rating Scale (BPRS), 3) The Brief COPE, 4) Self-efficacy for Appropriate Medication use Scale, 5) Family Expressed Emotional Scale, and 6) Stressful life event questionnaire, 7) Social Functioning Scale (SOFS), and 8) Social support questionnaire. A description of each instrument is presented as follows:

1. Demographic questionnaire:

Personal data sheet was developed by the investigator. This instrument was used to collect demographic and socioeconomic data including age, gender, income, education level, and medical history, age at onset of illness, number of readmission, history of illness, numbers of negative life events and history of methamphetamine use.

2. Psychotic symptoms

The Brief Psychiatric Rating Scale (BPRS), was translated into Thai language by Kittirattanapiboon (2001) from the original version of The Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962), is a one-page, semi structured interview, with an three subscales which cover 18 common psychiatric symptoms as following: 1) Positive psychotic symptoms 2) Negative psychotic symptoms, and 3) Affective symptoms, 18-item rating scale is based upon observation and verbal report by the persons (Overall and Gorham, 1962 cited in Kenedy, 1994).

Psychometrics properties

Minimum interrater reliability with a criteria rater for each BPRS subscale was .80 or higher ($P < .001$, intraclass correlation coefficient), and internal consistency (for one sample) was good. The inter-rater reliability between the researchers with 2 expert psychiatric nurses was .85. The reliability for the questionnaire was .87 (Stithyudhakarn, 2009).

Scoring and interpretation of scores

The BPRS contained 18 items. The total scale score ranges from 18-126, with a 7-point response option ranging from not present to extremely severe. Higher scores indicate more severe psychotic symptoms (Overall & Gorham, 1962).

Total score of BPRS	Interpretation
< 18	Not present the symptoms
18-35	Very mild
36-53	mild
54-71	moderate
72-89	moderate severe
90-107	severe
>108	Extreme severs

Reliability of BPRS was evaluated by inter-rater and intraclass correlation coefficient. Inter-rater reliability (IRR) is a measure of reliability used to assess the degree to which different judges or raters agree in their assessment decisions. Inter-rater reliability is useful because human observers would not necessarily interpret answers the same way; raters may disagree as to how well certain responses or material demonstrate knowledge of the construct or skill being assessed. The range of the IRR may be between 0.0 and 1.0. Intra-class correlation coefficient (ICC) is "the proportion of variance of an observation due to between-subject variability in the true scores". The range of the ICC may be between 0.0 and 1.0.

In current study, Inter-rater reliability was 0.98 and Intra-class correlation coefficient was 0.88.

3. Coping

The Brief COPE, was translated into Thai by the researcher from the original of The Brief Cope instrument (Carver, 1977), which is a self-report questionnaire and is a multidimensional coping inventory to assess a number of different coping behaviors and thoughts a person may have in response to a specific situation among adults for all condition, illnesses or non-illnesses over the past few weeks.

The Brief Cope Scale consists of 3 constructs Emotional focused coping strategies (10 items), problem focused coping strategies (6 itmes), and dysfunctional coping strategies (12 items). The 28 items covering 14 dimensions: self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, religion, and self-blame.

In this study, after translation into Thai, the researcher assessed the validity of the measurement using seven content experts, including two psychiatrist, a psychologist, three nursing instructors, and a psychiatric nurse who were advanced practice nurses (APN). Most experts rated each item as 3 or 4 (from 1 = not relevant to 4 = very relevant) which met the criteria for appropriate content validity (Polit & Hungler, 1999). In this study, the CVI was 1.0 (see Appendix C).

Psychometrics properties

Internal consistencies ranged from 0.51 to 0.99. In the meantime, the test-retest Intraclass Correlation Coefficient (ICC) ranged from <0.00 to 0.98. Sensitivity of the scale was observed in nearly all of the domains with Effect Size Index (ESI) ranged from 0.00 to 0.49. Internal consistency for the two coping categories was adequate (α= .81 for emotion-oriented coping; α= .84 for problem oriented coping). Internal reliabilities for the 14 subscales range from alpha = 0.57-0.90 (Carver, 1997).

Scoring and interpretation of scores

Each of the 14 scales is captured by two items, and responses are made on 4-point scales (0 – I haven't been doing this at all; 3–I've been doing this a lot). The three main coping scores were calculated: emotion-oriented subscales (sum of seeking emotional support, positive reframing, humor, acceptance, religion, and with possible scores ranging from 0 to 30); problem-oriented subscales (sum of active coping, seeking instrumental support, and planning scales, with possible scores ranging from 0 to 18); and dysfunctional subscale (sum of behavioral disengagement, denial, self-distraction, self-blame, substance use scales, , venting, , with possible scores ranging from 0 to 36). The higher score represents greater coping strategies used by the respondents (Carver, 1997). In addition, subscales representing adaptive and maladaptive coping were summed separately, with higher scores indicating more frequent use of that strategy.

In current study, pilot study was undertaken with persons with schizophrenia and methamphetamine misuse. The Cronbach's Alpha was 0.96 in (N = 30), and 0.91 (N = 313). The item total correlation range from 0.35-0.76, construct reliability was 0.99, and test-retest reliability was 0.99. For the 3 sub construct, a) emotionally-focused coping strategies shown Cronbach's Alpha was 0.83, the item total correlation range from 0.31-0.65, and test-retest reliability was 0.96; b) Problem-focused coping strategies shown Cronbach's Alpha was 0.80, the item total correlation range from 0.50-0.63, and test-retest reliability was 1.00; and c) Dysfunctional coping strategies shown Cronbach's Alpha was 0.81, the item total correlation range from 0.28-0.55, and test-retest reliability was 0.90.

Additionally, content validity was evaluated by seven experts, including two

psychiatrists, three nursing instructors, one psychologist, and one psychiatric nurse who are advance practice in nursing (APN). Most experts rated each item of measurement as 3 or 4 (from 1 = not relevant to 4 = very relevant) which met the criteria for appropriate content validity (Polit and Hungler, 1999). The result of content validity index of this study was 0.82. Construct validity was tested by confirmatory factor analysis in 313 persons with schizophrenia and methamphetamine misuse. The result indicated that the measurement model fit with the empirical data. The result is presented in Table 1.

Table 3. 1 Construct reliability and average variance extracted of brief cope

Variable	Construct reliability ($Pc > 0.60$)	Average variance extracted ($Pv>0.50$)
Coping	0.90	0.84

4. Self-efficacy

The Self-efficacy for Appropriate Medication Use Scale translated into Thai language by Polsook (2012). The original version developed by a multidisciplinary team with expertise in medication adherence and health literacy. Self-efficacy is the key construct in social cognitive theory by Bandura. Self-efficacy refers to the belief or confidence that one can successfully perform a specific action required to attain a desired outcome. SEAM measure consists of two dimensions; first is Self-efficacy for taking medications under difficult circumstances, and seconds is Self-efficacy for continuing to take medications when circumstances surrounding medication-taking are uncertain. Patients were asked to indicate, under a number of different circumstances, their level of confidence about taking medication.

Psychometrics properties

This instrument has been employed patient with chronic disease such as coronary heart disease and psychiatric illness (Risser et al., 2007). The Thai versions of the instruments were translated by Poolsuk (2012) through translation-back translation method. Test-Retest Reliability was moderate (Spearman's $\rho = 0.62$, $p = 0.0001$). Criterion-Related Validity was strongly correlated with medication adherence as assessed by the Morisky scale (Spearman's $\rho = 0.51$, $p = .0001$).

Scoring and interpretation of scores

The SEAMS consisted of 13- items. Patients were asked to indicate, under a number of different circumstances, their level of confidence about taking medication correctly (1= not confident, 2= somewhat confident, and 3= very confidence). The potential score for the 13-items scale ranged from 13 to 39. Higher scores indicated higher levels of self-efficacy for medication adherence.

A total score range from 13 to 39. A higher SEAMS score indicated a higher self-efficacy in medication adherence. The levels of SEAMS were categorized into three levels (low, moderate, and high) by employing the range between minimum and maximum scores of the SEAMS and dividing it by three (Risser et al., 2007).

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Score	Interpret
1-13	Low
14-27	Moderate
28-39	High

In current study, cronbach's Alpha of medication use self-efficacy was 0.89 in pilot study (N = 30), and 0.91 (N = 313). The item total correlation range from -0.07-0.66, and test-retest reliability was 0.97.

5. Expressed Emotional

Expressed emotion of Family caregiver scale is a modification of Thai-Expressed Emotion Scale (TEES) (Sunpaveravong, 2005) and contains 49 items. TEES composed of seven constructs: critical comments, hostility, positive remarks, warmth, and emotional over-involvement in the interactions of family caregivers, emotional under involment, and emotional regulation.

2012, TEEFC-PNAS was modifying by Wongsin (2012) and namely Expressed emotion of Family caregiver scale cover positive expressed emotion (5 items) and negative expressed emotion (11 items).

Psychometric properties

In patients with schizophrenia (Rungruangsiripan, 2009), the reliability coefficient was .89 (positive aspect was .89, negative aspect was .76), content validity was .90.

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Scoring and interpretation of scores

TEES is a 16-item; on a four-point Likert scale, ranging from strongly agrees, agrees, not agree, and strongly not agree.

Scoring	Meaning	Positive aspect	Negative aspect
strongly agree	strongly agree with the sentence	1	4
Agree	Agree with the sentence	2	3
not agree	not agree the sentence	3	2
strongly not agree	strongly not agree the sentence	4	1

In the present study, Cronbach's Alpha of Family Expressed Emotional Scale was 0.76 in pilot study (N = 30), and 0.87 (N = 313). The item total correlation range from -0.33-0.72, and test-retest reliability was 0.95. For 2 sub constructs; a) negative expressed emotion shown Cronbach's Alpha was 0.86, the item total correlation range from 0.06-0.65, and test-retest reliability was 0.93; and b) positive expressed emotion shown Cronbach's Alpha was 0.91, the item total correlation range from 0.70-0.79, and test-retest reliability was 0.91. In this study, the construct validity of Family Expressed Emotional Scale was tested by confirmatory factor analysis in 313 persons with schizophrenia and methamphetamine misuse. The result indicated that the measurement model fit with the empirical data. The result is presented in Table 2.

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Table 3. 2 Construct reliability and average variance extracted of Family Expressed Emotional Scale

Variable	Construct reliability (*P*c > 0.60)	Average variance extracted (*P*v>0.50)
Expressed emotion	0.99	0.90

6. Stressful life events

Stressful life events questionnaire was translated into Thai language by the researcher (Roohafza et al., 2011). The stressful life events questionnaire is a self-report questionnaire and consists of 2 Constructs; The self-perceived frequency of stressful life events and the self-perceived intensity of stressful life events.

TSLEQ is 46 items on 6-point Likert scales (0 = never, 1 = very mild, 2 = mild, 3 = moderate, 4 = severe, 5 = very sever). under the eleven domains as Home life, Financial problems, Social Relations, Personal Conflicts, Job Conflicts, Educational Concerns, Job Security, Loss and Separation, Sexual life, Daily life, and Health Concerns.

Psychometric properties

TSLEQ demonstrated coefficient alpha was 0.92 (Roohafza, Rameani et al., 2011) and correlation coefficient was moderately significant among domains of the SLE questionnaire and GHQ-12score.

Validity: Concurrent criterion validity of the stressful life events questionnaire was computed by correlating the total scores of each domain with GHQ-12. The correlation between stressful life events questionnaire and GHQ-12 score was moderately significant (r = 0.31, P\0.001).

Scoring and interpretation of scores

There were 7 items under the Home life domain, 5 items under the

Financial problems domain, 4 items under the Social Relations domain, 5 items under the Personal Conflicts domain, 4 items under the Job Conflicts domain, 4 items under the Educational Concerns domain, 5 items under the Job Security domain, 4 items under the Loss and Separation domain, 4 items under the Sexual life domain, 2 items under the Daily life domain, and 2 items under the Health Concerns domain. If participants had not experienced the stressful life events, they answered never. But others had stressful life events at 6 months ago, their responses to express stress intensity were rated from 1 = very mild to 5 = very sever. The total score of each domain was the sum of the raw score of the 46 items.

The total score of each domain was the sum of the raw score of the 46 items. The higher score represents high frequency and intensity of stressful life events by the respondents

In this study, after translation-back translate into Thai, the researcher assessed the validity of Stressful life events questionnaire using seven content experts, including two psychiatrist, psychologist, three nursing instructors, and a psychiatric nurse who were advanced practice nurses (APN). Most experts rated each item as 3 or 4 (1 = not relevant to 4 = very relevant) which met the criteria for appropriate content validity (Polit and Hungler, 1999: 419). In this study, the CVI was 1.0. In addition, cronbach's Alpha of Stressful life events questionnaire was 0.96 in pilot study (N = 30), and 0.97 (N = 313). The item total correlation range from 0.27-0.92, and test-retest reliability was 1.00.

7. Social support

The Social Support Questionnaire (SSQ) translated to Thai by Hanuchareankul (1988) from the original of the SSQ (Schaefer, Coyne, and Lazarus, 1981). This

instrument was modified from the conceptualization of social support by Schaefer, Coyne, and Lazarus (1981), from the conceptual definitions of social support (Kahn, 1979), and from the definitions from network theory (Barnes, 1972). The SSQ consist of two parts. Only part two was designed to measure informational and emotional support whereas the Norbeck Social Support Questionnaire (NSSQ) was designed to measure tangible support. Items from the SSQ and the NSSQ were slightly modified. The SSQ was designed to measure three types of social support: 1) the perceived informational, 2) emotional, and 3) tangible sources of social support. The SSQ consisted of 21 items of three source of support; family members, friends, and health care providers and each type of support consist of seven items: One item for informational support, four items for emotional support, and two items for tangible support. Each part consists of 7 items.

Psychometric properties

SSQ presented coefficient alpha of 0.81 (Schaefer et al., 1981) for the Informational Support Scale and 0.95 for the Emotional Support Scale. They also reported a correlation of 0.66 for test-retest reliability 9 months apart for the Emotional support Scale.

Validity: The Criterion-related validity of SSQ was supported in that emotional support was inversely associated with depression and negative morale. For the Tangible Support Scale, Norbeck et al. reported an internal consistency of 0.89.

In Thailand, Hanuchareonkul (1988) report test-retest within a period of 3 days with 10 patients. The correlations between time one and time two were 0.90 for the Total Emotional, and Tangible Support Scale, and 0.89 for the Informational support Scale. Internal consistency was established after completion of data collection from

the 112 cancer patients for this study. The four emotional support items and 0.61 between the two items of tangible support. The coefficient alpha for the total SSQ was 0.97.

Scoring and interpretation of scores

The participants then rated the person on this list as to the degree of support for each item ranging from 0 = not at all to 4 = a great deal. Scores for the three types of support from all sources were summed to produce a total social support score. Scores for the three types of support from all sources were summed to produce a total social support score. The higher scores depict the higher level of social support.

Total score of SSQ	**Interpretation**
0-28	Low
29-56	Moderate
57-84	High

In this study, Cronbach's Alpha of social support Questionnaire was 0.91 in pilot study (N = 30), and 0.93 (N = 313). The item total correlation range from -0.38-0.79, and test-retest reliability was 0.96. Additionally, the construct validity of social support Questionnaire was tested by confirmatory factor analysis in 313 persons with schizophrenia and methamphetamine misuse. The result indicated that the measurement model fit with the empirical data. The result is presented in Table 3.3

Table 3. 3 Construct reliability and average variance extracted of social support Questionnaire

Variable	Construct reliability ($Pc > 0.60$)	Average variance extracted ($Pv>0.50$)
Social support	0.99	0.97

8. Social function

The Social and occupational functioning Scale was translated into Thai by the researcher (Saraswat et al., 2006) from the original Social and occupational Functioning Scale (SOFS). The SOFS is an observer rating scale and can be used by mental health professionals, family carers or professional care providers who are familiar with the patient. Ratings should be based on patient's behavior during the last 1 month. The concept of social functioning is, however, complex. It comprised of two essentially main components: (i) the ability to look after oneself and maintain daily activities and (ii) the instrumental and social skills to manage oneself and live in the community.

The emphasis on social functioning as a treatment goal for schizophrenia has generated the need for appropriate and psychometrically sound assessment measures.

Psychometric properties

Reliability: SOFS shown the coefficient was 0.91 for the total scale. Test–retest reliability for the total SOFS score as indicated by the intraclass coefficient (ICC) was 0.95 and for individual items it ranged from 0.73 to 0.96.

Validity: The SOFS was compared with the SOFAS for establishing concurrent validity. Higher scores on the SOFS indicate poor functioning, while higher scores on the SOFAS indicate better functioning. The SOFS total score was significantly negatively correlated with the SOFAS score (r =0.70, P b0.001) indicating that it is tapping the domain of social functioning.

For Criterion validity, SOFS total score was significantly positively correlated with the PANSS positive symptom score (r =0.39, P b0.001) and the negative symptom score (r =0.70, P b0.001).

Scoring and interpretation of scores

Each item is rated on a 5-point Likert scale (1 = no impairment, 2 = mild impairment, 3 = moderate impairment, 4 = severe impairment, and 5 = extreme impairment). A description of each anchor point is provided to reduce ambiguity and arbitrariness in responding. Higher scores on the SOFS indicate greater impairment in social functioning. Total scores range from 14-17. Higher scores on the SOFS indicate greater impairment in social functioning.

In current study, after translation-back translates, the researcher assesses the validity of scale by seven content experts and the CVI was 1.00. In addition, cronbach's Alpha of Stressful life events questionnaire was 0.76 in pilot study (N = 30), and 0.94 (N = 313). The item total correlation range from -0.27-0.78, and test-retest reliability was 0.96.

Translation procedure for translated instruments

Translation procedure of measurement as follow:

1. According to Brislin's model, Brief COPE, Stressful life events scale, and Social and occupational functioning scale was translated in to Thai language by two instructors who have expertise in the English language at Language Institute, Chulalongkorn University.

2. The Thai version of Brief COPE, Stressful life events scale, and Social and occupational functioning scale were blindly back translation into English by two Thai English independent translators who each had taught English to graduate students for more than 10 years and a nurse instructor with expertise in psychiatric nursing who had studied abroad for more than 5 years.

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3. The back translated English version of instruments were compared with the original versions for consistency in meaning by two instructors who have expertise in the English language at Language Institute, Chulalongkorn University.

4. Content validity and cultural accuracy of items were examined by seven experts, including the two psychiatrist, psychologist, three nursing instructors, and psychiatric nurse who were advanced practice nurses (APN).

5. The researcher compared both versions in the original language, conducted checks with the translators and advisors, discussed the differences, and produced a final consensus version. The finally version of instruments were acceptable and reflect the meaning of each items.

6. The expert's degree of agreement was calculated. The content validity index for items (I-CVI) is calculate as the number of experts rate of either 3 or 4, divided by the total number of experts. The scale –level content validity index, universal agreement calculate method (S-CVI/UA) is the proportion of items on a scale for which experts had giving a rating of 3 or 4.

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Table 3. 4 Content validity Index of Instruments

Instruments	Mean I-CVI	S-CVI/UA	Mean Expert Proportion	Range of I-CVI per item
Brief COPE	0.96	0.99	0.96	0.86-1.00
- Emotionally-focused coping strategies	0.92	0.96	0.94	0.88-1.00
- Problem-focused coping strategies	0.88	0.90	0.92	0.84-1.00
- Dysfunctional coping strategies	0.90	0.92	0.90	0.84-1.00
Stressful life events questionnaire	0.99	0.99	0.99	0.86-1.00
Social functioning scale	1.00	1.00	1.00	1.00

7. Reliability of instruments was pilot tested in 30 persons with schizophrenia and methamphetamine misuse. The result as illustrate on table 3.4.

Table 3. 5 Testing psychometric properties of instruments

Instruments	Items and responses	Inter-rater (N=30)	Intraclass Correlation Coefficient
1. Brief Psychiatric rating scale (BPRS)	18 items Likert scale	0.98	0.88

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Table 3. 6 esting psychometric properties of instruments

Instrument	Validity		Reliability			
	Items and responses	CVI (N = 30)	Cronbach's alpha (N=30)	Cronbach's alpha (N=313)	The Item-Total Corre-lations (N=30)	Test-retest (N=30)
2. Brief COPE	28 items Likert scale	0.82	0.96	0.91	0.35-0.76	0.99
- Emotional focused coping strategies	10 items	0.92	0.91	0.83	0.31-0.65	0.96
- Problem focused coping strategies	6 items	0.88	0.92	0.80	0.50-0.63	1.00
- Dysfunctional coping strategies	12 items	0.90	0.89	0.81	0.28-0.55	0.90
3. Medication use self-efficacy	13 items Likert scale	-	0.89	0.91	-0.07-0.62	0.97
4. Family Expressed Emotional Scale	16 items Likert scale 0.99	0.90	0.76	0.88	-0.33-0.72	0.95
- Negative expressed emotion	11 items	0.89	0.74	0.86	0.06-0.65	0.93
- Positive expressed emotion	5 items	0.90	0.88	0.91	0.70-0.79	0.91
-						

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Instrument	Validity		Reliability			
	Items and responses	CVI (N = 30)	Cronbach's alpha (N=30)	Cronbach's alpha (N=313)	The Item-Total Corre-lations (N=30)	Test-retest (N=30)
5.Social support questionnaire	21 items Likert scale	-	0.91	0.93	0.38-0.67	0.95
6.stressful life event questionnaire	46 items Likert scale	1.00	0.96	0.97	0.27-0.92	1.00
7.Social Functioning Scale	14 items Likert scale	1.00	0.76	0.93	-0.02-0.78	0.96

Protection of human subjects

Participation of the respondents in the primary data collection was voluntary. Questionnaires were used with attached clear instructions. Written informed consent after explaining the objectives and expectations of the study was employed. The Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University approval was received on 18 March 2015 (COA.No. 053/ 2558) for use of these data. (Appendix E).

The participant's names were not addressed in the data; a code number was used to ensure confidentiality. There was neither cost nor any payment to participants in the study. However, after completing the questionnaire, each participant was given a pill case in appreciation for their participation

Data collection

Data collection was conducted after approval from The Ethics Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University and the IRB of 8 hospitals. It was carried out from March 20, 2015, through May 31, 2015. The steps involved in data collection were as follows:

Phase I: Conducted Pre study visit to evaluate the facility and the staff to determine whether they had the capacity to successfully support this study and initiated personal contact with a psychiatrist and a psychiatric nurse at each settings and invited them to be field supervisors for the data collection. In addition, the researcher was tested the psychometrics properties of the instruments with 30 participants and also asked permission to access the medical records from 8 potential settings.

Phase II: Research assistant training

Total ten research assistance was meet the criteria of graduate master degree in the field of mental health and psychiatric nursing and had at least 5 years of experience caring for psychiatric patient. They were trained to use all instruments, and at least 3 cases and inter-rater scores of BPRS were assessed. The training program takes for 3 hours. The training topics covered dissertation proposal, background of instrument, characteristic of instruments, psychometric properties, scoring, and interpretation. They were also trained to protect against and handle the risk during the time of participants complete the questionnaires.

Phase III: The researcher and data collection supervisor planned and discussed data collection.

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Phase VI: The researcher/research assistance asked for cooperation from a psychiatrist to invite participants who met the inclusion criteria and a psychiatrist was introducing the researcher and/or the research assistants to potential participants. The participants who met the criteria processed to the inform consent process listed below:

a. Information: The researcher/research assistance provided the information sheet and consent form to the participants. The information included the purpose of the study, confidentiality, estimated time required for completion (45-60 minutes), name, address, and telephone number of the researcher. Next, the researcher and research assistant informed the participants about the study objectives, methods, and asked for cooperation. The data were collected anonymously.

b. Comprehension: The researcher/research assistant allowed the participant to read the information sheet and consent form. The participant asked their relatives for cooperation as required.

c. Voluntariness: The participants who agreed to take part in this study were asking to sign an informed by the research/research assistance. They can withdraw from this study any time without penalty.

4. The participants were asked to complete the questionnaires. It took about 45-60 minutes for each participant to complete all questionnaires. If they cannot read the questionnaire by themselves, the researcher/research assistant would read for them.

5. The researcher/or research assistants checked the questionnaires for completeness of the data.

6. When completing the questionnaire, each participant was given a pill case in appreciation for their participation.

Data analysis

In preparation data analysis, the researcher checked and cleans the data. The Statistical Package for Social Science (SPSS) program version 22.0 used to analyze data and provide descriptive statistics. Linear Structural Relationship (LISREL) version 8.72 employee for the path analysis. An alpha level of .05 was set as the accepted level of significance for this study. The steps involved in data analysis as follows:

1. All data was double-checked to confirm the accuracy of the data file. The researcher used a frequency table to verify incorrectly keyed category variables. In addition, a summary of descriptive statistics will be used to help check the range of variables for incorrectly keyed category numeric values, number of sample, mean, median, and maximum and minimum values.

2. Missing data and outlier were investigated and questionnaires will be select for accuracy data check.

3. Descriptive statistics, including frequencies, means, and standard deviation were use to describe the demographic data and to examine the distribution of demographic and other major variables in the study.

4. The measurement models were tested for construct validity by confirmatory factor analysis.

5. Path analysis was used to analyze the hypothesized model because it can assess the direct effects and indirect effects of some variables that have been theorized

to be the causes of other variables (Meyers et al., 2006). The statistical assumptions underlying path analysis including normality of distribution, linearity of relationships, homoscedasticity, and multicollinearity will be examine.

6. Pearson's Product Moment correlations were used to test for bivariate relationships among pairs of variables and to assess multicollinearity among the independent variables.

7. Multiple regression analyses were used to compute a variance inflation factor and tolerance to examine multicollinearity among the major variables.

8. The hypothesized path model was tested and modified for best fit and parsimony. LISREL will be used to estimate the parameters of the path model associated with the study's specific aims. The overall model-fit-index will examined to determine how well the hypothesized model fit the existing data.

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CHAPTER IV

RESULTS

This chapter provides the analysis of the data from this research. Findings regarding the demographic characteristics of the participants and the ten major study variables derived from the descriptive statistical analysis are presented, and the preliminary analysis and analysis of the hypothesized model are displayed.

Characteristics of the study participants

Demographic characteristics of schizophrenic persons misusing methamphetamines

A total of 313 schizophrenic persons misusing methamphetamines, were included in this analysis. The findings revealed that the mean age of the participants was 31.45 years old (SD = 7.83, range = 19-58). They were predominantly male (87.9%), single (66.1%), and completed secondary and high school education (55.0%). Moreover, some of the participants were employee (27.80%), some were unemployed (22.4%), and some worked in the field of agriculture (22.0%). In addition, more than half of the participants (62%) had a monthly family income more than 10,000 baht (1 US dollar = 31 baht), and about of two-third of the participants (65.8%) had no financial problems. Finally, approximately about three quarters of the participants (69.0%) used universal healthcare coverage. The findings regarding demographic characteristics of the study participants are summarized as below (See table 4.1).

Table 4. 1 Demographic characteristics of schizophrenic persons misusing methamphetamines (n = 313)

Characteristics	Number	Percentage
Age (years)		
19-30	143	46.3
31-40	126	40.3
41-50	38	12.1
51-60	4	1.3
Gender		
Male	275	87.9
Female	38	12.1
Marital status		
Single	209	66.8
Marriage	54	17.3
Widowed	10	3.2
divorced	15	4.8
separated	25	8.0
Education		
None	14	4.5
Primary/elementary education	12	3.8
Secondary education	73	23.3
High school	87	27.8
Diploma/certificate	86	27.5
Bachelor’s degree or higher	20	6.4
Occupation		
Government official	15	4.8
Employee	89	28.4
Business person	64	20.4
Agriculturist	71	22.7
Unemployed	73	23.3
Housewife	1	0.3
Family income/month (Baht)		

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Characteristics	Number	Percentage
1,000 - 4,999	24	7.7
5,000 - 9,999	93	29.7
10,000 - 14,999	45	14.4
15,000 - 19,999	39	12.5
20,000 or more	110	35.1
Financial problems		
No	206	65.8
Yes	107	34.2
Medical payment		
Universal healthcare coverage	216	69
Social security service	12	3.8
Government reimbursement	20	6.4
Self-support	48	15.3
Welfare of Persons with disabilities and addiction	17	5.5

Regarding medical history, half of the participants (50.5 %) had the first time of diagnosis of schizophrenia between 2 to 10 years and most (83.4%) had been admitted 2-5 times. In addition, nearly half of them (47.0 %) have the duration of psychiatric illness between 1to 5 years. The comorbidity among persons with schizophrenia and methamphetamine misuse was Gastritis (3.3 %), Gastritis and hypertension (1.7 %), and asthma (1.2 %). Two-thirds of participants were treating as Antipsychotic drug (73.2%), and group therapy (87.2%). Most living with family (93.3%) (See table 4.2).

