VALIDATION OF THE CONNOR DAVIDSON RESILIENCE SCALE (CD-RISC) AS APPLIED WITHIN THE THAI CONTEXT

Kirsten McGillivray

A Thesis Submitted in Partial Fulfillment of the
Requirements for the Degree of
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SEPTEMBER 2015

The purpose of this study was to evaluate the psychometric properties of the Thai version of the Connor Davidson Resilience Scale (CD-RISC), a 25-item self-report questionnaire developed to measure resilience, when applied to a non-clinical sample of Thai adults.

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ABSTRACT

This study evaluated the psychometric properties of the Thai version of the Connor Davidson Resilience Scale (CD-RISC), a 25-item self-report questionnaire developed to measure resilience. This was achieved by testing the factor structure of the CD-RISC when applied to a non-clinical sample of Thai adults. Exploratory factor analysis identified three resilience factors: *personal competence/tolerance of negative affect; support resources;* and *self-efficacy*. Reliability analysis identified a number of items that were not internally consistent and these were deleted from the scale. The final Thai version of the CD-RISC consisted of 18 items, which is shorter than the original 25-item scale. The scale's convergent validity was tested by assessing the scale's relationship with three states of negative affect – depression, anxiety, stress – as measured by the 21-item Depression Anxiety and Stress Scale (DASS-21). Correlation analysis revealed that the three extracted resilience factors of *personal competence/tolerance of negative affect; support resources;* and *self-efficacy* are significantly and negatively correlated with the DASS-21 factors of depression, anxiety, and stress. The utility of the CD-RISC as applied within the Thai context is discussed.

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CHAPTER I

INTRODUCTION

Adversity, in one form or another, is an inescapable fact of life. Whether it is the loss of a loved one, the horrors of war, the disappointment of having failed an exam, the stress of a thankless job, or the challenges of a financial crisis, we are all bound to encounter difficult situations at various points in our life. But, while adversity is a universal experience, the way that each individual responds to any given adversity is unique. Resilience researchers are interested in the reasons why some individuals are able to overcome, and even thrive, in the face of adversity, while others feel defeated and unable to deal with the adversities that life has thrown their way. In short, resilience researchers are focused on why some individuals are resilient and how various levels of resiliency impact overall well-being.

The importance of resilience cannot be understated. It encompasses the "ability to cope and adapt in the face of adversity and/or to bounce back and restore positive functioning when stressors become overwhelming" (Padesky & Mooney, 2012, p. 283). It also functions to facilitate both "reactive recovery" and "proactive learning and growth through conquering challenges" (Youseff & Luthans, 2007, p. 778). Since resilience leads to positive adaptation and effective coping, it contributes to overall well-being and helps to protect against the development of socio-environmental and psychological problems. More than this, resilience is pivotal in determining how we react to and to cope with stressful life events (Connor, 2006). According to Connor, resilience can be considered a measure of emotional stamina and functions as an index of overall mental health. This view is in line with the earlier

suggestion by Connor and Davidson (2003) that resilience could be considered a measure of stress coping ability and, as such, an important target of treatment in anxiety, depression and stress reactions. This may explain why psychologists often assess resilience using instruments designed to measure anxiety, post-traumatic stress disorder (PTSD) and depression (Herrman et al., 2011).

There is a growing volume of research on the importance of resilience in contributing to overall psychological well-being. For example, Bonnano (2005) pointed out that there is a relationship between resilience and the continued fulfillment of personal and social responsibilities and the capacity for positive emotions and generative experiences, both immediately and in the months following exposure to a potentially traumatic event. It has also been suggested that resilience may reduce the likelihood of children developing learning or behavioral problems (Werner, 1992) as well as protecting against suicidal ideation (Cleverley & Kidd, 2011). Fincham, Altes, Stein, and Seedat (2009) demonstrated that resilience acted as a buffer against the negative effects of childhood abuse and neglect. Past studies also indicated that resilience shields against PTSD and feelings of helplessness, and is predictive of increased likelihood of PTSD recovery (Connor, Sutherland, Tupler, Malik & Davidson, 1999; Davidson et al., 2005; Connor, 2006).

Not only is resilience a highly significant "buffering" construct against adversities, it can also be modified and developed with treatment and training programs (Reivich & Shatte, 2002; Seligman, 1990; Connor & Davidson, 2003). As Reivich and Shatte (2002) put it, resilience is not an either/or trait but lies on a continuum that can decrease or increase to meet the challenges encountered at a particular point in time. The notion that a person's level of resilience is not fixed has led to the development of a number of training programs and intervention strategies to

promote resilience in a varicty of settings and populations. Examples of such programs include the FRIENDS programs developed by Dr. Paula Barrett (Barrett, Cooper & Guajardo, 2014); Your Journey Together developed by the Devereaux Center for Resilient Children (Smith, LeBuffe, Alleyne, Mackrain, & Likins, 2014); The JOBS Program (Caplan, Vinokur, & Price, 1997); and The U.S. Army Master Resilience Trainer (MRT) course developed by the University of Pennsylvania's Positive Psychology Center, together with researchers at the Walter Reed Army Institute of Research, and sports psychologists at the United States Military Academy at West Point (Reivich, Seligman & McBride, 2011). While the dynamics and procedures of these programs may be different, they nevertheless serve the same common purpose of promoting resilience in the face of adversity encountered in different settings and among different populations.

Statement of the Problem

Over the years a number of instruments have been developed to assess resilience levels. One such scale is the Resilience Scale which is a self-report scale designed to identify individual resilience, a positive aspect of personality that fosters adaptation (Wagnild & Young, 1993). This scale comprises 25 items which yields two factors: personal competence and acceptance of self and life. The authors reported that the scale possesses acceptable psychometric properties, including high internal consistency (α=0.91) and significant correlations with scales such as the Beck Depression Inventory (r= -0.37) and the Life Satisfaction Index A (r=0.30) (Wagnild & Young, 1993). Although the Resilience Scale is widely used and has been applied to populations of various ages (Windle, Bennett, & Noyes, 2011), it was developed based on qualitative data from older women and originally tested in a sample of senior

citizens. The specificity of such a sample could have affected the content validity of the scale items (Terwee et al., 2007; Windle, Bennett, & Noyes, 2011).

Another instrument developed to measure resilience is the 37-item self-report Resilience Scale for Adults (RSA), developed to measure the protective factors that lead to health adjustment and which fosters adult resilience (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003). The RSA yields five factors: personal competence, social competence, family coherence, social support, and personal structure. The scale was developed from and tested on a sample of Norwegian psychiatric patients and healthy adults. The authors reported good psychometric properties, including acceptable internal consistency for the scale (Cronbach's alpha ranging from 0.67 to 0.90 for the subscales), test-retest correlations ranging from 0.69 to 0.84 ($p<0.01$) for the subscales over a four-month period, and significant correlations with the Hopkins Symptom Checklist (r=-0.19 to -0.61) and Sense of Coherence Scale (r=0.29 to 0.75) (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003). In a quality review of nineteen resilience measures (Windle, Bennet, & Noyes, 2011), the RSA was one of three instruments to receive the highest psychometric ratings. However, it has not been widely used outside Norway, and its generalizability to other populations and cultures has not yet been adequately established.

Smith et al. (2008) developed the six-item Brief Resilience Scale (BRS) that assesses the ability to bounce back or recover from stress. The authors reported good psychometric properties for the BRS, including high internal consistency for four separate samples (Cronbach's alphas = 0.84, 0.87, 0.80, and 0.91, respectively), and significant correlations with a number of instruments, such as the Ego Resiliency Scale (r=0.51, $p<0.01$) and the Perceived Stress Scale (-0.60, -0.71, -0.61, and -0.64, for samples 1–4 respectively, $p<0.01$). Like the RSA, the BRS also received the

highest psychometric ratings in the quality review conducted by Windle, Bennett, and Noyes (2011). However, despite its potential usefulness in evaluating the ability to recover from stress, the BRS does not provide insight into the presence or absence of protective resources that could facilitate this positive outcome. Such information could assist clinicians in identifying appropriate interventions to promote resilience (Windle, Bennett, & Noyes, 2011).

One resilience instrument that has been gaining recognition among resilience researchers is the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003; Manzano-García & Calvo, 2013). This is largely due to the scale's established reliability and validity, as well as its applicability to various populations since it was not developed for a particular group (Manzano-García & Calvo, 2013). The CD-RISC is a 25-item self-rating scale designed to measure a respondent's stress coping ability by tapping the various features of resilience (Connor & Davidson, 2003). The scale's utility lies in its ability to (1) tap various aspects of an individual's resilience so as to identify the likelihood that the individual is having or will have difficulty coping with a stressful or adverse situation and (2) assess treatment outcomes (Connor & Davidson, 2015). Given the sound theoretical and practical foundations underlying the scale, the present researcher determined that the CD-RISC would be the most suitable instrument to be cross-validated with a Thai sample in order to investigate its utility within the Thai context. This decision was based on the observations that (1) CD-RISC's psychometric properties are well established, (2) the scale has been used successfully with various clinical and non-clinical populations worldwide, (3) the scale items are relatively straightforward and it takes a reasonably short amount of time to complete, (4) interpretation of the scale scores is uncomplicated, and (5) a Thai translation of the scale already exists, albeit untested.

In the development of the scale, Connor and Davidson identified five resilience factors via exploratory factor analysis: (1) notion of personal competence, high standards and tenacity; (2) trust in one's instincts, tolerance of negative affect, and strengthening effects of stress; (3) positive acceptance of change, and secure relationships; (4) control; and (5) spiritual influences. A number of subsequent studies also revealed a five factor solution (Davidson & Connor, 2015; Catalano, Lee, Hunter, Fujikawa, & Chan, 2008; Sexton, Byrd, & von Kluge, 2009), although the factor structure are not always represented by the same five factors (Baek, Lee, Joo, Lee, & Choi, 2010). Still, other investigators have identified four or fewer factors (Lamond et. al., 2008; Jørgensen and Seedat, 2008; Khoshouei, 2009; Yu and Zhang, 2007).

The psychometric properties of the CD-RISC were initially tested on six samples: Sample 1 comprised 577 adults from the general population, selected by means of random digit dialing; Sample 2 comprised 139 primary care outpatients; Sample 3 consisted of 43 psychiatric outpatients; Sample 4 included 25 subjects in a clinical trial for Generalized Anxiety Disorder; and Sample 5 and Sample 6 each comprised 22 subjects participating in clinical trials for post-traumatic stress disorder. Connor and Davidson (2003) reported that the CD-RISC exhibited good internal consistency (α=0.89 when applied to the random digit dial based general population of 577 subjects) and satisfactory test-retest reliability (r=0.87). CD-RISC scores had positive correlations with scores on the Kobasa Hardiness Scale (r=0.83, p<0.001) and the Sheehan Social Support Scale (r=0.36, p<0.001), and negative correlations with scores for the Sheehan Stress Vulnerability Scale (r=-0.32, p<0.001), the Perceived Stress Scale (r=-0.76, p<0.001), and the Sheehan Disability Scale (r=-0.62, p<0.001) (Connor & Davidson, 2003). The CD-RISC was also found to have significant positive correlations with the Positive Affect Scale (r=0.69), the Ego

Resiliency Scale (r=0.68), the Rosenberg Self Esteem Scale (r=0.53), the Life Orientation Scale (a measure of optimism, r=0.55), the Dispositional Hope Scale (r=0.68), and negative correlation with the Negative Affect Scale (r=-0.44) (Karairmak, 2010).

In terms of its cross-cultural utility, the CD-RISC has been used in various countries around the world, including the USA (Connor & Davidson, 2003; White, Driver, & Warren, 2010), China (Yu, Lau, Mak, Cheng, Lv, Zhang, 2009), Korea (Ha, Kang, An, & Cho, 2009), Australia (Benetti & Kambouropoulos, 2006) and Indonesia (Irmansyah, Dharmono, Maramis, & Minas, 2010); and its cross-cultural validity and reliability have been demonstrated across different populations worldwide (Korea—general adult population and outpatients with non-psychotic mood or anxiety disorders: Jung et al., 2012; Iran—university students: Khoshouei, 2009; Turkey—adult earthquake survivors: Karairmak, 2010; China—adolescent earthquake survivors: Yu et al., 2011; Netherlands—undergraduate students: Giesbrecht et al., 2009; Uganda—former child soldiers: Klasen et al., 2010; USA—Alzheimer's caregivers: Lavretsky, Siddarth, & Irwin, 2010; Australia—patients with schizophrenia: Deane & Andresen, 2006).

Yet, despite the CD-RISC's demonstrated sound cross-cultural psychometric properties (both in the West and in Asia), its efficacy and utility as a valid and a reliable measurement instrument to tap the level of resiliency within the Thai context has not yet been demonstrated. From personal communication with Dr. Davidson, one of the developers of the CD-RISC, it was confirmed that Ms. Nauwarat Imlimtharn (while a student at Ramkhamhaeng University, Thailand) produced an authorized Thai translated version of the CD-RISC, although to date no studies have been conducted to test the cross-cultural validity and reliability of this translated Thai

version. The present study represents an attempt to cross-validate the CD-RISC with a Thai sample and to identify the scale's psychometric properties within the Thai context. It is hoped that this study will lead to a better understanding of the construct of resilience as experienced by Thai people. It is also hoped that the study's findings will be useful in contributing to the development of effective intervention and prevention programs for both clinical and non-clinical populations when faced with trauma and adversities.

