

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

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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.

**Keywords:** Resilience, Assessment, Cross-validation, Anxiety, Depression, Stress, Thailand.

### 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. The concept of resilience 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

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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).

It is evident from the growing volume of resilience research that resilience has a significant impact on a person's overall psychological well-being (Bonnano, 2005; Werner, 1992; Cleverley & Kidd, 2011; Fincham, Altes, Stein & Seedat, 2009; Connor, Sutherland, Tupler, Malik & Davidson, 1999; Davidson et al., 2005; Connor, 2006). Despite this, there have been relatively few resilience studies in Thailand; however, the Thai studies 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; Takviriyannun, 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.

Over the years a number of instruments have been developed to assess resilience levels. 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).

The CD-RISC has proved to be a useful assessment tool in a number of different countries and cultures (for example: Connor & Davidson, 2003; White, Driver, & Warren, 2010; Ha, Kang, An, & Cho, 2009; Benetti & Kambouropoulos, 2006; and Irmansyah, Dharmono, Maramis, & Minas, 2010). Its translated versions have also been found to possess good psychometric properties (for example: Jung et al., 2012; Khoshouei, 2009; Karairmak, 2010; Yu et al., 2011; Giesbrecht et al., 2009; Klasen et al., 2010; Lavretsky, Siddarth, & Irwin, 2010; Deane & Andresen, 2006.)

In view of the scale's demonstrated sound cross-cultural psychometric properties (both in the West and in Asia), the present study was therefore designed to examine the cross-cultural validity of the CD-RISC when used with a sample of Thai individuals. 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 provide insights as to how Thai people respond to stress and adversity encountered in life.

### **Research objectives**

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. 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).

## **Method**

### *Participants*

The participants in this study were Thai male and female nationals between the ages of 20 and 60 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. The final 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).

### *Instrumentation*

This study utilized a self-administered survey questionnaire comprising the following three sections:

#### Part 1: Personal Information

The first part of the questionnaire was designed by the researcher to tap basic demographic information, including gender, age, marital status, religion, and occupation.

#### Part 2: Connor Davidson Resilience Scale (Thai Version)

The second part of the questionnaire consisted of the Thai version of the CD-RISC, which was translated by Ms. Nauwarat Imlimtharn (then a student at Ramkhamhaeng University) and approved by Dr. Jonathan Davidson, one of the authors of the original CD-RISC. 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 ( $\alpha=0.89$  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 means of 66.4 ( $SD=10.8$ ) and 66.3 ( $SD=9.8$ ) in two administrations. Khoshouei (2009) reported reliability coefficients of  $r=0.78$  to  $r=0.88$ .

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).

### Part 3: Depression Anxiety and Stress Scale (21-item Version)

The third section of the questionnaire 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.

Antony, Bieling, Cox, Enns, and Swinson (1998) reported high internal consistency for the subscales ( $\alpha=0.94$  for the depression scale;  $\alpha=0.87$  for the anxiety scale; and  $\alpha=0.91$  for the stress scale). In a large non-clinical sample, Henry and Crawford (2005) obtained adequately high alphas ( $\alpha=0.88$  for the depression subscale;  $\alpha=0.82$  for the anxiety subscale;  $\alpha=0.90$  for the stress subscale; and  $\alpha=0.93$  for the full scale).

Antony et al. (1998) also reported significant correlations between the depression subscale and the Beck Depression Inventory (BDI) (0.79); the anxiety subscale and the Beck Anxiety Inventory (BAI) (0.84); and the stress subscale and the DASS depression and anxiety subscales (0.57 and 0.72, respectively), the BDI (0.69), and the BAI (0.70). 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).

### *Procedure*

Participants were enlisted by convenience sampling via a request circulated to staff at selected companies and organizations in Bangkok. Participants were also enlisted via the internet where they could access and fill in the study's questionnaire from [www.surveymonkey.com](http://www.surveymonkey.com).

## **Results**

### *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.

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. 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 the items representing each of the four resilience 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* were found to be internally consistent based on the above two criteria (Cronbach's alphas ranging from 0.64–0.87), and yielded adequate corrected item-total correlations (range: 0.38–0.77). Thus, the final Thai CD-RISC scale comprises 18 items.

Table 1 presents the Cronbach's alpha coefficients for the three-factor Thai-based CD-RISC scale.