Table 4. 2 Medical history of schizophrenic persons misusing methamphetamines (n = 313)

Medical history	Number	Percentage
First time of diagnosis		
0-1 year	103	32.9
2-10 year	158	50.5
11-20 year	46	14.7
>20 year	6	1.9
Number of admitted		
2-5 times	261	83.4
6-10 times	39	12.5
>10 time	13	4.2
Duration of having psychiatric illness		
<1 year	80	25.6
1-5 years	147	47.0
6-10 years	33	10.5
11-15 years	33	10.5
15-20 years	15	4.8
>20 years	5	1.6
Physical illness		
none	276	88.3
Gastritis	10	3.3
Hypertension	5	1.7
Asthma	3	1.0
HIV	2	0.6
Thalassemia	2	0.6
Diabetes mellitus	2	0.6
Migraine	1	0.3
Renal failure	1	0.3
Hyperthyroid	1	0.3
Hypercholesterol	1	0.3
Gastritis and asthma	1	0.3

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Medical history	Number	Percentage
Gastritis and hypertension	4	1.2
Hypertension and renal failure	2	0.6
Diabetes mellitus, Hypercholesterol, and Hypertension	2	0.6
Treatment		
Pharmacotherapy		
None	3	1.0
Antipsychotic drug	229	73.2
antidepressant	1	0.3
Anxiolytic drug		
Antipsychotic drug and antidepressant	72	23.0
Antipsychotic drug, antidepressant, and Bupropion HCl	4	1.3
Antipsychotic drug and Propylthiouracil (PTU)	1	0.3
Antipsychotic drug and Antipsychotic drug and	1	0.3
Antipsychotic drug and AZT	2	0.6
Group Therapy	273	87.2
ECT	11	3.5
Living with		
Alone	21	6.7
Family	292	93.3

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Regarding Methamphetamine misuse history, nearly half of the participants used methamphetamine per day as 2-5 tabs (48.2 %). The top rout to take methamphetamine was smoking (91.1%) and more than half of the patients (62.3%) were concurrently smoking cigarettes.

Table 4. 3: Methamphetamine misuse history of schizophrenic persons misusing methamphetamines (n = 313)

Methamphetamine misuse history	Number	Percentage
Methamphetamine use		
Dose per day (1 tab = 0.09 g.)		
0.25-1 tab	137	43.8
2-5 tabs	151	48.2
6-9 tabs	21	6.7
>10 tabs	2	0.6
Route		
oral	20	6.4
smoking	285	91.1
Nasal	1	0.3
oral and smoking	1	0.3
Oral and nasal	5	1.6
Oral, smoking, nasal, and injection	1	0.3
Smoking status		
No	2	0.6
Ex-smoking	116	37.1
Smoking	195	62.3

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Characteristics of the study variables

Seven major variables in the currents study include psychotic symptoms, coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning. The detail regarding characteristics of each variable is presented as follows:

Psychotic symptoms

The total scores of the psychotic symptoms ranged from 18 to 126 points with a mean of 23.10 (SD = 4.75). The psychotic symptoms scores had a negative skewness value (0.47), thus indicating that most participants had scores of psychotic symptoms lower than the mean score. The kurtosis value of psychotic symptoms was a negative value (-.81), thus suggesting that the psychotic symptoms scores were shaped like a flattened curve. Based on the mean score, skewness, and the kurtosis value, it could be concluded that the participants had a very mild of psychotic symptoms (see table 4.4).

Table 4. 4 : Possible range, actual range, means, SD, skewness, and kurtosis of Psychotic symptoms (n = 313)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Psychotic symptoms	**18-126**	**18-34**	**23.11**	**4.75**	**0.47(3.26)**	**-.81 (0.50)**	**Very mild**

Coping

The total scores of coping ranged from 0 to 84 points with a mean of 44.10 (SD = 15.44). The skewness value of coping was moderately negative (-0.68), thus indicating that most participants had scores of coping lower than the mean score. The kurtosis value of coping was a positive value 0.20), thus suggesting that the coping scores were shaped like a flattened curve. The findings regarding the mean score and skewness value indicated that most participants had the frequent use of strategies of coping at low level (see table 4.5).

Table 4. 5: Possible range, actual range, means, SD, skewness, and kurtosis of coping (n = 313)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Inter pretation
Coping	**0-84**	**0-78**	**44.1**	**15.44**	**-0.68 (-4.6)**	**0.20(0.83)**	**Low frequency**
- Emotional focused coping strategies	0-30	0-30	16.65	6.29	-0.45 (-3.15)	-0.21 (-0.82)	
- Problem focused coping strategies	0-18	0-18	10.50	4.09	-0.47 (-3.32)	-0.06 (-0.17)	
- Dysfunctional coping strategies	0-36	0-35	16.73	7.55	-0.24 (-1.80)	-0.48 (-2.14)	

Expressed emotion

The total scores expressed emotion ranged from 1 to 64 points with an average mean of 2.31 (SD = 0.57). The skewness value of expressed emotion was moderately positive (0.40), thus indicating that one-third of participants had scores of expressed emotion higher than the mean score. The kurtosis value of expressed emotion was positive value (0.08), thus suggesting that the expressed emotion scores were shaped like a flattened curve. The findings regarding the average mean score and skewness value indicated that most participants had not agree the sentence of negative expressed emotion from the relative and most of them agree with the sentence in the positive expressed emotion**.**

Table 4. 6 : Possible range, actual range, means, SD, skewness, and kurtosis, of expressed emotion (n = 313)

Variable	Possible range	Actual range	Average Mean	SD	Skewness (Z value)	Kurtosis (Z value)
Expressed emotion	**1-64**	**16-64**	**0.57**	**9.65**	**0.36 (2.88)**	**0.10 (0.43)**
- Negatively - expressed emotion	1-40	10-40	2.62	0.72	-1.64	-1.32
- Positively-expressed emotion	1-24	6-24	2.25	0.84	3.13	-4.18

Medication use self-efficacy

The total scores of Medication use self-efficacy ranged from 13 to 39 points with a mean of 29.69 (SD = 6.58). The skewness value of Medication use self-efficacy was moderately negative (-0.33), thus indicating that most participants had scores of Medication use self-efficacy higher than the mean score. The kurtosis value of Medication use self-efficacy was negative value (-0.44), thus suggesting that the Medication use self-efficacy scores were shaped like a flattened curve. The findings regarding the mean score and skewness value indicated that most participants had high level of Medication use self-efficacy

Social support

The total scores of social support ranged from 0 to 84 points with a mean of 45.13 (SD = 18.11). The totals scores were positively skewed (0.14), thus indicating that most participants had scores of totals slightly higher than the mean score. The kurtosis value of totals was a negative value (-0.68), thus suggesting that the totals scores were shaped like a slightly flattened curve. Based on the mean score and skewness value, it could be concluded that a half of participants had a high level of social support (see

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Table 4.5). Regarding the average of the mean score, the highest support was emotional support (mean score = 26.54), followed by tangible support (mean score = 11.61), and information support (mean score = 6.99), respectively.

Table 4. 7: Possible range, actual range, means, SD, skewness, and kurtosis of social support (n = 313)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Social support	**0-84**	**0-78**	**45.1**	**18.11**	**0.14 (1.08)**	**-0.68 (0.83)**	**High**

Stressful life events

The total scores stressful life events ranged from 0 to 230 points with mean of 60.44 (SD = 53.32). The skewness value of stressful life events was moderately positive (1.15), thus indicating all of participants had scores of stressful life events average of all situation. The kurtosis value of stressful life events was positive value (0.51), thus suggesting that the stressful life events scores were in the level of very mild.

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Table 4. 8: Possible range, actual range, means, SD, skewness, and kurtosis ofStressful life events (n = 313)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Stressful life events	**0-230**	**0-227**	**60.44**	**53.32**	**1.15 (0.06)**	**0.51 (-0.07)**	**Very mild**

Social functioning

The total scores social functioning ranged from 1 to 70 points with an average mean of 22.6 (SD = 9.34). The skewness value of expressed emotion was moderately positive (1.82), thus indicating that one-third of participants had scores of expressed emotion higher than the mean score. The kurtosis value of expressed emotion was positive value (4.49), thus suggesting that the social functioning scores were normal distribution.

Table 4. 9: Possible range, actual range, means, SD, skewness, and kurtosis of Social functioning (n = 313)

Variable	Possible range	Actual range	average Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Social functioning	**1-70**	**17-70**	**22.6**	**9.34**	**1.82 (1.40)**	**4.49 (-2.05)**	**High**

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Preliminary study

Before path analysis was conducted, normality, linearity, homoscedasticity, and muticollinearity were tested in order to ensure that there was no violation of the underlying assumption. The results of normality, linearity, homoscedasticity, and multicollinearity testing are presented.

Normality testing

In the current study, descriptive statistics including mean, standard deviation, skewness and kurtosis were used to test normality of variables. The skewness of all variables ranged from -.23 to 4.48, and the kurtosis of variables ranged from -0.81 to 13.00 (see tables 4.3 - 4.6). In fact, an absolute value of 2.0 for skewness is considered a departure from normality (Li et al., 1998), and a value of univariate skewness greater than ± 3.0 indicates extreme skewness (Kline, 1998). According to Hair and colleagues (2006), the z value of skeweness and kurtosis not exceeding ± 1.96 which corresponds to a .05 level or ± 2.58 at the .01 probability level reflects a normal distribution. Then data with nonnormal distribution were transformed by using normal score (du Toit and du Toit, 2001) by LISREL version 9.2 that will automatically perform robust estimation of standard errors and chi-square goodness of fit measures under non-normality (Jöreskog and Wallentin, 2015) that ineffect structure of model by the Satorra-Benler (1988) method. Therefore, all variables in current study were assumed to be normal distribution and represent the population.

Linearity Testing

Multiple regression assumes that there is a linear relationship between the independent variables and the dependent variable. The linearity testing can be checked by the residual plot which is a visual examination of the scatter plot graph

between the standardized residual (y-axis) versus the predict values (x-axis). Nonlinearity is indicated when most of the residuals are above the zero line on the plot at some predicted values and below the zero line at other predict values (Tabachnick and Fidell, 2007). In other words, the assumption of linearity is met when the standardized residual values are randomly around the horizontal line. In the current study, the scatter plot between independent and dependent variables showed such a linear relationship (see appendix L2).

Homoscedasticity testing

Homoscedasticity means that the variance of error is the same across all levels of the independent variables (Osborne and Waters, 2002). This assumption can be tested by a visual examination of the plot of the regression of the standardized predicted dependent variable against the regression standardized residual. Homoscedastisticity is indicated when the residual plots are randomly scattered around zero (in the horizontal line) (Osborne and Waters, 2002). In the current study, the scatter plot of residuals showed the results from homoscedastic data (see appendix L3).

Multicollinearity testing

Two common criteria can be used to examine multicollinearity: 1) Pearson's correlation coefficients and 2) tolerance values and variance inflation factor (VIF). The correlation of two variables that does not exceed ± .9 indicates that there is no multicollinearity (Tabachnick and Fidell, 2006). In the current study, the correlation coefficients among the variables ranged from -.059 to 0.85 Thus, these correlation coefficients indicated no multicollimearity (see table 4.8).

In fact, the tolerance measures of multicollinearity among the independent variables (values ranging from 0 to 1) and the tolerance value that approaches zero indicates multicollinearity (Mertler and Vannatta, 2002). It is worth noting that the values of VIF that are greater than 10 indicate a cause of concern (Mertler and Vannatta, 2002). In the present study, the results of the multiple regression analysis indicated that the tolerance ranged from .66 to .95 (not approaching 0) and VIF ranged from 1.05 to 1.51 (not greater than 10) (see appendix L4). Thus, these results confirmed no violation for multicollinearity.

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Table 4. 10 : Bivariate relationships among psychotic symptoms, coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning.

Variables	Emotional focus coping strategies	Problem focus coping strategies	Dysfunc-tional coping strategies	Negative expressed emotion	Positive expressed emotion	Medi-cation use self-efficacy	Social sup- port	Stress ful life events	Social func-tioning	Psy-chotic symp-toms
Emotional focus coping strategies	1									
Problem focus coping strategies	.797**	1								
Dysfunc-tional coping strategies	.568**	.590**	1							
Negative expressed emotion	.184**	.286**	.436**	1						
Positive expressed emotion	.087	.151**	.346**	.857**	1					
Medica-tion use self-efficacy	.237**	.257**	.168**	.210**	.175**	1				
Social support	.237**	.194**	-.022	-.177**	-.237**	.109*	1			
Stressful life events	.291**	.309**	.303**	.250**	.115*	-.105*	-.091	1		
Social function	-.099*	-.059	.073	.114*	.110*	-.219**	-.098*	.255**	1	
Psychotic symptoms	-.117*	-.017	.094*	.118*	.039	-.150**	-.072	.084	.228**	1

**. Correlation is significant at the 0.01 level (1-tailed),* Correlation is significant at the 0.05 level (1-tailed).

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Principal analysis

1.1 Findings of research questions and hypothesis testing

The findings that answered the research questions and the results of the testing of the hypothesized model are described below:

Research question 1: What are the relationships among emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and psychotic symptoms among schizophrenic persons and misusing methamphetamines?

The relationships among ten major variables

Bivariate Pearson correlations were used to evaluate relationships among variables (see Table 4.7). The magnitude of relationships was determined by the following criteria: $r < .30$ = weak or low relationship, $.30 \geq r \leq .50$ = moderate relationship and $r > .50$ = strong or high relationship (Burn and Grove, 2005).

The results presented that Emotional focus Coping has a negative relationship with psychotic symptoms ($r = -.117$, $p < .05$) among persons with schizophrenia and methamphetamine misuse. Problem solving Coping has no significance correlation on psychotic symptoms ($r = -.017$, $p < .05$). In contrast, problem solving coping has a positive relationship with social support ($r = .194$, $p < .01$) and medication use self-efficacy ($r = .257$, $p < .01$). Dysfunctional Coping has a positive relationship with psychotic symptoms ($r = -.094$, $p < .05$) among persons with schizophrenia and methamphetamine misuse. Negative expressed emotion has a positive relationship with psychotic symptoms ($r = 0.118$, $p < .05$) and medication use self-efficacy ($r = .210$, $p < .01$). Social support has no significance correlation on psychotic symptoms

(r = -.072, p < .05) and stressful life event (r = -.091, p < .05). However, social support has a negative relationship with social function (r = .098, p < .05). Medication use Self efficacy has a negative relationship with psychotic symptoms (r = -.015, p < .01) among persons with schizophrenia and methamphetamine misuse.

Research question 2: Does the hypothesized model explain the psychotic symptoms among schizophrenic persons and misusing methamphetamines, including emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and does it adequately fit the data?

1. Hypothesis testing

1.1 Measurement model testing

Before testing the hypothesized model, a factor analysis was conducted to examine factor loading for each item and the goodness-of-fit indices of the measurement model and the data. In this study, three measure models were tested including social support, coping, and expressed emotion (see Appendix N).

The results of confirmatory factor analysis (CFA) revealed that the three measurement models had good overall model fit. The second-order CFA showed that all measurements had low Chi-square values resulting in a non-significant difference level of 0.05. The χ^2/df ratio was less than 3.00, with both GFI and AGFI values close to 1.00. The RMSEA values ranged from .00 to .02, indicating a validity of measurement constructs (See table 4.8).

Table 4. 11: Goodness of fit statistics of the measurement models

Measurement	χ^2	df	χ^2/df	p-value	GFI	AGFI	RMSEA
Social support	160.13	135	14.22	0.07	0.95	0.92	0.02
Coping	314.58	278	1.13	0.06	0.94	0.91	0.01
Expressed emotion	78.48	61	1.28	0.06	0.97	0.93	0.03

Abbreviations: χ^2, Chi-square**;** df, degree of freedom**;** RMSEA, Root Mean Square Error of Approximation**;** GFI, Goodness of Fit Index; AGFI**,** Adjust Goodness of Fit Index

After the overall measurement model had been accepted, the results of the loading with t-values and construct validity were examined. In general, based on an accepted level of .05, t-value test statistics needs to be more than ± 1.96 before the hypothesis could be rejected. In this study, the results revealed that most of the dimensions of the measurement had significantly low to high parameter estimates, which were related to their specific constructs and which validated the relationships among the observed variables and their constructs. The result indicating that reliability based on a confirmatory factor analysis support for the measure (see table 4.9-4.11).

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Table 4. 12: Maximum Likelihood Estimation factor loadings for the hypothesized measurement model of the Thai version of Brief COPE

Items in Brief COPE	Factor loading	SE	t	Standardized Factor loading	R^2
Emotional focus					
BC5	0.39	0.06	6.91	0.39	0.16
BC12	0.77	0.05	15.12	0.76	0.58
BC15	0.51	0.05	9.75	0.53	0.28
BC17	0.73	0.05	14.56	0.73	0.53
BC18	0.46	0.05	8.70	0.48	0.23
BC20	0.63	0.05	12.71	0.67	0.45
BC22	0.62	0.06	10.69	0.6	0.36
BC24	0.68	0.05	14.37	0.73	0.53
BC27	0.50	0.06	8.22	0.47	0.22
BC28	0.47	0.05	8.74	0.48	0.23
Problem focus					
BC2	0.64	0.05	12.46	0.65	0.42
BC7	0.69	0.05	13.68	0.7	0.49
BC10	0.49	0.05	9.65	0.53	0.28
BC14	0.61	0.05	12.18	0.64	0.41
BC23	0.55	0.05	11.27	0.61	0.37
BC25	0.68	0.05	12.49	0.65	0.43
Dysfunctional coping					
BC1	0.63	0.06	10.98	0.61	0.37
BC3	0.56	0.06	9.46	0.54	0.29
BC4	0.26	0.06	4.06	0.25	0.06
BC6	0.33	0.06	5.37	0.32	0.1
BC8	0.41	0.06	6.68	0.39	0.16
BC9	0.64	0.06	10.87	0.61	0.37
BC11	0.33	0.07	4.98	0.3	0.09
BC13	0.60	0.06	9.56	0.54	0.29
BC16	0.43	0.06	7.09	0.42	0.17
BC19	0.45	0.06	8.08	0.47	0.22
BC21	0.51	0.06	8.94	0.52	0.27
BC26	0.63	0.06	10.10	0.8	0.33
χ^2=291, df=276, χ^2/df=1.05, p-value=0.25, GFI=0.94, AGFI=0.91, RMSEA=0.01, CFI=1.00					

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Table 4. 13 : Maximum Likelihood Estimation factor loadings for the hypothesized measurement model of Expressed emotion

Items in Expressed emotion	Factor loading	SE	t	Standardized Factor loading	R^2
Negative					
EE1	0.74	0.05	14.07	0.77	0.59
EE2	0.61	0.05	11.33	0.66	0.44
EE3	0.68	0.05	13.10	0.71	0.50
EE4	0.62	0.05	11.79	0.66	0.44
EE5	0.71	0.06	12.34	0.64	0.41
EE6	0.73	0.06	12.18	0.71	0.51
EE7	0.75	0.06	11.85	0.68	0.47
EE8	0.74	0.06	13.08	0.72	0.51
EE9	0.64	0.05	12.11	0.65	0.42
EE10	0.57	0.05	10.56	0.56	0.32
Positive					
EE11	0.43	0.07	6.34	0.37	0.14
EE12	0.86	0.05	18.26	0.85	0.72
EE13	0.83	0.05	16.60	0.81	0.65
EE14	0.82	0.05	16.69	0.80	0.65
EE15	0.94	0.05	17.78	0.85	0.72
EE16	0.78	0.05	14.63	0.74	0.55

χ^2=78.48, df=61, χ^2/df=1.29, p-value=0.06, GFI=0.97, AGFI=0.93, RMSEA=0.03, CFI=1.00

Table 4. 14: Maximum Likelihood Estimation factor loadings for the hypothesized measurement model of Social Support

Items in Social Support	Factor loading	SE	t	Standardized Factor loading	R^2
Family	**0.83**	**0.10**	**8.64**	**0.83**	**0.68**
SS1	0.85	-	-	0.68	0.46
SS2	1.05	0.06	17.24	0.83	0.68
SS3	1.09	0.07	14.91	0.84	0.70
SS4	1.14	0.08	15.08	0.91	0.84
SS5	1.16	0.08	14.83	0.91	0.84
SS6	1.08	0.08	14.09	0.85	0.72
SS7	1.06	0.09	12.33	0.73	0.53
Health Care Team	**0.68**	**0.08**	**8.61**	**0.68**	**0.46**
SS8	1.05	-	-	0.84	0.71
SS9	1.01	0.04	25.10	0.88	0.77
SS10	1.03	0.05	19.01	0.85	0.72
SS11	1.05	0.05	19.54	0.90	0.80
SS12	1.06	0.05	19.54	0.88	0.77
SS13	1.01	0.07	14.06	0.70	0.49
SS14	0.92	0.07	12.79	0.64	0.42
Neighbors and friend	**0.46**	**0.07**	**6.69**	**0.46**	**0.21**
SS15	1.10	-	-	0.81	0.65
SS16	1.17	0.05	21.64	0.88	0.77
SS17	1.20	0.06	19.78	0.89	0.79
SS18	1.18	0.06	19.93	0.92	0.84
SS19	1.19	0.06	20.10	0.92	0.85
SS20	1.05	0.06	16.47	0.79	0.62
SS21	1.10	0.07	16.63	0.81	0.66

χ^2=160, df=135, χ^2/df=1.18, p-value=0.06, GFI=0.95, AGFI=0.92, RMSEA=0.02, CFI=1.00

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1.2 Model testing and modification

The reliability and validity based on the confirmatory factor analysis were support for the measurement and Path analysis was conducted to test the proposed model of psychotic symptoms.

1.2.1 Model identification

The hypothesized path model was drawn from The Stress vulnerability of schizophrenia and empirical literature. LISREL statistics was used to test this path model. Identification path model is a crucial process before testing a model (Norris, 2005) because the computer program will run when the model is only over-identification. According to Tabachnick and Fidell's (2007), over-identification is one with more data points than free parameters. The number of data points is {p (p+1)}/2, where p equals the number of observed variables (Tabachnick and Fidell, 2007: 695). In the hypothesized model, there were ten variables and 10 free parameters. The number of data points was 55 = {10(10+1)}/2. The hypothesized model had two fewer free parameters than data points. Thus, this model was over-identification which meant that it could be identified.

1.2.2 Model testing

According to the hypothesized model, the exogenous variable was coping, medication use self-efficacy, expressed emotion, stressful life events, social support, and social functioning, and psychotic symptoms served as endogenous variables. The process of model testing is presented as follows:

In the initially hypothesized model (see Figure 4.1), the researcher did not constrain or fix any parameter. The results showed that the model unfitted with the empirical data. The result demonstrated X^2= 76.85, χ^2/df = 5.48, = 0.92, GFI = 0.95, AGFI = 0.82, RMSEA = 0.12, R^2 = 0.11 (See Table 4.14). In order to decrease x^2 values, the modification indices, standardize residuals, and expected value suggested through the That-Epsilon metric (TE) and the Delta (TD) was used. Therefore, the proposed model was refitted to get a suitable model that fit the data.

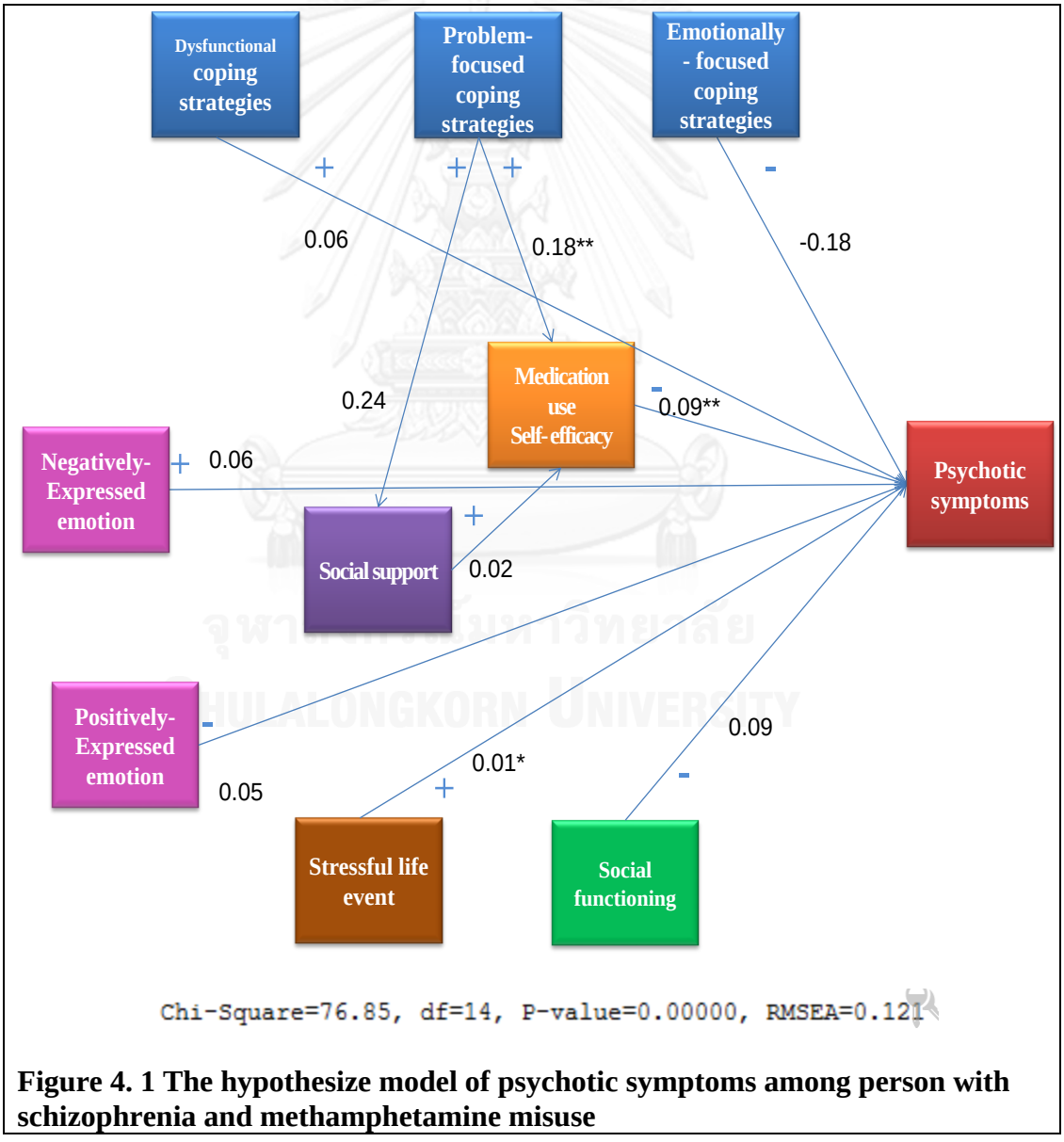

Figure 4. 1 The hypothesize model of psychotic symptoms among person with schizophrenia and methamphetamine misuse

The model was modified by using the modification indices and theoretical support. The final model was better than the hypothesize model and explained 54% (R^2 = .54) of the variance of psychotic symptoms. The fit index statistics were in the acceptable range more than the initially hypothesized model (see Table 4.13), and the largest (0.03) and smallest standardized residuals (-0.02) were less than ± 2. All of path coefficients are displayed in table 4.13.