Purpose of the Study

It is evident from current resilience research that resilience has a significant impact on a person's life and well-being, and although there have been relatively few resilience studies in Thailand, those that have been carried out have consistently indicated that resilience contributes significantly to Thai people's psychological well-being (Thanoi, Phancharoenworakul, Thompson, Panitrat, & Nityasuddhi, 2010; Takviriyanun, Phuphaibul, Villarruel, Vorapongsathorn, & Panitrat, 2007; Maneerat, Isaramalai, & Boonyasopun, 2011; Nitachan, 2007; Prinyaphol, 2007). The relatively small volume of research on resilience in Thailand may in part be attributed to the lack of a standardized instrument to measure the construct of resilience. Furthermore, a number of programs and interventions aimed at increasing resilience are available, but before they can be successfully implemented in Thailand, researchers and clinicians need to have a valid and reliable instrument with which to measure and monitor resilience levels.

The purpose of this study was to determine whether the Thai version of the CD-RISC provides a reliable and valid means for measuring resilience among the Thai population. The CD-RISC was identified as the most suitable instrument for assessing resilience due to its strong psychometric properties, which have been

established in countries and populations around the world, and its successful use with various clinical and non-clinical populations worldwide (Connor & Davidson, 2003; White, Driver, & Warren, 2010; Yu, Lau, Mak, Cheng, Lv, Zhang, 2009; Ha, Kang, An, & Cho, 2009; Benetti & Kambouropoulos, 2006; Irmansyah, Dharmono, Maramis, & Minas, 2010). The present study investigated the cross-cultural validity of the CD-RISC in order to ascertain whether the CD-RISC represents an appropriate assessment of resilience within the Thai context.

Significance of the Study

The findings of this study may contribute the following benefits:

1. The outcome of this study may aid researchers and mental health professionals in both the comprehension and measurement of resilience within the Thai setting, as well as providing insights as to how Thai people respond to stress and adversity encountered in life.
2. Governmental and non-governmental organizations may find the results useful in development and implementation of resilience-building programs to enhance and support the well-being of individuals and groups, including students, employees, military personnel, underprivileged communities, trauma victims, clinical populations, and various high-risk individuals and populations.
3. The findings from this study may underscore the protective mechanisms that are part-and-parcel of the resilient personality that help to buffer the negative sequelae experienced when faced with adversities and life-failures.

Definitions of Terms

Resilience: Positive adaptation in the presence of risk or adversity (Wright, Masten & Narayan, 2013).

Adversity: Unfavorable situations that increase the probability of maladaptation or threaten development (Luthar & Cicchetti, 2000; Wright, Masten & Narayan, 2013).

Anxiety: Feelings of uneasiness or apprehension which are experienced in response to or in anticipation of a threat (Keane, 2008).

Depression: A mental state typified by feelings of sadness, loneliness, hopelessness, low self-esteem and remorse (Ray & Chogtu, 2011).

Positive adaptation: Social competence or successfully completing stage-salient developmental tasks (Luthar & Cicchetti, 2000).

Protective factors: Factors or characteristics that predict better outcomes in adverse situations (Wright, Masten & Narayan, 2013).

Risk: The likelihood of an undesirable or negative outcome (Wright, Masten & Narayan, 2013).

Risk factor: A measurable characteristic that predicts a negative outcome (Wright, Masten & Narayan, 2013).

Stress: Negative emotional experiences that involve biochemical, physiological, and behavioral responses targeted at adaptation to the situation (Baum, 1990).

CHAPTER II

LITERATURE REVIEW

Defining Resilience

The concept of resilience has been defined in a number of ways by different researchers. Luthar, Cicchetti, and Becker (2000) defined resilience as a construct that maintains positive adaptation despite the experience of significant adversity. Masten (2001) refers to resilience as a phenomenon characterized by positive outcomes in spite of serious threats to the person's well-being. Connor and Davidson (2003) hold that resilience encompasses personal qualities that enable one to thrive in the face of adversity. Richardson, Neiger, Jensen, and Kumpfer (1990) describe resilience as a coping process that provides the individual with protective and coping skills to deal successfully with disruptive, stressful, and challenging life events. More recently, Tugade and Fredrickson (2004) characterized resilience as the ability to bounce back from failure. While these numerous definitions may differ in terms of their defined processes in dealing with adversity, they share the common theme that resilience is essentially the ability or process by which an individual is able to successfully overcome adverse or challenging events and thereby gain additional or increased competence and skills.

Early Resilience Research

Resilience research was pioneered by developmental psychopathologists who focused on children and adolescents who experienced adverse conditions or events while growing up. The seminal longitudinal study conducted by Werner and Smith (1982) generated significant insights and provided the drive for further resilience research. In their study, the researchers studied 505 individuals born on Kauai Island

in 1955. The study followed the individuals from birth until they were nearing their forties. The findings revealed that almost two-thirds of the children who grew up in poverty or under other adverse conditions developed serious difficulties as adults. The remaining one-third grew up to be capable and caring. They were, for some reason, unmarred by the adverse conditions they had lived through as children (Earvolino-Ramirez, 2007). These findings suggest that there were some attributes and circumstances that were highly efficacious in serving to protect this group of children from the consequences of their negative life experiences.

Protective Factors

The preliminary emphasis of resilience research was on identifying factors that existed in the lives of individuals who thrived in spite of adversity (Prince-Embury, 2013). These factors, known as "protective factors," are specific attributes or situations considered essential for resilience to occur (Dyer and McGuinness, 1996; Johnson & Wiechelt, 2004). Early developmental researchers identified three sets of protective factors that could enable a child to cope with adversity: personal qualities; family and home environment; and environment outside the home. More recently, Sandra Prince-Embury noted that personal qualities that may facilitate coping in times of adversity include intellectual ability, self-reliance, sociability, easy temperament, effective coping techniques, and communication skills (Prince-Embury, 2013). Protective factors in the family and home environment include family cohesion, structure, emotional support, family warmth, positive attachment styles, and a close relationship with "at least one caregiver" (Prince-Embury, 2013).

Many social scientists have contended that protective factors play a very important role in resilient outcomes and appear to predict positive results in 50 to 80

percent of a high-risk sample (Rutter, 1987; Werner & Smith, 2001; Benard, 2004). The importance of the role that protective factors play in resilient outcome was succinctly captured by Werner and Smith (1992) who explained that:

> *"Our findings and those by other American and European investigators with a life-span perspective suggest that these buffers [i.e., protective factors] make a more profound impact on the life course of children who grow up under adverse conditions than do specific risk factors or stressful life events. They [also] appear to transcend ethnic, social class, geographical, and historical boundaries. Most of all, they offer us a more optimistic outlook than the perspective that can be gleaned from the literature on the negative consequences of perinatal trauma, caregiving deficits, and chronic poverty"* (Werner & Smith, 1992, p. 202).

Resilience as a dynamic process

For a number of years, researchers considered resilience to be a personality trait, but more recent definitions of resilience describe the construct as a dynamic process (Luthar, Cicchetti, & Becker, 2000) involving positive responses and adaptations to adverse situations. A person's level of resilience will vary at different points throughout his or her lifespan and according to his/her life circumstances (Rutter, 1985). Not only is resilience dynamic, it is also situation-specific (Luthar, Cicchetti, & Becker, 2000; Waller; 2001). The dynamic, multidimensional nature of resilience may explain why a person might cope well with one kind of adverse situation but not another (Luthar, Cicchetti, & Becker, 2000). For example, an individual may be able to cope with a divorce but not with a sudden layoff from employment.

Resilience as an ordinary quality

Early resilience research suggested that resilience is an extraordinary quality that is not within everyone's reach. Researchers used terms such as "invincible" and "invulnerable" to describe individuals who displayed resilience. However, the current view is that resilience is an ordinary part of human development and does not apply only in the presence of adversity (Masten, 2001). That is, research has shown that resilience is neither remarkable nor extraordinary; rather, it is an ordinary, commonly demonstrated phenomenon that results from the operation of basic human adaptation systems (Masten, 2001). According to Masten, everyone has inherent fundamental characteristics that facilitate adaptive functioning in response to stressors and threats. Indeed, she described resilience as "ordinary magic" and argued that it is basically the consequence of ordinary human resources following exposure to a potentially traumatic event.

Genetics and Neurobiology of Resilience

Interactions between genes, hormones, neural circuits and biological processes affect people's physical, cognitive and emotional functioning, which in turn affects the level of resilience they are able to demonstrate in any given situation. Charney (2004) identified two biological mediators of stress response which may contribute to an individual's resilience. These include Dehydroepiandrosterone (DHEA) and Neuropeptide Y (NPY).

DHEA is an adrenal steroid released in response to stress. There is evidence to suggest that a high level of DHEA may be protective in individuals experiencing stress or trauma (Rasmusson et al., 2004; Elliot, Sahakian, & Charney, 2008). Goodyer, Park, and Herbert (2001) have also reported negative correlations between

DHEA levels and depressive symptoms in adolescents (Goodyer, Park, & Herbert, 2001).

NPY is an amino acid peptide that influences a number of functions, including blood pressure, circadian rhythms, hormone secretion, pain and stress. It has been suggested that NYP may also be an axiolytic (Heilig, 2004). Morgan et al. (2003) found reduced levels of NYP in patients with PTSD. Low levels of NYP have also been observed in patients with depression (Mathe, 2002). Conversely, high levels of NYP have been associated with improved performance in stressful situations (Morgan et al., 2000). The findings of Yehuda, Brand, and Yang (2006) also suggest that high levels of NYP could be a biological marker for resilience in stressful or traumatic circumstances.

Genetic and epigenetic research suggest that genetic factors may influence responses to stress. Twin studies revealed that the estimated overall hereditability of PTSD ranges from 32 to 38% (Southwick & Charney, 2012). Studies also suggest that certain genetic polymorphisms are correlated with more resilient responses (Elliot, Sahakian & Charney, 2008). These include functional polymorphisms in the monoamine oxidase A gene (MAOA gene; Caspi et al., 2002) and the serotonin transporter gene (5-hydroxytryptamine or 5-HTT; Caspi, 2003). High MAOA activity alleles have been associated with significantly reduced risks of anti-social behavior (Caspi et al., 2002). The 5-HTT gene has been found to regulate the influence of stressful events on depression. Individuals with two long alleles of the 5-HTT gene appear to have more resilient responses to stressful events and are less likely to develop depression, depressive symptoms and suicidal ideation than individuals with one or two short alleles (Caspi et al., 2003).

Concepts related to but distinguished from resilience

There are a number of traits and constructs that are similar to but distinguished from resilience, although it is arguable that they may, in fact, be components or pathways to resilience. These include hardiness, self-efficacy, locus of control and learned helplessness.

Hardiness

The Oxford Dictionary of English (2010) defines "hardiness" as "the ability to endure difficult conditions". For many people, hardiness and resilience are one and the same as both concepts describe a person's ability to cope effectively in the face of adversity. Yet, despite this similarity, the two concepts are conceptually different. Hardiness is considered to be a personality characteristic that may protect against severe or extreme stress (Kobasa, Maddi, & Kahn, 1982). A key difference between resilience and hardiness is that resilience leads to an improved adaptive outcome, but hardiness merely enables an individual to withstand adversity without a positive adaptive consequence (Earvolino-Ramirez, M., 2007). According to Kobasa, hardy individuals possess three general ideas about themselves and the world around them (Kobasa 1979, 1982; Maddi 2002, 2005). First, they believe they have control over their life. Second, they are committed to their activities. Third, they believe change offers challenge and opportunity. The combination of control, commitment, and challenge results in hardiness, a personality characteristic that enables the individual to turn stressful circumstances from potential disasters into growth opportunities (Maddi, 2013).

Self-efficacy

Self-efficacy refers to the self-judgment that we make about our ability to complete a particular task or succeed in a certain situation (Bandura, 1982). People's

self-efficacy judgments affect the choices they make, their motivation levels, and their perseverance in dealing with obstacles and aversive experiences (Bandura, 1977). When faced with a stressful situation, self-efficacious people hold onto the belief that their actions can have an impact on the outcome of the event. They are more likely to reject negative thoughts about themselves and their abilities than people with a sense of personal inefficacy (Ozer & Bandura, 1990). This gives them the capacity to be proactive during the stressful event and to view the situation as a challenge to be mastered.

Although there are conceptual differences between self-efficacy and resiliency, self-efficacy can be regarded as a component of resiliency. Lack of self-efficacy can cause people to cease their coping efforts prematurely, because they doubt their ability to succeed, and thus do not get the opportunity to acquire new skills or develop their problem-solving abilities (which would boost their self-efficacy level). Instead, their belief that they lack the ability to cope effectively with adversities lowers both their development of resilience and their ability to bounce back after experiencing trauma.

Locus of control

Locus of control is a term developed by Rotter (1966) to describe the extent to which people believe they can control what happens to them. Individuals with a more internal locus of control believe that they are responsible for their successes and failures; that they have some control over the events in their lives; and that their decisions and efforts have a direct impact on the outcomes they experience. Individuals with an external locus of control usually attribute successes and failures to external factors such as luck, chance or fate. They believe that events and outcomes

are determined by such external factors or by other people over whom they have no control.

Although locus of control and resilience are discrete constructs, there are a number of studies that suggest the two constructs are related and that locus of control may contribute to resilience or be a component of resilience (Leontopoulou, 2006). Werner and Smith (1982) reported that internal locus of control is a protective factor in supporting resilient outcomes. Wyman et al. (1992) found that an internal locus of control is a crucial factor for stress resistance. Grossman and colleagues (Grossman et al., 1992) found a significant correlation between stress resilience and internal locus of control. Masten, Best and Garmezy's research (1990) also indicates an association between internal locus of control and resilience. In a study of resilience among high school students, Smokowsaki, Reynolds, and Bezruczko (1999) found that many subjects exhibited an internal locus of control and recognized that endurance and hard work were fundamental factors in creating a good life.

In the book *The Resiliency Advantage* (2005), Dr. Al Siebert argues that both types of mindsets are self-fulfilling in that individuals will behave in ways that validate their beliefs. When faced with difficulties or adversity, it therefore follows that individuals with an internal locus of control will take action to overcome the situation because they believe that their actions can impact their life and circumstances. This, in turn, leads to a resilient outcome in which such individuals are able to bounce back from adversity because they know that their actions influence the direction of their lives.