**Table 1: Cronbach's Alpha Coefficients for the Three Factor Thai-Based CD-RISC Scale**

	<u>Cronbach's Alpha</u>
• Personal competence/tolerance of negative affect	0.87
• Support resources	0.64
• Self-efficacy	0.79

The following Table 2 presents the means and standard deviations for the three computed resilience factors together with the overall resilience score.

**Table 2: Means and Standard Deviations for the Computed Factors of Personal Competence/Tolerance of Negative Affect, Support Resources, and Self-Efficacy**

	<u>Mean</u>	<u>S.D.</u>	<u>Mid-poin</u>
• 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

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. Thus, overall, the participants in the present study rated themselves as relatively high in resiliency.

#### *Test of Convergent Validity*

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*). 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**

	<u>Depression</u>	<u>Anxiety</u>	<u>Stress</u>
• 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.

## Discussion

The factor structure identified in the present study supports the contention that resilience is a multidimensional construct. The specific factor solution that was obtained 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. 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 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. The sound psychometric properties identified for the Thai CD-RISC in this study 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 relationship 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.

There are a number of limitations for this study. 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 generalizability 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.

Despite these limitations, the cross-cultural validation of the Thai CD-RISC carried out in this study represents a preliminary endeavor to measure and understand the capacity for resilience among the Thai population. It is hoped that this initial effort will encourage further empirical research into the factors underlying resilience and the optimal methods for fostering resilience in Thai society. In particular, it is recommended that comparative studies on the differences in resilience of the urban and rural populations; investigations into the psychometric soundness of the Thai CD-RISC when administered to clinical populations; and studies to determine whether demographic variables such as gender, marital status, income and education play a role in the resilience of Thai individuals be conducted. It is also recommended that future researchers consider conducting similar studies using larger samples to enhance the generalizability and stability of the obtained findings, which will contribute not only to the research findings' external validity but also to the overall confidence in the meaningfulness of the obtained results.

## References

- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment, 10*, 176–181.
- Benetti, C., & Kambouropoulos, N. (2006). Affect-regulated indirect effects of trait anxiety and trait resilience on self-esteem. *Personality and Individual Differences, 41*, 341–352.
- Bonanno, G. A. (2005). Resilience in the face of potential trauma. *Current Directions in Psychological Science, 14*(3), 135–138.
- Cleverley, K., & Kidd, S. A. (2011). Resiliency and suicidality among homeless youth. *Journal of Adolescence, 34*, 1049–1054.



- Connor, K. M. (2006). Assessment of resilience in the aftermath of trauma. *Journal of Clinical Psychiatry*, 67 (suppl 2)
- Connor, K. M., & Davidson, J. R. T. (2003). Development of a New Resilience Scale: The Connor–Davidson Resilience Scale (CDRISC). *Depression and Anxiety*, 18, 76–82.
- Connor, K. M., Sutherland, S. M., Tupler, L. A., Malik, M. L., & Davidson, J. R. (1999). Fluoxetine in post-traumatic stress disorder. *British Journal of Psychiatry*, 175, 17–22.
- Davidson, J. R., & Connor, K. M. (2015). *Connor-Davidson Resilience Scale Manual*. Unpublished manual.
- Davidson, J. R., Payne, V. M., Connor, K. M., Foa, E. B., Rothbaum, B. O., Hertzberg, M. A., & Weisler, R. (2005). Trauma, resilience and saliostasis: Effects of treatment in post-traumatic stress disorder. *International Clinical Psychopharmacology*, 20, 43–48.
- Deane, F. P., & Andresen, R. (2006). Evolution and sustainability of the Helping Hands Volunteer Program: Consumer recovery and mental health comparisons six years on. *Australian Journal of Rehabilitation Counselling*, 12(2), 88–103.
- Fincham, D. S., Altes, L. K., Stein, D. J., Seedat, S. (2009). Posttraumatic stress disorder symptoms in adolescents: Risk factors versus resilience moderation. *Comprehensive Psychiatry*, 50, 193–199.
- Giesbrecht, T., Abidi, K., Smeets, T., Merckelbach, H., van Oorsouw, K., Raymaekers, L. (2009). Adversity does not always lead to psychopathology: Cognitive reactivity is related to longitudinal changes in resilience. *Netherlands Journal of Psychology*, 65, 62–68.
- Ha, R. Y., Kang, J. I., An, S. K., & Cho, H. S. (2009). Some psychological correlates affecting recognition of neutral facial emotion in young adults. *Journal of the Korean Neuropsychiatric Association*, 48, 481–487.
- Hair, J., Anderson, R. E., Tatham, R., & Black, W. (1997). *Multivariate data analysis*. Upper Saddle River, NJ: Prentice Hall.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 44, 227–239.
- Irmansyah, Dharmono, S., Maramis, A., & Minas, H. (2010). Determinants of psychological morbidity in survivors of the earthquake and tsunami in Aceh and Nias. *International Journal of Mental Health*, 4(8), 1–10.
- Jung, Y. E., Min, J. A., Shin, A. Y., Han, S. Y., Lee, K. U., Kim, T. S., Park, J. E., Choi, S. W., Lee, S. H., Choi, K. S., Park, Y. M., Woo, J. M., Bhang, S. Y., Kang, E. H., Kim, W., Yu, J. J., Chae, J. H., Positiveness Research Team of Korea. (2012). The Korean version of the Connor-Davidson Resilience Scale: An extended validation. *Stress Health*, 28, 319–326.
- Karairmak, O. (2010). Establishing the psychometric qualities of the Connor-Davidson Resilience Scale (CD-RISC) using exploratory and confirmatory factor analysis in a trauma survivor sample. *Psychiatry Research*, 179, 350–356.
- Khoshouei, M. S. (2009). Psychometric evaluation of the Connor-Davidson Resilience Scale (CD-RISC) using Iranian students. *International Journal of Testing*, 9, 60–66.