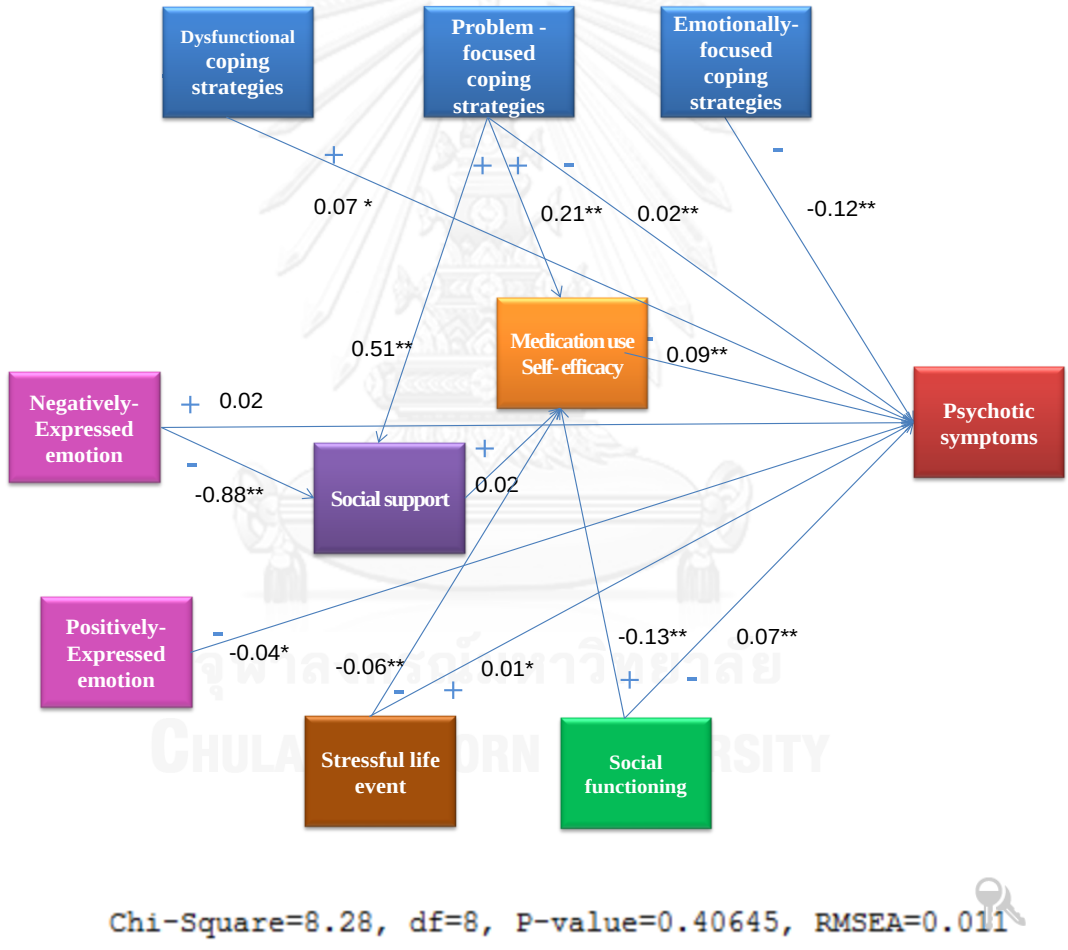

Figure 4. 2 The Final model of psychotic symptoms among person with schizophrenia and methamphetamine misuse

1.3 Evaluation of goodness of fit criteria

Regarding the research result found that the final model fit to the empirical data and explained 54% of the variance of psychotic symptoms among persons with schizophrenia and methamphetamine misuse (χ^2= 8.28, df = 8, p-value = 0.41, χ^2/df = 1.0, GFI = 0.99, AGFI = 0.96, CFI= 1.00, RMSEA = 0.01) (See table 4.14).

Table 4. 15 : The goodness of fit statistics between the initial hypothesized model and final model of psychotic symptoms among persons with schizophrenia and methamphetamine misuse

Relative fit index	Initial Model	Final Model	Goodness of Fit Statistics
χ^2	76.85	8.28	($p < 0.05$) non-significant
χ^2/df	5.48	1.23	< 2.00
CFI	0.92	1.00	≥ 0.95
GFI	0.95	0.99	≥ 0.95
AGFI	0.82	0.96	≥ 0.95
RMSEA	0.12	0.01	< 0.05
SRMR	0.06	0.01	< 0.05
PGFI	0.24	0.14	< 0.05
Largest S.	3.74	1.96	± 2.00
Smallest S.	-4.31	-1.34	± 2.00
R^2	0.11	0.54	> 0.50

Abbreviation: χ2 = Chi-square, df = degree of freedom, CFI = Comparative Fit Index
GFI = Goodness of Fit Index, AGFI = Adjust Goodness of Fit Index
RMSEA = Root Mean Square Error of Approximation,
SRMR = Standardized Root Mean Square Residual
Smallest s = Smallest standardized residual, Largest s = Largest standardized residual

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Table 4. 16: A path model of Psychotic Symptoms with Total effect (TE) Direct effect (DE) and Indirect effect (IE)

	Endogenous variables								
Exogenous	Social Support			Medication use Self-efficacy			Psychotic Symptoms		
Variables	DI	IE	TE	DI	IE	TE	DI	IE	TE
Emotional							-0.12**	-	-0.12**
Coping							(0.04)	-	(0.04)
							-0.26	**-**	**-0.26**
Problem-	0.51**	-	0.51**	0.21**	0.01	0.22**	0.06	-0.02**	0.04
solving	(0.09)	-	(0.09)	(0.04)	(0.02)	(0.04)	(0.04)	(0.01)	(0.04)
Coping	**0.41**	**-**	**0.41**	**0.29**	**0.01**	**0.30**	**0.13**	**-0.05**	**0.09**
Dysfunc-							0.07*	-	0.07*
tional									
Coping							(0.03)	-	(0.03)
							0.14	**-**	**0.14**
Negative	-0.88**	-	-0.88**	-	-0.01	-0.01	0.02	0.00	0.02
Expressed									
Emotion	(0.17)	-	(0.17)	-	(0.03)	(0.03)	(0.02)	(0.00)	(0.02)
	-0.74	**-**	**-0.74**	**-**	**-0.02**	**-0.02**	**0.05**	**0.00**	**0.05**
Positive							-0.04*	-	-0.04*
Expressed							(0.02)	-	(0.02)
Emotion							**-0.12**	**-**	**-0.12**
Stressful				-0.06**	-	-0.06**	0.01	0.01*	0.01
Life									
Event				(0.03)	-	(0.03)	(0.02)	(0.00)	(0.02)
				-0.15	**-**	**-0.15**	**0.03**	**0.02**	**0.03**
Social				-0.13**	-	-0.13**	0.07**	0.01*	0.08**
Func-				(0.04)	-	(0.04)	(0.03)	(0.01)	(0.03)
tioning									
				-0.17	**-**	**-0.17**	**0.15**	**0.02**	**0.17**
Social				0.02	-	0.02	-	0.00	0.00
Support				(0.03)	-	(0.03)	-	(0.00)	(0.00)
				0.03	**-**	**0.03**	**-**	**0.00**	**0.00**
Medication							-0.09**	-	-0.09**
use							(0.03)	-	(0.03)
Self-							**-0.15**	**-**	**-0.15**
efficacy									
R^2	0.54			0.13			0.12		
χ^2 = 8.28, df = 8, p-value = 0.41, GFI = 0.99, AGFI = 0.96, CFI= 1.00 , RMSEA = 0.01									

Note * p < 0.05, ** p < 0.01

The results of final model testing are summarized in accordance with the hypothesized model as follows (see table 4.13):

1. Emotionally-coping strategies had a negative direct effect (-0.12, $p < .01$). Therefore, this result supported the hypothesis model. A new path from emotional coping strategies to psychotic symptoms was also found.

2. Problem-solving coping strategies had a positive direct effect on social support (0.51, $p < .01$) and medication use self-efficacy (0.21, $p < .01$). In addition, it had an indirect effect (-0.02.13, $p < .01$) on psychotic symptoms through social support. Thus, this result supported the hypothesized model. However, problem solving coping strategies had a non-significant direct effect 0.062, $p > .05$) on psychotic symptoms. Therefore, this result did not support the hypothesized model, which indicated that Problem solving coping strategies should have an indirect effect on psychotic symptoms through social support.

3. Dysfunctional Coping had a positive direct effect (0.07, $p < .01$) on psychotic symptoms. The result supports the hypothesized model, which indicated that dysfunctional Coping had a positive direct effect on psychotic symptoms.

4. Negatively-Expressed Emotion had a significant negative direct effect (-0.88, $p < .05$) on social support. This result supports the hypothesized model, which proposed that Negative Expressed Emotion had a significant negative direct effect on the total score of social support.

5. Positively-Expressed Emotion had a negative direct effect on psychotic symptoms (0.05, $p < .05$). This result supports the hypothesized model.

6. Stressful Life Event had significant negative direct effect (-0.06, $p < .01$) on medication use self-efficacy and had positive indirect effect on psychotic symptoms (0.01, $p < .05$). This result supports the hypothesized model.

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7. Social Functioning had significant negative direct effect (-0.13, $p < .01$) on medication use self-efficacy. Besides, it had significant positive direct effect (0.07, $p < .01$) and positive indirect effect on psychotic symptoms (0.01, $p < .05$). This result supports the hypothesized model, which proposed that social Functioning had direct effect on medication use self-efficacy and psychotic symptoms.

8. Medication use Self-efficacy had significant negative direct effect (-0.09, $p < .01$) on psychotic symptoms. This result supports the hypothesized model.

Summary

The descriptive statistic characteristics of the variables investigated in the current study have been explained. The preliminary analysis reported did not violate the assumption for the path analysis. The hypothesized path model of psychotic symptoms among schizophrenic persons misusing methamphetamines was tested. It is noteworthy that the hypothesized model was modification and fit the empirical data of psychotic symptoms among schizophrenic persons misusing methamphetamines.

The model is still meaningful and useful for explaining factors affecting psychotic symptoms among schizophrenic persons misusing methamphetamines. Finally, all the variables in the model explained approximately 54% of the variance in psychotic symptoms.

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CHAPTER V

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

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

Summary

The purposes of this cross-sectional descriptive correlation study were (a) To explore the relationships among emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning, and psychotic symptoms among schizophrenic persons and misusing methamphetamines, and b) To develop and test a model that explains the influences of psychotic symptoms among schizophrenic persons and misusing methamphetamines, including emotionally-focused coping strategies, problem-focused coping strategies, dysfunctional coping strategy medication use self-efficacy, negatively expressed emotion, positively expressed emotion, stressful life events, social support, social functioning.

The conceptual framework was guided by The Vulnerability-Stress Model of Schizophrenia by Nuechterlein and Dawson (1984). A consecutive sample of 313 individuals with schizophrenia and methamphetamine misuse was recruited from 8

hospitals in Thailand and responded to a set of seven questionnaires through interviews, observations and self-reports. The data collection instruments included the demographic data questionnaire, the brief psychiatric rating scale, brief COPE, self-efficacy for appropriate medication use scale, family expressed emotional scale, stressful life events questionnaire, and social functioning scale. A linear structural relationship was used to test the hypothesized path model. Data collection was carried out from March 20, 2015, through May 31, 2015.

According to the study findings, the participants ranged in age from 19 to 58 years old, with the mean age of 31.48 years (SD = 7.83). They were predominantly male (87.9%), single (66.1%), and completed secondary and high school education (55.0%). Moreover, some of the participants were employee (27.80%), some were unemployed (22.4%), and some worked in the field of agriculture (22.0%). In addition, more than a half of the participants (62%) had a monthly family income of more than 10,000 baht (1 US dollar = 31 baht), and most of the participants (65.8%) had no financial problems. Finally, approximately about three quarters of the participants (69.0%) used universal healthcare coverage.

Furthermore, the findings revealed that the hypothesized model fit the empirical data and could explain 54% of the variance of psychotic symptoms (χ^2 = 8.28, df = 8, p-value = 0.41, GFI = 0.99, AGFI = 0.96, CFI= 1.00, RMSEA = 0.01). The results of the final model testing are summarized according to the research hypotheses as follows:

1. Emotionally-focused coping strategies have a direct negative effect (-0.12, $p < .01$) on the psychotic symptoms among schizophrenic persons misusing methamphetamines

2. Problem-focused coping strategies had a positive direct effect on social support (0.51, $p < .01$) and medication use self-efficacy (0.21, $p < .01$). In addition, it had an indirect effect (-0.02.13, $p < .01$) on psychotic symptoms through social support. However, problem-solving coping strategies had a non-significant direct effect (0.062, $p > .05$) on psychotic symptoms.

3. Dysfunctional Coping strategies had a direct positive effect (0.07, $p < .01$) on psychotic symptoms.

4. Negatively-Expressed Emotion had a significant direct negative effect (-0.88, $p < .05$) on social support.

5. Positively-Expressed Emotion had a direct negative effect on psychotic symptoms (0.05, $p < .05$).

6. Stressful Life Event had significant direct negative effect (-0.06, $p < .01$) on medication use self-efficacy and had positive indirect effect on psychotic symptoms (0.01, $p < .05$).

7. Social Functioning had significant direct negative effect (-0.13, $p < .01$) on medication use self-efficacy. Besides, it had significant positive direct effect (0.07, $p < .01$) and positive indirect effect on psychotic symptoms (0.01, $p < .05$).

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Characteristics of schizophrenic persons misusing methamphetamines

A total of 313 schizophrenic persons misusing methamphetamines who was mean age of years = 31.45 (SD = 7.83, range = 19-58). They were predominantly male (87.9%), single (66.1%), and completed secondary and high school education (55.0%). Moreover, some of the participants were employee (27.80%), some were unemployed (22.4%), and some worked in the field of agriculture (22.0%). These

findings are consistent with the incidence of Psychotic symptoms in methamphetamine psychotic in-patients in Thailand which reported that population are more prevalent in men (82%) than in women and that most participants are middle-age patients (Srisurapanont et al., 2003).

In addition, more than a half of the participants (62%) had a monthly family income of more than 10,000 baht (1 US dollar = 31 baht), and most of the participants (65.8%) had no financial problems. Finally, approximately about three quarters of the participants (69.0%) used universal healthcare coverage. a half of the participants (50.5 %) had the first time of diagnosis of schizophrenia between 2 to 10 years and most of them (83.4%) had admitted 2-5 times.

In regard to the participants' medical history, nearly half of them (47.0 %) have the duration of psychiatric illness between 1to 5 years. The comorbidity among persons with schizophrenia and methamphetamine misuse was Gastritis (3.3 %), Gastritis and hypertension (1.7 %), and asthma (1.2 %). Two-thirds of participants were treating as Antipsychotic drug (73.2%), and group therapy (87.2%). Almost of them living with family (93.3%).

According to history of methamphetamine misuse, nearly half of the participants use methamphetamine per day as 2-5 tabs (48.2 %). The top rout to take methamphetamine was smoking (91.1%) and more than a half of them (62.3%) smoking at the same time.

Characteristics of the study variables

The ten major variables in the currents study include psychotic symptoms, coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning. The detail regarding characteristics of each of the study variable is presented as below:

Psychotic symptoms

According to the study findings, the participants had a mean score and standard deviation of psychotic symptoms was 23.10 and 4.75. In the current study, psychotic symptoms are proposed as the symptoms outcome of persons with schizophrenia and methamphetamine misuse. The scores of psychotic symptoms lower than the mean score due to the inclusion criteria of this study that include only the sample who had BPRS score less than 36..

Coping

According to the study findings, a half of the participants made moderate use of coping strategies to manage psychotic symptoms (mean = 44.10, SD = 15.44). As Black (2005) and Lazarus and Folkman (1984) stated that coping is an individual response and while different persons may have a different innate ability to cope, the use of coping strategies depends on the cultural background of the individuals. Therefore, this study reveals the moderate of strategies of coping to manage psychotic symptoms.

Medication use self-efficacy

The total scores of Medication use self-efficacy ranged from 13 to 39 points with a mean of 29.69 (SD = 6.58). The findings regarding the mean score indicated that most participants had high confidence level of Medication use self-efficacy. It

could explain that in schizophrenia, self-efficacy has a positive impact on the person's ability to control positive symptoms, and diminish the effects of negative symptoms and social withdrawal (McDermott, 1995). Therefore, the result of this study shown the low level of psychotic symptoms in the sample and self-efficacy in medication use is the positive relationship.

Expressed emotion

The result of research depict that the total scores expressed emotion ranged from 1 to 64 points with an average mean of 2.31 (SD = 0.57). The findings regarding the mean score indicated that most participants had an appropriate (mean 1.49-2.49) extreme to in appropriate of expressed emotion level from family member. These consistences with the previous studies explain high expressed emotion of family members of schizophrenic patients leading patient to relapse (Wearden, Tarrier, Barrowclough, Zastowny, and Rahill, 2000).

Social support

The findings showed that participants perceived high levels of social support (Mean = 45.13, SD = 18.11), and the highest support from health care provider (score = 18.00). These findings may be related to the fact that all of the participants were hospitalization and 207 cases were single. Therefore, perceive of participant close to the multidisplinary heath care team support.

Stressful life events

According to the study findings, the total scores stressful life events ranged from 0 to 230 points with mean of 60.44 (SD = 53.32). This study indicated that participants had stressful life events in the moderately level. This finding consistence

with the coping score of participant that they attempt to use problem focus coping strategies to made the situation getting better.

Social functioning

The total scores social functioning ranged from 1 to 70 points with an average mean of 1.61 (SD = 0.66). The result indicating that three-fourth of participants had mild impairment (minor deviations or problems occasionally, able to work or function independently). These may be explain that deficits in social functioning are common to many schizophrenic patients and are considered to be fundamental and diagnostic characteristics of the disorder (Sadock, Sadock, and Ruiz, 2015). Social functioning in schizophrenia is markedly impaired and is categorized as part of the constellation of impairments in one or more major areas of life functioning.

Hypothesis testing and relationships

The study findings revealed that the hypothesized model fit the empirical data and could explain 54% of the variance of psychotic symptoms by coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning. The study finding also showed that all of hypotheses were fully supported by the empirical data obtained in the study. The discussions of the hypothesis testing are presented as follows:

Hypothesis 1: *Emotionally-focused coping strategies had a direct positive effect on psychotic symptoms among schizophrenic persons misusing methamphetamines.*

The findings in this study support this hypothesis. A possible explanation is that people use coping strategies during stressful life events. Emotional focused

coping strategies include acceptance, using emotional support, humor, positive reframing, and religion. The most coping strategies of the participants use was emotional focused coping strategies such as accepting the reality of the fact that it has happened, learning to live with it, getting emotional support from others, getting comfort and understanding from someone, making jokes fun of the situation, trying to see it in a different light to make it seem more positive, and trying to find comfort in religion or spiritual beliefs as praying or meditating. These strategies would help the persons to adapt to perceived stressors (Varcarolis and Halter, 2015), feel getting better and relive the psychotic symptoms.

Additionally, schizophrenic persons misusing methamphetamines appraised information from the health care provider and generated their understanding about the trajectory of illness and the skill to dealing with the stress, in terms of coping strategies. Therefore, they use emotional focused coping strategies to dealing with psychotic symptoms. Furthermore, it similar to another study that participants who received an intervention targeting coping had decreased positive symptom severity (Leclerc et al., 2000). Because of adult participants, they may influence coping strategies used to deal with symptoms of schizophrenia. Moreover, they frequently utilize more proactive coping strategies such as accessing social support as Yanos (2001) mention.

Hypothesis 2: *Problem-focused coping strategies had a direct positive effect on psychotic symptoms through social support and medication use self-efficacy among schizophrenic persons misusing methamphetamines misuse.*

The findings support the hypothesis that problem solving coping strategies have a positive direct effect on psychotic symptoms among persons with

schizophrenia and methamphetamine misuse through social support and medication use self-efficacy.

In the current study, participating schizophrenic persons misusing methamphetamines reported using problem focus coping strategies to taking action to try to make the situation better (40.3 %) most frequently, followed by emotional focus coping strategies to accepting the reality of the fact that it has happened (40.3%). The positive coping strategies predicted relative decreases in symptoms over time in people with schizophrenia. Characteristics of individuals with schizophrenia who tend to use better coping strategies include having a higher level of premorbid adjustment, being exposed to helpful resources, and having motivation and ability to use these helpful resources (Lee, Lieh-Mak, Yu, and Spinks, 1993).

This finding is different from several studies that indicated that persons with schizophrenia often report chronic difficulties ineffectively coping with both major and minor stresses (Corrigan and Toomey, 1995; Frese, 1993; Mueser et. al., 1997). They may possess relatively limited repertoire of coping strategies (Rollins et al., 1999) and tend to avoid rather than actively attempt to solve problems (Farhall and Gehrke, 1997; Lysaker et al., 2003b; Wilder-Willis et al., 2002).

According to the study findings, medication use self-efficacy was the negative significance second factor (-0.09, $p < .01$) affecting on psychotic symptoms in terms of total effect and direct effect. This means that the confidence in one's ability to taking antipsychotic medications, play an importance role to support the patient to decrease psychotic symptoms and prevent psychotic relapse. Individuals with stronger self-efficacy are more likely to engage in healthy behaviors, to maintain them, and to recover after setbacks. In addition, self-efficacy strongly related to negative symptoms

and moderate associated with social and general function. Patient with negative symptoms reported low self-efficacy estimates for everyday tasks, which they performed less frequently than the control. Overall, the results suggest that low self-efficacy is characteristic of negative symptom patient (Hill, 2012; Kurtz, Olfson, and Rose, 2013).

The strong of self-efficacy for appropriate antipsychotic use plays an importance role to take antipsychotic and can be balance neurotransmitter in the brain especially dopamine and norepinephrine which leading to decrease both of positive psychotic symptoms and negative psychotic symptoms. Moreover, self-efficacy for appropriate antipsychotic use plays a vital role to prevent psychotic relapse. In schizophrenia, self-efficacy has a positive impact on the person's ability to control positive symptoms, and diminish the effects of negative symptoms and social withdrawal (McDermott, 1995).

In addition, the findings of this study are consistent with the vulnerability-stress model of schizophrenia. In the case of persons with schizophrenia use methamphetamine, such use may be identified as a biological stressor—a toxin to the brain—that makes them more likely to drop out of treatment and to be non-adherent to medication. This behavior can be said to be the result of changes in the brain chemistry (i.e. dopaminergic stressor) that lead to changes in cognitive functioning, including poor judgment, loss of insight, disorganization and paranoia. For the social worker, vulnerable individual may be a useful way to maintain a non-judgmental approach to treatment.

Moreover, this participants appraised information of the psychoeducation from the health care provider and generated their knowledge about the coping and the

medication us self-efficacy, in terms of problem solving coping strategies. As a result, problem solving coping strategies enhanced their skill for seeking social support such as health care provider, family, and friend in order to maintain and promote medication use self-efficacy to control psychotic symptoms.

Hypothesis 3: *Dysfunctional coping strategies had a direct positive effect on psychotic symptoms among schizophrenic persons misusing methamphetamines.*

The findings of the present study also showed that dysfunctional coping strategies have a significance positive direct effect on psychotic symptoms.

Studies have shown that persons with schizophrenia use various coping strategies The participants in this study had used many of dysfunctional coping strategies to deal with the symptom, for example Substance use, they use methamphetamine and smoking. In addition, behavioral disengagement, denial, self-distraction, self-Blame, and venting to adapt to distressing symptoms (Singh, Sharan, and Kulhara, 2003). Moreover, dysfunctional coping strategies was the high rates of substance abuse among persons with schizophrenia resulting in (Asher and Gask, 2008): (1) to achieve intoxication, (2) to enhance their socialization skills, (3) to self-medicate for positive and negative symptoms of schizophrenia, (4) to decrease the dysphoria associated with psychotic symptoms (Fowler et al., 1998; Khantzian, 1985; Littrell and Littrell, 1999), (5) to decrease the negative side-effects of antipsychotic medications (Khantzian, 1985; Fowler et al., 1998; Littrell and Littrell, 1999), (6) to relieve depressive symptoms (Baigent et al., 1995; Fowler et al., 1998; Littrell and Littrell, 1999). In contrast, other studies have found the opposite, in that individuals did not report abusing substances to counter the negative side-effects of psychotropic medications (Cuffel et al., 1993), nor did they report using substance to

alleviate any type of psychotic symptoms. Furthermore, individuals with schizophrenia tended to abuse hallucinogens, rather than dopaminergic substances, such as cocaine and amphetamines, which does not support the self-medication hypothesis (Lammertink, Lohrer, Kaiser, Hambrecht, and Pukrop, 2001).

The primary reported disadvantages of using drugs were the negative physical symptoms (e.g., hangovers); changes in emotions; increased psychosis, cognitive confusion, family conflicts, financial problems, and legal difficulties (Fowler et al., 1998). This suggests that substance use may initially provide relief, but longer-term use exacerbates psychiatric symptoms. Individuals also noted that the advantages of quitting were improved physical symptoms, higher self-esteem, and increased social relationships (Fowler et al., 1998). This suggests that individuals are aware of the impact of substance abuse on psychiatric symptoms and interpersonal relationships. Finally, individuals reported that the disadvantages of quitting drugs were the withdrawal symptoms, the relapse cycle, loss of drug-abusing friends, cravings, and the pressure to use drugs (Fowler et al. 1998).

Hypothesis 4: *Negatively-expressed emotion had a direct positive effect on psychotic symptoms among schizophrenic persons misusing methamphetamines.*

The findings support the hypothesis that negative expressed emotion has a positive direct effect on psychotic symptoms among schizophrenic persons misusing methamphetamines. The empirical data show that EE is one of the major psychosocial stressor and it has direct association with recurrence of illness. The importance of EE depends on research that has consistently established that persons with mental illness, such as schizophrenia, who live with close relatives who have negative attitudes, are significantly more likely to relapse (Butzlaff and Hooley, 1998).

As a result, after modification the model the researcher found that negative expressed emotion had a significant direct effect on social support. It could be explain that the Thai family member had culture of kindness and concern of family member living. They perceive that person with schizophrenia was stigma and need caring. Therefore, they always take care of person with schizophrenia although he/she use methamphetamine. Even though the family member had a negative expressed emotion toward the patient (Ratanaporn, 2014) but they still take a role of supporter.

Furthermore, the characteristics of participants in this study, there was relatively little variation in terms of educational level. Approximately 61.7 % of the participants had a higher educational level than primary school. Therefore, they knew the way to ask for support from family member, health care provider, and friend.

Moreover, the exacerbation of psychotic symptoms resulting in the stress factors and protective factors that decrease severity of symptoms. The support from family, friends, and health care provider are key components in helping patients to increase protective factors for the reduction of symptoms severity (O'Connor, 1994). In addition, social support directs helping a person to stabilize their emotion toward the problematic event and to recognize their self-worth, leading to improve health condition and behavior. Besides, social support also has direct effects on the function of immunology and endocrinology systems. Social support acts as a barrier or buffer that reduces the impact of stress because it generates the sense of being helped by other people. Additionally, social support directly eliminates or reduces the reactions resulting from stress or the effects of stress on the body thus reducing perceived severity problem, which has effect on hormone functioning.

Furthermore, the provision of information enhances patient' s perception about one's self and increase understanding about the environment such as negative expressed emotion. As a result, a person will be able to evaluate and control the situation, the severity of problem will be reduced and, finally, the persons will adapt to the situation more appropriate (House, 1981). Therefore, the psychotic symptoms will be decrease because of good adaptation of patient.

Hypothesis 5: *Positively-expressed emotion had a direct negative effect on psychotic symptoms among schizophrenic persons misusing methamphetamines.*

The findings support the hypothesis. According to the study findings, positively expressed emotion has a significant direct negative effect (-0.04, $p < 0.05$) on psychotic symptoms. Expressed emotion is one of the main contributors and reliable predictors for psychotic relapse in schizophrenia (Hooley, 2007). Emotional express is a significant and robust predictor of relapse in schizophrenia. Additional analyses have demonstrated that the EE-relapse relationship was the strongest for patients with more chronic schizophrenic illnesses (Azhar and Varma, 1996; Ronald, Butzlaff, Jill, Hooley, and DPhil, 1998; Lopez et al., 2004; Peterson and Docherty, 2004; Li and Arthur, 2005).

Positively-expressed emotion including of: love from family member, regret of illness, feeling good when the patient be happy, hope the patient getting better. The participants and touch the love and care from the family member. Thus, love and care from the family member is the powerful tool to make to patient can dealing with the psychotic symptoms.

Hypothesis 6: *Stressful life events had a direct positive effect on the psychotic symptoms among schizophrenic persons misusing methamphetamines*

The findings support the hypothesis. After the researcher modified the model, the stressful life event has the indirect effect (0.01, $p < 0.05$) on psychotic symptoms through medication use self-efficacy. The reason is stressful life events that were independent of the patient's behavior were more frequent in the weeks immediately before the patient experienced a psychotic relapse (Brown and Birley 1968; Leff and Vaughn 1980; Day et al., 1987). The possible roles of these environmental triggers in relapse and the processes by which they affect the course of schizophrenia are unclear. It is possible that these attitudes, similar to the occurrence of major life events, contribute to a high level of environmental stress that interacts with preexisting biological vulnerability factors to increase the likelihood that psychotic symptoms will return (Brown et al., 1972; Leff, 1987). However, high stressful life events leading to the medication use self-efficacy of the patient down because of on the process of adaption.

Hypothesis 7: *Social functioning has a direct positive effect on psychotic symptoms among schizophrenic persons misusing methamphetamines.*

Social functioning has a positive direct effect on psychotic symptoms among persons with schizophrenia and methamphetamine misuse was supported by current analysis. This finding contrast with the early research on the social functioning that specific that this population had a deficits in this area of functioning (Argyle, 1981; Bellack, Morrison, Wixted, and Mueser, 1990), and has continued in the past two decades. Moreover, repeated hospitalizations often contribute to further their social dysfunction (Yager and Ehmann, 2006) which indicated in the finding of this study

that 83.40% of the participant readmitted 2-5 time of the period of time of diagnosis of schizophrenia.

In the other angle, persons with schizophrenia and methamphetamine misuse who had a good social functioning will be able to manage their time for medication taking and medication will decrease the psychotic symptoms.