Learned helplessness

Research on learned helplessness began in the 1960s when animal studies rooted in classical conditioning revealed that dogs which were repeatedly subjected to

electric shocks from which there was no escape would eventually stop trying to avoid the shocks, even when presented with a way of escaping. They had learned that any action initiated by them had no effect, and that outcome (which is beyond their control) is not contingent upon their behavior.

Seligman and other researchers then began conducting studies on people to show how people (like their canine counterparts) who are exposed to a series of setbacks over which they had no control learn to feel helpless and subsequently learn to give up in trying (Thornton, & Jacobs, 1971; Hiroto, & Seligman, 1975; Raps, Peterson, Jonas, & Seligman, 1982; Cole, & Coyne, 1977).

According to Abramson, Seligman and Teasdale (1978) there are two factors that interact to influence whether learned helplessness manifests only in one specific context or if it generalizes to various other situations. These factors are (1) the cause the individual attributes to the uncontrollable events of the original circumstances (explanatory style); and (2) the similarity between the new circumstances and the original situation (Alloy, Peterson, Abramson, & Seligman, 1984; Abramson, Seligman, & Teasdale, 1978). Explanatory style refers to the habitual way that people explain the causes of events in their lives, and according to Seligman (2006), individuals who embrace an optimistic explanatory style are able to avoid helplessness, whereas individuals who adopt a pessimistic explanatory style tend to succumb to helplessness.

Measuring resilience

Over the years a number of instruments have been developed to measure resilience. As mentioned earlier, these include the Resilience Scale (Wagnild & Young, 1993), the Resilience Scale for Adults (Friborg, Hjemdal, Rosenvinge, &

Martinussen, 2003), the Brief Resilience Scale (Smith et al., 2008), and the Connor-Davidson Resilience Scale (Connor & Davidson, 2003).

The Resilience Scale (RS) is a 25-item self-report scale designed to identify individual resilience. The scale yields two factors: personal competence and acceptance of self and life. It was developed based on qualitative data from 24 older women who had successfully adapted in response to a major life event. The items were derived from statements which the women made during interviews and from "generally accepted definitions of resilience" (Wagnild & Young, 1993, p. 168). The authors conducted a pilot test of the scale on 39 undergraduate nurses (α=0.89) and a full test with a random sample of 810 readers of a particular senior citizens' periodical (mean age=71.1, SD=6.5). The authors reported high internal consistency (α=0.91) and item to item correlations ranging from 0.37 to 0.75, with the majority between 0.50 and 0.70, $p \leq 0.001$ (Wagnild & Young, 1993). The scale was also found to have high correlations with scales measuring constructs associated with resilience (Beck Depression Inventory, r= -0.37; Philadelphia Geriatric Center Morale Scale, r= 0.28; Life Satisfaction Index A, r= 0.30) (Wagnild & Young, 1993).

The Resilience Scale for Adults (RSA; Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003) is a 37-item self-report scale intended to measure the protective factors that lead to health adjustment and which foster adult resilience. The authors developed the scale items based on a literature review of the construct of resilience. Factor analysis revealed five factors: personal competence, social competence, family coherence, social support, and personal structure. The scale was tested on a sample of 59 patients from an outpatient clinic in Tromsø, Norway (14 males, mean age =33.7; and 45 females, mean age=36.2), and on a control sample of 290 healthy adults randomly selected from the population of Tromsø, Norway (128 males, mean

age=37.1; and 162 females, mean age=35.6). The authors reported acceptable internal consistency for the scale, with Cronbach's alphas ranging from 0.67 to 0.90. Test-retest correlations ranged from 0.69 to 0.84 ($p<0.01$) for the subscales over a four-month period. Friborg and colleagues (2003) also reported a significant negative correlation with the Hopkins Symptom Checklist, ranging from r= -0.19 to -0.61, and a significant positive correlation with the Sense of Coherence Scale, ranging from r=0.29 to 0.75 (Friborg, Hjemdal, Rosenvinge, & Martinussen, 2003).

The Brief Resilience Scale (BRS; Smith et al., 2008) assesses the ability to bounce back or recover from stress. It contains six items and uses a five-point Likert scale. During the development stage, the authors tested the scale with four samples: Sample 1 comprised 128 undergraduate students; sample 2 comprised 64 undergraduate students; sample 3 consisted of 112 cardiac rehabilitation patients; and sample 4 consisted of 50 women, 20 of whom had fibromyalgia and 30 of whom were healthy controls. All four samples were recruited from a medium sized metropolitan area in New Mexico, USA. Factor analysis yielded a one factor solution for all 4 samples. Cronbach's alphas for samples 1–4 were 0.84, 0.87, 0.80, and 0.91, respectively. The scale was administered twice in two of the samples, revealing test-retest reliability of 0.69 for one month in 48 participants from sample 2 (undergraduate students) and 0.62 for three months in 61 participants from sample 3 (cardiac patients) (Smith et al., 2008). The authors reported that the scale shows acceptable convergent validity. Positive correlations were revealed with a number of instruments including the Connor-Davidson Resilience Scale (0.59, $p<0.01$), the Ego Resiliency Scale (0.51, $p<0.01$), the Purpose in Life Scale (sample 1=0.46; sample 3=0.47; sample 4=.67, $p<0.01$), the Interpersonal Support Evaluation List (sample 1=0.28, $p<0.01$; sample 2 =0.27, $p<.05$); and the MOS Social Support Survey

(sample 3=0.30, $p<0.01$; sample 4 =0.40, $p<0.01$). The scale was also negatively correlated with instruments such as the Mental Health Inventory (sample 1 anxiety= -0.46, depression=-0.41; sample 2 anxiety=-0.56, depression=-0.49, $p<0.01$), the Hospital Anxiety and Depression Scale (sample 3 anxiety=-0.53, depression=-0.50; sample 4 anxiety=-0.60, depression=-0.66, $p<0.01$), and the Perceived Stress Scale (-0.60, -0.71,-0.61, and -0.64, respectively, $p<0.01$).

The Connor Davidson Resilience Scale

The Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) is a 25-item scale that uses a five-point Likert scaling. It was originally developed to determine resilience as a measure of the ability to successfully cope with stress. It has been used in clinical, non-clinical and general populations across the world (Connor & Davidson, 2003; Davidson & Connor, 2015; Lavretsky, Siddarth, & Irwin, 2010; Ha, Kang, An, & Cho, 2009; Dodding, Nasel, Murphy, & Howell, 2008; Sutherland, Cook, Stetina, & Hernandez, 2009). In the original study validating the 25-item self-rating scale, factor analysis produced five factors: (1) notion of personal competence, high standards and tenacity; (2) trust in one's instincts, tolerance of negative affect, and strengthening effects of stress; (3) positive acceptance of change, and secure relationships; (4) control; and (5) spiritual influences (Connor & Davidson, 2003). The strongest factor was factor 1, which includes tenacity and self-efficacy, while factors 4 (control/meaning) and 5 (meaning) appeared to be "less robust" (Davidson & Connor, 2015). A number of subsequent studies have also revealed a five factor solution (Davidson & Connor, 2015; Catalano, Lee, Hunter, Fujikawa, & Chan, 2008; Sexton, Byrd, & von Kluge, 2009), although not always the same five factors (Baek, Lee, Joo, Lee, & Choi, 2010). Other investigations, however, have

generated four or fewer factors (Lamond et. al., 2008; Jørgensen and Seedat, 2008; Khoshouei, 2009; Yu and Zhang, 2007).

To reiterate its psychometric properties, Connor and Davidson (2003) reported good internal consistency for the CD-RISC (α=0.89 when applied to a random digit dial based general population of 577 subjects) and acceptable test-retest reliability (r=0.87). The scale's authors also reported that CD-RISC scores were positively correlated with scores on the Kobasa Hardiness Scale (r=0.83, p<0.001) and the Sheehan Social Support Scale (r=0.36, p<0.001), and negatively correlated with scores for the Sheehan Stress Vulnerability Scale (r=-0.32, p<0.001), the Perceived Stress Scale (r=-0.76, p<0.001), and the Sheehan Disability Scale (r=-0.62, p<0.001) (Connor & Davidson, 2003). Karaimak also found that the CD-RISC was significantly correlated with the Positive Affect Scale (r=0.69), the Ego Resiliency Scale (r=0.68), the Rosenberg Self Esteem Scale (r=0.53), the Life Orientation Scale (a measure of optimism, r=0.55), the Dispositional Hope Scale (r=0.68), and the Negative Affect Scale (r=-0.44) (Karairmak, 2010).

The CD-RISC has been used in various countries around the world, including the USA (Connor & Davidson, 2003; White, Driver, & Warren, 2010), China (Yu, Lau, Mak, Cheng, Lv, Zhang, 2009), Korea (Ha, Kang, An, & Cho, 2009), Australia (Benetti & Kambouropoulos, 2006) and Indonesia (Irmansyah, Dharmono, Maramis, & Minas, 2010); and its cross-cultural validity and reliability have been demonstrated across different populations worldwide (Korea—general adult population and outpatients with non-psychotic mood or anxiety disorders: Jung et al., 2012; Iran—university students: Khoshouei, 2009; Turkey—adult earthquake survivors: Karairmak, 2010; China—adolescent earthquake survivors: Yu et al., 2011; Netherlands—undergraduate students: Giesbrecht et al., 2009; Uganda—former child

soldiers: Klasen et al., 2010; USA—Alzheimer's caregivers: Lavretsky, Siddarth, & Irwin, 2010; Australia—patients with schizophrenia: Deane & Andresen, 2006).

Resilience among Thai people

A number of words are used by Thai people to express the idea of being able to weather adversity. Thai words that connote "resilience" include ความยืดหยุ่น (*kwaam yeud yoen*, meaning flexible), ความแข็งแกร่งในชีวิต (*kwaam kaeng graeng nai cheewit*, meaning fortitude in dealing with life), and ความเข้มแข็งสร้างสรรค์ (*kwaam kem kaeng sahng sun*, meaning mental strength and creativity). There have been relatively few investigations of resilience among the Thai population. Of those that have been conducted, none had used the CD-RISC. This is probably because a Thai version of the CD-RISC did not exist until 2012, when it was translated by Ms. Nauwarat Imlimtharn (Davidson, personal communication, 2013). To date, those Thai studies that have directly measured resilience are based on Edith Grotberg's *I Have, I Am, I Can* framework (Grotberg, 1995; Maneerat, Isaramalai, & Boonyasopun, 2011; Nitachan, 2007; Prinyaphol, 2007), and have used the *State-Trait Resilience Inventory* that Hiew and colleagues developed (Hiew, Mori, Shimizu, & Tominaga, 2000) by modifying the Grotberg Resilience Checklist (Grotberg, 1995; Nintachan, 2007; Thanoi, Phancharoenworakul, Thompson, Panitrat, & Nityasuddhi, 2010; Nintachan, Vanaleesin, Sanseeha, Thummathai, & Orathai, 2011).

Overall, the findings indicated that the construct of resilience plays an important role in the lives of Thai individuals. For example, it was found that high resilience contributed directly to psychological well-being and influences the likelihood of healthy habits and behaviors. Thanoi and colleagues (2010) showed that

resilience, together with social support, are protective factors that have a mediating effect on rumination and negative life events among Thai adolescents, which could result in reduced risks of suicidal behavior. Based on their findings, the authors suggested a preventive intervention program which focuses on strengthening these protective factors for Thai adolescents (Thanoi et al., 2010). Takviriyanun and colleagues found that resilience is a protective factor in the prevention of alcohol use among Thai adolescents (Takviriyanun, Phuphaibul, Villarruel, Vorapongsathorn, & Panitrat, 2007). In a study of 4th–6th grade children in Chonburi, Thailand, Somchit (1998) noted that the resilience factor scores of girls were higher than boys' scores. She also found a negative correlation between the children's negative behavior scores and their resilience factor scores, and a positive correlation between resilience factor scores and perception of adversity scores (Somchit, 1998). Prinyaphol and Chongruksa (2008) found that academic achievement, chosen academic field and birth order influenced resilience levels in both Thai Buddhist and Thai Muslim university students in Pattani, Thailand. Maneerat, Isaramalai, and Boonyasopun (2011) developed a conceptual framework for identifying protective factors that contribute to resilience in elderly Thais. Their framework was based on the *I Have, I Am, I Can* model (Grotberg, 1995), and from their research, they concluded that inner strength, support from external resources, and interpersonal and problem-solving skills served to promote resilience among elderly Thai individuals.

Justification of this study

Matsumoto defined culture as "a shared system of socially transmitted behavior that describes, defines, and guides people's ways of life, communicated from one generation to the next" (Matsumoto, 1994, p. 220). Culture has a significant

impact on many facets of an individual's life, including his/her cognitive processes, emotions, and motivation (Markus & Kitayama, 1991). Thus, when conducting psychological research, if a measurement instrument is to be used with participants from a different social or cultural background than those for which the instrument was originally developed, the instrument must be shown to be linguistically, conceptually and metrically equivalent in order to avoid test biases and to be certain that the instrument is appropriate for use in the target culture/group (Groth-Marnat, 2009). This means that the instrument needs to be accurately translated into the target language through appropriate techniques (usually back-translation); the constructs being measured by the instrument must mean the same thing in the target culture/group; and the psychometric properties of the instrument must be similar in the original culture/group and the new culture/group. The prospective researcher must, therefore, establish the reliability and validity of the translated instrument before it can be used in the new social or cultural context. As Wang, Lee, and Fetzer (2006) have argued, failure to demonstrate equivalence could lead to erroneous conclusions derived from errors in translation rather than on substantial differences and similarities between cultures on the phenomenon being measured.