- Klasen, F., Daniels, J., Oettingen, G., Post, M., Hoyer, C., & Adam, H. (2010). Posttraumatic resilience in former Ugandan child soldiers. *Child Development, 81*, 1096–1113.
- Lavretsky, H., Siddarth, P., & Irwin, M. R. (2010). Improving depression and enhancing resilience in family dementia caregivers: A pilot randomized placebo-controlled trial of escitalopram. *American Journal of Geriatric Psychiatry, 18*, 154–162.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behavior Research and Therapy, 33*, 335–343.
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety stress scales*. (2nd Ed.). Sydney: Psychology Foundation.
- Maneerat, S., Isaramalai, S., & Boonyasopun, U. (2011). A conceptual structure of resilience among Thai elderly. *International Journal of Behavioral Science, 6(1)*, 24–40.
- Manzano-García, G. & Calvo, J. C. A. (2013). Psychometric properties of Connor-Davidson Resilience Scale in a Spanish sample of entrepreneurs. *Psicothema, 25(2)*, 245–251.
- Nintachan, P. (2007). *Resilience and risk taking behavior among Thai adolescents living in Bangkok* (Unpublished doctoral dissertation). Virginia Commonwealth University, Richmond, VA.
- Padesky, C.A., & Mooney, K.A. (2012). Strengths-based CBT: A four-step model to build resilience. *Clinical Psychology & Psychotherapy, 19(4)*, 283–290.
- Prinyaphol, P. (2007). Resilience of university students of Prince of Songkla University, Pattani campus. *Songklanakarinn Journal of Social Sciences and Humanities, 13(2)*, 137–153.
- Takviriyannun, N., Phuphaibul, R., Villarruel, A. M., Vorapongsathorn, T. & Panitrat, R. (2007). How do environmental risks and resilience factors affect alcohol use among Thai adolescents? *Thai Journal of Nursing Research, 11*, 151–65.
- Thanoi, W., Phancharoenworakul, K., Thompson, E. A., Panitrat, R., & Nityasuddhi, D. (2010). Thai adolescent suicide risk behaviors: Testing a model of negative life events, rumination, emotional distress, resilience and social support. *Pacific Rim International Journal of Nursing Research, 14(3)*, 187–202.
- Walsh, W. B., & Betz, N. E. (1985). *Tests and Assessment*. Englewood Cliffs, New Jersey: Prentice Hall, Inc.
- Werner, E. (1992). The children of Kauai: Resiliency and recovery in adolescence and adulthood. *Journal of Adolescent Health, 13*, 262–268.
- White, B., Driver, S., & Warren, A. M. (2010). Resilience and indicators of adjustment during rehabilitation from a spinal injury. *Rehabilitation Psychology, 54*, 23–32.
- Youssef, C. M., & Luthans, F. (2007). Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience. *Journal of Management, 33(5)*, 774–800.
- Yu, X., Lau, J. T. F., Mak, W. W. S., Zhang, J., Lui, W. W. S., & Zhang, J. (2011). Factor structure and psychometric properties of the Connor-Davidson Resilience Scale among Chinese adolescents. *Comprehensive Psychiatry, 52*, 218–224.