Conclusion

In summary, the path model predicting psychotic symptoms among schizophrenic persons misusing methamphetamines demonstrated that symptoms were found to have the strongest effect on psychotic symptoms among persons with schizophrenia and methamphetamine misuse. The results indicated that the highest total effect and direct effect factors affecting psychotic symptoms were emotional focused coping strategies (-0.12, $p < 0.01$), medication use self-efficacy (-0.09, $p < .01$), social functioning (0.08, $p < 0.01$), positive expressed emotion (-.04, $p < .05$), and stressful life events (-.01, $p < .05$). In addition, the highest indirect effect factors affecting the psychotic symptoms were problem focused coping strategies (-0.02, $p < 0.01$), stressful life events (-0.01, $p < 0.05$), and social functioning (- 0.01, $p < 0.05$), respectively. Therefore, this model supported by empirical literature in psychotic symptoms among persons with schizophrenia.

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Methodological limitation

In the present study was conducted based on the stress vulnerability model of schizophrenia which was used as a theoretical framework. The researcher keep out the personal vulnerability factors includes dopaminergic dysfunction, reduced available processing resources, autonomic hyperactivity, and schizotypal personality traits because of time and budget. Therefore, to be the superior and sustainable of multi-disciplinary treatment team intervention for persons with schizophrenia and methamphetamine misuse, the theory testing of all factors are needed.

Implications for nursing

The implications of this study focus on the implications for nursing science, nursing practice, nursing education, and nursing research as follows:

Implications for nursing science

In present study, the researcher testing some part of the stress vulnerability model of schizophrenia and the findings support this model and empirical literature that coping, medication use self-efficacy, expressed emotion, stressful life events, and social functioning which influence psychotic symptoms. In order to design nursing intervention efficiency we need to shift the paradigm of nursing from care persons with schizophrenia and methamphetamine misuse as the routine group. The result shown that most of participant was treat as exercise group (92.0%), hygiene care group (87.5%), occupational group (51.8%), conversation group (51.8%), pray group (51.8%), respectively. In theory, they also need direct intervention to decrease psychotic symptoms and there are multiple factors to involve these symptoms. The conventional nursing intervention is group therapy and interpersonal therapeutic

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relationship. These interventions are workable. However, it's not support the individual need. The new innovation of equipment need to be the pararell nursing care such as emotional focused coping strategies factors they always know what it is and how to cope the situation with emotional. However, when they get in that situation in difficult time and urgency it could be loses of control. Therefore, the application to assess them self are needed. It would be the questionnaire online or skin touch card of evaluate stress. For medication use self-efficacy, we need to monitor psychotic symptoms for medication adherence by equipment such as application for remind to take medication via mobile phone or blood test by themselves when they on the treatment of new type of antipsychotic drug. For social functioning, as the persons compose of biological, psychological, and social. Therefore, the real of individual situation should be integrate in the treatment plan, nurse should be there and done that. In other word, nurse should have more clearly and understand the social function of the patient to help them have a good adaptation.

In summary, nursing science should be added the knowledge and skill to develop equipment or innovation that support nursing intervention to be fit to individual need.

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Implications for nursing practice

The current study sheds light on the knowledge regarding the influence of coping, medication use self-efficacy, expressed emotion, social support, stressful life events, and social functioning on psychotic symptoms among persons with schizophrenia and methamphetamine misuse. Based on the findings, several significant implications for nursing practice can be proposed as follows:

First, understanding the predictors of psychotic symptoms among persons with schizophrenia and methamphetamine misuse provides valuable information which enables nurses and associated healthcare professionals to plan for effective intervention to maintain or improve psychotic symptoms among persons with schizophrenia and methamphetamine misuse.

Second, medication use self-efficacy was found to have the strongest effect on psychotic symptoms among persons with schizophrenia and methamphetamine misuse. The results indicated that a higher level of medication use self-efficacy could generate decrease psychotic symptoms among persons with schizophrenia and methamphetamine misuse.

Third, expressed emotion and social functioning affecting the psychotic symptoms among persons with schizophrenia and methamphetamine misuse in the present study. Nurses and healthcare providers are key persons who should provide the information how family member communicate to persons with schizophrenia and methamphetamine misuse and their family and promote the social skill for this population.

Implications for nursing education

Presently, healthcare providers are certain that psychotic symptoms are an important outcome to guarantee quality of nursing care among persons with schizophrenia and methamphetamine misuse. Manage the psychotic symptoms among schizophrenic persons misusing methamphetamines to decrease or stable can be seen as a challenge for psychiatric nurses. This study has provided a comprehensive understanding of the predictors of psychotic symptoms among schizophrenic persons misusing methamphetamines that can help psychiatric nurses improve the ways to

decrease psychotic symptoms in these patients. Nurse educators can use these findings to generate new perspectives and new options in teaching and learning about promoting psychotic symptoms among persons with schizophrenia and methamphetamine misuse. Nursing students should also have the opportunity to investigate and critique all the issues that are relevant to psychotic symptoms of this population.

Implications for nursing research

The current study is the first study of its kind to explore the influence of coping, medication use self-efficacy, expressed emotion, social support, stressful life events, and social functioning on psychotic symptoms among schizophrenic persons misusing methamphetamines. The findings of this study will serve as a reference point for further interventions to decrease psychotic symptoms in this specific group of population. Besides, new intervention should be focus on emotionallyfocused coping strategies, medication use self-efficacy, and social functioning. Furthermore, problem- focused coping strategies, stressful life event, and social functioning also adding up.

Implications for healthcare policy

Schizophrenic persons misusing methamphetamines need continuous care for all trajectory of the disease as they have to encounter multiple factors affect their psychotic symptoms. The effective referral system for schizophrenic persons misusing methamphetamines is necessary to be established in the healthcare system and propose to health care policy. Health care provider should urge policy makers to devise an action plan to support the continuing care from the tertiary care system to homecare among schizophrenic persons misusing methamphetamines. Moreover,

healthcare providers in the primary care system and tertiary care system should coordinate in caring for persons with schizophrenia and methamphetamine misuse. The findings from the current study have suggested that coping, medication use self-efficacy, expressed emotion, stressful life events, and social functioning affect psychotic symptoms. Additionally, psychotic symptoms are an important health problem in Thailand. The main outcome of nursing care for schizophrenic persons misusing methamphetamines is to decrease psychotic symptoms. Thus, policy makers must take different variables that influence psychotic symptoms into careful consideration when devising an action plan to decrease psychotic symptoms among schizophrenic persons misusing methamphetamines.

Recommendations for future research

Based on the findings of the present study, the following recommendations for future research can be made as follows:

1. A time series study and longitudinal study should be conducted to assess the change of coping, medication use self-efficacy, expressed emotion, stressful life events, and social functioning affect psychotic symptoms overtime so as to provide a more causal explanation regarding psychotic symptoms among persons with schizophrenia and methamphetamine misuse and its predictors.

2. Persons with schizophrenia and methamphetamine misuse in the present study used problem-focused coping strategies and emotionally-focused coping strategies to deal with stress in their life. The coping strategy affected psychotic symptoms in a different way. Therefore, future studies should be carried out to test the

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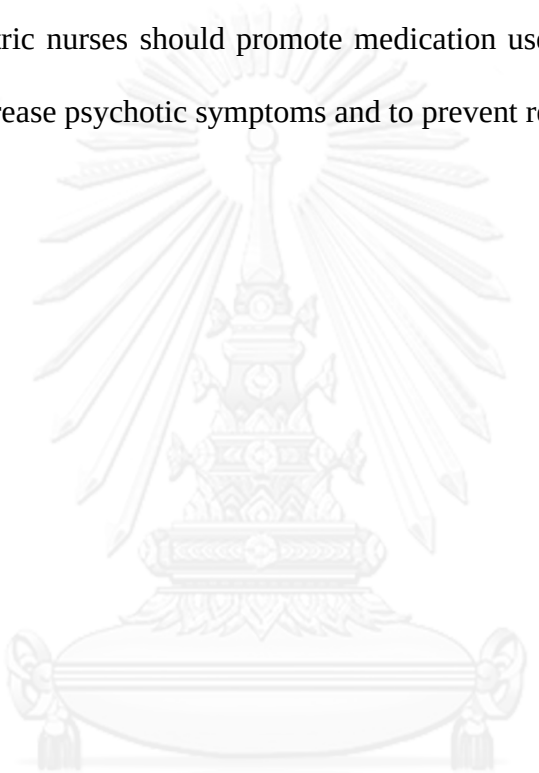
effects of coping on the psychotic symptoms in terms of how helpful each of the strategies is in addressing their psychotic symptoms.

3. An intervention study to decrease psychotic symptoms among persons with schizophrenia and methamphetamine misuse should be developed and tested as well. It should manage the factors included in emotionally-focused coping strategies. However, psychiatric nurses should promote medication use self-efficacy and social functioning to decrease psychotic symptoms and to prevent relapse.



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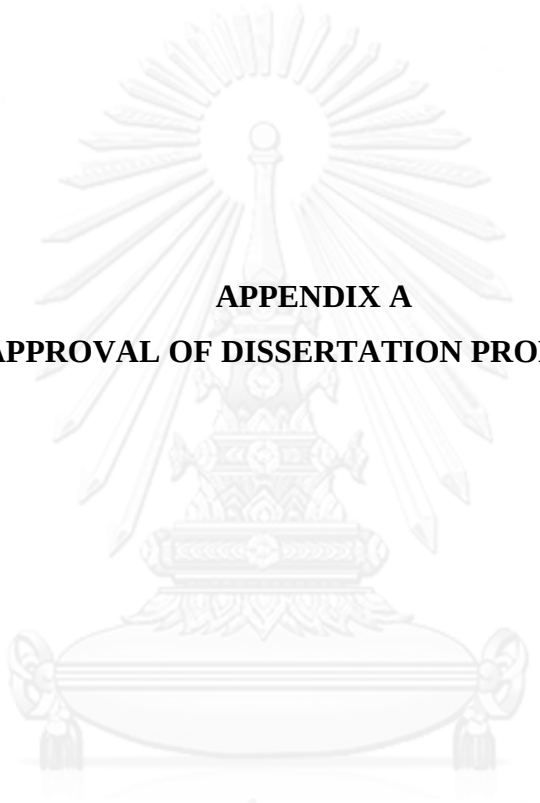
APPENDIX

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

APPENDIX A
APPROVAL OF DISSERTATION PROPOSAL



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Chulalongkorn University

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

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สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์
อาจารย์ที่ปรึกษาร่วม	รองศาสตราจารย์ ดร. วราภรณ์ ชัยวัฒน์
ประธานกรรมการสอบฯ	รองศาสตราจารย์ ร.ต.อ.หญิง ดร. ยุพิน อังสุโรจน์
กรรมการสอบฯ	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
กรรมการสอบฯ	รองศาสตราจารย์ ดร. ศิริเดช สุชีวะ
กรรมการสอบฯ	รองศาสตราจารย์ ดร. ยาใจ สิทธิมงคล
ชื่อหัวข้อดุษฎีนิพนธ์	การวิเคราะห์เส้นทางความสัมพันธ์ของอาการทางจิตในผู้ที่เป็นโรคจิตเภทและการใช้เมทแอมเฟตามีน A PATH ANALYSIS OF PSYCHOTIC SYMPTOMS AMONG PERSONS WITH SCHIZOPHRENIA AND METHAMPHETAMINE MISUSE
ครั้งที่อนุมัติ	3/2554
ระดับ	ปริญญาเอก

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APPENDIX B
INSTRUMENTS

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แบบสอบถามในโครงการวิจัย

การวิเคราะห์เส้นทางของอาการทางจิตในผู้ป่วยโรคจิตเภท

ที่มีการใช้เมทแอมเฟตามีน

ผู้วิจัย นางสาว เอกอุมา อิ้มคำ

นิสิตดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

แหล่งเก็บข้อมูล .....

คำชี้แจง

แบบสอบถามในโครงการวิจัยนี้มีทั้งหมด 8 ส่วน ดังนี้

ส่วนที่ 1 แบบบันทึกข้อมูลส่วนบุคคล

ส่วนที่ 2 แบบประเมินอาการทางจิต (BPRS)

ส่วนที่ 3 แบบวัดการเผชิญปัญหา (ฉบับสั้น) (Brief COPE)

ส่วนที่ 4 แบบสอบถามการรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม (Self-efficacy for appropriate medication use)

ส่วนที่ 5 แบบวัดการแสดงออกทางอารมณ์ในครอบครัว (The Thai version of Family Expressed emotion)

ส่วนที่ 6 แบบวัดการสนับสนุนทางสังคม (Social support questionnaire)

ส่วนที่ 7 แบบวัดเหตุการณ์รุนแรงในชีวิต (The stressful life events questionnaire)

ส่วนที่ 8 แบบวัดระดับการทำหน้าที่ในสังคมและในการทำงาน (The Social Occupational Functioning Scale (SOFS))

หมายเหตุ

แบบสอบถามส่วนที่ 1 และ 2 ผู้วิจัย/ผู้ช่วยผู้วิจัยจะเป็นผู้ทำการสัมภาษณ์อาสาสมัคร

แบบสอบถามส่วนที่ 3-8 อาสาสมัครเป็นผู้ตอบด้วยตนเอง หากอาสาสมัครไม่สามารถอ่านได้

ผู้วิจัย/ผู้ช่วยผู้วิจัยจะใช้วิธีการสัมภาษณ์แทน

1. แบบสอบถามข้อมูลทั่วไป

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงใน □ และกรอกข้อความให้สมบูรณ์

"คุณมีสิทธิจะไม่ตอบคำถาม ข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้ โดยจะไม่มีผลกระทบใด ๆ ต่อสิทธิประโยชน์ที่คุณจะได้รับ"

ข้อมูลส่วนบุคคล	**สำหรับผู้วิจัย**
1. อายุ..... ปี	Age □
2. เพศ □ 1. ชาย □2. หญิง	Gender□
3. สถานภาพสมรส □ 1. โสด □ 2. คู่ □ 3. หม้าย □ 4. หย่า □ 5. แยกกันอยู่ □ 6. อื่นๆระบุ.....	Status□

********。☆。◕‿◕。. ☆ขอขอบคุณที่ตอบแบบสอบถามค่ะ 。☆。◕‿◕。☆*******

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2. แบบประเมินอาการรุนแรงทางจิต

(The Brief Psychiatric Rating Scale (BPRS))

****

คำชี้แจง แบบสอบถามชุดนี้ต้องการประเมินความรุนแรงของอาการทางจิตใน 1 สัปดาห์ที่ผ่านมา โดยอาสาสมัครมีสิทธิจะไม่ตอบคำถาม ข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้ ซึ่งจะไม่มีผลกระทบใด ๆ ต่อสิทธิประโยชน์ที่จะได้รับ

แบบประเมินนี้ผู้วิจัยเป็นผู้ประเมินโดยการสัมภาษณ์และการสังเกตอาการของผู้ป่วยตามแบบประเมินแล้วทำเครื่องหมาย (✓) ลงในช่องตามระดับความรุนแรงของแต่ละอาการ โดยมีเกณฑ์การประเมินดังนี้

1 = ไม่มีอาการ 2 = มีอาการเล็กน้อยเป็นบางครั้ง 3 = มีอาการเล็กน้อย
4 = อาการปานกลาง 5 = อาการค่อนข้างรุนแรง 6 = อาการรุนแรง 7 = อาการรุนแรงมาก

ข้อที่มีเครื่องหมาย * (3,4,6,7,13,14,16,17, และ18) เป็นการประเมินโดยการสังเกตขณะการสัมภาษณ์ส่วนข้อที่เหลือ (1,2,5,8,9,10,11,12 และ15) ประเมินจากคำพูดของผู้ที่ถูกประเมินเกี่ยวกับความรู้สึกนึกคิดส่วนบุคคลที่เกิดขึ้น

อาการและอาการแสดง	ระดับคะแนน							สำหรับ
	1	2	3	4	5	6	7	ผู้วิจัย
1. **ความวิตกกังวลเกี่ยวกับอาการทางกาย (Somatic concern)** (Rate ตามความรู้สึกของผู้ป่วย) 1.1 สุขภาพร่างกายของคุณเป็นอย่างไรบ้าง? (มีอะไรที่ผิดปกติ?มีความรุนแรงมากน้อยแค่ไหน?) 1.2 คุณรู้สึกวิตกกังวลมากน้อยแค่ไหนกับสุขภาพร่างกายคุณ (หรือกับอาการที่เกิดขึ้น)?								BPRS1 ☐

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********。☆。◕‿◕。☆。ขอขอบคุณที่ตอบแบบสอบถามค่ะ 。☆。◕‿◕.。☆**********

3. แบบวัดการเผชิญปัญหา (ฉบับสั้น) (Brief COPE)

****

<u>คำชี้แจง</u> คุณเคยประสบปัญหาด้านจิตใจหรือปัญหาอื่นๆและเข้ารับการรักษาในโรงพยาบาลจิตเวชซึ่งเป็นเรื่องเครียดสำหรับหลายๆคน คำถามต่อไปนี้จะถามว่าคุณได้ทำอะไรบ้าง ซึ่งแต่ละคนจะมีวิธีจัดการกับความเครียดที่แตกต่างกันไป ผู้วิจัยสนใจวิธีการที่คุณพยายามจัดการกับความเครียดและความบ่อยในการใช้วิธีการนั้น ***<u>ในช่วง 1 สัปดาห์ที่ผ่านมา</u>*** อย่ากังวลว่าว่าคุณใช้วิธีนี้ได้ผลหรือไม่ กำลังทำอยู่หรือไม่ โปรดทำเครื่องหมาย (✓) ลงในช่องที่ตรงกับความรู้สึกของคุณและคุณมีสิทธิจะไม่ตอบคำถามข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้ โดยจะไม่มีผลกระทบใด ๆ ต่อสิทธิประโยชน์ที่คุณจะได้รับ

ข้อ	คำถาม	ระดับคะแนน				สำหรับผู้วิจัย
		ฉันได้ทำสิ่งนี้มาก	ฉันได้ทำสิ่งนี้ในปริมาณปานกลาง	ฉันได้ทำสิ่งนี้เล็กน้อย	ฉันไม่ได้ทำสิ่งนี้เลย	
1.	ฉันหันกลับไปทำงานหรือทำกิจกรรมอื่นๆ เพื่อจะได้หยุดคิดถึงเรื่องต่างๆ					BC1 □
2.	ฉันพยายามมุ่งมั่นทำบางอย่างเกี่ยวกับสถานการณ์ที่ฉันเผชิญอยู่					BC2 □
3.	ฉันบอกตัวเองว่า "เหตุการณ์ต่างๆที่เกิดขึ้นแล้วทำให้ฉันเครียด...มันไม่เป็นจริง"					BC3 □
4.	ฉันดื่มเหล้าหรือใช้ยาเสพติดอื่นๆ เพื่อให้ตัวเองรู้สึกดีขึ้น					BC4 □

*******。☆。◕‿◕。☆。ขอขอบคุณที่ตอบแบบสอบถามค่ะ 。☆。◕‿◕.。☆**********

4. แบบสอบถามการรับรู้สมรรถนะแห่งตนในการรับประทานยาอย่างเหมาะสม

(Self-efficacy for appropriate medication use)

****

<u>คำชี้แจง</u> โปรดทำเครื่องหมาย (✓) ลงในข้อความที่ตรงกับความเชื่อมั่นของคุณว่าคุณสามารถรับประทานยาได้ถูกต้องเพียงใดและคุณมีสิทธิจะไม่ตอบคำถามข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้ โดยจะไม่มีผลกระทบใดๆต่อสิทธิประโยชน์ที่คุณจะได้รับ

ข้อ	คำถาม	มีความมั่นใจมาก	ค่อนข้างมีความมั่นใจ	ไม่มีความมั่นใจ	สำหรับผู้วิจัย
1.	ฉันมีความมั่นใจเมื่อฉันรับประทานยาที่แตกต่างกันหลายชนิดในแต่ละวัน				S1 ☐
2.	ฉันมีความมั่นใจเมื่อฉันรับประทานยามากกว่าหนึ่งครั้งต่อวัน				S2 ☐
3.	ฉันมีความมั่นใจในการรับประทานยาเมื่อฉันอยู่ห่างจากบ้าน				S3 ☐
4.	ฉันมีความมั่นใจในการรับประทานยาถึงแม้ว่าฉันมีแผนงานต้องทำมากมายในหนึ่งวัน				S4 ☐
5.	ฉันมีความมั่นใจในการรับประทานยาถึงแม้ว่ายามีผลข้างเคียงบางอย่างเกิดขึ้นกับฉัน				S5 ☐
6.	ฉันมีความมั่นใจในการรับประทานยาถึงแม้ว่าไม่มีใครเตือนฉันให้รับประทานยา				S6 ☐
7.	ฉันมีความมั่นใจในการรับประทานยาถึงแม้ว่าตารางเวลาในการรับประทานยาไม่สะดวกกับฉัน				S7 ☐
8.	ฉันมีความมั่นใจในการรับประทานยาถึงแม้ว่ากิจวัตรปกติของฉันเกิดความยุ่งเหยิง				S8 ☐

********.☆.◕‿◕.☆.ขอขอบคุณที่ตอบแบบสอบถามค่ะ.☆.◕‿◕.☆**********

5. แบบวัดการแสดงออกทางอารมณ์ในครอบครัว

(The Thai version of Family Expressed emotion)

<u>คำชี้แจง</u> โปรดทำเครื่องหมาย (✓) ลงในช่องที่คุณเห็นด้วยในกิจกรรมนั้นโดยไม่ต้องคำนึงถึงความผิดหรือถูกและคุณมีสิทธิจะไม่ตอบคำถามข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้โดยจะไม่มีผลกระทบใดๆ ต่อสิทธิประโยชน์ที่คุณจะได้รับ

ข้อ	คำถาม	ระดับความคิดเห็น				สำหรับผู้วิจัย
		เห็นด้วยอย่างยิ่ง	เห็นด้วย	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง	
1.	สมาชิกในครอบครัวของคุณไม่ชอบพฤติกรรมหลายอย่างของคุณ					EE1 ☐
2.	สมาชิกในครอบครัวของคุณรู้สึกทุกข์ใจกับพฤติกรรมของคุณ					EE2 ☐
3.	สมาชิกในครอบครัวของคุณแสดงให้คุณรู้สึกว่าไม่ได้ชื่นชมในสิ่งที่คุณทำให้เลย					EE3 ☐
4.	สมาชิกในครอบครัวของคุณแสดงออกถึงความรู้สึกผิดหวังในตัวคุณ					EE4 ☐
5.	สมาชิกในครอบครัวของคุณอยากให้คุณอยู่ในโรงพยาบาลตลอดไป					EE5 ☐
6.	สมาชิกครอบครัวของคุณมองไม่เห็นคุณค่าของคุณเลย					EE6 ☐
7.	บางครั้งสมาชิกในครอบครัวของคุณมีความรู้สึกอยากทุบตีคุณ					EE7 ☐
8.	สมาชิกในครอบครัวของคุณควบคุมอารมณ์ได้ยากเมื่อคุณทำให้พวกเขาโกรธ					EE8 ☐
9.	สมาชิกในครอบครัวของคุณต้องโกหกคุณเพื่อควบคุมพฤติกรรมของคุณ					EE9 ☐

********。☆。◕‿◕。☆。ขอขอบคุณที่ตอบแบบสอบถามค่ะ 。☆。◕‿◕。☆**********

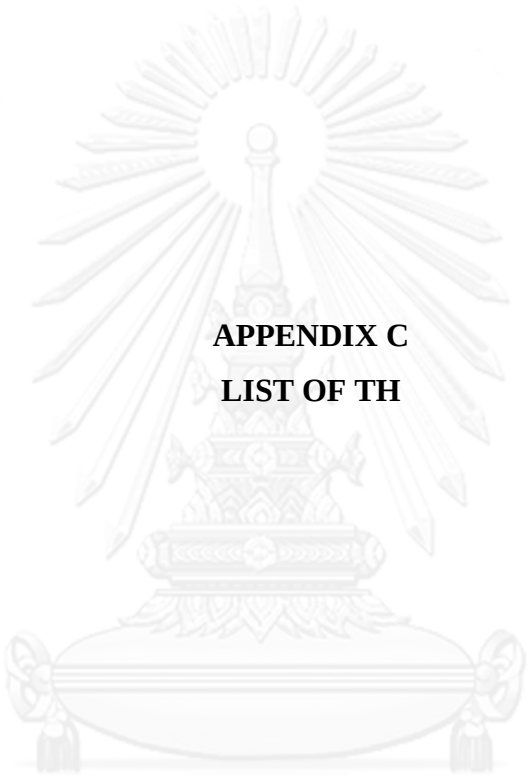
6. แบบวัดการสนับสนุนทางสังคม

(Social support Questionnaire)

****

<u>คำชี้แจง</u> โปรดทำเครื่องหมาย (✓) ลงในช่องที่คุณคิดว่าสมาชิกในครอบครัว เจ้าหน้าที่ในทีมสุขภาพ เพื่อได้ให้ความช่วยเหลือคุณภายหลังที่คุณได้รับการวินิจฉัยว่าเป็นโรคจิตเภทตามข้อความต่อไปนี้มากน้อยเพียงใด และคุณมีสิทธิจะไม่ตอบคำถามข้อใดก็ได้หรือยุติการตอบคำถามเมื่อใดก็ได้ โดยจะไม่มีผลกระทบใดๆ ต่อสิทธิประโยชน์ที่คุณจะได้รับ”

ข้อ	การช่วยเหลือที่ได้รับ	ไม่ช่วยเหลือเลย	ช่วยเหลือเล็กน้อย	ช่วยเหลือบ้างบางครั้ง	ช่วยเหลือค่อนข้างมาก	ช่วยเหลือมากที่สุด	สำหรับผู้วิจัย
สมาชิกในครอบครัว ได้แก่ สามี บิดา มารดา บุตร หลาน ญาติพี่น้อง							
1.	ให้คำแนะนำและแนวทางในการปฏิบัติตัวที่เป็นประโยชน์						S1☐
2.	ให้ความมั่นใจว่าเขาจะช่วยเหลือเมื่อคุณต้องการ						S2☐
3.	ให้กำลังใจเมื่อคุณรู้สึกหดหู่ในระหว่างการเจ็บป่วย						S3☐
4.	ให้ความห่วงใยระหว่างการเจ็บป่วย						S4☐
5.	ให้ความไว้วางใจได้ในระหว่างการเจ็บป่วย						S5☐
6.	ให้ความช่วยเหลือด้านการเงิน หรือนำส่งโรงพยาบาลในกรณีฉุกเฉินในระหว่างการเจ็บป่วย						S6☐



APPENDIX C
LIST OF TH

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

List of Expert for Content Validity

1. Associate Professor Chatchawan Silpakit, MD., Ph.D.

   Director of the Contemplative EducationCentre, Mahidol University.