In studying resilience within a cross-cultural context, aside from ensuring equivalence and ruling out translation and psychometric biases, researchers should also be aware of the roles that context and culture have in building resilience in individuals and communities. For example, Friesen (2007) argued against the universality of all protective factors. According to Werner (2005; 2007), although protective factors linked to resilience appear to be universal, their effectiveness is more context-specific and depends greatly on each person's level of development and risk. Indeed, Wright, Masten and Narayan (2013) pointed out that protective factors

are often rooted in culture and cultural traditions, religion, and support systems are likely to offer a number of protective mechanisms in times of adversity (Wright, Masten, & Narayan, 2013). Similarly, McCubbin and McCubbin (2005) argued that the influence of culture on family and individual resilience is profound, with culture, ethnic identity, and schemas playing important roles in determining resilience.

With the above view in mind, the present researcher is of the opinion that resilience among Thai people may well be rooted in Thailand's rich cultural heritage and faith in Theravada Buddhism, which teaches that (1) suffering is inevitable, (2) suffering has a cause, (3) suffering has an end, and (4) one may escape suffering through Dharma. Thus, the impact, if any, of Thailand's ethnic and religious influences on resilience may be worth investigating. In particular, having a valid and reliable assessment tool to measure resilience in the Thai population would undoubtedly foster and encourage resilience research in this country, which could ultimately lead to the development of viable intervention and prevention programs. Since the CD-RISC has proved to be a useful assessment tool in different countries and cultures, and its translated versions have shown to possess good psychometric properties, the present study has been designed to examine the cross-cultural validity of the CD-RISC when used with a sample of Thai individuals. This was achieved by investigating (1) the factor structure of the Thai CD-RISC; (2) the reliability of the identified factors, and (3) the scale's convergent validity.

Research questions

1. What is the factor structure of the Thai version of the CD-RISC?
2. Is the Thai version of the CD-RISC a reliable and valid tool for measuring resilience in the Thai context?

CHAPTER III

RESEARCH METHODOLOGY

The major objective of this study was to validate the Thai version of the CD-RISC. This was achieved by first testing the factor structure of the scale when applied to a sample of Thai adults, and then by examining the scale's factor reliability and convergent validity by assessing its relationship with three states of negative affect – depression, anxiety, stress – as measured by the DASS-21 (Lovibond & Lovibond, 1995). The information contained in this chapter has been divided into five sections: (1) Research Design; (2) Study Participants; (3) Research Instrumentation; (4) Data Collection; and (5) Data Analysis.

Research Design

The design of this study is descriptive in nature. The principal analytic tools employed were factor analysis, reliability analysis, and correlation analysis.

Study Participants

The participants in this study were Thai male and female nationals between the ages of 20 and 65 who volunteered to participate in the study. To be included in the sample, participants had to be able to read and write in the Thai language. Participants were enlisted by convenience sampling via a request circulated to staff at selected companies and organizations in Bangkok. Participants were also encouraged toforward the request to their colleagues, associates and friends. As the study employed the multivariate technique of factor analysis, the sample size employed had to be large enough to ensure the stability of the extracted factors. Unfortunately, there is no cut-and-dried guideline as to what "large enough" means. As such, the determination of the sample size for factor analysis was guided by the

rule of thumb that the sample size should have at least ten times as many cases as variables entered into the factor analysis (Ho, 2013). Given that the CD-RISC has a total of 25 items, a sample size of 250 to 300 was targeted.

Research Instrumentation

This study utilized a self-administered survey questionnaire comprising the following three sections (Appendix A). The questionnaire was available online at surveymonkey.com.

Section 1 was written to tap basic demographic information including gender, age, marital status, religion, and occupation.

Section 2 consisted of the Thai version of the CD-RISC, which was translated by Ms. Nauwarat Imlimtharn and approved by Dr. Jonathan Davidson, one of the authors of the original CD-RISC. (Note: *In private communications between Dr. Davidson and the researcher, Dr. Davidson confirmed that the translation procedure involved a forward translation into Thai, followed by an independent back-translation into English, which was then reviewed by Dr. Davidson. Ms. Imlimtharn and Dr. Davidson then discussed and resolved the problematic items, and a final version was then prepared.*)

The CD-RISC is a self-rated measure designed to evaluate an individual's current capacity for resilience. The scale comprises 25 items written to tap different aspects of resilience, including being able to adapt to change, not giving up when things seem hopeless, believing that personal goals can be achieved, knowing where to get help, and feeling in control of one's life. Each of the 25 items is to be rated from 0 ("not true at all") to 4 ("true nearly all the time) based on how the respondent has been feeling over the past month. Scores are summed to yield a total score ranging from 0–100; the higher the total score, the greater the respondent's level of reported resilience.

Connor and Davidson (2003) reported that the CD-RISC has good internal consistency (α=0.89 when applied to a random digit dial based general population of 577 subjects), and satisfactory test-retest reliability (r=0.87). They also found that the range of item-total correlations was from 0.30 to 0.70. Other studies have also reported acceptable test-retest reliability; for example, Giesbrecht and colleagues (2009) reported a mean of 66.4 (SD=10.8) the first time the scale was administered and a mean of 66.3 (SD=9.8) in the second administration. Khoshouei (2009) reported reliability coefficients of r=0.78 to r=0.88.

In terms of the scale's validity, a number of studies have found that the CD-RISC has acceptable convergent validity. In their original study, Connor and Davidson (2003) found that CD-RISC scores had a positive correlation with scores on the Kobasa Hardiness Scale (r=0.83, p<0.001) and the Sheehan Social Support Scale (r=0.36, p<0.001). Connor and Davidson also reported negative correlations between CD-RISC scores and scores for the Sheehan Stress Vulnerability Scale (r=-0.32, p<0.001), the Perceived Stress Scale (r=-0.76, p<0.001), and the Sheehan Disability Scale (r=-0.62, p<0.001) (Connor & Davidson, 2003). In a 2010 study conducted by Karairmak, the CD-RISC was found to have significant correlations with the Positive Affect Scale (r=0.69), the Ego Resiliency Scale (r=0.68), the Rosenberg Self Esteem Scale (r=0.53), the Life Orientation Scale (a measure of optimism, r=0.55), the Dispositional Hope Scale (r=0.68), and the Negative Affect Scale (r=-0.44) (Karairmak, 2010).

Section 3 consists of the 21-item version of the Depression, Anxiety, and Stress Scale (DASS-21), which is a self-report style instrument developed by Lovibond and Lovibond (1995) to measure the extent to which the individual is experiencing depression, anxiety, and/or stress. The DASS-21 consists of three subscales, each containing seven items which are to be rated from 0 to 3. The chosen responses are summed together and, in the case of the DASS-21, multiplied by two to obtain a final score.

In Lovibond and Lovibond's sample of 2,914 Australian adults, the mean score and standard deviation for depression was 6.34 (SD = 6.97); for anxiety 4.70 (SD = 4.91); and for stress 10.11 (SD = 7.91) (Lovibond & Lovibond, 1995). Antony, Bieling, Cox, Enns, and Swinson (1998) reported high internal consistency for the subscales (α=0.94 for the depression scale; α=0.87 for the anxiety scale; and α=0.91 for the stress scale). In a large non-clinical sample, Henry and Crawford (2005) obtained adequately high alphas (α=0.88 for the depression subscale; α=0.82 for the anxiety subscale; α=0.90 for the stress subscale; and α=0.93 for the full scale).

The DASS-21 also shows good convergent validity (Antony et al., 1998). The depression subscale and the Beck Depression Inventory (BDI) showed a high correlation of 0.79; the anxiety subscale correlated highly with the Beck Anxiety Inventory (BAI) at 0.84; and the stress subscale correlated quite highly with instruments assessing depression and anxiety, including the DASS depression and anxiety subscales (0.57 and 0.72, respectively), the BDI (0.69), and the BAI (0.70) (Antony et al., 1998). Henry and Crawford (2005) also reported that the DASS-21 subscales demonstrated good convergent and discriminant validity when they were compared with one another and to the Hospital Anxiety and Depression Scale, the Personal Disturbance Scale, and the Positive Affect Negative Affect Scale (PANAS).

Data Collection

To gather the data for this study, the following steps were carried out:

1. The researcher prepared an email that introduced her and her research, and invited recipients to participate in the study. Those who were willing to fill in the study's questionnaire were asked to read the study's information sheet and informed consent form. Specifically, the informed consent form informed the participants that: (1) they could withdraw from filling in the questionnaire at any time, (2) no names would be

recorded in order to guarantee anonymity, and (3) the data collected would only be used for the purpose of this study and only by the researcher and her advisor (see Appendices A and B).

2. The email was disseminated to employees at various companies and organizations where the researcher has contacts to help facilitate the dissemination process. The email provided the link to the online questionnaire. Participants were also encouraged to forward the link to any other Thai adult whom they thought might be interested in participating.

Pre-test

A pre-test was conducted to ensure that the Thai questionnaire was clear, understandable, and free of typographical errors. Four native Thai speakers were asked to read the Thai questionnaire online, and report any errors, ambiguity, and difficulties accessing the questionnaire via the website link. Minor typographical errors were reported, which the present researcher corrected before disseminating the questionnaire to potential participants.

Data Analysis

This study employed the techniques of exploratory factor analysis, reliability analysis, correlation analysis, and descriptive statistics.

CHAPTER IV

RESEARCH FINDINGS

As stated in Chapter 2, the major purpose of the present research is to examine the cross-cultural validity of the CD-RISC when used with a sample of Thai individuals. This was achieved by investigating (1) the factor structure of the Thai-based CD-RISC; (2) the reliability of the identified factors, and (3) the scale's convergent validity.

Demographic Profile of Participants

The sample consisted of 201 participants of whom 41 (20.6%) were males and 158 (79.4%) were females. Their ages ranged from 20 years to 64 years, with a mean age of 35 years (*median*=31 years). In terms of their marital status, 137 participants (68.8%) reported that they were single, 44 participants (22.1%) reported that they were married, 11 participants (5.5%) reported that they were cohabiting but not married, 4 participants (2%) reported that they were divorced, and 3 participants (1.5%) reported that they were widowed. In terms of their religious affiliation, the majority of the participants reported that they were Buddhist (n=178; 89.9%), with the rest was divided into Muslim (n=2; 1.0%), Christian (n=9; 4.5%), Hindu (n=1; 0.5%), and no religion (n=8; 4.0%). In terms of their occupational status, 1 (0.5%) participant reported that he/she was an 'unskilled or semi-skilled worker;' 39 participants (19.6%) reported that they were skilled blue-collar workers; 8 participants (4.0%) reported that they were low level administrators; 34 participants (17.1%) reported that they were small business employers; 57 participants (28.6%) reported that they were professionals; 14 participants (17.0%) reported that they were employers of more than 10 people; 22 participants (11.1%) reported that they were students; 10 participants (5.0%) reported that they were unemployed; and 14 participants (7.0%) reported that they were 'stay at home parents or spouse.' In terms of their income, 30 (15.0%) participants reported that

their family earned THB 20,000 or less per month; 45 (22.5%) participants reported that their family earned THB 20,001–40,000 per month; 37 (18.5%) participants reported that their family earned THB 40,001–60,000 per month; 16 (8.0%) participants reported that their family earned THB 60,001–80,000 per month; 18 (9.0%) participants reported that their family earned THB 80,001–100,000 per month; and 54 (27.0%) participants reported that their family earned more than THB 100,000 per month (see Appendix C).

Factor Structure of the CD-RISC: Exploratory Factor Analysis

Participants' responses to the 25-item CD-RISC scale were subjected to a principal components analysis, followed by oblique rotation. Inspection of the results revealed that seven factors had eigen-values greater than 1.00. However, examination of the items that loaded on these seven factors indicated that only the first four factors were interpretable. In conjunction with results obtained from the scree-plot, these findings suggested a four factor solution. These four factors accounted for 31.26%, 6.69%, 5.79%, and 4.96% of the total variance respectively, for a combined total of 48.70%. In order to clarify these four factors, oblique rotation limited to four factors was then conducted (see Appendix D).

From the obtained rotated pattern matrix, a total of 20 items were retained, using the criteria of selecting items with factor structure coefficients greater than or equal to 0.40 and no significant cross-loadings. The use of the 0.40 value as a criterion for selecting items is based on the logic that squaring the correlation coefficient (0.40^2) yields approximately 16% of the variance explained. Of the 20 items, 11 loaded on Factor 1, 2 loaded on Factor 2, 5 loaded on Factor 3, and 2 loaded on Factor 4. Examination of the items that loaded on these four factors indicated that for Factor 1, the 11 items that loaded on it reflect a sense of personal competence in dealing with personal problems and challenges, as well as the ability to tolerate negative life events; thus, this factor was labeled *personal competence/tolerance of negative affect.* For Factor 2, the two items that loaded on it reflect the belief that one has

sufficient support resources to cope with stress, as well as the ability to seek out such support when needed; thus, this factor was labeled *support resources.* For Factor 3, the five items that loaded on it reflect the belief that one has control over one's life as well as the confidence to overcome life's obstacles; thus, this factor was labeled *self-efficacy.* For Factor 4, the two items that loaded on it reflect the belief that in coping with life's problems, sometimes one has to rely on a hunch, or to seek spiritual help; thus, this factor was labeled *faith.*

Reliability Analysis

In order to maximize the internal consistency of the derived factor solution (as well as the three DASS-21 factors of depression, anxiety, and stress), the items representing each of the four resilience factors and the DASS-21 factors were item analyzed. Two criteria were used to eliminate items from these factors. First, an item was eliminated if the inclusion of that item resulted in a substantial lowering of Cronbach's alpha (Walsh & Betz, 1985). Second, an item was considered to have an acceptable level of internal consistency if its corrected item-total (IT) correlation was equal to or greater than 0.33 (Hair, Anderson, Tatham, & Black, 1997).