2. Associate Professor Rattana Saipanit, MD

   Department of Psychiatry, Ramathibodi Hospital

3. Associate Professor Yajai Sittimongkol, Ph.D.

   Faculty of Nursing, Mahidol University

4. Associate Professor Sucheera Phattharayuttawat, Ph.D.

   Department of Psychiatry, Mahidol University

5. Assistant Professor Nopporn Vongsirimad, Ph.D.

   Faculty of Nursing, Mahidol University

6. Miss Malatee Rungruangsiripan, Ph.D.

   Faculty of Nursing, Mahidol University

7. Miss Utaya Nakcharoen, Ph.D., APN

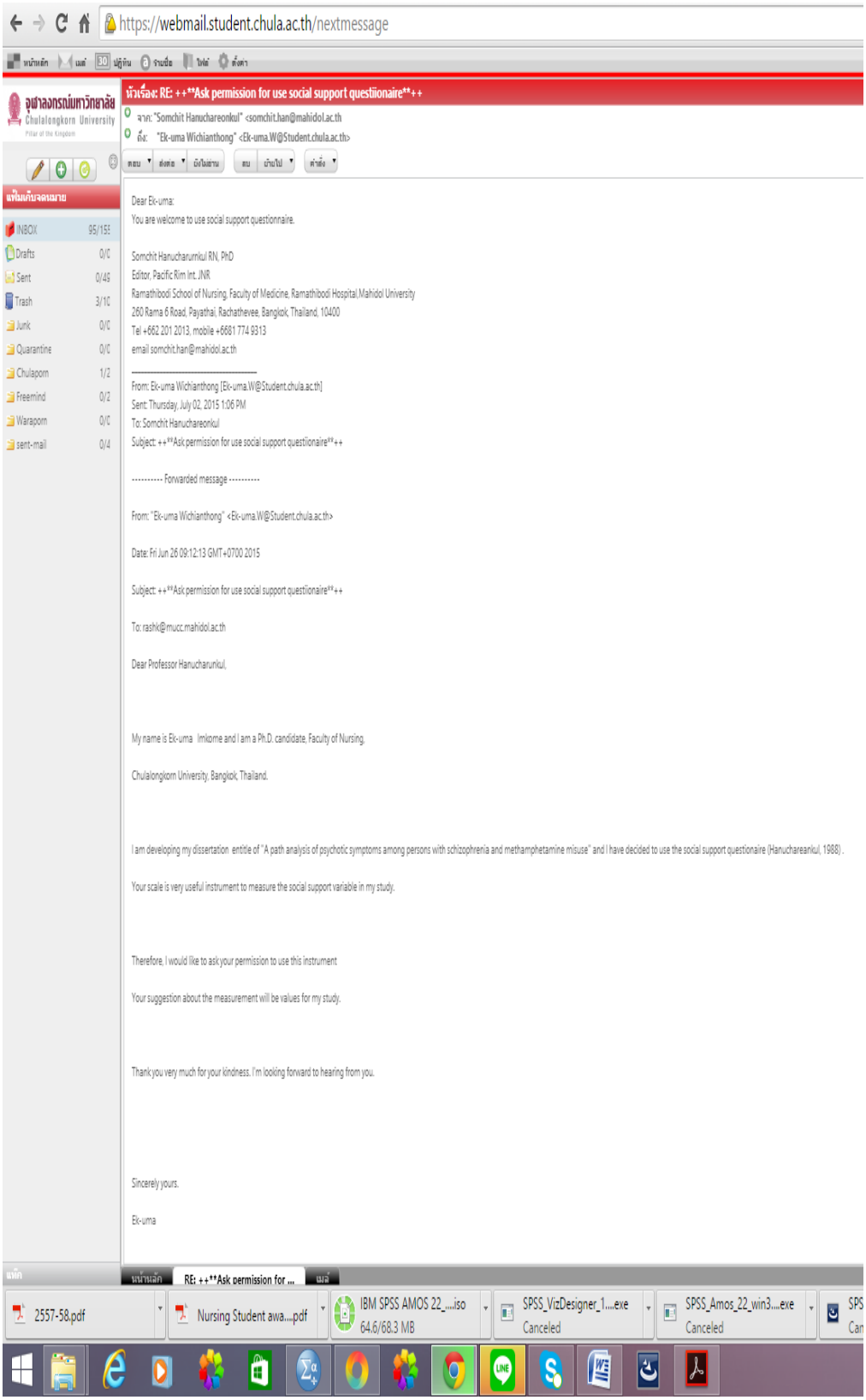
   Division of Nursing, Galayaratchanakarindra Institute

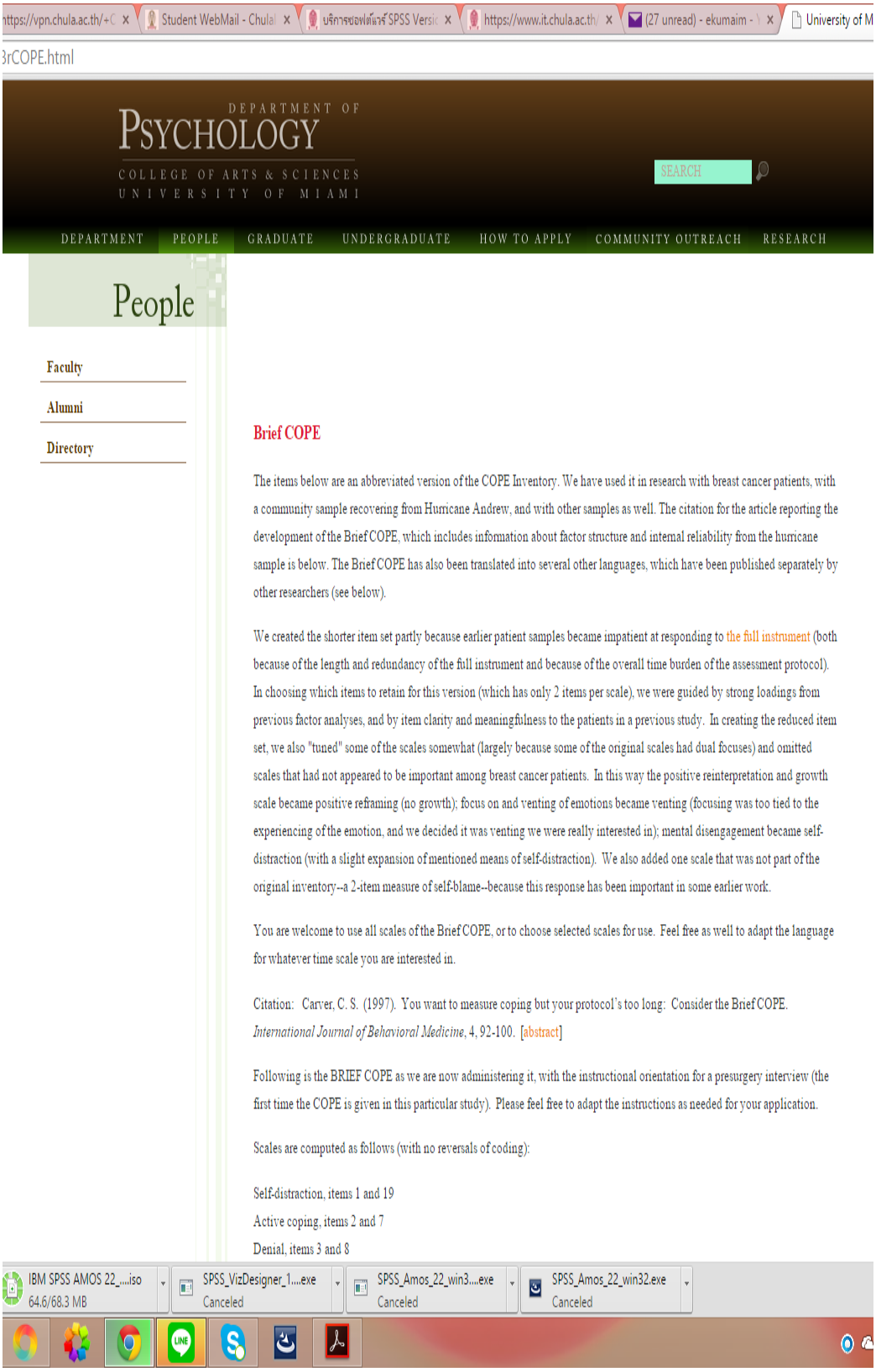
จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

APPENDIX D

Permission letters for research instrument using

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University


https://webmail.student.chula.ac.th/nextmessage
หัวเรื่อง: RE: ++**Ask permission for use social support questiionaire**++
จาก: "Somchit Hanucharoenkul" <somchit.han@mahidol.ac.th
ถึง: "Ek-uma Wichianthong" <Ek-uma.W@Student.chula.ac.th>
Dear Ek-uma:
You are welcome to use social support questionnaire.
Somchit Hanucharurnkul RN, PhD
Editor, Pacific Rim Int. JNR
Ramathibodi School of Nursing, Faculty of Medicine, Ramathibodi Hospital,Mahidol University
260 Rama 6 Road, Payathai, Rachathevee, Bangkok, Thailand, 10400
Tel +662 201 2013, mobile +6681 774 9313
email somchit.han@mahidol.ac.th
From: Ek-uma Wichianthong [Ek-uma.W@Student.chula.ac.th]
Sent: Thursday, July 02, 2015 1:06 PM
To: Somchit Hanucharoenkul
Subject: ++**Ask permission for use social support questiionaire**++
---------- Forwarded message ----------
From: "Ek-uma Wichianthong" <Ek-uma.W@Student.chula.ac.th>
Date: Fri Jun 26 09:12:13 GMT+0700 2015
Subject: ++**Ask permission for use social support questiionaire**++
To: rashk@mucc.mahidol.ac.th
Dear Professor Hanucharunkul,
My name is Ek-uma Imkome and I am a Ph.D. candidate, Faculty of Nursing.
Chulalongkorn University, Bangkok, Thailand.
I am developing my dissertation entitle of "A path analysis of psychotic symptoms among persons with schizophrenia and methamphetamine misuse" and I have decided to use the social support questionaire (Hanucharoenkul, 1988) .
Your scale is very useful instrument to measure the social support variable in my study.
Therefore, I would like to ask your permission to use this instrument
Your suggestion about the measurement will be values for my study.
Thank you very much for your kindness. I'm looking forward to hearing from you.
Sincerely yours,
Ek-uma
2557-58.pdf
Nursing Student awa....pdf
IBM SPSS AMOS 22_....iso
64.6/68.3 MB
SPSS_VizDesigner_1....exe
Canceled
SPSS_Amos_22_win3....exe
Canceled



https://vpn.chula.ac.th/+C | Student WebMail - Chula | บริการซอฟต์แวร์ SPSS Versi | https://www.it.chula.ac.th/ | (27 unread) - ekumaim - | University of M

3rCOPE.html

DEPARTMENT OF PSYCHOLOGY
COLLEGE OF ARTS & SCIENCES
UNIVERSITY OF MIAMI

SEARCH

DEPARTMENT | PEOPLE | GRADUATE | UNDERGRADUATE | HOW TO APPLY | COMMUNITY OUTREACH | RESEARCH

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Brief COPE

The items below are an abbreviated version of the COPE Inventory. We have used it in research with breast cancer patients, with a community sample recovering from Hurricane Andrew, and with other samples as well. The citation for the article reporting the development of the Brief COPE, which includes information about factor structure and internal reliability from the hurricane sample is below. The Brief COPE has also been translated into several other languages, which have been published separately by other researchers (see below).

We created the shorter item set partly because earlier patient samples became impatient at responding to the full instrument (both because of the length and redundancy of the full instrument and because of the overall time burden of the assessment protocol). In choosing which items to retain for this version (which has only 2 items per scale), we were guided by strong loadings from previous factor analyses, and by item clarity and meaningfulness to the patients in a previous study. In creating the reduced item set, we also "tuned" some of the scales somewhat (largely because some of the original scales had dual focuses) and omitted scales that had not appeared to be important among breast cancer patients. In this way the positive reinterpretation and growth scale became positive reframing (no growth); focus on and venting of emotions became venting (focusing was too tied to the experiencing of the emotion, and we decided it was venting we were really interested in); mental disengagement became self-distraction (with a slight expansion of mentioned means of self-distraction). We also added one scale that was not part of the original inventory--a 2-item measure of self-blame--because this response has been important in some earlier work.

You are welcome to use all scales of the Brief COPE, or to choose selected scales for use. Feel free as well to adapt the language for whatever time scale you are interested in.

Citation: Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, 4, 92-100. [abstract]

Following is the BRIEF COPE as we are now administering it, with the instructional orientation for a presurgery interview (the first time the COPE is given in this particular study). Please feel free to adapt the instructions as needed for your application.

Scales are computed as follows (with no reversals of coding):

Self-distraction, items 1 and 19
Active coping, items 2 and 7
Denial, items 3 and 8

IBM SPSS AMOS 22_....iso 64.6/68.3 MB | SPSS_VizDesigner_1....exe Canceled | SPSS_Amos_22_win3....exe Canceled | SPSS_Amos_22_win32.exe Canceled

APPENDIX E

Psychometric properties of Instruments

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Chulalongkorn University

APPENDIX E1

Reliability of Instruments

1. Inter-rater Reliability of Brief Psychiatric Rating Scale (BPRS)

Cases	Items									จำนวนเกณฑ์ที่ไม่ตรงกัน/เกณฑ์ทั้งหมด	จำนวนความคลาดเคลื่อนที่พบ	จำนวนเกณฑ์ทั้งหมด
	3	4	6	7	13	14	16	17	18			
1	-	-	-	-	-	-	-	-	-	0/9	-	9
2	-	-	-	-	-	-	-	-	-	0/9	-	9
29	-	-	-	-	-	-	-	-	-	0/9	-	9
30	-	-	-	-	-	-	-	-	-	0/9	-	9
รวม											6	270

Error coefficient (%) = $\frac{\text{ความคลาดเคลื่อนรวม x } 100}{\text{จำนวนเกณฑ์ที่ประเมินทั้งหมด}} = \frac{600}{270} = 2.22$

ค่าความเชื่อถือได้ (Reliability coefficient) (%) = 100-ค่าความคลาดเคลื่อน

= 100-2.22 = 97.77

ดังนั้น ค่าความเชื่อถือของเครื่องมือ = 0.97

Minimum standard ระดับที่ยอมรับได้ = 80%

2. The Brief COPE

N = 30

Brief COPE: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.956	.956	28

N = 313

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.913	.914	28

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Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BC1	56.83	379.040	.623	.	.955
BC2	57.20	376.097	.762	.	.954
BC3	57.50	382.052	.651	.	.955
BC4	57.47	390.602	.355	.	.957
BC5	56.53	386.533	.469	.	.956
BC6	57.30	382.286	.536	.	.955
BC7	56.97	364.792	.786	.	.953
BC8	57.57	385.771	.450	.	.956
BC9	57.23	372.392	.763	.	.953
BC10	56.67	374.230	.753	.	.954
BC11	57.27	381.582	.511	.	.956
BC12	57.17	379.937	.600	.	.955
BC13	57.43	377.909	.611	.	.955
BC14	57.30	379.734	.645	.	.955
BC15	57.00	378.000	.640	.	.955
BC16	57.40	376.731	.691	.	.954
BC17	57.20	373.752	.720	.	.954
BC18	57.37	373.275	.719	.	.954
BC19	57.13	390.533	.389	.	.956
BC20	56.97	377.757	.586	.	.955
BC21	57.30	377.941	.605	.	.955
BC22	57.20	372.166	.715	.	.954
BC23	56.87	368.878	.832	.	.953
BC24	57.17	369.592	.813	.	.953
BC25	57.17	365.385	.891	.	.952
BC26	57.60	381.421	.596	.	.955
BC27	57.03	376.447	.662	.	.954
BC28	57.27	376.961	.682	.	.954

Reliability of 3 constructs

Scale: Emotional focused coping strategies

Case Processing Summary

		N	%
Cases	Valid	313	100.0
	Excluded[a]	0	.0
	Total	313	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.837	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BC20	14.5911	32.422	.596	.437	.816
BC24	14.8882	32.010	.643	.500	.812
BC5	14.8530	35.042	.313	.157	.842
BC15	14.9105	33.479	.475	.285	.827
BC18	15.3323	33.216	.498	.310	.825
BC28	15.3450	32.938	.509	.320	.824
BC12	14.7955	31.586	.626	.455	.812
BC17	14.8403	31.430	.652	.488	.810
BC22	15.1438	32.540	.514	.370	.824
BC27	15.1661	32.588	.484	.342	.827

Scale: Problem focused coping strategies

Case Processing Summary

		N	%
Cases	Valid	313	100.0
	Excluded[a]	0	.0
	Total	313	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.799	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BC2	8.7572	11.813	.585	.372	.761
BC7	8.4792	11.584	.632	.408	.749
BC23	8.9073	12.655	.512	.291	.777
BC10	8.6070	12.541	.508	.300	.778
BC14	8.8626	12.286	.543	.319	.771
BC25	8.8946	11.806	.544	.310	.771

Scale: Dysfunctional coping strategies

Case Processing Summary

		N	%
Cases	Valid	313	100.0
	Excluded[a]	0	.0
	Total	313	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.818	12

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BC6	15.8051	45.279	.450	.309	.806
BC16	15.8403	44.430	.521	.348	.800
BC3	15.6486	44.498	.516	.283	.801
BC8	15.6645	45.685	.418	.222	.809
BC1	15.0128	45.878	.409	.259	.810
BC19	15.1278	47.958	.285	.128	.819
BC13	15.4824	43.500	.550	.425	.797
BC26	15.4696	43.776	.539	.455	.799
BC4	15.6933	45.367	.442	.370	.807
BC11	15.7380	44.559	.488	.415	.803
BC9	15.4313	44.349	.508	.306	.801
BC21	15.5591	45.158	.490	.297	.803

3. Self-efficacy for Appropriate Medication use Scale

N = 30

Self-efficacy for Appropriate Medication use Scale: Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.890	.911	13

N = 313

Self-efficacy for Appropriate Medication use Scale: Reliability Statistics

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.911	.911	13

.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
MS1	27.13	43.982	.520	.669	.634
MS2	27.23	42.668	.486	.657	.627
MS3	27.27	42.202	.621	.667	.618
MS4	27.10	44.507	.447	.594	.639
MS5	27.57	41.771	.657	.861	.614
MS6	27.20	42.717	.588	.910	.623
MS7	27.23	42.599	.612	.901	.621
MS8	27.30	42.562	.646	.816	.620
MS9	26.73	39.237	-.070	.464	.914
MS10	27.40	41.214	.654	.830	.610
MS11	27.30	44.493	.322	.623	.646
MS12	27.33	41.747	.609	.665	.616
MS13	27.20	43.752	.469	.800	.634

4. Family Expressed Emotional Scale

N = 30

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.763	.783	16

N = 313

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.871	.872	16

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Chulalongkorn University

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
EE1	34.47	56.533	.560	.920	.734
EE2	34.53	60.947	.330	.708	.753
EE3	34.67	56.437	.584	.817	.732
EE4	34.80	58.372	.506	.795	.740
EE5	35.30	53.803	.724	.825	.718
EE6	35.17	58.144	.463	.629	.742
EE7	35.43	57.426	.546	.806	.736
EE8	34.50	59.707	.073	.558	.812
EE9	34.43	60.806	.367	.714	.751
EE10	34.47	60.395	.323	.737	.754
EE11	33.60	70.248	-.338	.554	.790
EE12	35.13	60.326	.424	.772	.747
EE13	34.67	62.506	.208	.925	.763
EE14	34.97	61.964	.273	.905	.758
EE15	35.23	57.564	.527	.819	.737
EE16	35.13	56.809	.503	.818	.738

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Reliability of 2 constructs

Scale: Negative expressed emotion

Case Processing Summary

		N	%
Cases	Valid	313	100.0
	Excluded[a]	0	.0
	Total	313	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.868	.874	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
EE1	25.9073	45.366	.657	.588	.851
EE2	25.9649	46.162	.614	.596	.854
EE3	26.0735	45.927	.615	.507	.854
EE4	26.1022	45.848	.642	.517	.852
EE5	26.5655	44.490	.627	.486	.852
EE6	26.4888	45.424	.609	.474	.854
EE7	26.5847	44.115	.658	.584	.850
EE8	26.2780	44.605	.658	.548	.850
EE9	26.1470	45.299	.653	.512	.851
EE10	26.0735	46.030	.575	.396	.856
EE11	26.2492	52.534	.061	.050	.895

Scale: Positive expressed emotion

Case Processing Summary

		N	%
Cases	Valid	313	100.0
	Excluded[a]	0	.0
	Total	313	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.910	.911	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
EE12	8.8211	13.455	.797	.640	.885
EE13	8.6550	13.387	.784	.631	.888
EE14	8.7061	13.631	.781	.627	.889
EE15	8.8307	12.987	.795	.637	.886
EE16	8.6805	13.801	.708	.512	.904

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Chulalongkorn University

5. Social support questionnaire

N = 30

Social support: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.916	.918	21

N = 313

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.936	.937	21

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SS1	38.63	248.654	.503	.966	.914
SS2	38.53	251.568	.383	.962	.916
SS3	38.70	244.562	.634	.910	.911
SS4	38.30	249.459	.481	.973	.914
SS5	38.73	241.857	.675	.891	.910
SS6	38.27	250.547	.410	.916	.916
SS7	39.70	228.493	.790	.927	.906
SS8	38.43	255.220	.394	.868	.916
SS9	38.60	250.317	.536	.940	.913
SS10	38.70	244.286	.578	.937	.912
SS11	38.67	241.195	.644	.932	.910
SS12	38.83	245.799	.531	.942	.913
SS13	39.20	234.924	.612	.887	.912
SS14	39.67	239.057	.495	.966	.915
SS15	39.77	249.426	.512	.939	.913
SS16	39.83	242.420	.618	.908	.911
SS17	39.97	244.309	.647	.952	.911
SS18	39.87	245.016	.597	.931	.912
SS19	40.07	246.616	.599	.955	.912
SS20	40.27	246.616	.581	.940	.912
SS21	40.60	245.697	.620	.962	.911

6. Stressful life event questionnaire

N = 30

Stressful life event: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.965	.977	46

N = 313

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.976	.977	46

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
SLE1	26.10	1226.714	.275	.967
SLE2	27.00	1198.759	.713	.964
SLE3	26.27	1185.582	.602	.965
SLE4	26.60	1191.834	.673	.964
SLE5	26.70	1201.390	.593	.964
SLE6	26.60	1197.834	.549	.965
SLE7	26.73	1207.995	.583	.964
SLE8	26.83	1193.385	.749	.964
SLE9	26.33	1200.299	.597	.964
SLE10	26.27	1200.961	.632	.964
SLE11	27.03	1203.137	.724	.964
SLE12	27.27	1205.720	.924	.963
SLE13	27.20	1201.131	.913	.963
SLE14	27.23	1205.426	.920	.963
SLE15	26.83	1196.006	.722	.964
SLE16	25.77	1217.909	.472	.965
SLE17	26.63	1195.413	.676	.964
SLE18	27.30	1216.493	.924	.963
SLE19	26.43	1202.047	.582	.964
SLE20	26.70	1206.631	.544	.965
SLE21	25.67	1216.575	.447	.965
SLE22	27.07	1205.099	.735	.964
SLE23	27.13	1210.326	.801	.964
SLE24	27.23	1205.426	.920	.963
SLE25	27.20	1207.338	.884	.963
SLE26	27.23	1205.426	.920	.963
SLE27	27.27	1205.720	.924	.963
SLE28	27.03	1236.102	.396	.965
SLE29	26.90	1242.369	.327	.965
SLE30	27.37	1243.826	.816	.964
SLE31	26.77	1250.461	.177	.966
SLE32	26.97	1254.171	.220	.965
SLE33	27.33	1232.851	.861	.964
SLE34	26.83	1235.592	.525	.965
SLE35	27.03	1206.102	.648	.964
SLE36	26.97	1214.033	.521	.965
SLE37	27.27	1209.789	.897	.963
SLE38	27.30	1210.079	.903	.963
SLE39	27.37	1242.309	.866	.964
SLE40	27.40	1242.593	.925	.964
SLE41	27.33	1237.954	.824	.964
SLE42	27.40	1242.593	.925	.964
SLE43	27.30	1210.079	.903	.963
SLE44	27.03	1213.895	.699	.964
SLE45	26.63	1244.033	.350	.965
SLE46	26.63	1228.447	.346	.966

.

7. Social occupational Functioning Scale

N = 30

Social function: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.756	.800	14

N = 313

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.936	.938	14

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SOFE1	18.07	29.444	.067	.598	.761
SOFS2	18.03	29.826	-.101	.184	.766
SOFS4	17.77	27.220	.367	.636	.745
SOFS5	17.47	25.085	.673	.684	.719
SOFS6	17.40	26.800	-.027	.062	.862
SOFS7	17.53	24.809	.508	.832	.727
SOFS8	17.23	23.633	.506	.907	.725
SOFS9	17.90	28.852	.136	.738	.759
SOFS10	17.43	23.702	.780	.909	.703
SOFS11	17.70	24.079	.767	.885	.707
SOFS12	17.43	21.426	.782	.957	.686
SOFS13	17.73	25.651	.575	.717	.727
SOFS14	17.50	24.121	.604	.745	.717

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APPENDIX E2

Test retest

Correlations

		BPRS1	BPRS2
BPRS1	Pearson Correlation	1	.696**
	Sig. (2-tailed)		.000
	N	30	30
BPRS2	Pearson Correlation	.696**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		BC1	BC2
BC1	Pearson Correlation	1	.997**
	Sig. (2-tailed)		.000
	N	30	30
BC2	Pearson Correlation	.997**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Emo_COPE1	Emp_COPE2
Emo_COPE1	Pearson Correlation	1	.962**
	Sig. (2-tailed)		.000
	N	313	313
Emp_COPE2	Pearson Correlation	.962**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Prob_COPE1	Prob_COPE2
Prob_COPE1	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	313	313
Prob_COPE2	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Dys_COPE1	Dys_COPE2
Dys_COPE1	Pearson Correlation	1	.904**
	Sig. (2-tailed)		.000
	N	313	313
Dys_COPE2	Pearson Correlation	.904**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		MS1	MS2
MS1	Pearson Correlation	1	.974**
	Sig. (2-tailed)		.000
	N	30	30
MS2	Pearson Correlation	.974**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		EE1	EE2
EE1	Pearson Correlation	1	.996**
	Sig. (2-tailed)		.000
	N	30	30
EE2	Pearson Correlation	.996**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Neg_EE1	Neg_EE2
Neg_EE1	Pearson Correlation	1	.935**
	Sig. (2-tailed)		.000
	N	313	313
Neg_EE2	Pearson Correlation	.935**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Neg_EE1	Neg_EE2
Neg_EE1	Pearson Correlation	1	.935**
	Sig. (2-tailed)		.000
	N	313	313
Neg_EE2	Pearson Correlation	.935**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Possi_EE1	Possi_EE2
Possi_EE1	Pearson Correlation	1	.914**
	Sig. (2-tailed)		.000
	N	313	313
Possi_EE2	Pearson Correlation	.914**	1
	Sig. (2-tailed)	.000	
	N	313	313

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		SS1	SS2
SS1	Pearson Correlation	1	.959**
	Sig. (2-tailed)		.000
	N	30	30
SS2	Pearson Correlation	.959**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		SLE1	SLE2
SLE1	Pearson Correlation	1	1.000**
	Sig. (2-tailed)		.000
	N	30	30
SLE2	Pearson Correlation	1.000**	1
	Sig. (2-tailed)	.000	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

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APPENDIX E3

Intraclass Correlation Coefficient

Intraclass Correlation Coefficient

	Intraclass Correlation[b]	95% Confidence Interval		F Test with True Value 0			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.888[a]	.822	.937	40.674	30	120	.000
Average Measures	.975[c]	.958	.987	40.674	30	120	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

a. The estimator is the same, whether the interaction effect is present or not.

b. Type C intraclass correlation coefficients using a consistency definition. The between-measure variance is excluded from the denominator variance.

c. This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

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APPENDIX E4

Construct Reliability

$$\rho_c = \frac{(\Sigma\lambda)^2}{\left[(\Sigma\lambda^2 + \Sigma\theta\right]}$$ Construct reliability

$$\rho_v = \frac{(\Sigma\lambda^2)}{\left[\Sigma\lambda^2 + \Sigma\theta\right]}$$ Average Variance Extracted (AVE)

Questionnaires	Construct Reliability
The Thai version of Brief COPE	$\frac{(0.63+0.64+0.56+0.26+0.39+0.33+0.69+0.41+0.64+0.49+0.33+0.77+0.60+0.61+0.51+0.43+0.73+0.46+0.45+0.63+0.51+0.62+0.55+0.68+0.68+0.63+0.50+0.47)^2}{(0.63+0.64+0.56+0.26+0.39+0.33+0.69+0.41+0.64+0.49+0.33+0.77+0.60+0.61+0.51+0.43+0.73+0.46+0.45+0.63+0.51+0.62+0.55+0.68+0.68+0.63+0.50+0.47)^2 + (0.06+0.05+0.06+0.06+0.06+0.06+0.05 + 0.06+0.06+ 0.05+0.07+0.05+0.06+0.05 +0.05+0.06+0.05 +0.05+0.06+0.05+0.06 +0.06+0.05+0.05+0.05+0.06+0.06+ 0.05)}$ = $\frac{(15.20)^2}{(15.20)^2+1.57}$ = 0.90

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Questionnaires	Construct Reliability
The Thai version of Family Expressed Emotional Scale	$\frac{(0.74+0.61+0.68+0.62+0.71+0.73+0.75+0.74+0.64+0.57+0.43+0.86+0.83+0.82+0.94+0.78)^2}{(0.74+0.61+0.68+0.62+0.71+0.73+0.75+0.74+0.64+0.57+0.43+0.86+0.83+0.82+0.94+0.78)^2 + (0.05+0.05+0.05+0.05+0.06+0.06+0.06+0.06+0.05+0.05+0.07+0.05+0.05+0.05+0.05+0.05)} = \frac{(11.45)^2}{(11.45)^2 + 0.86} = 0.99$

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APPENDIX F

Approval of the IRB of Chulalongkorn University

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย
อาคารสถาบัน 2 ชั้น 4 ซอยจุฬาลงกรณ์ 62 ถนนพญาไท เขตปทุมวัน กรุงเทพฯ 10330
โทรศัพท์: 0-2218-8147 โทรสาร: 0-2218-8147 E-mail: eccu@chula.ac.th

COA No. 053/2558

ใบรับรองโครงการวิจัย

โครงการวิจัยที่ 006.1/58	:	การวิเคราะห์เส้นทางความสัมพันธ์ของอาการทางจิตในผู้ที่เป็นโรคจิตเภท และการใช้เมทแอมเฟตามีน
ผู้วิจัยหลัก	:	นางสาวอกกุมา ยิ้มคำ
หน่วยงาน	:	คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

คณะกรรมการพิจารณาจริยธรรมการวิจัยในคน กลุ่มสหสถาบัน ชุดที่ 1 จุฬาลงกรณ์มหาวิทยาลัย ได้พิจารณา โดยใช้หลัก ของ The International Conference on Harmonization – Good Clinical Practice (ICH-GCP) อนุมัติให้ดำเนินการศึกษาวิจัยเรื่องดังกล่าวได้

ลงนาม.....
(รองศาสตราจารย์ นายแพทย์ปรีดา ทัศนประดิษฐ)
ประธาน

ลงนาม.....
(ผู้ช่วยศาสตราจารย์ ดร.นันทรี ชัยชนะวงศาโรจน์)
กรรมการและเลขานุการ

วันที่รับรอง : 18 มีนาคม 2558 **วันหมดอายุ** : 17 มีนาคม 2559

เอกสารที่คณะกรรมการรับรอง

1) โครงการวิจัย
2) ข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัยและใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย
3) คู่มือวิจัย
4) แบบสอบถาม

เลขที่โครงการวิจัย 006.1/58
วันที่รับรอง 18 มี.ค. 2558
วันหมดอายุ 17 มี.ค. 2559

เงื่อนไข

1. ข้อพึงรับทราบว่าเป็นการพิจารณาจริยธรรม หากดำเนินการเก็บข้อมูลการวิจัยก่อนได้รับการอนุมัติจากคณะกรรมการพิจารณาจริยธรรมการวิจัยฯ
2. หากใบรับรองโครงการวิจัยหมดอายุ การดำเนินการวิจัยต้องหยุดชั่วคราว เว้นแต่คณะกรรมการฯ จะได้พิจารณาแล้วเห็นว่าการดำเนินการวิจัยต่อไปมีความเสี่ยงหรือผลกระทบต่อผู้เข้าร่วมวิจัยเพิ่มขึ้นจากเดิมหรือไม่ อย่างไร ทั้งนี้ ต้องมีการแจ้งให้ผู้เข้าร่วมวิจัยทราบถึงความเสี่ยงหรือผลกระทบดังกล่าวด้วย
3. ต้องดำเนินการวิจัยตามที่ระบุไว้ในโครงการโดยอย่างเคร่งครัด
4. ใช้เอกสารข้อมูลสำหรับกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย ใบยินยอมของกลุ่มประชากรหรือผู้มีส่วนร่วมในการวิจัย และเอกสารชี้ชวนผู้เข้าร่วมวิจัย (ถ้ามี) **เฉพาะที่ประทับตราคณะกรรมการเท่านั้น**
5. หากเกิดเหตุการณ์ไม่พึงประสงค์ร้ายแรงในสถานที่เก็บข้อมูลที่ขอยกเว้นการขอความเห็นชอบจากคณะกรรมการ ต้องรายงานคณะกรรมการทราบใน 5 วันทำการ
6. หากมีการแก้ไขเปลี่ยนแปลงการดำเนินการวิจัย ให้ส่งคณะกรรมการพิจารณารับรองก่อนดำเนินการ
7. โครงการวิจัยไม่เกิน 1 ปี ส่งแบบรายงานสิ้นสุดโครงการวิจัย (AF 03-12) และบทคัดย่อผลการวิจัยภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น สำหรับโครงการวิจัยที่เป็นวิทยานิพนธ์ให้ส่งบทคัดย่อผลการวิจัย ภายใน 30 วัน เมื่อโครงการวิจัยเสร็จสิ้น

APPENDIX G
PARTICIPANT INFORMATION SHEET

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

AF 04-07

ข้อมูลสำหรับผู้มีส่วนร่วมในการวิจัย

(Patient/Participant Information Sheet)

ชื่อโครงการวิจัย การวิเคราะห์เส้นทางของอาการทางจิตในผู้ที่เป็นโรคจิตเภทและการใช้เมทแอมเฟตามีน

ชื่อผู้วิจัย นางสาวเอกอุมา อิ้มคำ นิสิตระดับดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สถานที่ติดต่อผู้วิจัย คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย อาคารบรมราชชนนีศรีศตพรรษ ชั้น 11 ถนนพระราม 1 เขตปทุมวันกรุงเทพฯ 10330

โทรศัพท์มือถือ 08-1692-0200 E-mail: Ekumaim@yahoo.com

1. ขอเรียนเชิญท่านเข้าร่วมในการวิจัย ก่อนที่ท่านจะตัดสินใจเข้าร่วมในการวิจัย มีความจำเป็นที่ท่านควรทำความเข้าใจว่างานวิจัยนี้ทำเพราะเหตุใด และเกี่ยวข้องกับอะไร กรุณาใช้เวลาในการอ่านข้อมูลต่อไปนี้อย่างละเอียดรอบคอบและสอบถามข้อมูลเพิ่มเติมหรือข้อมูลที่ไม่ชัดเจนได้ตลอดเวลา
2. โครงการนี้เป็นการศึกษาวิจัยเกี่ยวกับอาการของผู้ที่เป็นโรคจิตเภทและปัจจัยต่างๆที่เกี่ยวข้อง
3. วัตถุประสงค์ของโครงการวิจัย มีดังนี้
   3.1 เพื่อศึกษาความสัมพันธ์ของการเผชิญปัญหา การทำหน้าที่ทางสังคม การรับประทานยา การแสดงออกทางอารมณ์ในครอบครัว เหตุการณ์ในชีวิต ความสามารถทางสังคมและการสนับสนุนทางสังคมที่มีต่ออาการของผู้ที่เป็น โรคจิตเภทและการใช้เมทแอมเฟตามีน
   3.2 เพื่อพัฒนาและทดสอบโมเดลที่อธิบายความสัมพันธ์ของการเผชิญปัญหา การทำหน้าที่ทางสังคม การรับประทานยา การแสดงออกทางอารมณ์ในครอบครัว เหตุการณ์ในชีวิต ความสามารถทางสังคม และการสนับสนุนทางสังคมที่มีต่ออาการทางจิตในผู้ที่เป็น โรคจิตเภทและการใช้เมทแอมเฟตามีน
4. รายละเอียดของผู้มีส่วนร่วมในการวิจัย

   ผู้มีส่วนร่วมในการวิจัยเป็นผู้ป่วยโรคจิตเภทที่มีการกลับเป็นซ้ำของอาการทางจิตร่วมกับการใช้เมทแอมเฟตามีน

   ท่านได้รับเชิญให้เข้าร่วมโครงการวิจัยนี้เพราะคุณสมบัติที่เหมาะสมดังต่อไปนี้

   1. เป็นผู้ป่วยโรคจิตเภทที่มีการกลับเป็นซ้ำของอาการทางจิตร่วมกับการใช้เมทแอมเฟตามีน
   2. มีอายุ 19-60 ปี
   3. คะแนนของการประเมินระดับอาการทางจิตน้อยกว่า 36 คะแนน
   4. สามารถสื่อสารโดยใช้ภาษาไทย
   5. ยินดีให้ความร่วมมือในการวิจัย

   ท่านไม่สามารถเข้าร่วมโครงการวิจัยได้หากท่านมีคุณสมบัติดังต่อไปนี้

   1. มีอาการกำเริบจนตอบแบบสอบถาม
   2. คะแนนของการประเมินระดับอาการทางจิตน้อยกว่า 36 คะแนน
   3. ไม่ร่วมมือในการตอบแบบสอบถาม

APPENDIX H
INFORMED CONSENT

จุฬาลงกรณ์มหาวิทยาลัย
Chulalongkorn University

AE 05-07

ใบยินยอมของผู้มีส่วนร่วมในการทำวิจัย

(Informed Consent Form)

ทำที่.....

วันที่.....เดือน..... พ.ศ. .....

ที่ผู้มีส่วนร่วมในการวิจัย.....

ข้าพเจ้า ซึ่งได้ลงนามท้ายหนังสือนี้ขอแสดงความยินยอมเข้าร่วมโครงการวิจัยการวิเคราะห์เส้นทางเอาการทางจิตในผู้ป่วยโรคจิตเภทที่มีการใช้มหแอมเฟตามีน โดยผู้วิจัย คือ นางสาวเอกอุมา อิ้มคำ นิสิตปริญญาเอก คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย สถานที่ติดต่อผู้วิจัย คือ คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัยอาคารบรมราชชนนีศรีศกหรรษชั้น 11 ถนนพระราม 1 เขตปทุมวันกรุงเทพฯ 30 โทรศัพท์มือถือ 08-1692-0200 E-mail: Etaumaim@yahoo.com

ข้าพเจ้า ได้รับทราบรายละเอียดเกี่ยวกับที่มาและวัตถุประสงค์ในการทำวิจัย รายละเอียดขั้นตอนต่างๆ ที่จะต้องปฏิบัติหรือได้รับการปฏิบัติความเสี่ยงอันตรายและประโยชน์ซึ่งจะเกิดขึ้นจากการวิจัยเรื่องนี้ ได้อ่านรายละเอียดในเอกสารชี้แจงผู้มีส่วนร่วมในการวิจัยโดยตลอด และได้รับคำอธิบายจากผู้วิจัยจนเข้าใจเป็นอย่างดีแล้ว

ข้าพเจ้าจึงสมัครใจเข้าร่วมในโครงการวิจัยนี้ ตามที่ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมการวิจัย ข้าพเจ้ายินยอม ตอบแบบสอบถามเกี่ยวกับอาการของข้าพเจ้า การเผชิญปัญหา การทำหน้าที่ทางสังคม รับประทานยาอย่างเหมาะสม การแสดงออกทางอารมณ์ในครอบครัว เหตุการณ์รุนแรงในชีวิต การสนับสนุนทางสังคมเป็นการตอบแบบสอบถามครั้งเดียวใช้เวลาประมาณ 45-90 นาที

ข้าพเจ้ามีสิทธิถอนตัวออกจากการวิจัยเมื่อใดก็ได้ตามความประสงค์ โดยไม่ต้องแจ้งเหตุผล ซึ่งการถอนตัวออกจากการวิจัยนั้นจะไม่มีผลกระทบต่อการดูแลรักษาในทางใดๆ ต่อข้าพเจ้าทั้งสิ้น

ข้าพเจ้าได้รับคำรับรองว่า ผู้วิจัยจะปฏิบัติต่อข้าพเจ้าตามข้อมูลที่ระบุไว้ในเอกสารชี้แจงผู้เข้าร่วมวิจัย และข้อมูลใดๆ ที่เกี่ยวข้องกับข้าพเจ้า ผู้วิจัยจะเก็บรักษาเป็นความลับ โดยจะนำเสนอข้อมูลการวิจัยเฉพาะรวมเท่านั้น ไม่มีข้อมูลใดในการรายงานที่จะนำไปสู่การระบุตัวข้าพเจ้า

APPENDIX I
THE MOST TOP FIVE OF COPING STRATEGIES

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The most top five coping strategies that participants used

Coping strategies	Percentages
I've been taking action to try to make the situation better.	40.3**%**
I've been accepting the reality of the fact that it has happened.	40.3%
I've been turning to work or other activities to take my mind off things.	39.3%
I've been trying to see it in a different light, to make it seem more positive.	31.3%
I've been getting help and advice from other people.	30.7%
I've been trying to come up with a strategy about what to do.	30.7%
I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	30.0%

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APPENDIX J
PRELIMINARY ANALYSIS: NORMALITY, LINEARITY, AND HOMOSCEDASTICITY

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APPENDIX J1

NORMALITY TESTING

Kolmogorov-Smirnov test

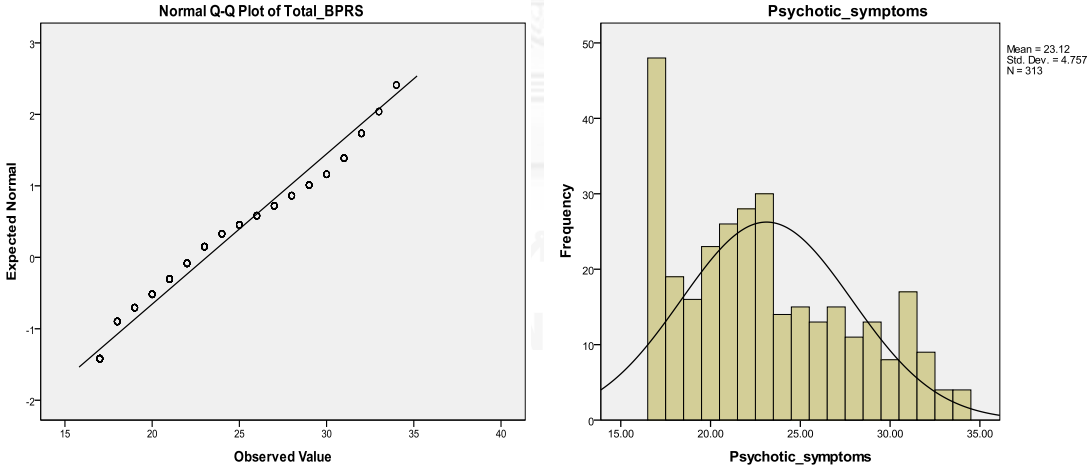
Tests of Normality

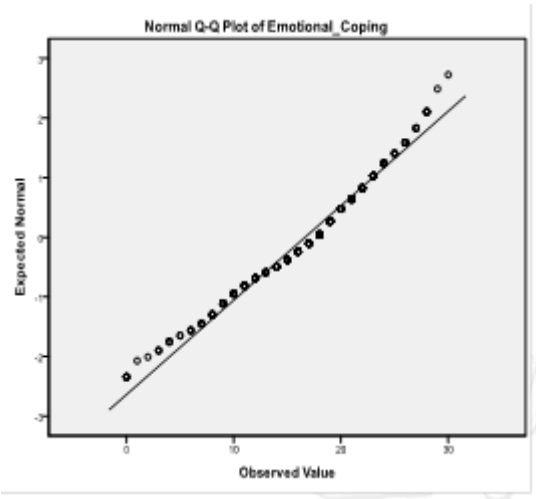
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Psychotic_symptoms	.117	312	.000	.934	312	.000
Emotional_Coping	.104	312	.000	.976	312	.000
Problem_Coping	.081	312	.000	.972	312	.000
Dysfunctional_coping	.071	312	.001	.985	312	.002
Negative_EE	.048	312	.082	.980	312	.000
Positive_EE	.125	312	.000	.948	312	.000
Medication_use_Self_efficacy	.082	312	.000	.957	312	.000
Social_support	.045	312	.200*	.985	312	.003
Stressful_life_event	.143	312	.000	.872	312	.000
Social_function	.177	312	.000	.823	312	.000

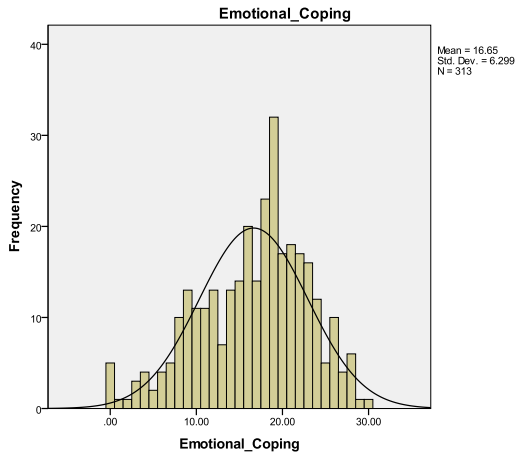
*. This is a lower bound of the true significance.

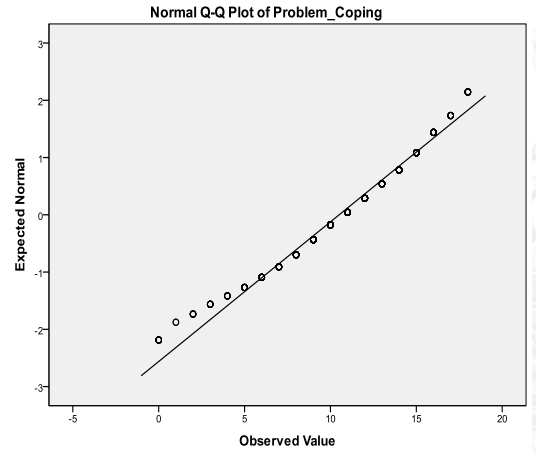
a. Lilliefors Significance Correction

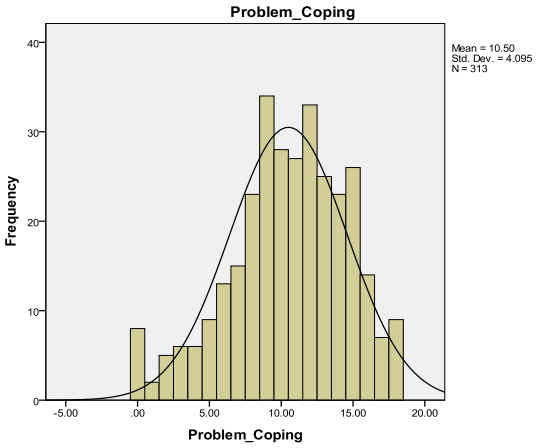
Q-Q PLOT AND HISTOGRAM

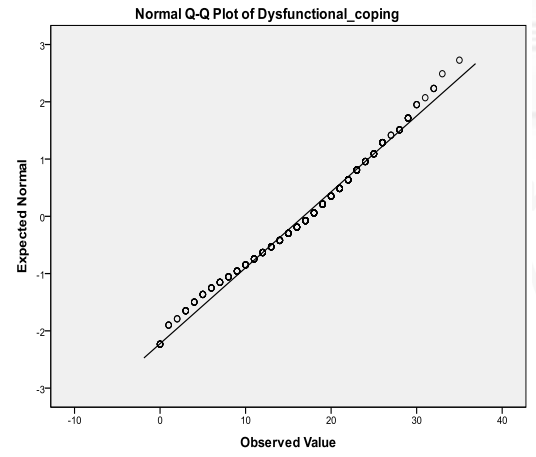


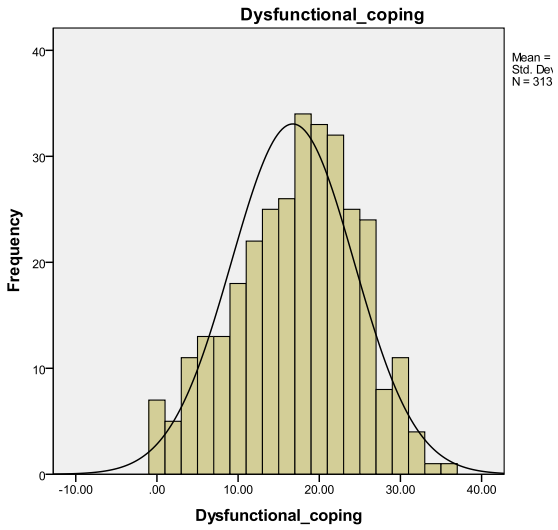

Normal Q-Q Plot of Emotional_Coping
Expected Normal
Observed Value

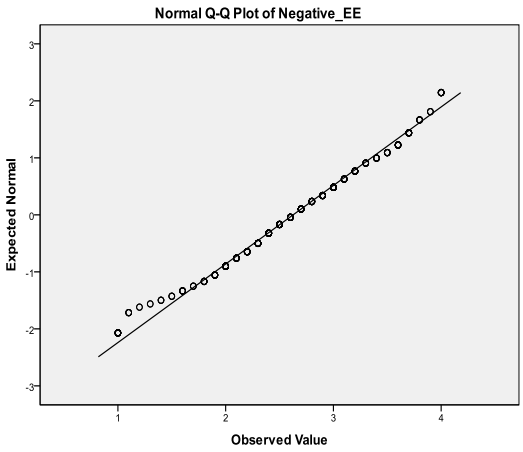

Emotional_Coping
Mean = 16.65
Std. Dev. = 6.299
N = 313
Frequency
Emotional_Coping

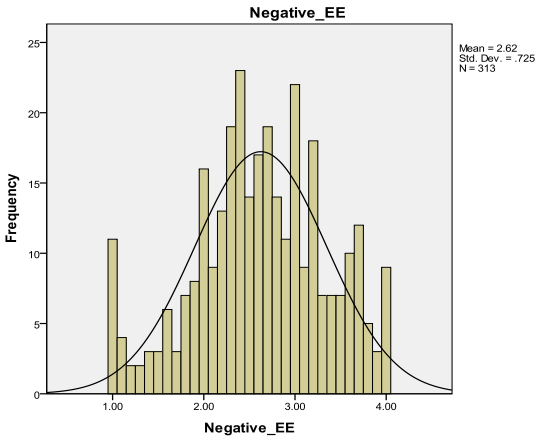

Normal Q-Q Plot of Problem_Coping
Expected Normal
Observed Value

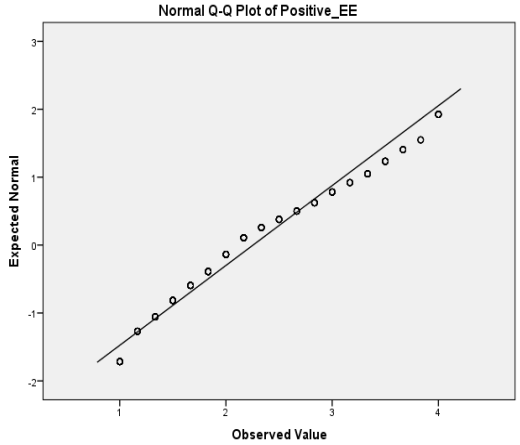

Problem_Coping
Mean = 10.50
Std. Dev. = 4.095
N = 313
Frequency
Problem_Coping

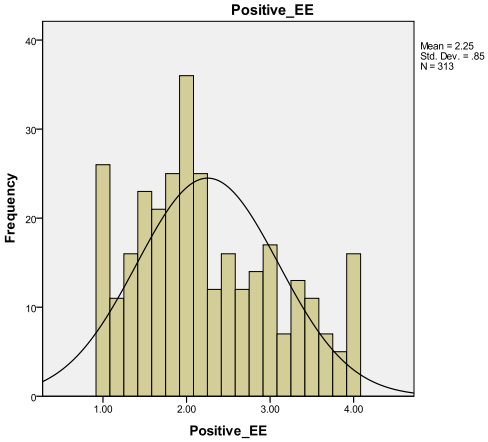

Normal Q-Q Plot of Dysfunctional_coping
Expected Normal
Observed Value

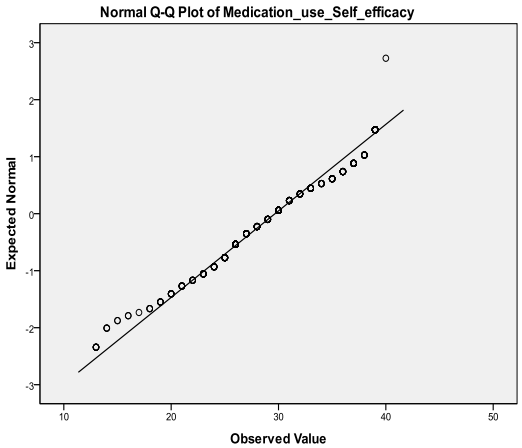

Dysfunctional_coping
Mean =
Std. Dev
N = 313
Frequency
Dysfunctional_coping

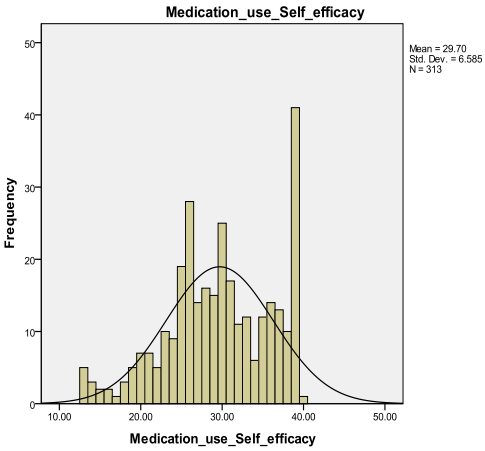

Normal Q-Q Plot of Negative_EE
Expected Normal
Observed Value

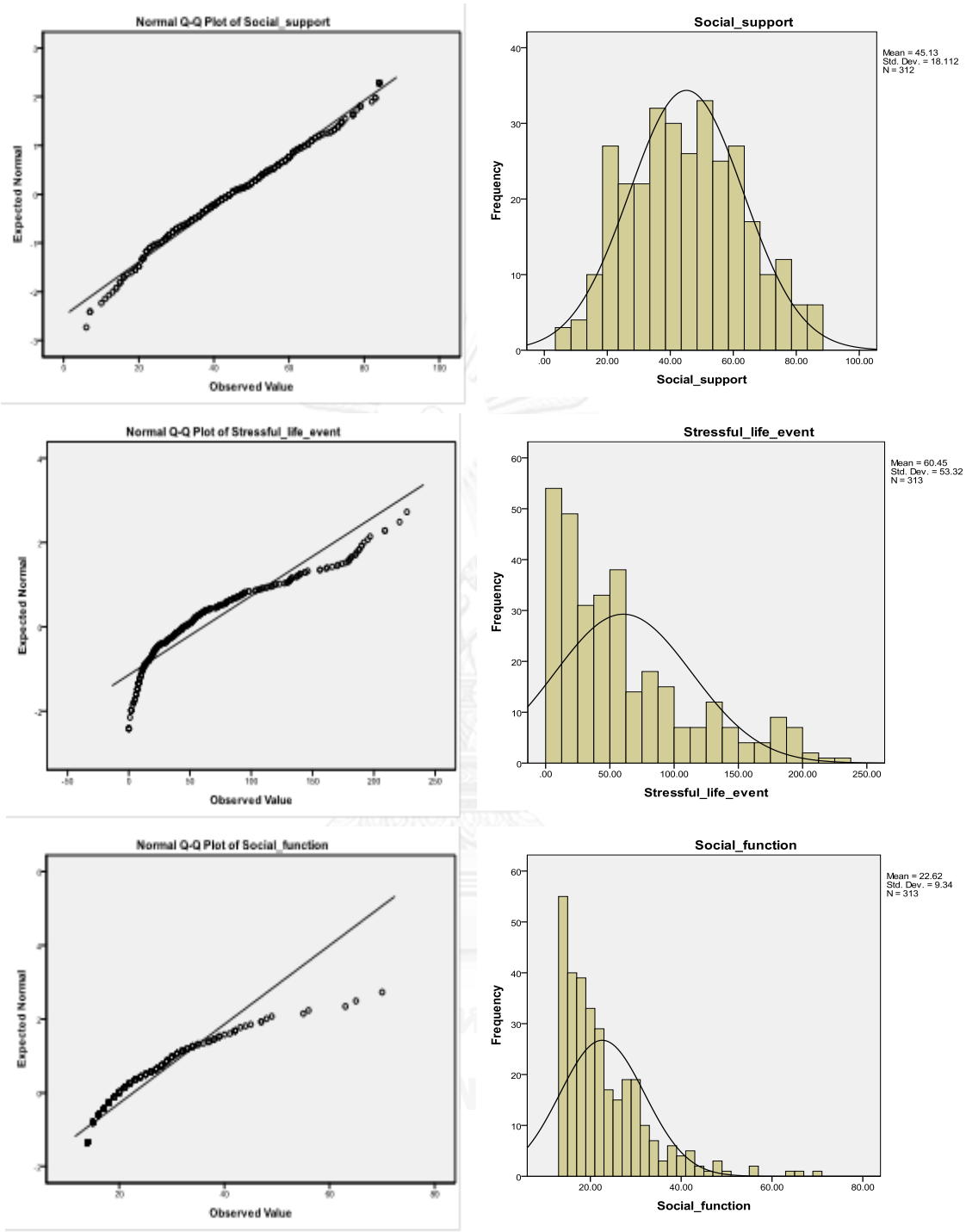

Negative_EE
Mean = 2.62
Std. Dev. = .725
N = 313
Frequency
Negative_EE


Normal Q-Q Plot of Positive_EE
Expected Normal
Observed Value


Positive_EE
Mean = 2.25
Std. Dev. = .85
N = 313
Frequency
Positive_EE


Normal Q-Q Plot of Medication_use_Self_efficacy
Expected Normal
Observed Value

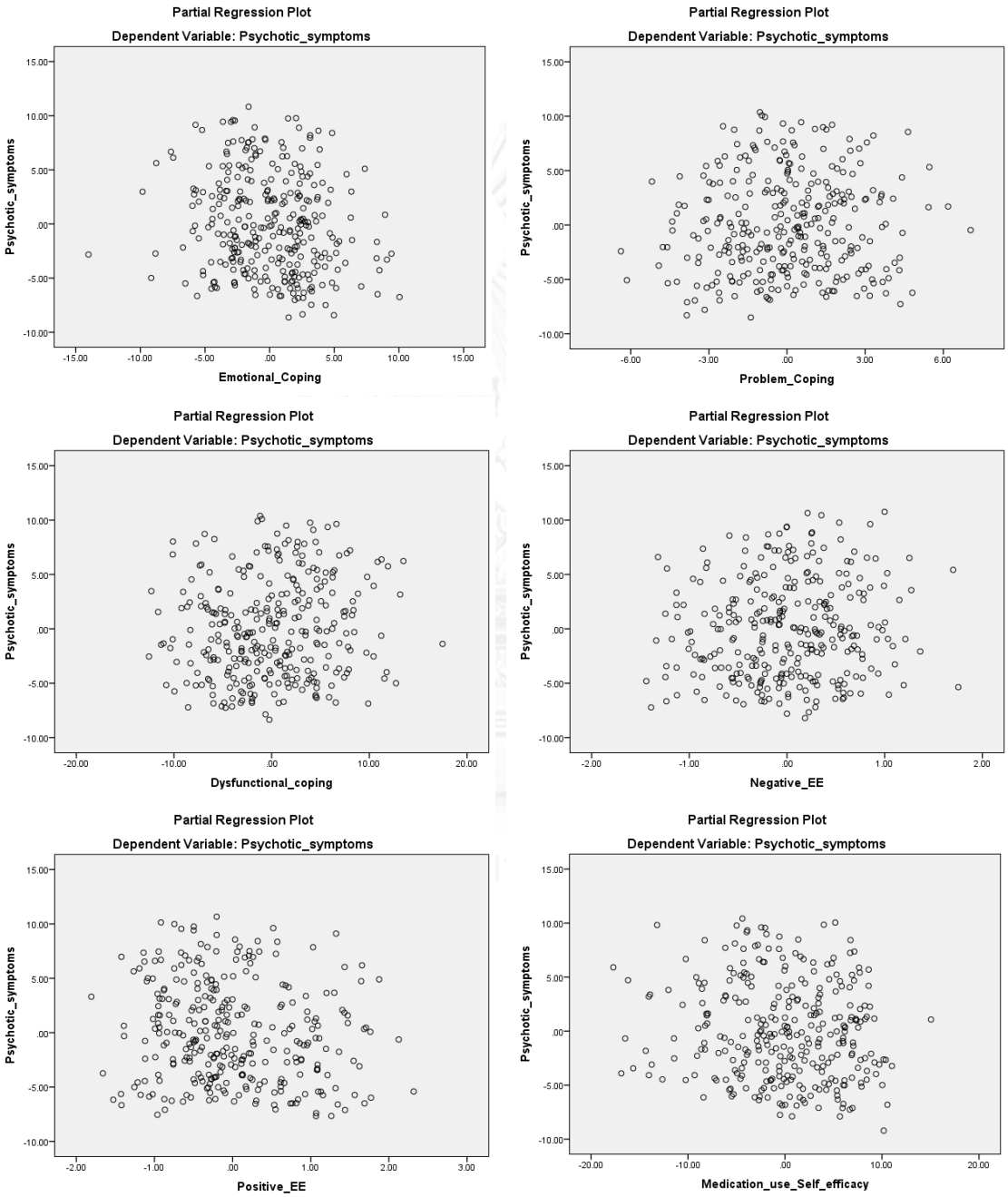

Medication_use_Self_efficacy
Mean = 29.70
Std. Dev. = 6.585
N = 313
Frequency
Medication_use_Self_efficacy