Examination of the Cronbach's alphas for the four resilience factors and their items' IT correlations showed that of the four factors, Factor 4 comprising the two items that reflect *faith* in coping with life's problems returned a very low Cronbach's alpha (0.30) as well as low corrected IT correlations for the two loaded items (0.18 for both items). These findings indicated that this two-item factor is not internally consistent and therefore this factor was deleted. All other items representing the resilience factors of *personal competence/tolerance of negative affect, support resources*, and *self-efficacy*, and the DASS-21 factors of *depression, anxiety*, and *stress* were found to be internally consistent based on the above two criteria (see Appendix E). Table 1 presents the Cronbach's alpha coefficients and the

corrected item-total correlations for the three-factor Thai-based CD-RISC scale and the DASS-21 factors.

Table 1
Cronbach's alpha coefficients and corrected Item-total (IT) correlations for the three factor Thai-based CD-RISC scale and the DASS-21 factors of depression, anxiety, and stress

	Corrected IT correlations
Thai-based CD-RISC Scale	
Personal competence/tolerance of negative affect	
• I prefer to take the lead in solving problems rather than letting others make all the decisions.	.52
• Under pressure, I stay focused and think clearly.	.58
• I think of myself as a strong person when dealing with life's challenges and difficulties.	.77
• I can make unpopular or difficult decisions that affect other people, if it is necessary.	.61
• I am not easily discouraged by failure.	.65
• I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	.52
• I can deal with whatever comes my way.	.56
• Past successes give me confidence in dealing with new challenges and difficulties.	.62
• Having to cope with stress can make me stronger.	.49
• I am able to adapt when changes occur.	.55
• I tend to bounce back after illness, injury, or other hardships.	.46
Cronbach's alpha = 0.87	
Support resources	
• I have at least one close and secure relationship that helps me when I am stressed.	.47
• During times of stress/crisis, I know where to turn for help.	.47
Cronbach's alpha = 0.64	
Self-efficacy	
• I have a strong sense of purpose in life.	.64
• I work to attain my goals no matter what roadblocks I encounter along the way.	.59

- I give my best effort no matter what the outcome may be. .49
- I take pride in my achievements. .57
- I feel in control of my life. .56

Cronbach's alpha = 0.79

DASS-21

Depression

- I couldn't seem to experience any positive feeling at all. .38
- I felt that I had nothing to look forward to. .52
- I felt I wasn't worth much as a person. .65
- I felt downhearted and blue. .69
- I was unable to become enthusiastic about anything. .73
- I felt that life was meaningless. .58
- I found it difficult to work up the initiative to do things. .54

Cronbach's alpha = 0.83

Anxiety

- I was aware of dryness of my mouth. .38
- I experienced breathing difficulty. .59
- I felt scared without any good reason. .49
- I was aware of the action of my heart in the absence of physical exertion. .67
- I felt I was close to panic. .54
- I was worried about situations in which I might panic and make a fool of myself. .39
- I experienced trembling. .56

Cronbach's alpha = 0.79

Stress

- I tended to overreact to situations. .45
- I found it difficult to relax. .45
- I felt that I was using a lot of nervous energy. .50
- I felt that I was rather touchy. .52
- I found it hard to wind down. .64
- I was intolerant of anything that kept me from getting on with what I was doing. .49
- I found myself getting agitated. .42

Cronbach's alpha = 0.77

The reliability analysis indicated that, apart from the deletion of the *faith* factor from the Thai-based CD-RISC scale (due to both low Cronbach's alpha and low corrected item-total correlations), all other scales representing the resilience factors of *personal competence/tolerance of negative affect, support resources,* and *self-efficacy,* and the DASS-21 factors of *depression, anxiety, and stress* have acceptable Cronbach's alphas (range: 0.64–0.87) as well as adequate corrected item-total correlations (range: 0.38–0.77). The six CD-RISC and DASS-21factors of *personal competence/tolerance of negative affect, support resources, self-efficacy, depression, anxiety,* and *stress* were then computed by summing across the items that make up that factor and their means calculated.

The following Table 2 presents the means and standard deviations for the six computed factors. (See Appendix F)

Table 2
Means and standard deviations for the computed factors of personal competence/tolerance of negative affect, support resources, self-efficacy, depression, anxiety, and *stress*

	Mean	*SD*	Mid-point
• Personal competence/tolerance of negative affect	2.76	0.52	2.0
• Support resources	2.80	0.76	2.0
• Self-efficacy	2.74	0.60	2.0
• **Overall resilience score**	**2.76**	**0.63**	**2.0**
• Depression	0.77	0.55	1.5
• Anxiety	0.79	0.51	1.5
• Stress	0.68	0.47	1.5

As can be seen from Table 2, all three CD-RISC factors of *personal competence/tolerance of negative affect, support resources,* and *self-efficacy* were rated above the mid-point on their scales. Moreover, the overall mean resilience score (summed across the three factors of *personal competence/tolerance of negative affect, support*

resources, and *self-efficacy*) is also above the mid-point. The three DASS-21 factors of *depression, anxiety,* and *stress* were rated below the mid-point on their scales. Thus, overall, the participants in the present study rated themselves as relatively high in resiliency, and low in terms of their levels of depression, anxiety, and stress.

Test of convergent validity

Convergent validity is based on the assumption that different measures of the same hypothetical construct ought to correlate highly with one another if the measures are valid. In order to test for the convergent validity of the Thai-based CD-RISC scale, Pearson's product-moment correlation analysis was conducted to investigate the direction and strength of the relationships between the Thai-based CD-RISC scale factors (*personal competence/tolerance of negative affect, support resources, self-efficacy*) and the summated scores yielded by the DASS-21 (*depression, anxiety, stress*) (see Appendix G). The results of this analysis are presented in Table 3.

Table 3
Correlation coefficients between the Thai-based resilience scale factors of personal competence/tolerance of negative affect, support resources, and self-efficacy, and the DASS-21 factors of depression, anxiety, and stress

	Depression	Anxiety	Stress
• Personal competence/ tolerance of negative affect	-.47***	-.47***	-.44***
• Support resources	-.20**	-.25***	-.27***
• Self-efficacy	-.38***	-.44***	-.36***

** $p<.01$
*** $p<.001$

The results indicated that all three Thai-based CD-RISC factors of *personal competence/tolerance of negative affect, support resources,* and *self-efficacy* are significantly

and negatively correlated with the DASS-21 factors of *depression, anxiety,* and *stress* (p<.001). Thus, the higher the participants' reported resilience levels of *personal competence/tolerance of negative affect, support resources,* and *self-efficacy*, the lower their reported levels of *depression, anxiety,* and *stress*. These findings are generally in line with the assumptions underlying the original CD-RISC scale and offer support for the convergent validity of the Thai-based CD-RISC scale.

Summary of Analyses and Findings

In order to test the psychometric properties of the Thai-based CD-RISC scale as a reliable and valid measure of resilience among a Thai sample, the following analyses were conducted.

- *Exploratory factor analysis*. Four factors were initially identified for the Thai-based CD-RISC. These identified factors tapped resiliency along the four dimensions of *personal competence/tolerance of negative affect, support resources, self-efficacy,* and *faith.*
- *Reliability analysis*. Reliability analysis was conducted to maximize the internal consistency of the derived CD-RISC factors as well as the DASS-21 factors of depression, anxiety, and stress. Cronbach's alphas for the four resilience factors and their items' IT correlations showed that the resilience factor of *faith* had a very low Cronbach's alpha as well as low corrected IT correlations. These results point to the lack of internal consistency of this factor and was therefore deleted. All other items representing the factors of *personal competence/tolerance of negative effect, support resources, self-efficacy, depression, anxiety,* and *stress* were found to be internally consistent.
- *Test of convergent validity.* Test of convergent validity was conducted via Pearson's product-moment correlation analysis to investigate the direction and strength of the

relationships between the Thai-based CD-RISC factors of *personal competence/tolerance of negative affect, support resources, self-efficacy*, and the DASS-21 factors of *depression, anxiety,* and *stress*. The findings showed that the CD-RISC factors of *personal competence/tolerance of negative affect, support resources,* and *self-efficacy* are significantly and negatively correlated with the DASS-21 factors of *depression, anxiety,* and *stress*. These findings are generally in line with the assumptions underlying the original CD-RISC scale.

CHAPTER V

DISCUSSION

The CD-RISC was designed to measure an individual's stress coping ability by assessing various aspects of psychological resilience (Connor & Davidson, 2003). The scale's utility lies in its ability to (1) tap various aspects of an individual's resilience so as to identify the likelihood that the individual is having or will have difficulty coping with a stressful or adverse situation and (2) assess treatment outcomes (Connor & Davidson, 2015). The present study was conducted to test the psychometric properties of the CD-RISC when used with a sample of Thai adults. This was achieved by testing (1) the factor structure of the Thai CD-RISC; (2) the reliability of the extracted factors; and (3) the convergent validity of this multidimensional scale.

There are a number of benefits to investigating the psychometric properties of the CD-RISC within the Thai context. First, a cross-culturally valid CD-RISC would provide a means for mental health professionals to identify and measure psychological resilience in the Thai population as well as to monitor and assess the efficacy of interventions and treatment plans. Second, the findings of this study could lead to a better understanding of the construct of resilience as experienced by Thai people. Third, having a valid Thai language instrument to measure resilience may encourage researchers to conduct more resilience research in Thailand, which could ultimately facilitate the development of effective intervention and prevention programs.

Properties of the Thai CD-RISC

Exploratory factor analysis of the 25-item Thai CD-RISC initially yielded four factors: (1) *personal competence/tolerance of negative affect*; (2) *support resources*; (3) *self-efficacy*; and (4) *faith*; however, *faith* was subsequently deleted due to its lack of internal

consistency. The most robust factor was *personal competence/tolerance of negative affect*, followed by *self-efficacy*, and *support resources*.

The three-factor solution obtained in the present study appears to reinforce the observations of Kulick and Wilson (1992) that Thais possess a strong sense of personal autonomy, and subscribe to the importance of self-improvement, personal achievement and the development of individual skills. Specifically, the factor structure suggests that Thais who exhibit a high level of resilience have an underlying belief that they possess suitable knowledge, attributes and skills to overcome adversities. In addition, they are able to keep their emotions in check when they are under pressure. The ability to positively regulate their emotions means that they are able to avoid becoming overwhelmed and to be able to select adaptive behaviors and responses that lead to successful adaptation (Factor 1*: personal competence/tolerance of negative affect*.) Being resilient also makes them confident that they have what it takes to get through difficult situations. This suggests that self-efficacy plays an important role in determining how successful Thai people are at adapting to and overcoming difficult or traumatic situations. Thus, resilient Thais appear to hold onto the belief that their actions can have an impact on the outcome of the event. This belief helps them to be proactive and to view the situation as a challenge to be mastered (Factor 3: *self-efficacy*).

Another important factor underlying the resilience of Thai people appears to be their need for and their ability to obtain support resources when confronted with adverse situations. This suggests that when Thai individuals are confronted with an adverse outcome, an important determinant of how successfully they cope with the situation is whether they are able to reach out for help and support from people around them. Given that Thai culture places great importance on family and community relationships, it would not be unexpected that when confronted with an adverse situation, Thais would seek support from those close to them.

The three-factor structure of the Thai CD-RISC supports the contention that resilience is a multidimensional construct; however, the three dimensions identified in the present study suggest that the latent constructs of resilience in the Thai context are somewhat different from those that Connor and Davidson identified from their original American sample, which were (1) notion of personal competence, high standards and tenacity; (2) trust in one's instincts, tolerance of negative affect, and strengthening effects of stress; (3) positive acceptance of change, and secure relationships; (4) control; and (5) spiritual influences (Connor & Davidson, 2003). Although the final three factors of the Thai CD-RISC bear some similarity to the five factors identified by Connor and Davidson, the differences are sufficiently broad so as to suggest a possible cultural difference in the CD-RISC structure components of resilience. That is, although resilience is posited to be a universal concept, Thai individuals may draw on different cultural attributes to cope with adversities when compared to the American sample employed in the development of the original CD-RISC (Parker, Endler, & Bagby, 1993). In addition, the different factor structure yielded in the present study suggests that the meaning of resilience in Thailand may differ from the meaning in other cultures. For the Thai populace, it seems that to be resilient means (1) possessing the belief in *personal competence* and the ability to *tolerate negative affect*, (2) belief in the availability of and the successful access to *support resources*, and (3) the belief in one's *self-efficacy* or the confidence that one has in one's ability to execute a behavior to bring about a desired outcome. This culture-specific definition is in line with the view that definitions of resilience are dependent on culture and context (Windle, Bennett, & Noyes, 2011; Ungar et al., 2008; Jogersen & Seedat, 2008; Baek, Lee, Joo, & Choi, 2010). Indeed, many studies involving the CD-RISC have not been able to replicate Connor and Davidson's original factor structure. For example, Yu and Zhang (2007) obtained a three-factor structure (tenacity, strength, and optimism) in a validation study involving Chinese adults. Jorgensen and Seedat (2008) also

obtained a three-factor solution comprising tenacity, adaptation, and spirituality in a study of South African adolescents. Baek and colleagues reported a five-factor solution comprising hardiness, persistence, optimism, support, and being spiritual in a validation study involving Korean hospital nurses, university students, and firefighters (Baek, Lee, Joo, Lee, & Choi, 2010).

The different Thai factor structure identified in the present study could also have been due to differences in the interpretation of the scale items and scale calibration. For example, terms such as "adapt," "bounce back," and "hardships" may possess different conceptual meanings within the Thai context when compared to their Western counterparts. Likewise, in rating the Likert scale associated with each scale item, the quantified range of "rarely true," "sometimes true," "often true," and "true nearly all the time" might not represent the same degree of frequency in the Thai language as they do when used in the English language.