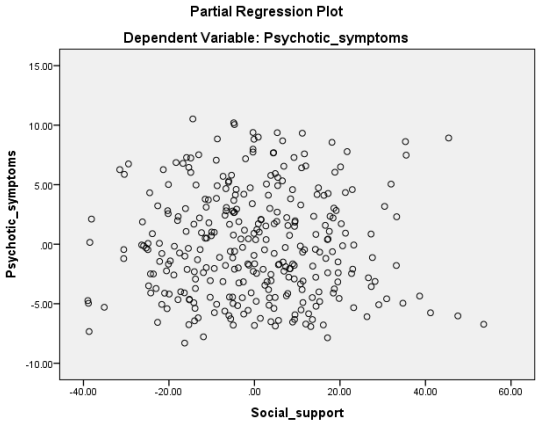


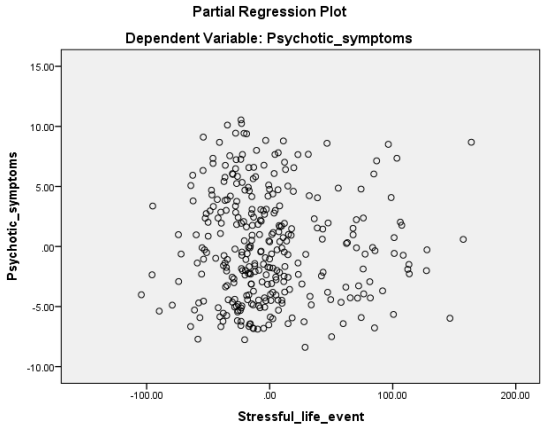
Normal distributions of psychotic symptoms, coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning.

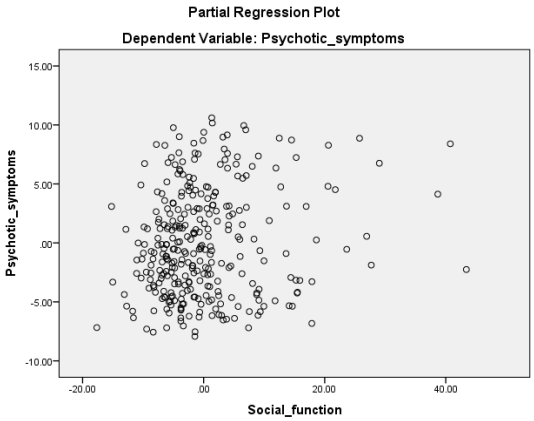
APPENDIX J2

LINEARITY TESTING









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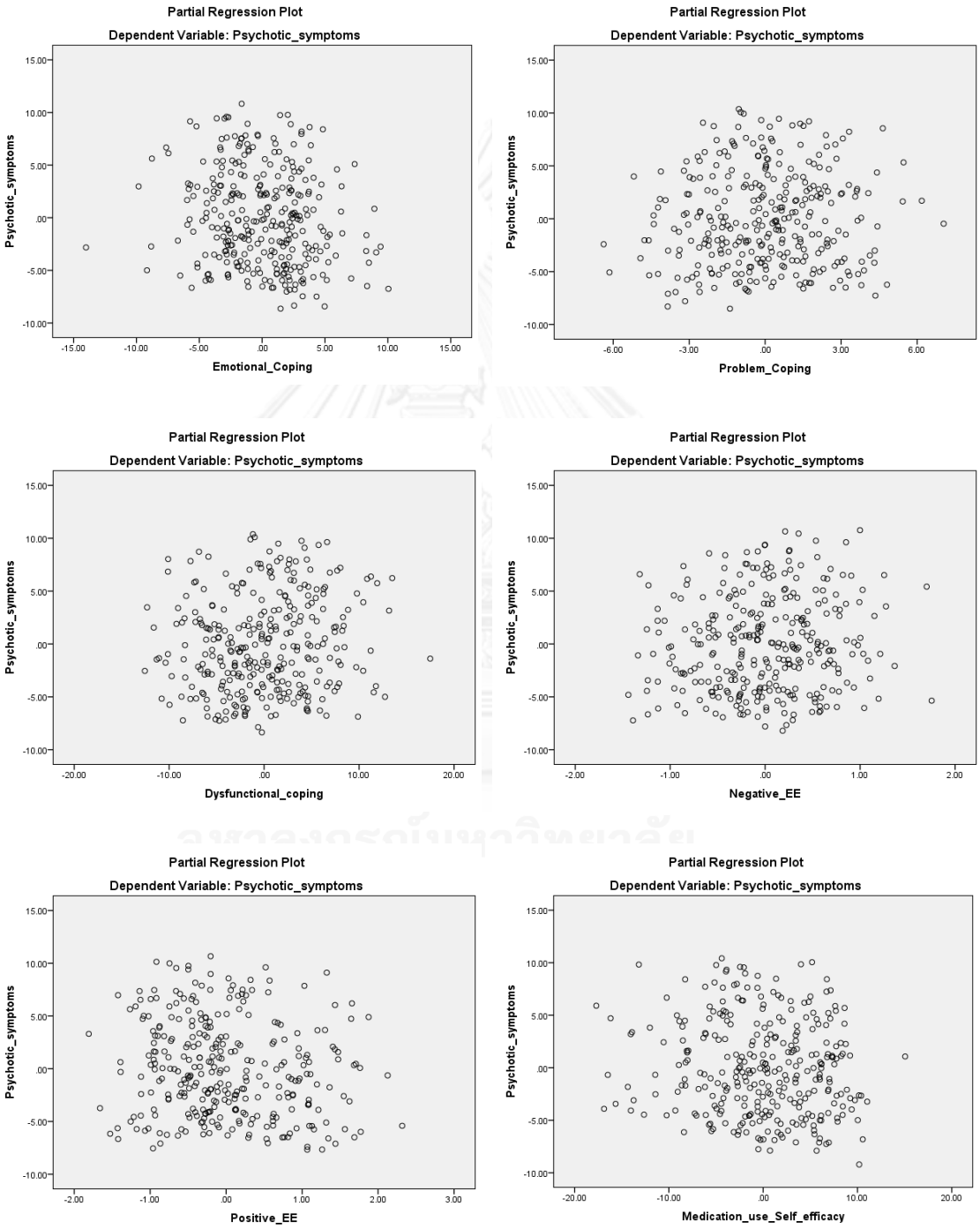
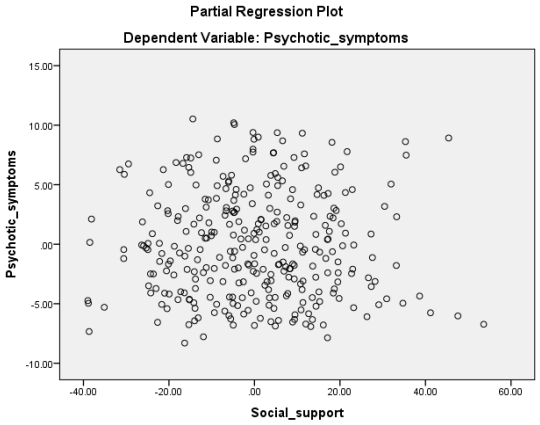
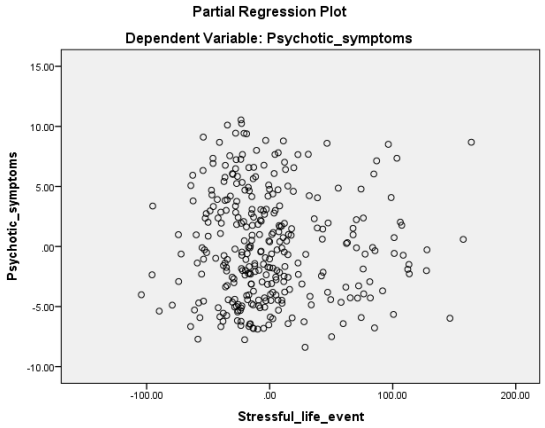
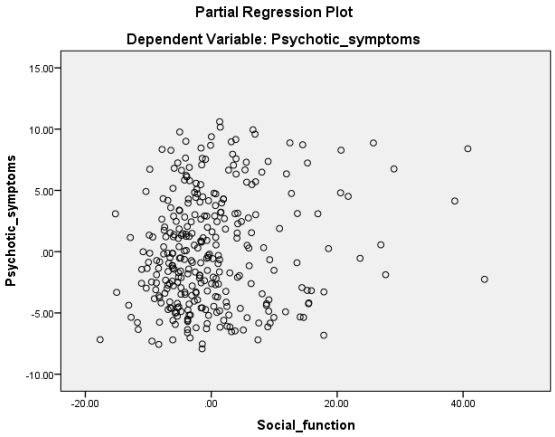
APPENDIX J3

HOMOSCEDASTICITY TESTING









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APPENDIX J4

MULTICOLLINEARITY TESTING

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	24.430	1.869		13.069	.000		
	Emotional_Coping	-.204	.071	-.271	-2.859	.005	.323	3.095
	Problem_Coping	.122	.110	.106	1.108	.269	.319	3.136
	Dysfunctional_coping	.097	.047	.153	2.059	.040	.523	1.912
	Negative_EE	.721	.426	.110	1.694	.091	.686	1.457
	Positive_EE	-.819	.322	-.147	-2.544	.011	.874	1.145
	Medication_use_Self_efficacy	-.086	.043	-.119	-2.017	.045	.826	1.210
	Social_support	-.002	.015	-.007	-.125	.901	.837	1.194
	Stressful_life_event	-.002	.006	-.022	-.356	.722	.736	1.358
	Social_function	.085	.030	.167	2.870	.004	.860	1.162

a. Dependent Variable: Psychotic_symptoms

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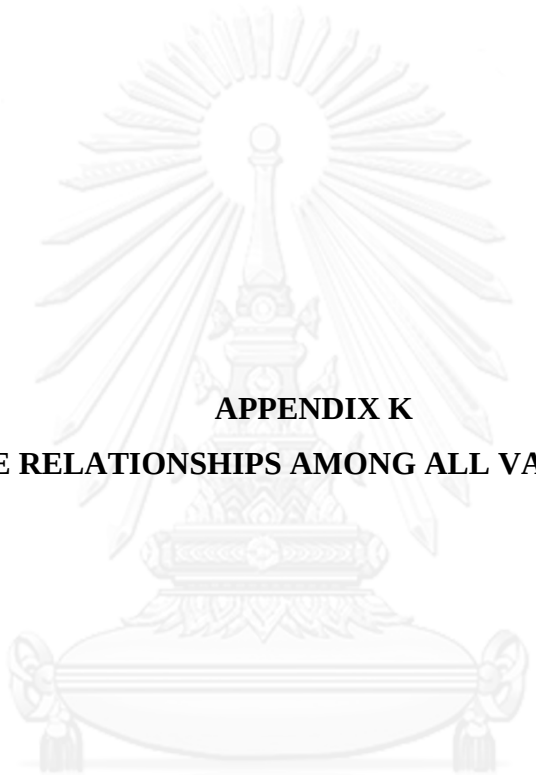
APPENDIX K
THE RELATIONSHIPS AMONG ALL VARIABLES



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The relationships among dimensions of psychotic symptoms, coping, Medication use self-efficacy, social support, expressed emotion, stressful life events, and social functioning.

The finding (see Table M) conveyed that Emotional focus Coping has a negative relationship with psychotic symptoms ($r = -.117$, $p < .05$) among persons with schizophrenia and methamphetamine misuse.

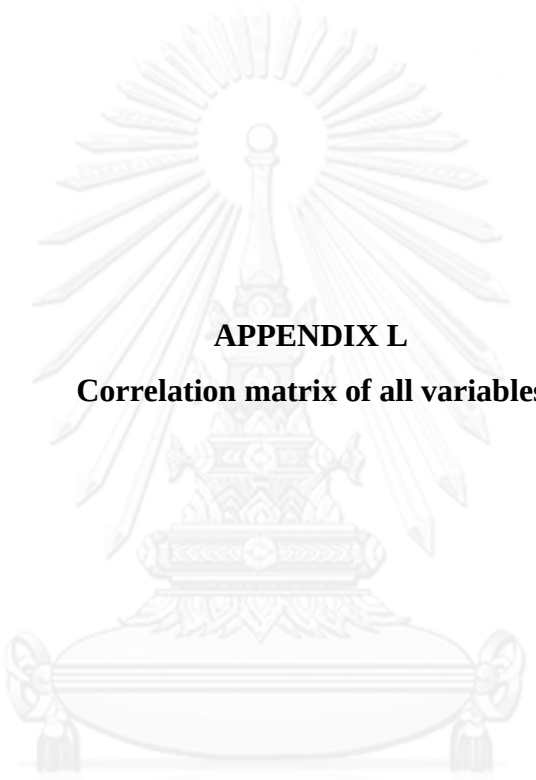
Problem solving Coping has no significance correlation on psychotic symptoms ($r = -.017$, $p < .05$). In contrast, problem solving coping has a positive relationship with social support ($r = .194$, $p < .01$) and medication use self-efficacy ($r = .257^{**}$, $p < .01$).

Dysfunctional Coping has a positive relationship with psychotic symptoms ($r = -.094$, $p < .05$) among persons with schizophrenia and methamphetamine misuse.

Negative expressed emotion has a positive relationship with psychotic symptoms ($r = 0.118$, $p < .05$) and medication use self-efficacy ($r = .210$, $p < .01$).

Social support has no significance correlation on psychotic symptoms ($r = -.072$, $p < .05$) and stressful life event ($r = -.091$, $p < .05$). However, social support has a negative relationship with social function ($r = .098$, $p < .05$).

Medication use Self efficacy has a negative relationship with psychotic symptoms($r = -.015$, $p < .01$). among persons with schizophrenia and methamphetamine misuse.



APPENDIX L

Correlation matrix of all variables

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Table L: Correlation matrix of all variables

Variables	Emotional focus coping strategies	Problem focus coping strategies	Dysfunctional coping strategies	Negative expressed emotion	Positive expressed emotion	Medication use self-efficacy	Social support	Stressful life events	Social functioning	Psychotic symptoms
Emotional focus coping strategies	1									
Problem focus coping strategies	.797**	1								
Dysfunctional coping strategies	.568**	.590**	1							
Negative expressed emotion	.184**	.286**	.436**	1						
Positive expressed emotion	.087	.151**	.346**	.857**	1					
Medication use self-efficacy	.237**	.257**	.168**	.210**	.175**	1				
Social support	.237**	.194**	-.022	-.177**	-.237**	.109*	1			
Stressful life events	.291**	.309**	.303**	.250**	.115*	-.105*	-.091	1		
Social function	-.099*	-.059	.073	.114*	.110*	-.219**	-.098*	.255**	1	
Psychotic symptoms	-.117*	-.017	.094*	.118*	.039	-.150**	-.072	.084	.228**	1

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).

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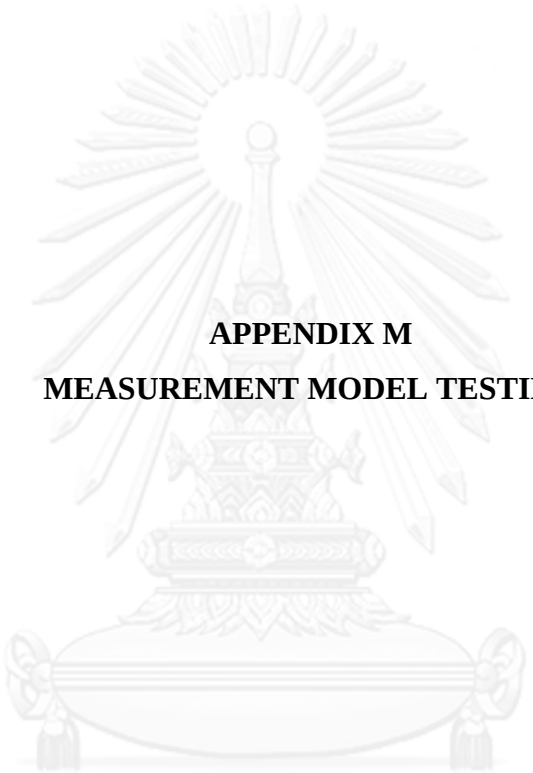
APPENDIX M
MEASUREMENT MODEL TESTING



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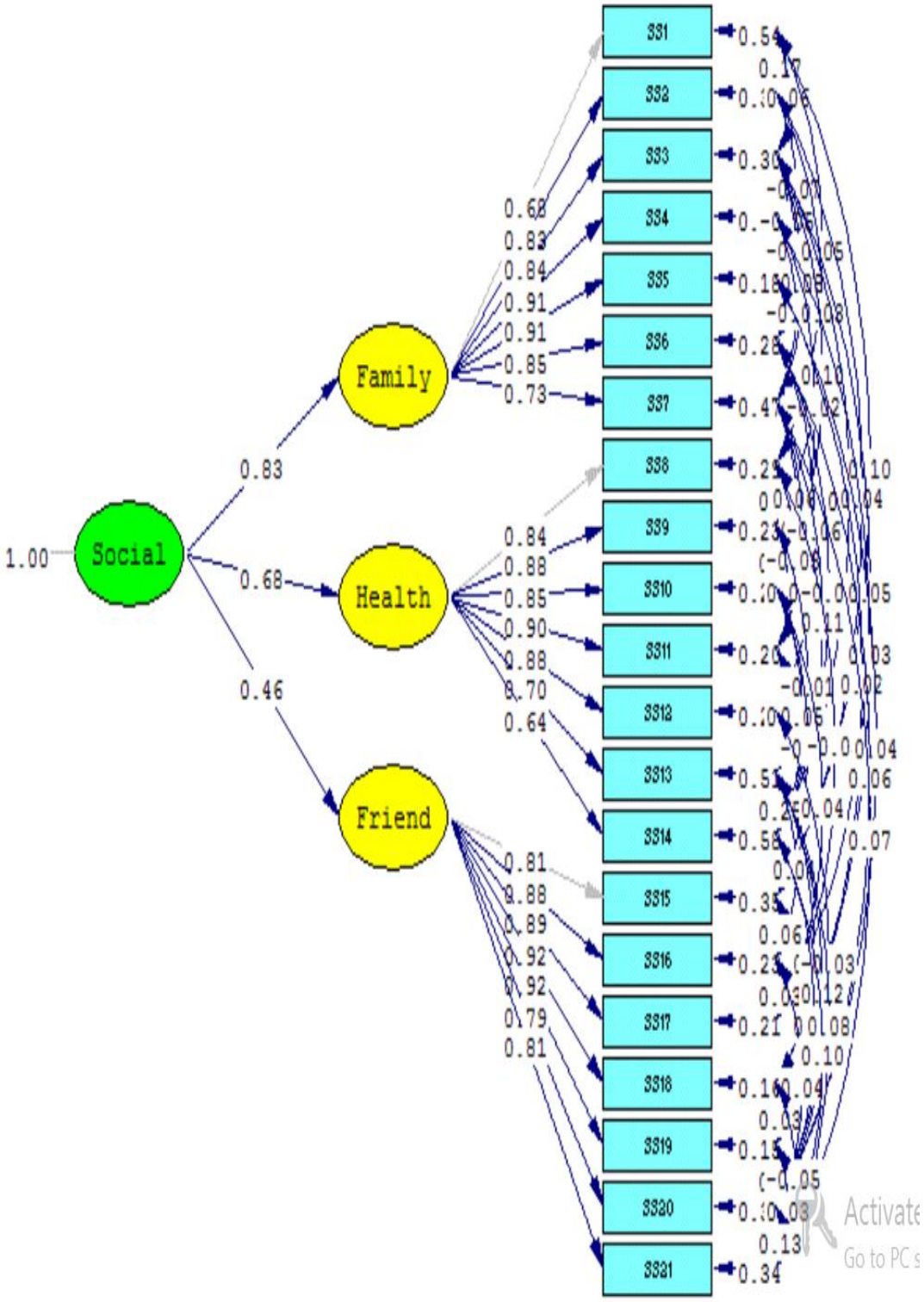

Chi-Square=160.13, df=135, P-value=0.06898, RMSEA=0.024

Goodness of Fit Statistics

Degrees of Freedom = 135
Minimum Fit Function Chi-Square = 166.37 (P = 0.035)
Normal Theory Weighted Least Squares Chi-Square = 160.13 (P = 0.069)
Estimated Non-centrality Parameter (NCP) = 25.13
90 Percent Confidence Interval for NCP = (0.0 ; 60.95)

Minimum Fit Function Value = 0.53
Population Discrepancy Function Value (F0) = 0.081
90 Percent Confidence Interval for F0 = (0.0 ; 0.20)
Root Mean Square Error of Approximation (RMSEA) = 0.024
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.038)
P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00

Expected Cross-Validation Index (ECVI) = 1.13
90 Percent Confidence Interval for ECVI = (1.05 ; 1.24)
ECVI for Saturated Model = 1.48
ECVI for Independence Model = 45.57

Chi-Square for Independence Model with 210 Degrees of Freedom = 14176.82
Independence AIC = 14218.82
Model AIC = 352.13
Saturated AIC = 462.00
Independence CAIC = 14318.50
Model CAIC = 807.76
Saturated CAIC = 1558.37

Normed Fit Index (NFI) = 0.99
Non-Normed Fit Index (NNFI) = 1.00
Parsimony Normed Fit Index (PNFI) = 0.64
Comparative Fit Index (CFI) = 1.00
Incremental Fit Index (IFI) = 1.00
Relative Fit Index (RFI) = 0.98
Critical N (CN) = 331.32

Root Mean Square Residual (RMR) = 0.082
Standardized RMR = 0.047
Goodness of Fit Index (GFI) = 0.95
Adjusted Goodness of Fit Index (AGFI) = 0.92
Parsimony Goodness of Fit Index (PGFI) = 0.56

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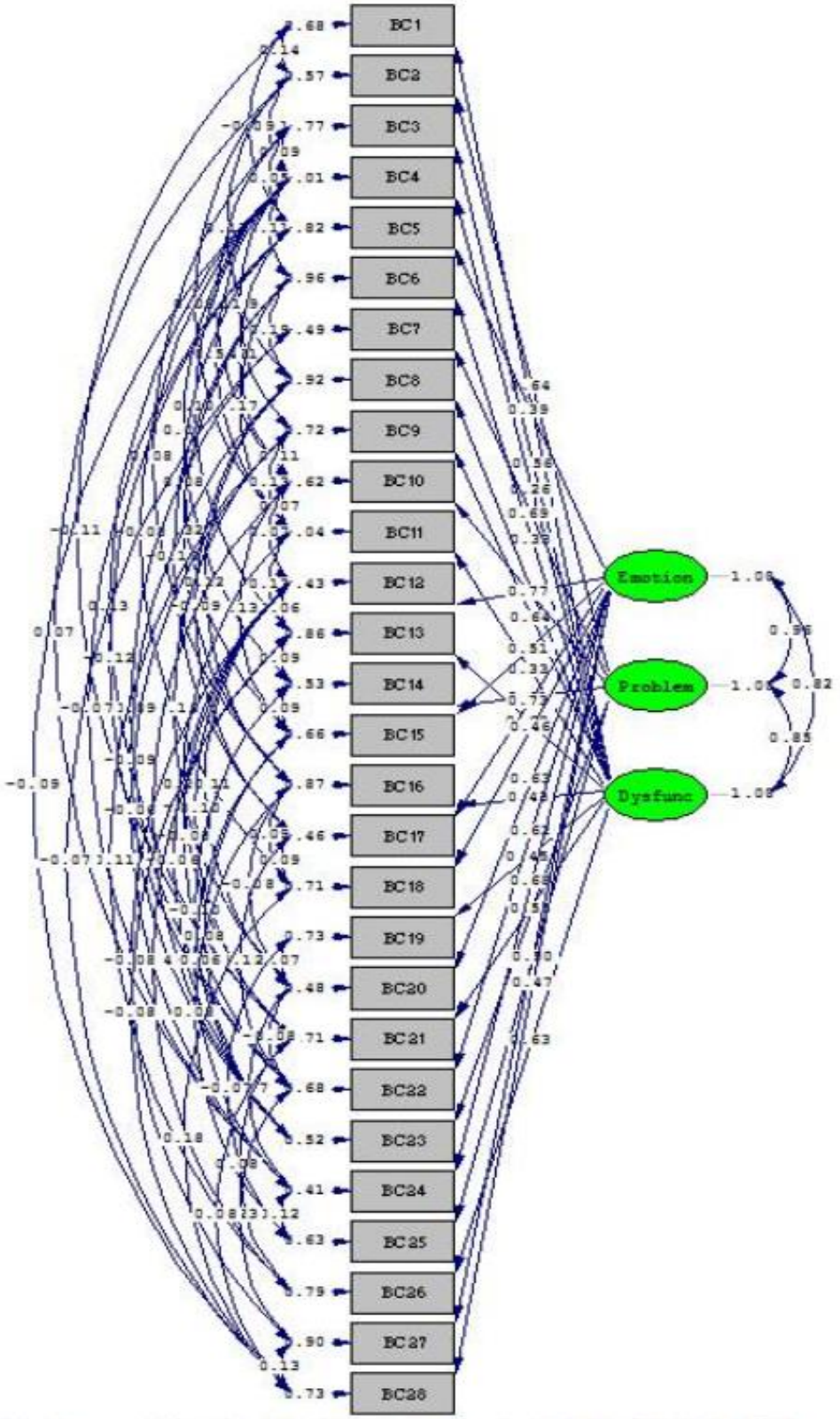


Chi-Square=291.33, df=276, P-value=0.25168, RMSEA=0.013

Goodness of Fit Statistics

Degrees of Freedom = 276
Minimum Fit Function Chi-Square = 281.54 (P = 0.40)
Normal Theory Weighted Least Squares Chi-Square = 291.33 (P = 0.25)
Estimated Non-centrality Parameter (NCP) = 15.33
90 Percent Confidence Interval for NCP = (0.0 ; 60.32)

Minimum Fit Function Value = 0.90
Population Discrepancy Function Value (F0) = 0.049
90 Percent Confidence Interval for F0 = (0.0 ; 0.19)
Root Mean Square Error of Approximation (RMSEA) = 0.013
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.026)
P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00

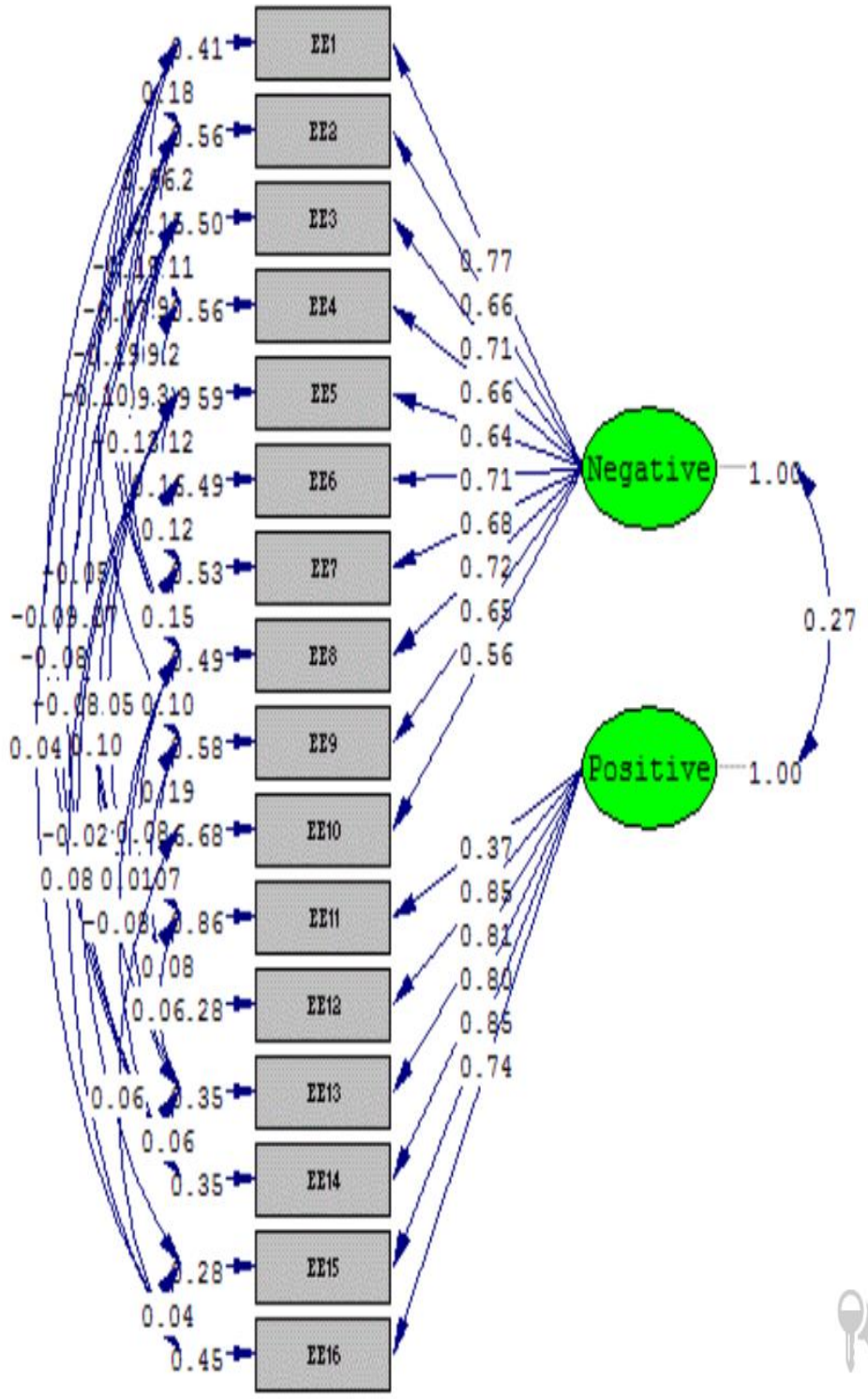
Expected Cross-Validation Index (ECVI) = 1.77
90 Percent Confidence Interval for ECVI = (1.72 ; 1.91)
ECVI for Saturated Model = 2.60
ECVI for Independence Model = 33.68

Chi-Square for Independence Model with 378 Degrees of Freedom = 10453.16
Independence AIC = 10509.16
Model AIC = 551.33
Saturated AIC = 812.00
Independence CAIC = 10642.05
Model CAIC = 1168.34
Saturated CAIC = 2738.96

Normed Fit Index (NFI) = 0.97
Non-Normed Fit Index (NNFI) = 1.00
Parsimony Normed Fit Index (PNFI) = 0.71
Comparative Fit Index (CFI) = 1.00
Incremental Fit Index (IFI) = 1.00
Relative Fit Index (RFI) = 0.96

Critical N (CN) = 370.67

Root Mean Square Residual (RMR) = 0.047
Standardized RMR = 0.045
Goodness of Fit Index (GFI) = 0.94
Adjusted Goodness of Fit Index (AGFI) = 0.91
Parsimony Goodness of Fit Index (PGFI) = 0.64



Chi-Square=78.48, df=61, P-value=0.06535, RMSEA=0.030

Goodness of Fit Statistics

Degrees of Freedom = 61
Minimum Fit Function Chi-Square = 76.78 (P = 0.084)
Normal Theory Weighted Least Squares Chi-Square = 78.48 (P = 0.065)
Estimated Non-centrality Parameter (NCP) = 17.48
90 Percent Confidence Interval for NCP = (0.0 ; 44.40)

Minimum Fit Function Value = 0.25
Population Discrepancy Function Value (F0) = 0.056
90 Percent Confidence Interval for F0 = (0.0 ; 0.14)
Root Mean Square Error of Approximation (RMSEA) = 0.030
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.048)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.97

Expected Cross-Validation Index (ECVI) = 0.73
90 Percent Confidence Interval for ECVI = (0.68 ; 0.82)
ECVI for Saturated Model = 0.87
ECVI for Independence Model = 16.66

Chi-Square for Independence Model with 120 Degrees of Freedom = 5165.45
Independence AIC = 5197.45
Model AIC = 228.48
Saturated AIC = 272.00
Independence CAIC = 5273.39
Model CAIC = 584.44
Saturated CAIC = 917.48

Normed Fit Index (NFI) = 0.99
Non-Normed Fit Index (NNFI) = 0.99
Parsimony Normed Fit Index (PNFI) = 0.50
Comparative Fit Index (CFI) = 1.00
Incremental Fit Index (IFI) = 1.00
Relative Fit Index (RFI) = 0.97
Critical N (CN) = 365.05

Root Mean Square Residual (RMR) = 0.060
Standardized RMR = 0.056
Goodness of Fit Index (GFI) = 0.97
Adjusted Goodness of Fit Index (AGFI) = 0.93
Parsimony Goodness of Fit Index (PGFI) = 0.43

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APPENDIX N
FIGURE OF FINAL MODEL AND LISREL PRINTOUT OF FINAL MODEL TESTING

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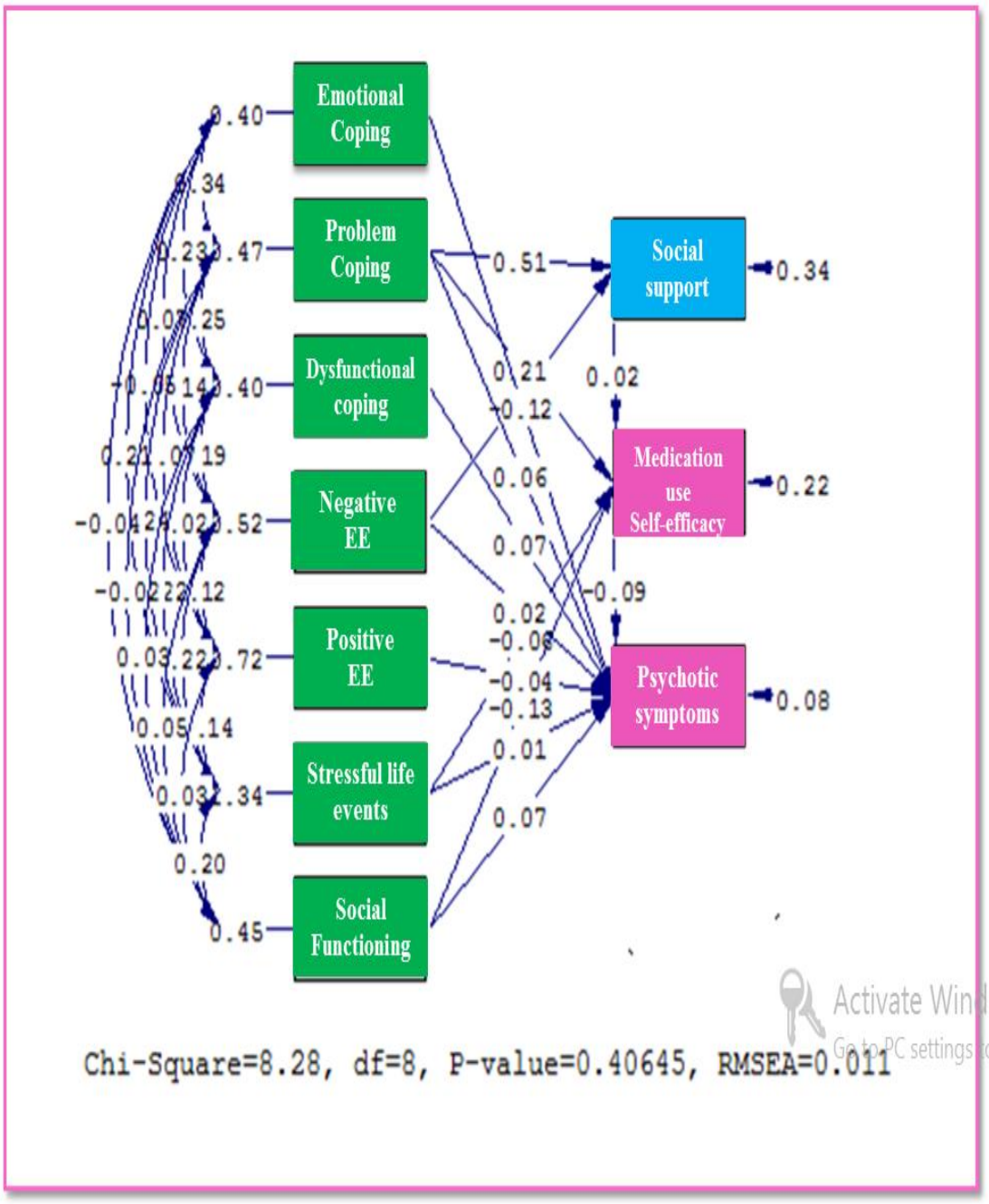

DATE: 6/ 8/2015

TIME: 21:27

L I S R E L 8.72

BY

Karl G. J”reskog & Dag S”rbom

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The following lines were read from file D:\Analysis\Jang\Outlook.com\path1.LPJ:

```
TI
DA NI=10 NO=313 MA=CM
RA FI='D:\Analysis\Jang\Outlook.com\path.psf'
MO NX=7 NY=3 BE=FU GA=FI PS=SY
FR BE(2,1) BE(3,2) GA(1,2) GA(2,2) GA(3,1) GA(3,3) GA(3,4) GA(3,5) GA(3,6)
FR GA(3,7)
fr ga 1 4 th 4 2 th 4 1 ga 2 7 ga 2 6 ga 3 2
PD
OU ef ss sc se tv rs
```

TI

Number of Input Variables 10
Number of Y - Variables 3
Number of X - Variables 7
Number of ETA - Variables 3
Number of KSI - Variables 7
Number of Observations 313

TI

Covariance Matrix

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	0.74					
M.SE	0.05	0.26				
psy	-0.01	-0.03	0.09			
CO.e	0.13	0.08	-0.02	0.40		
CO.p	0.11	0.09	0.00	0.34	0.47	
Co.d	-0.01	0.05	0.02	0.23	0.25	0.40
EX.n	-0.11	0.08	0.03	0.08	0.14	0.20
Ex.p	-0.15	0.01	-0.03	-0.05	-0.07	0.02
SLE.a	-0.09	-0.06	0.04	0.21	0.24	0.22
Function	-0.06	-0.07	0.04	-0.04	-0.02	0.03

Covariance Matrix

	EX.n	Ex.p	SLE.a	Function
EX.n	0.53			
Ex.p	0.13	0.72		
SLE.a	0.21	-0.14	1.34	
Function	0.05	0.03	0.20	0.45

Means

SS	M.SE	psy	CO.e	CO.p	Co.d
2.15	2.28	1.40	1.67	1.75	1.40

Means

EX.n	Ex.p	SLE.a	Function
2.63	2.25	1.31	1.62

TI

Parameter Specifications

BETA

	SS	M.SE	psy
SS	0	0	0
M.SE	1	0	0
psy	0	2	0

GAMMA

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	0	3	0	4	0	0
M.SE	0	5	0	0	0	6
psy	8	9	10	11	12	13

GAMMA

	Function
SS	0
M.SE	7
psy	14

PHI

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
CO.e	15					
CO.p	16	17				
Co.d	18	19	20			
EX.n	21	22	23	24		
Ex.p	25	26	27	28	29	
SLE.a	30	31	32	33	34	35
Function	36	37	38	39	40	41

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PHI

	Function
Function	42

PSI

SS	M.SE	psy
43	44	45

ALPHA

SS	M.SE	psy
48	49	50

TI

Number of Iterations = 14

LISREL Estimates (Maximum Likelihood)

BETA

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	0.02	- -	- -
	(0.03)		
	0.51		
psy	- -	-0.09	- -
		(0.03)	
		-2.64	

GAMMA

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	0.51	- -	-0.88	- -	- -
		(0.09)		(0.17)		
		5.57		-5.27		
M.SE	- -	0.21	- -	- -	- -	-0.06
		(0.04)				(0.03)
		4.97				-2.50
psy	-0.12	0.06	0.07	0.02	-0.04	0.01
	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)
	-2.76	1.36	1.96	0.91	-2.21	0.52

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GAMMA

	Function
SS	- -
M.SE	-0.13
	(0.04)
	-2.98
psy	0.07
	(0.03)
	2.54

Covariance Matrix of Y and X

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	0.74					
M.SE	0.05	0.26				
psy	-0.02	-0.03	0.09			
CO.e	0.11	0.07	-0.02	0.40		
CO.p	0.11	0.09	0.00	0.34	0.47	
Co.d	-0.03	0.04	0.02	0.23	0.25	0.40
EX.n	-0.39	0.00	0.02	0.07	0.14	0.19
Ex.p	-0.14	-0.01	-0.02	-0.05	-0.07	0.02
SLE.a	-0.07	-0.06	0.04	0.21	0.24	0.22
Function	-0.06	-0.07	0.04	-0.04	-0.02	0.03

Covariance Matrix of Y and X

	EX.n	Ex.p	SLE.a	Function
EX.n	0.52			
Ex.p	0.12	0.72		
SLE.a	0.22	-0.14	1.34	
Function	0.05	0.03	0.20	0.45

Mean Vector of Eta-Variables

SS	M.SE	psy
2.15	2.28	1.40

PHI

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
CO.e	0.40					
	(0.03)					
	12.35					
CO.p	0.34	0.47				
	(0.03)	(0.04)				
	10.88	12.35				
Co.d	0.23	0.25	0.40			
	(0.03)	(0.03)	(0.03)			
	8.62	8.88	12.35			

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EX.n	0.07	0.14	0.19	0.52		
	(0.03)	(0.03)	(0.03)	(0.04)		
	2.90	4.82	6.81	12.40		
Ex.p	-0.05	-0.07	0.02	0.12	0.72	
	(0.03)	(0.03)	(0.03)	(0.03)	(0.06)	
	-1.70	-2.06	0.62	3.64	12.35	
SLE.a	0.21	0.24	0.22	0.22	-0.14	1.34
	(0.04)	(0.05)	(0.04)	(0.05)	(0.06)	(0.11)
	4.89	5.16	5.08	4.74	-2.38	12.35
Function	-0.04	-0.02	0.03	0.05	0.03	0.20
	(0.02)	(0.03)	(0.02)	(0.03)	(0.03)	(0.05)
	-1.72	-0.88	1.27	2.11	0.81	4.31

PHI

	Function
Function	0.45
	(0.04)
	12.35

PSI

Note: This matrix is diagonal.

SS	M.SE	psy
0.34	0.22	0.08
(0.13)	(0.02)	(0.01)
2.68	12.35	12.39

Squared Multiple Correlations for Structural Equations

SS	M.SE	psy
0.54	0.13	0.12

Squared Multiple Correlations for Reduced Form

SS	M.SE	psy
0.54	0.13	0.10

Reduced Form

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	0.51	- -	-0.88	- -	- -
		(0.09)		(0.17)		
		5.57		-5.27		
M.SE	- -	0.22	- -	-0.01	- -	-0.06
		(0.04)		(0.03)		(0.03)
		5.18		-0.50		-2.50
psy	-0.12	0.04	0.07	0.02	-0.04	0.01
	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)
	-2.76	0.90	1.96	0.97	-2.21	0.87

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Reduced Form

	Function
SS	- -
M.SE	-0.13
	(0.04)
	-2.98
psy	0.08
	(0.03)
	2.98

ALPHA

SS	M.SE	psy
3.57	2.16	1.53
(0.38)	(0.12)	(0.12)
9.42	18.18	13.02

Goodness of Fit Statistics

Degrees of Freedom = 8
Minimum Fit Function Chi-Square = 8.31 (P = 0.40)
Normal Theory Weighted Least Squares Chi-Square = 8.28 (P = 0.41)
Estimated Non-centrality Parameter (NCP) = 0.28
90 Percent Confidence Interval for NCP = (0.0 ; 11.47)

Minimum Fit Function Value = 0.027
Population Discrepancy Function Value (F0) = 0.00092
90 Percent Confidence Interval for F0 = (0.0 ; 0.038)
Root Mean Square Error of Approximation (RMSEA) = 0.011
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.069)
P-Value for Test of Close Fit (RMSEA < 0.05) = 0.82

Expected Cross-Validation Index (ECVI) = 0.40
90 Percent Confidence Interval for ECVI = (0.37 ; 0.40)
ECVI for Saturated Model = 0.36
ECVI for Independence Model = 2.85

Chi-Square for Independence Model with 45 Degrees of Freedom = 848.77
Independence AIC = 868.77
Model AIC = 122.28
Saturated AIC = 110.00
Independence CAIC = 916.23
Model CAIC = 392.82
Saturated CAIC = 371.04

Normed Fit Index (NFI) = 0.99
Non-Normed Fit Index (NNFI) = 1.00
Parsimony Normed Fit Index (PNFI) = 0.18
Comparative Fit Index (CFI) = 1.00
Incremental Fit Index (IFI) = 1.00
Relative Fit Index (RFI) = 0.94

Critical N (CN) = 755.56

Root Mean Square Residual (RMR) = 0.0075
Standardized RMR = 0.017
Goodness of Fit Index (GFI) = 0.99
Adjusted Goodness of Fit Index (AGFI) = 0.96
Parsimony Goodness of Fit Index (PGFI) = 0.14

TI

Fitted Covariance Matrix

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	0.74					
M.SE	0.05	0.26				
psy	-0.02	-0.03	0.09			
CO.e	0.11	0.07	-0.02	0.40		
CO.p	0.11	0.09	0.00	0.34	0.47	
Co.d	-0.03	0.04	0.02	0.23	0.25	0.40
EX.n	-0.11	0.07	0.02	0.07	0.14	0.19
Ex.p	-0.14	-0.01	-0.02	-0.05	-0.07	0.02
SLE.a	-0.07	-0.06	0.04	0.21	0.24	0.22
Function	-0.06	-0.07	0.04	-0.04	-0.02	0.03

Fitted Covariance Matrix

	EX.n	Ex.p	SLE.a	Function
EX.n	0.52			
Ex.p	0.12	0.72		
SLE.a	0.22	-0.14	1.34	
Function	0.05	0.03	0.20	0.45

Fitted Means

SS	M.SE	psy	CO.e	CO.p	Co.d
2.15	2.28	1.40	1.67	1.75	1.40

Fitted Means

EX.n	Ex.p	SLE.a	Function
2.63	2.25	1.31	1.62

Fitted Residuals

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	0.00					
M.SE	0.00	0.00				
psy	0.01	0.00	0.00			
CO.e	0.02	0.01	0.00	0.00		
CO.p	0.00	0.00	0.00	- -	0.00	
Co.d	0.02	0.02	0.00	0.00	- -	0.00
EX.n	0.00	0.01	0.01	0.01	0.00	0.01
Ex.p	0.00	0.03	0.00	0.00	- -	0.00
SLE.a	-0.02	0.00	0.00	0.00	0.00	0.00
Function	0.00	0.00	0.00	0.00	0.00	0.00

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Fitted Residuals

	EX.n	Ex.p	SLE.a	Function
EX.n	0.00			
Ex.p	0.01	0.00		
SLE.a	-0.01	0.00	0.00	
Function	0.00	0.00	0.00	0.00

Fitted Residuals for Means

SS	M.SE	psy	CO.e	CO.p	Co.d
- -	0.00	0.00	- -	- -	- -

Fitted Residuals for Means

EX.n	Ex.p	SLE.a	Function
- -	- -	- -	- -

Summary Statistics for Fitted Residuals

Smallest Fitted Residual = -0.02
Median Fitted Residual = 0.00
Largest Fitted Residual = 0.03

Stemleaf Plot

```
- 2|3
- 1|
- 1|1
- 0|
- 0|3321100000000000000000000000000000000
 0|1124
 0|5679
 1|134
 1|88
 2|0
 2|6
```

Standardized Residuals

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	-1.34					
M.SE	-0.07	-0.43				
psy	1.22	0.24	0.53			
CO.e	1.34	0.86	-0.67	- -		
CO.p	- -	- -	- -	- -	- -	
Co.d	1.49	1.35	-1.19	- -	- -	- -
EX.n	1.34	0.99	1.03	1.57	- -	1.96
Ex.p	-0.13	1.18	-1.20	- -	- -	- -
SLE.a	-0.62	-0.62	0.62	- -	- -	- -
Function	0.09	0.09	-0.09	- -	- -	- -

Standardized Residuals

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	EX.n	Ex.p	SLE.a	Function
EX.n	1.21			
Ex.p	0.45	- -		
SLE.a	-0.62	- -	- -	
Function	0.09	- -	- -	- -

Summary Statistics for Standardized Residuals

Smallest Standardized Residual = -1.34
Median Standardized Residual = 0.00
Largest Standardized Residual = 1.96

Stemleaf Plot

```
- 1|322
- 0|7666
- 0|4111000000000000000000000000
  0|11124
  0|569
  1|00222333
  1|56
  2|0
```

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TI

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Standardized Solution

BETA

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	0.03	- -	- -
psy	- -	-0.15	- -

GAMMA

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	0.41	- -	-0.74	- -	- -
M.SE	- -	0.29	- -	- -	- -	-0.15
psy	-0.26	0.13	0.14	0.05	-0.12	0.03

GAMMA

	Function
SS	- -
M.SE	-0.17
psy	0.15

Correlation Matrix of Y and X

	SS	M.SE	psy	CO.e	CO.p	Co.d
SS	1.00					
M.SE	0.11	1.00				
psy	-0.08	-0.19	1.00			
CO.e	0.20	0.21	-0.09	1.00		
CO.p	0.19	0.26	0.00	0.80	1.00	
Co.d	-0.06	0.11	0.09	0.57	0.59	1.00
EX.n	-0.62	0.01	0.10	0.16	0.29	0.41
Ex.p	-0.19	-0.03	-0.09	-0.10	-0.12	0.04
SLE.a	-0.07	-0.10	0.12	0.29	0.31	0.30
Function	-0.10	-0.22	0.22	-0.10	-0.05	0.07

Correlation Matrix of Y and X

	EX.n	Ex.p	SLE.a	Function
EX.n	1.00			
Ex.p	0.20	1.00		
SLE.a	0.26	-0.14	1.00	
Function	0.11	0.05	0.25	1.00

PSI

Note: This matrix is diagonal.

SS	M.SE	psy
0.46	0.87	0.88

Regression Matrix Y on X (Standardized)

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	0.41	- -	-0.74	- -	- -

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M.SE	- -	0.30	- -	-0.02	- -	-0.15
psy	-0.26	0.09	0.14	0.05	-0.12	0.05

Regression Matrix Y on X (Standardized)

	Function

SS	- -
M.SE	-0.17
psy	0.17

TI

Total and Indirect Effects

Total Effects of X on Y

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
	---	---	---	---	---	---
SS	- -	0.51	- -	-0.88	- -	- -
		(0.09)		(0.17)		
		5.57		-5.27		
M.SE	- -	0.22	- -	-0.01	- -	-0.06
		(0.04)		(0.03)		(0.03)
		5.18		-0.50		-2.50
psy	-0.12	0.04	0.07	0.02	-0.04	0.01
	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)	(0.02)
	-2.76	0.90	1.96	0.97	-2.21	0.87

Total Effects of X on Y

	Function

SS	- -
M.SE	-0.13
	(0.04)
	-2.98
psy	0.08
	(0.03)
	2.98

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Indirect Effects of X on Y

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	- -	- -	- -	- -	- -
M.SE	- -	0.01	- -	-0.01	- -	- -
		(0.02)		(0.03)		
		0.50		-0.50		
psy	- -	-0.02	- -	0.00	- -	0.01
		(0.01)		(0.00)		(0.00)
		-2.35		0.49		1.81

Indirect Effects of X on Y

	Function
SS	- -
M.SE	- -
psy	0.01
	(0.01)
	1.97

Total Effects of Y on Y

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	0.02	- -	- -
	(0.03)		
	0.51		
psy	0.00	-0.09	- -
	(0.00)	(0.03)	
	-0.50	-2.64	

Largest Eigenvalue of B*B' (Stability Index) is 0.008

Indirect Effects of Y on Y

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	- -	- -	- -
psy	0.00	- -	- -
	(0.00)		
	-0.50		

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TI

Standardized Total and Indirect Effects

Standardized Total Effects of X on Y

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	0.41	- -	-0.74	- -	- -
M.SE	- -	0.30	- -	-0.02	- -	-0.15
psy	-0.26	0.09	0.14	0.05	-0.12	0.05

Standardized Total Effects of X on Y

	Function
SS	- -
M.SE	-0.17
psy	0.17

Standardized Indirect Effects of X on Y

	CO.e	CO.p	Co.d	EX.n	Ex.p	SLE.a
SS	- -	- -	- -	- -	- -	- -
M.SE	- -	0.01	- -	-0.02	- -	- -
psy	- -	-0.05	- -	0.00	- -	0.02

Standardized Indirect Effects of X on Y

	Function
SS	- -
M.SE	- -
psy	0.02

Standardized Total Effects of Y on Y

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	0.03	- -	- -
psy	0.00	-0.15	- -

Standardized Indirect Effects of Y on Y

	SS	M.SE	psy
SS	- -	- -	- -
M.SE	- -	- -	- -
psy	0.00	- -	- -

Time used: 0.047 Seconds

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APPENDIX O

Training Materials for Research Assistants

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Chulalongkorn University

FACULTY OF NURSING
CHULALONGKORN UNIVERSITY

A path analysis of psychotic symptoms among persons with schizophrenia and methamphetamine misuse

(การวิเคราะห์เส้นทางของอาการทางจิตในผู้ที่เป็นโรคจิตเภทที่มีการใช้เมทแอมเฟตามีน)

ผู้วิจัย เอกอุมา อิ้มคำ
นิสิตดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

แหล่งเก็บข้อมูล .....

จุฬาลงกรณ์มหาวิทยาลัย
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VITA

Ek-uma Imkome was born on October 18, 1973. She received a Diploma in Nursing Science (Nursing), of Boromarajonani Sapasittiprasong Nursing College, Thailand, in 1998. She got A Master of Nursing Science in Psychiatric-Mental Health Nursing from Mahidol University, Thailand, in 2001. Ek-uma had 6 year of clinical experience in Psychiatric-Mental Health Nursing and 12 years of working as an instructor in the field of Psychiatric-Mental Health Nursing at faculty of nursing, Thammasat University. She had received the scholarship from Thammasat University to study Philosophy Program in Nursing Science, Faculty of Nursing, Chulalongkorn University since 2009-2015.

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