Limitations

The present study bears certain limitations that must be considered when interpreting the findings.

First, the use of a convenience sample may limit the generalizability of the findings in this study. The participants are residents of Thailand's capital city who all had access to the internet (a requirement given that the survey was presented online), which suggests a certain level of affluence. Thus, this sample may differ from Thai adults in other parts of Thailand, particularly rural and impoverished areas. In addition, females are over-represented in the study sample, and this may limit the generalizabilty of the findings to Thai men across the population.

Second, the study's sample size is small (n=201) and as such does not contribute significantly to the overall stability of the obtained findings. Given the possible high variation of the extracted resilience factors across samples, the question arises as to whether the Thai-

based CD-RISC offers a stable measure of the resilience factors identified. Nonetheless, the present study does provide indicative results that can be built upon by future researchers with larger scale studies.

Third, although the findings in this study indicate that the Thai CD-RISC possesses satisfactory internal consistency, they do not provide evidence that the scale's internal consistency will remain stable over time. To demonstrate this, test-retest reliability must be conducted. That is, the scale must be administered to the same group of participants at two or more different points in time. The current lack of test-retest reliability results of the Thai CD-RISC must be taken into consideration by researchers wishing to use the Thai CD-RISC in the future.

Fourth, the nature of self-report instruments is such that the presence of socially desirable responses cannot be ruled out and the truthfulness and accuracy of responses cannot be verified or ensured. As the study inquired about the participants' levels of resilience and negative affective states (depression, anxiety, stress), it is possible that certain participants distorted their responses in an effort to appear more socially acceptable (for example, by falsely reporting that are not discouraged by failure and never feel that life is meaningless). Although it is extremely difficult to control for socially desirable responses, it is hoped that the guarantee of anonymity and confidentiality would have ameliorated this effect.

Implications

With the above limitations in mind, the findings of the present study suggest a number of important implications regarding the utility of the Thai CD-RISC as an instrument for assessing and monitoring resilience. The factor structure identified in the present study suggests that in times of difficulty or hardship, Thai people draw their resilience from (1) their perception of personal competence and their ability to tolerate unpleasant emotions, (2) their belief in the availability of and the successful access to support resources, and (3) their

confidence in their ability to influence the situation. Thus, a prerequisite to being resilient among Thai people appears to lie in their possession of these three constructs. Consequently, when any of these three factors is lacking or insufficient, a resilient outcome is harder to achieve. For example, a person may be (1) high in his/her perception of personal competence and ability to tolerate unpleasant emotions, (2) high in his/her belief in the availability of and the successful access to available support resources, but is (3) low in his/her confidence in their ability to influence the situation, then their level of resiliency could be low. Thus, treatment plans and prevention programs aimed at promoting resilience in Thai communities must focus on developing and enhancing all these three factors. To accomplish this, researchers and clinicians will need to identify the social and psychological contributors to a strong sense of personal competence, self-efficacy, and the belief that one has access to resource support when confronted by adverse situations.

The finding (via factor analysis) that only 18 items from the original CD-RISC 25 items will be used to represent the Thai-based CD-RISC scale suggests a slightly shorter version which makes the scale easier and less time consuming for Thai participants to complete. Thus, potential participants are, in general, more likely to perceive filling in the Thai-based CD-RISC as more convenient and less time-consuming. Such a perception may motivate a potential participant's willingness to participate and complete the questionnaire.

Second, the sound psychometric properties identified for the Thai CD-RISC suggest that the scale may be used as an assessment tool for assessing resilience in Thai adults. Thus, the Thai CD-RISC may represent an important contribution to (1) the identification of at-risk individuals, (2) the monitoring and evaluation of preventive programs and treatment plans, and (3) the understanding of the protective factors that promote resilience in Thai individuals. Given the evidence of a connection between resiliency and psychological and behavioral problems, the Thai CD-RISC can be used to identify individuals who may be at risk of

developing such problems. Early identification of risk can minimize the negative consequences for the individual, the individual's friends and family, and society as a whole. Clinicians and mental health professionals can use the Thai CD-RISC to identify the specific factors contributing to an individual's low resilience and then design a personalized treatment plan for strengthening the individual's resilience and lowering their risk of behavioral and psychological difficulties. For example, if a clinician identifies the self-efficacy factor as a major contributor to the individual's low capacity for resilience, the clinician can then develop a treatment program that targets ways to increase self-efficacy.

Third and from a wider perspective, the Thai CD-RISC represents a reliable and valid assessment instrument that can be utilized by government and non-governmental organizations to identify risk factors and protective factors associated with resilience in the Thai population. Identification of these factors will allow community centers to provide counseling, training and activities that will promote resilience and combat risk factors in Thai society.

Recommendations

The researcher strongly recommends follow-up studies on resilience in Thailand. One worthwhile focal point of further research could be a comparative study on the differences in the resilience of the urban population and rural population. Not only do urban and rural Thais face different risks and stressors in their everyday life, they also enjoy different protective factors. For example, many rural Thais are exposed to poverty, unemployment, and limited education and healthcare. Mental health care services are extremely scarce and the stigma associated with seeking psychological help is highly negative. On the other hand, rural communities tend to be close-knit and supportive. A comparative study could help to identify specific risks and protective factors in rural and urban communities, and the findings could be used to develop suitable intervention and prevention programs.

Another worthwhile study would be an investigation into the psychometric soundness of the Thai CD-RSC when administered to a clinical population. If the Thai CD-RISC provides a valid and reliable measure of resilience among clinical patients, then clinicians will be able to use the scale to monitor and track the efficacy of treatment and intervention programs designed to build resilience. Researchers should also investigate whether demographic variables such as gender, marital status, income and education play a role in the resilience of Thai individuals. This is because past findings on the relationships between resilience and the aforementioned variables are inconsistent. For example, some researchers have reported no relationship between resilience scores and either gender or marital status (Connor & Davidson, 2003; Wilks, 2006; Lamond et al, 2008; Jowkar, Friborg, & Hjemdal, 2010). Lamond et al. (2008) also found no relationship between education level and resilience scores. However, studies conducted by Campbell-Sills, Forde, and Stein (2009) reported that a higher level of education, male gender, and higher income are associated with higher levels of resiliency. While these studies are informative, they have all been conducted in the West and do not necessarily predict relationships between resilience and demographic variables within the Thai context. Understanding these relationships will be crucial in developing appropriate prevention programs and identifying at-risk groups among the Thai population.

The researcher also suggests that government and non-government agencies collaborate to develop and implement appropriate community programs that promote and offer support for the development of resilience and associated skills, which will reduce the stigma of seeking help in times of psychological distress. Programs may also be designed to help health care professionals understand the importance of resilience as it relates to physical and mental health, to identify and assist patients who may have low resilience levels, and to design appropriate treatment strategies aimed specifically at strengthening resilience.

Future researchers considering conducting a similar study should consider using larger samples. Larger samples will enhance the stability of the obtained findings and contribute not only to the research findings' external validity but also the researcher's overall confidence in the meaningfulness of the obtained results.

Conclusion

To the researcher's knowledge, this study is the first to investigate the psychometric properties of the CD-RISC in the Thai context. The development of a valid and reliable Thai CD-RISC provides clinicians and future researchers with an assessment tool to evaluate and monitor resilience, identify potentially at-risk individuals, and evaluate the efficacy of interventions and treatment plans. It also offers a starting point for the development and implementation of preventive strategies and treatment programs targeting risk factors and resilience. It can, therefore, be concluded that the cross-cultural validation of the Thai CD-RISC represents a preliminary endeavor to measure and understand the capacity for resilience among the Thai population. It is hoped that this preliminary effort will encourage further empirical research into the factors underlying resilience and the optimal methods for fostering resilience in Thai society.

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APPENDICES

APPENDIX A

English Questionnaire

INFORMATION AND CONSENT FORM

You are invited to participate in this research study. The following information is provided to help you make an informed decision on whether or not to participate.

The purpose of this study is to explore the concept of resilience (ความยืดหยุ่น, ความแข็งแกร่งในชีวิต, ความเข้มแข็งสร้างสรรค์) among Thai individuals. In this study, you will be asked to respond to a questionnaire in which you will provide information about your beliefs/attitudes toward your level of resiliency. The information gained from this study may help us to better understand the factors underlying the decision to 'give up' or to 'bounce back' in the face of adversity.

All information collected will be kept confidential and secure, no names will be recorded, and participants may withdraw from filling in the questionnaire at any time. The data collected will only be used for the purpose of this study and only by the researcher and her advisor. **By voluntarily filling in this questionnaire, it will be assumed that you have consented to participate in this research study.**

If you have any questions regarding this study, please contact the researcher, Ms Kirsten McGillivray, at her email address: kirsten.mcgillivray@yahoo.com

Section 1

Personal Data

1. Gender: Male ____ Female ____

2. Age: _____

3. Marital Status:

☐ Single ☐ Married

☐ Cohabiting ☐ Separated but not divorced

☐ Divorced ☐ Widowed

4. Religion:

☐ Buddhist ☐ Muslim

☐ Christian ☐ Sikh

☐ Hindu ☐ Other religion

☐ No religion

5. Occupation:

1. _____ Unskilled or semi-skilled worker (e.g., driver, laborer, shop assistant, typist but not secretary).
2. _____ Skilled blue-collar worker with apprenticeship or similar training.
3. _____ Clerical; low-level administration; low-salary skilled white collar worker.
4. _____ Small business employer / self-employed; non-executive administrator in a large company; middle-level public servant.
5. ____ Professional (specific skill with university degree or technical college diploma and member of recognized professional society.
6. _____ Employer of more than 10; executive in an organization greater than 100; senior public servant.
7. _____ Student.
8. _____ Unemployed / looking for employment.
9. _____ Stay-at-home parent / spouse.

5. Average household income per month:

☐ THB 20,000 or less ☐ THB 20,001– 40,000 ☐ THB 40,001–60,000

☐ THB 60,001–80,000 ☐ THB 80,001–100,000 ☐ More than THB 100,000

Section 2

CD-RISC

Instructions:

For each item, please select the response that best indicates how much you agree with the following statements as they apply to you over the last **month**. If a particular situation has not occurred recently, answer according to how you think you would have felt.

Scale:

Due to copyright reasons, the authors of the CD-RISC have asked that the original scale not be reproduced here. A hardcopy version is available from the researcher.

Section 3

DASS-21

Please consider each of the statements listed below and then decide how often the situation described in that statement applies to you. Using the rating scale below, please choose the number that best reflects your opinion. There are no right or wrong answers. Do not spend too much time on any statement.

0 = Did not apply to me at all

1 = Applied to me to some degree, or some of the time

2 = Applied to me to a considerable degree, or a good part of the time

3 = Applied to me very much, or most of the time

1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (e.g., in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3

16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

THANK YOU FOR YOUR PARTICIPATION

APPENDIX B

Thai Questionnaire

แบบสอบถาม

แบบสอบถามนี้จัดทำขึ้นเพื่อรวบรวมข้อมูลสำหรับการทำวิทยานิพนธ์ระดับปริญญาโท โดยมีจุดประสงค์เพื่อจะสำรว จ / ตรวจสอบปัจจัยที่มีอิทธิพลและมีส่วนทำให้เกิดความเข้มแข็งทางจิตใจ (ความเข้มแข็งและสร้างสรรค์)
ข้อมูลจะถูกนำมารวบรวมเป็นข้อมูลกลุ่มและใช้เพื่อวัตถุประสงค์ในงานวิจัยเท่านั้น จะไม่มีการเปิดเผยชื่อและจะเก็บรักษาข้อมูลเป็นความลับ ท่านไม่จำเป็นต้องเขียนชื่อ และโปรดทราบว่าไม่มีคำตอบที่ถูกหรือผิด ดังนั้น กรุณาตอบอย่างตรงไปตรงมา
ขอขอบพระคุณอย่างสูงในความร่วมมือและเวลาของท่าน

ส่วนที่1 : ข้อมูลส่วนตัว

1. เพศ ☐ ชาย ☐ หญิง

2. อายุ _____

3. สถานภาพสมรสปัจจุบัน

☐ โสด ☐ แต่งงาน
☐ อยู่ร่วมกันแต่ยังไม่ได้จดทะเบียน ☐ แยกกันอยู่แต่ยังไม่ได้หย่า
☐ หย่าร้าง ☐ หม้าย

4. ศาสนา

☐ พุทธ ☐ อิสลาม
☐ คริสต์ ☐ ซิกข์
☐ ฮินดู ☐ อื่น ๆ
☐ ไม่มีศาสนา

6. รายได้เฉลี่ยต่อเดือนของครัวเรือน?

☐ น้อยกว่าหรือเท่ากับ 20,000 บาท ☐ 20,001– 40,000 บาท ☐ 40,001–60,000 บาท

☐ 60,001–80,000 บาท ☐ 80,001–100,000 บาท ☐ มากกว่า 100,000 บาท

ส่วนที่ 2

กรุณาระบุว่าข้อความดังต่อไปนี้เป็นจริงเกี่ยวกับตัวท่านมากน้อยเพียงใดในช่วง 1 เดือนที่ผ่านมา หากสถานการณ์ใดๆ ไม่ได้เกิดขึ้นในช่วงระยะเวลานี้ ให้ท่านตอบโดยคิดว่าท่านน่าจะรู้สึกอย่างไร

		ไม่จริงเลย (0)	จริงน้อยมาก (1)	จริงบางครั้ง (2)	จริงบ่อยครั้ง (3)	จริงแทบทั้งหมด (4)
1	ข้าพเจ้าสามารถปรับตัวได้เมื่อมีการเปลี่ยนแปลงเกิดขึ้น					
2	อย่างน้อย ข้าพเจ้าก็มีคนที่สนิทและรู้สึกปลอดภัยที่ช่วย ข้าพเจ้าได้ในเวลาเครียด					
3	เวลาที่ไม่มีทางออกในการแก้ปัญหา บางครั้งบางคราวโชคชะตาหรือ สิ่งศักดิ์สิทธิ์ก็สามารถช่วยให้ข้าพเจ้าพบทางออกได้					
4	ข้าพเจ้า สามารถรับมือกับสิ่งต่างๆ ที่เข้ามาในเส้นทางชีวิตของข้าพเจ้า					
5	ความสำเร็จในอดีตที่ผ่านมา ทำให้ข้าพเจ้ามั่นใจในการรับมือกับสิ่งท้าทายและ ความยากลำบากครั้งใหม่					
6	เวลาที่ข้าพเจ้าเผชิญกับปัญหา ข้าพเจ้าพยายามมองหาด้านที่ทำให้ข้าพเจ้าหัวเราะได้ ในเรื่องนั้นๆด้วย					
7	การรับมือกับความเครียดทำให้ข้าพเจ้าแข็งแกร่งขึ้น					
8	ข้าพเจ้ามักจะกลับฟื้นคืนสู่สภาพเดิมได้หลังจากที่เจ็บป่วย บาดเจ็บหรือทุกข์ยาก					
9	ไม่ว่าจะดีหรือร้าย ข้าพเจ้าเชื่อว่าทุกสิ่งทุกอย่างเกิดขึ้นต้องมีสาเหตุ					
10	ข้าพเจ้าใช้ความพยายามอย่างสุดความสามารถ ไม่ว่าผลที่ตามมาจะเป็นอย่างไร					
11	ข้าพเจ้าเชื่อว่าข้าพเจ้าสามารถทำได้สำเร็จตามเป้าหมายของข้าพเจ้าได้ แม้ว่าจะพบอุปสรรคมากมาย					
12	แม้ในขณะที่ดูเหมือนว่าจะสิ้นหวังในหลายๆสิ่ง ข้าพเจ้าก็ไม่ยอมแพ้					
13	ในช่วงเวลาที่เครียดหรือมีวิกฤต ข้าพเจ้ารู้ว่าจะไปขอความช่วยเหลือได้จากที่ไหน					
14	ภายใต้ภาวะความกดดัน ข้าพเจ้ายังคงมีจิตใจจดจ่อกับเรื่องนั้นและคิดได้อย่างชัดเจน					

		ไม่จริงเลย (0)	จริงน้อยมาก (1)	จริงบางครั้ง (2)	จริงบ่อยครั้ง (3)	จริงแทบทั้งหมด (4)
15	ข้าพเจ้าชอบที่จะเป็นผู้นำในการแก้ปัญหา มากกว่าจะปล่อยให้คนอื่นเป็น คนตัดสินใจทั้งหมด					
16	ข้าพเจ้าเป็นคนที่ไม่ท้อแท้ง่ายๆกับความล้มเหลว					
17	ข้าพเจ้าคิดว่าตัวข้าพเจ้าเป็นคนที่เข้มแข็งในเวลาที่รับมือกับความท้าทายและ อุปสรรคต่างๆในชีวิต					
18	เมื่อถึงคราวจำเป็น ข้าพเจ้าก็สามารถตัดสินใจในเรื่องที่ไม่ธรรมดา หรือ เรื่องที่ลำบากใจซึ่งผลกระทบกับผู้อื่นได้					
19	ข้าพเจ้าสามารถจัดการกับความรู้สึกไม่สบอารมณ์หรือปวดร้าวใจได้เช่น เสียใจ หวาดกลัวและโกรธ					
20	ในการรับมือกับปัญหาชีวิต บางครั้งข้าพเจ้าก็ทำตามลางสังหรณ์โดยที่ไม่รู้ว่าทำไม					
21	ข้าพเจ้ามีเป้าหมายที่ชัดเจนในชีวิต					
22	ข้าพเจ้ารู้สึกว่าข้าพเจ้าควบคุมชีวิตของข้าพเจ้าได้					
23	ข้าพเจ้าชอบสิ่งที่ท้าทาย					
24	ข้าพเจ้าทำทุกอย่างเพื่อให้ได้ตามเป้าหมายของข้าพเจ้า ไม่ว่าต้องเผชิญกับอุปสรรค อันใดที่มาขัดขวางก็ตาม					
25	ข้าพเจ้าภาคภูมิใจในความสำเร็จของข้าพเจ้า					

ส่วนที่ 3

โปรดเลือกข้อความที่ตรงกับท่านมากที่สุดใน ช่วงสัปดาห์ที่ผ่านมา ทั้งนี้ไม่มีคำตอบที่ถูกหรือคำตอบที่ผิด ท่านไม่ควรใช้เวลามากนักในแต่ละข้อความ

เกณฑ์การประเมินมีดังนี้:

0 ไม่ตรงกับข้าพเจ้าเลย

1 ตรงกับข้าพเจ้าบ้าง หรือเกิดขึ้นเป็นบางครั้ง

2 ตรงกับข้าพเจ้า หรือเกิดขึ้นบ่อย

3 ตรงกับข้าพเจ้ามาก หรือเกิดขึ้นบ่อยมากที่สุด

1.	ข้าพเจ้ารู้สึกว่ายากที่จะผ่อนคลายอารมณ์	0 1 2 3
2.	ข้าพเจ้าพบว่าข้าพเจ้ามีอาการปากแห้ง	0 1 2 3
3.	ข้าพเจ้าไม่รู้สึกดีขึ้นเลย	0 1 2 3
4.	ข้าพเจ้ามีอาการหายใจลำบาก (เช่น มีอาการหายใจเร็วขึ้นผิดปกติ มีอาการหายใจไม่ออกแม้ว่าจะไม่ได้ออกแรง)	0 1 2 3
5.	ข้าพเจ้ารู้สึกทำกิจกรรมด้วยตนเองได้ค่อนข้างลำบาก	0 1 2 3
6.	ข้าพเจ้าเริ่มมีปฏิกิริยาตอบสนองต่อสิ่งต่างๆมากเกินไป	0 1 2 3
7.	ข้าพเจ้ามีอาการสั่น (เช่น ที่มือทั้งสองข้าง)	0 1 2 3
8.	ข้าพเจ้ารู้สึกว่าข้าพเจ้าวิตกกังวลมาก	0 1 2 3
9.	ข้าพเจ้ารู้สึกกังวลกับเหตุการณ์ที่อาจทำให้ข้าพเจ้ารู้สึกตื่นกลัว และกระทำสิ่งใดโดยมิได้คิด	0 1 2 3
10.	ข้าพเจ้ารู้สึกว่าข้าพเจ้าไม่มีเป้าหมาย	0 1 2 3
11.	ข้าพเจ้าเริ่มรู้สึกว่าข้าพเจ้ามีอาการกระวนกระวายใจ	0 1 2 3
12.	ข้าพเจ้ารู้สึกไม่ผ่อนคลาย	0 1 2 3
13.	ข้าพเจ้ารู้สึกจิตใจเหงาหงอยและเศร้าซึม	0 1 2 3
14.	ข้าพเจ้าทนไม่ได้กับภาวะใดก็ตามที่ทำให้ข้าพเจ้าไม่สามารถทำอะไรต่อจากที่ข้าพเจ้ากำลังกระทำอยู่	0 1 2 3
15.	ข้าพเจ้ารู้สึกว่าข้าพเจ้ามีอาการคล้ายกับอาการหวั่นวิตก	0 1 2 3
16.	ข้าพเจ้าไม่รู้สึกกระตือรือร้นต่อสิ่งใด	0 1 2 3
17.	ข้าพเจ้ารู้สึกเป็นคนไม่มีคุณค่า	0 1 2 3

18.	ข้าพเจ้ารู้สึกว่าข้าพเจ้าค่อนข้างมีอารมณ์ฉุนเฉียวง่าย	0	1	2	3
19.	ข้าพเจ้ารับรู้ถึงการทำงานของหัวใจของข้าพเจ้าในตอนที่ข้าพเจ้าไม่ได้ออกแรง (เช่น รู้สึกถึงการเต้นของหัวใจเพิ่มขึ้น การหยุดเต้นของหัวใจ)	0	1	2	3
20.	ข้าพเจ้ารู้สึกกลัวโดยไม่มีเหตุผลใดๆ	0	1	2	3
21.	ข้าพเจ้ารู้สึกว่าชีวิตไม่มีความหมาย	0	1	2	3

ขอขอบพระคุณอย่างสูงในความร่วมมือและเวลาของท่าน

APPENDIX C

Demographics Data

Frequencies

		gender	in years	Marital status	religion	Occupation	Family income per month
N	Valid	199	195	199	198	199	200
	Missing	2	6	2	3	2	1
Mean		1.7940	35.0000	1.4874	1.3636	4.8643	3.5450
Median		2.0000	31.0000	1.0000	1.0000	5.0000	3.0000
Std. Deviation		.40547	11.47835	.95272	1.26615	2.06625	1.84799

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	41	20.4	20.6	20.6
	female	158	78.6	79.4	100.0
	Total	199	99.0	100.0	
Missing	System	2	1.0		
Total		201	100.0		

Age in Years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20.00	4	2.0	2.1	2.1
	21.00	4	2.0	2.1	4.1
	22.00	6	3.0	3.1	7.2
	23.00	13	6.5	6.7	13.8
	24.00	6	3.0	3.1	16.9
	25.00	9	4.5	4.6	21.5
	26.00	13	6.5	6.7	28.2
	27.00	9	4.5	4.6	32.8
	28.00	6	3.0	3.1	35.9
	29.00	6	3.0	3.1	39.0
	30.00	17	8.5	8.7	47.7
	31.00	10	5.0	5.1	52.8
	32.00	10	5.0	5.1	57.9

	33.00	3	1.5	1.5	59.5
	34.00	6	3.0	3.1	62.6
	36.00	2	1.0	1.0	63.6
	37.00	3	1.5	1.5	65.1
	38.00	3	1.5	1.5	66.7
	39.00	3	1.5	1.5	68.2
	40.00	5	2.5	2.6	70.8
	41.00	3	1.5	1.5	72.3
	42.00	2	1.0	1.0	73.3
	43.00	4	2.0	2.1	75.4
	44.00	6	3.0	3.1	78.5
	45.00	2	1.0	1.0	79.5
	46.00	4	2.0	2.1	81.5
	47.00	1	.5	.5	82.1
	48.00	4	2.0	2.1	84.1
	49.00	1	.5	.5	84.6
	50.00	5	2.5	2.6	87.2
	51.00	2	1.0	1.0	88.2
	53.00	3	1.5	1.5	89.7
	54.00	4	2.0	2.1	91.8
	55.00	3	1.5	1.5	93.3
	56.00	1	.5	.5	93.8
	57.00	2	1.0	1.0	94.9
	58.00	1	.5	.5	95.4
	59.00	2	1.0	1.0	96.4
	61.00	1	.5	.5	96.9
	62.00	2	1.0	1.0	97.9
	63.00	3	1.5	1.5	99.5
	64.00	1	.5	.5	100.0
	Total	195	97.0	100.0	
Missing	System	6	3.0		
Total		201	100.0		

Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	single	137	68.2	68.8	68.8
	married	44	21.9	22.1	91.0
	cohabiting but not married	11	5.5	5.5	96.5
	divorced	4	2.0	2.0	98.5
	widowed	3	1.5	1.5	100.0

	Total	199	99.0	100.0	
Missing	System	2	1.0		
Total		201	100.0		

Religion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Buddhist	178	88.6	89.9	89.9
	Muslim	2	1.0	1.0	90.9
	Christian	9	4.5	4.5	95.5
	Hindu	1	.5	.5	96.0
	no religion	8	4.0	4.0	100.0
	Total	198	98.5	100.0	
Missing	System	3	1.5		
Total		201	100.0		

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unskilled or semi-skilled worker (e.g., driver, laborer, shop assistant, typist but not secretary)	1	.5	.5	.5
	Skilled blue-collar worker with apprenticeship or similar training	39	19.4	19.6	20.1
	Clerical; low-level administration; low-salary skilled white collar worker	8	4.0	4.0	24.1
	Small business employer	34	16.9	17.1	41.2
	Professional	57	28.4	28.6	69.8
	Employer of more than 10	14	7.0	7.0	76.9
	student	22	10.9	11.1	87.9
	unemployed	10	5.0	5.0	93.0
	stay at home parent or spouse	14	7.0	7.0	100.0
	Total	199	99.0	100.0	
Missing	System	2	1.0		
Total		201	100.0		

Family income per month

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	THB 20,000 or less	30	14.9	15.0	15.0
	THB 20,001-40,000	45	22.4	22.5	37.5
	THB 40,001-60,000	37	18.4	18.5	56.0
	THB 60,001-80,000	16	8.0	8.0	64.0
	THB 80,001-100,000	18	9.0	9.0	73.0
	More than THB 100,000	54	26.9	27.0	100.0
	Total	200	99.5	100.0	
Missing	System	1	.5		
Total		201	100.0		

APPENDIX D

Exploratory Factor Analysis Data

Communalities

	Initial	Extraction
r1	1.000	.547
r2	1.000	.595
r3	1.000	.432
r4	1.000	.487
r5	1.000	.538
r6	1.000	.244
r7	1.000	.371
r8	1.000	.331
r9	1.000	.295
r10	1.000	.503
r11	1.000	.605
r12	1.000	.518
r13	1.000	.496
r14	1.000	.427
r15	1.000	.427
r16	1.000	.562
r17	1.000	.672
r18	1.000	.498
r19	1.000	.492
r20	1.000	.410
r21	1.000	.622
r22	1.000	.479
r23	1.000	.457
r24	1.000	.643
r25	1.000	.523

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	7.814	31.256	31.256	7.814	31.256	31.256	6.369
2	1.673	6.691	37.947	1.673	6.691	37.947	1.657
3	1.448	5.793	43.740	1.448	5.793	43.740	5.706
4	1.239	4.956	48.696	1.239	4.956	48.696	2.047
5	1.117	4.466	53.162				
6	1.083	4.332	57.494				
7	1.042	4.167	61.661				
8	.897	3.589	65.250				
9	.845	3.381	68.631				
10	.798	3.191	71.822				
11	.742	2.967	74.789				
12	.673	2.693	77.482				
13	.642	2.569	80.052				
14	.627	2.508	82.559				
15	.602	2.409	84.968				
16	.558	2.233	87.201				
17	.497	1.988	89.189				
18	.451	1.805	90.994				
19	.437	1.747	92.741				
20	.400	1.600	94.341				
21	.381	1.524	95.865				
22	.314	1.257	97.123				
23	.255	1.021	98.144				
24	.234	.935	99.079				
25	.230	.921	100.000				

Extraction Method: Principal Component Analysis.

a. When components are correlated, sums of squared loadings cannot be added to obtain a total variance.

Component Matrix[a]

	Component			
	1	2	3	4
r17	.812			
r16	.731			
r5	.699			
r24	.642		.412	
r18	.632			
r12	.627			
r21	.623			
r14	.620			
r11	.616			
r4	.610			
r22	.599			
r1	.581			
r25	.579			
r10	.574		.409	
r15	.573			
r7	.554			
r19	.543			
r8	.507			
r9	.474			
r23	.450	-.408		
r6				
r2		.669		
r3		.518		
r13	.409	.505		
r20				.515

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

Pattern Matrix[a]

	Component			
	1	2	3	4
r19	.729			
r18	.656			
r4	.654			
r1	.622			
r17	.600			
r14	.582			

r8	.559			
r7	.511			
r16	.504			
r5	.496			
r15	.456			
r2		.659		
r13		.587		
r23		-.461	.406	
r21			.781	
r24			.721	
r10			.682	
r25			.672	
r22			.575	
r12				
r20				.626
r11			.457	.504
r3				.502
r6				
r9				

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.[a]

a. Rotation converged in 19 iterations.

Structure Matrix

	Component			
	1	2	3	4
r17	.764		.622	
r18	.691			
r16	.674		.577	
r19	.673			
r4	.668			
r5	.644		.563	
r14	.643		.402	
r1	.633			
r7	.573			
r8	.564			
r15	.564		.471	
r12	.528		.521	
r9				
r2		.691		
r13		.607		
r21			.773	

r24			.748	
r10			.690	
r25			.689	
r22	.454		.645	
r23		-.420	.469	
r20				.613
r11			.584	.598
r3				.494
r6				.418

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

Component Correlation Matrix

Component	1	2	3	4
1	1.000	.037	.475	.173
2	.037	1.000	.064	.082
3	.475	.064	1.000	.168
4	.173	.082	.168	1.000

Extraction Method: Principal Component Analysis.

Rotation Method: Oblimin with Kaiser Normalization.

APPENDIX E

Reliability Analysis Data

Scale: Personal Competence/Tolerance of Negative Affect

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.871	11

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
r15	27.7769	27.281	.518	.864
r14	27.7581	28.174	.577	.859
r17	27.6499	26.000	.774	.844
r18	27.6525	27.699	.605	.857
r16	27.6875	27.326	.653	.854
r19	27.7519	27.828	.518	.863
r4	27.5518	28.168	.563	.860
r5	27.5519	27.444	.617	.856
r7	27.4327	28.286	.491	.865
r1	27.5642	28.405	.552	.861
r8	27.3919	28.400	.458	.868

Scale: Support Resources

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.635	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
r2	2.5900	.812	.465	.
r13	3.0000	.780	.465	.

Scale: Self-efficacy

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.788	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
r21	11.1526	5.438	.636	.724
r24	11.2030	6.118	.591	.741
r10	10.6405	6.717	.485	.773
r25	10.6280	6.068	.572	.747
r22	11.2280	5.833	.555	.753

Scale: Faith

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.299	2

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
r20	1.7765	1.122	.180	.
r3	2.2511	.737	.180	.

Scale: Depression

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.829	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
d2	4.2561	11.646	.382	.844
d6	4.5517	11.838	.518	.815
d8	4.4883	10.849	.647	.794
d13	4.5249	10.806	.686	.787
d15	4.7238	10.592	.729	.780
d17	4.8853	11.398	.579	.805
d21	5.0263	12.088	.544	.812

Scale: Anxiety

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.785	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
d1	4.4000	9.821	.377	.786
d3	4.7706	9.495	.586	.744
d10	4.7430	9.360	.493	.762
d12	4.6249	8.987	.669	.727
d14	4.6147	9.146	.542	.751
d19	4.9465	10.256	.385	.780
d20	5.0407	9.648	.560	.749

Scale: Stress

Case Processing Summary

		N	%
Cases	Valid	201	100.0
	Excluded[a]	0	.0
	Total	201	100.0

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

Reliability Statistics

Cronbach's Alpha	N of Items
.772	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
d4	4.3059	8.680	.451	.751
d5	4.3062	8.793	.446	.752
d7	4.3637	8.767	.497	.744
d9	3.8622	8.179	.521	.737
d11	3.9206	7.636	.642	.710
d16	3.8898	8.150	.493	.743
d18	3.7610	8.165	.424	.761

APPENDIX F

Means and Standard Deviations Data

Statistics

		personal_ competence_ tolerance_of_ negative_affect	support_ resources	self_efficacy	depression	anxiety	stress
N	Valid	201	201	201	201	201	201
	Missing	0	0	0	0	0	0
Mean		2.7615	2.7950	2.7426	.7728	.7891	.6764
Std. Deviation		.52320	.76353	.59851	.55284	.50554	.47238

personal_competence_tolerance_of_negative_affect

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.45	1	.5	.5	.5
	1.55	2	1.0	1.0	1.5
	1.64	2	1.0	1.0	2.5
	1.73	3	1.5	1.5	4.0
	1.82	4	2.0	2.0	6.0
	1.89	1	.5	.5	6.5
	1.91	1	.5	.5	7.0
	2.00	8	4.0	4.0	10.9
	2.08	1	.5	.5	11.4
	2.09	5	2.5	2.5	13.9
	2.10	1	.5	.5	14.4
	2.18	3	1.5	1.5	15.9
	2.23	1	.5	.5	16.4
	2.27	8	4.0	4.0	20.4
	2.30	1	.5	.5	20.9
	2.36	7	3.5	3.5	24.4
	2.45	9	4.5	4.5	28.9
	2.46	1	.5	.5	29.4
	2.51	1	.5	.5	29.9
	2.55	12	6.0	6.0	35.8
	2.58	1	.5	.5	36.3
	2.64	11	5.5	5.5	41.8
	2.70	1	.5	.5	42.3

	2.73	9	4.5	4.5	46.8
	2.76	1	.5	.5	47.3
	2.81	1	.5	.5	47.8
	2.82	9	4.5	4.5	52.2
	2.85	1	.5	.5	52.7
	2.91	9	4.5	4.5	57.2
	3.00	1	.5	.5	57.7
	3.00	23	11.4	11.4	69.2
	3.02	1	.5	.5	69.7
	3.07	1	.5	.5	70.1
	3.09	18	9.0	9.0	79.1
	3.17	1	.5	.5	79.6
	3.18	6	3.0	3.0	82.6
	3.27	9	4.5	4.5	87.1
	3.36	8	4.0	4.0	91.0
	3.45	4	2.0	2.0	93.0
	3.55	4	2.0	2.0	95.0
	3.64	4	2.0	2.0	97.0
	3.73	2	1.0	1.0	98.0
	3.91	2	1.0	1.0	99.0
	4.00	2	1.0	1.0	100.0
	Total	201	100.0	100.0	

support_resources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	.5	.5	.5
	1.00	7	3.5	3.5	4.0
	1.50	12	6.0	6.0	10.0
	2.00	23	11.4	11.4	21.4
	2.50	39	19.4	19.4	40.8
	2.80	1	.5	.5	41.3
	3.00	65	32.3	32.3	73.6
	3.50	33	16.4	16.4	90.0
	4.00	20	10.0	10.0	100.0
	Total	201	100.0	100.0	

self_efficacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.20	2	1.0	1.0	1.0
	1.40	4	2.0	2.0	3.0
	1.60	2	1.0	1.0	4.0
	1.80	5	2.5	2.5	6.5
	2.00	13	6.5	6.5	12.9
	2.02	1	.5	.5	13.4
	2.20	22	10.9	10.9	24.4
	2.40	21	10.4	10.4	34.8
	2.60	25	12.4	12.4	47.3
	2.74	1	.5	.5	47.8
	2.80	21	10.4	10.4	58.2
	3.00	33	16.4	16.4	74.6
	3.20	16	8.0	8.0	82.6
	3.30	1	.5	.5	83.1
	3.40	10	5.0	5.0	88.1
	3.60	9	4.5	4.5	92.5
	3.80	11	5.5	5.5	98.0
	4.00	4	2.0	2.0	100.0
	Total	201	100.0	100.0	

depression

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	12	6.0	6.0	6.0
	.00	1	.5	.5	6.5
	.14	21	10.4	10.4	16.9
	.29	15	7.5	7.5	24.4
	.40	1	.5	.5	24.9
	.43	24	11.9	11.9	36.8
	.52	1	.5	.5	37.3
	.54	1	.5	.5	37.8
	.57	21	10.4	10.4	48.3
	.59	1	.5	.5	48.8
	.62	1	.5	.5	49.3

	.71	13	6.5	6.5	55.7
	.77	1	.5	.5	56.2
	.86	18	9.0	9.0	65.2
	.96	1	.5	.5	65.7
	1.00	13	6.5	6.5	72.1
	1.02	1	.5	.5	72.6
	1.12	1	.5	.5	73.1
	1.14	12	6.0	6.0	79.1
	1.19	1	.5	.5	79.6
	1.29	13	6.5	6.5	86.1
	1.43	5	2.5	2.5	88.6
	1.54	1	.5	.5	89.1
	1.57	6	3.0	3.0	92.0
	1.71	3	1.5	1.5	93.5
	1.80	1	.5	.5	94.0
	1.86	3	1.5	1.5	95.5
	1.92	1	.5	.5	96.0
	2.00	4	2.0	2.0	98.0
	2.05	1	.5	.5	98.5
	2.14	1	.5	.5	99.0
	2.43	1	.5	.5	99.5
	2.71	1	.5	.5	100.0
	Total	201	100.0	100.0	

anxiety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	11	5.5	5.5	5.5
	.14	12	6.0	6.0	11.4
	.16	1	.5	.5	11.9
	.17	1	.5	.5	12.4
	.29	22	10.9	10.9	23.4
	.43	17	8.5	8.5	31.8
	.45	1	.5	.5	32.3
	.52	1	.5	.5	32.8
	.52	1	.5	.5	33.3
	.57	18	9.0	9.0	42.3
	.71	19	9.5	9.5	51.7
	.79	1	.5	.5	52.2
	.79	1	.5	.5	52.7
	.86	20	10.0	10.0	62.7
	.92	1	.5	.5	63.2

	1.00	19	9.5	9.5	72.6
	1.07	1	.5	.5	73.1
	1.09	1	.5	.5	73.6
	1.13	1	.5	.5	74.1
	1.14	10	5.0	5.0	79.1
	1.29	16	8.0	8.0	87.1
	1.43	1	.5	.5	87.6
	1.43	9	4.5	4.5	92.0
	1.57	5	2.5	2.5	94.5
	1.71	4	2.0	2.0	96.5
	1.86	2	1.0	1.0	97.5
	2.00	2	1.0	1.0	98.5
	2.14	1	.5	.5	99.0
	2.29	1	.5	.5	99.5
	2.57	1	.5	.5	100.0
	Total	201	100.0	100.0	

stress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	15	7.5	7.5	7.5
	.02	1	.5	.5	8.0
	.05	1	.5	.5	8.5
	.14	16	8.0	8.0	16.4
	.29	16	8.0	8.0	24.4
	.43	29	14.4	14.4	38.8
	.47	1	.5	.5	39.3
	.48	1	.5	.5	39.8
	.48	1	.5	.5	40.3
	.57	32	15.9	15.9	56.2
	.68	1	.5	.5	56.7
	.71	1	.5	.5	57.2
	.71	16	8.0	8.0	65.2
	.84	1	.5	.5	65.7
	.86	15	7.5	7.5	73.1
	.88	1	.5	.5	73.6
	1.00	13	6.5	6.5	80.1
	1.06	1	.5	.5	80.6
	1.14	12	6.0	6.0	86.6
	1.21	1	.5	.5	87.1
	1.29	9	4.5	4.5	91.5
	1.43	5	2.5	2.5	94.0
	1.57	5	2.5	2.5	96.5

1.71	1	.5	.5	97.0
1.75	1	.5	.5	97.5
1.86	2	1.0	1.0	98.5
2.03	1	.5	.5	99.0
2.29	1	.5	.5	99.5
2.43	1	.5	.5	100.0
Total	201	100.0	100.0	

APPENDIX G

Correlations Analysis Data

```
correlations personal_competence_tolerance_of_negative_effects
support_resources self_efficacy with depression anxiety stress.
```

Correlations

		depression	anxiety	stress
personal_competence_ tolerance_of_negative_ affect	Pearson Correlation	-.468	-.468	-.442
	Sig. (2-tailed)	.000	.000	.000
	N	201	201	201
support_resources	Pearson Correlation	-.198	-.253	-.274
	Sig. (2-tailed)	.005	.000	.000
	N	201	201	201
self_efficacy	Pearson Correlation	-.382	-.436	-.360
	Sig. (2-tailed)	.000	.000	.000
	N	201	201	201