Royal University of Phnom Penh

DEPARTMENT OF PSYCHOLOGY

The Child Psychosocial Distress Screener and the Child Functional Impairment Scale

DEVELOPMENT AND VALIDATION OF TWO CAMBODIAN MENTAL HEALTH SCREENING MEASURES

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Preface

This report presents the preliminary findings from the 2013 Cambodia development and validation study of two mental health screening tools in Cambodia: The Khmer versions of the Child Psychological Distress Screener and the Child Functional Impairment Scale. These two instruments were developed and validated within the Cambodian context by the Psychology Department of the Royal University of Phnom Penh in order to aid subsequent research which may, in turn, provide nationally representative data on the prevalence of mental health disorders and distress among Cambodian youth. The findings of this study will be to be provided to the Department of Psychology at the Royal University of Phnom Pehn, the Ministries of Health and Education, and other non-governmental agencies concerned with mental health problems faced by Cambodia youth. Hopefully, the findings will not only serve to develop and deploy effective interventions and services, but also direct research funding that can help identify the most disadvantaged children who have the greatest needs for the limited mental health resources.

Authors

This document was produced over a period of time by several academics and students including the Primary Investigator of the study, Lieke van Domburgh, Ph.D., as well as Kao Sovandara, M.A., Pichkessey Tim, M.S., Anna Christophersen, M.A., Sorita Ann, M.S., and the main author of this report, Edward A. Palmer, Ph.D.

Note to the Reader

This manuscript was written for Cambodian professors and students of psychology. My intention of including peripheral research and historical figures in this report was done in cases where some of the student readers may have missed or had forgotten the content during their academic training. I also hope it may serve as a model to students that when delving into academic areas, which can sometimes be ambiguous or controversial—just as in life, one must strive for prudence and reliance upon the best data and methods available. It should also be noted that where the author expresses his own views, they are not necessarily the views of RUPP as an institution, or any of the faculty therein, or any of the Ministries within the Kingdom of Cambodia.

Abbreviations and Acronyms

K-CFIS	Khmer Child Functional Impairment Scale
K-CPDS	Khmer Child Psychosocial Distress Screener
C-SSA	Cambodian Symptom and Syndrome Addendum
CTQ	Childhood Trauma Questionnaire
FGD	Focus group discussion
HSCL-25	Hopkins Symptom Checklist-25
LAMIC	Low- and middle-income country
SDQ	Strengths and Difficulties Questionnaire
WHO	World Health Organization

Acknowledgements

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Abstract

Poverty and parental mental illness in Cambodia, in addition to other factors, can negatively affect the mental health adjustment of children. Despite the complex interactions between protective factors and risks for children living in lower- and middle-income countries, the mental health status of Cambodian children remains vastly understudied. In fact, no nation-wide, random stratified sampling investigation of Cambodian child mental health prevalence or incidence has ever been published. This may be due in part to the paucity of validated measures and the appropriate cut-scores for measures assessing particular disorders in Cambodian children. Additionally, assessing psychiatric disorders in children presents several nosological challenges in addition to other cultural considerations. One way of circumventing some of these difficulties is to assess the constructs of psychosocial distress and functional impairment.

The primary goal of the current study was to develop two brief screening measures of psychosocial distress and functional impairment following the methods by Jordans, Komproe, Ventevogel, Tol and de Jong (2008) and Tol et al. (2011). Qualitative methods including focus group discussions, child daily diaries, and in-depth interviews were employed to develop culturally-specific item content. Appropriate samples of parents, students, and teachers were recruited from urban and rural areas of Phnom Penh and the provinces of Takeo and Kampong Chhnang.

After the measures were developed and pilot tested, the newly developed Khmer versions of the Child Psychosocial Distress Screener (K-CPDS) and Child Functional Impairment Scale (K-CFIS) were deployed to a larger

validation sample of 1,643 students attending primary and secondary schools in Phnom Penh and both rural and urban areas of Battambang province. Non-probabilistic, purposive sampling was employed to recruit the child participants given that the purpose of the study was to develop and validate the measures, rather than create nation-wide normative data. Care was taken, however, to recruit students from both rural and urban areas to ensure appropriate demographic representation of the sample. In addition to the newly developed screeners and a demographic questionnaire, the following measures were administered to assess content validity: the Childhood Trauma Questionnaire, the Strength and Difficulties Questionnaire, the Cambodian Symptom and Syndrome Addendum, the Indochina Version of the Hopkins Symptom Checklist-25, and an experimental checklist to assess exposure to various adverse events.

The psychometric properties of the K-CPDS and K-CFIS were assessed using item, correlation, and hierarchical regression analyses, in addition to exploratory and confirmatory factor analyses. The results indicated that the K-CPDS demonstrated a three-factor structure similar to Jordans, Komproe, Tol, and De Jong's (2009) multi-national samples, and the K-CFIS was found to have a unidimensional structure. Other reliability and validity analyses of the measures indicated that the K-CFIS demonstrated sufficient psychometric properties across all indicators. Conversely, K-CPDS demonstrated poor construct validity, as well as poor internal consistency and test-test reliability. Several possible reasons for the psychometric weaknesses found in the K-CPDS include the reversal of two items on the administration form, the susceptibility of these two items to social desirability or adherence to social norms, and the inherent brevity of the measure, which assesses the relatively broad construct of psychosocial distress.

In sum, the K-CFIS was considered fully validated by the current analyses, but the K-CPDS requires further modification and validation to address the weaknesses of the measure. These adjustments may include: 1) Keeping the order of the endorsement the same for every item on the administration form; 2) Providing teachers with a scoring rubric for items 6 and 7, as well as instructions that they refer their attendance records to inform their responses more accurately; and 3) As a last resort, increasing the two-item subscales to three items—such as adding an item that queries teachers about the students' actual levels of academic performance, and adding a resilience item, which queries the ability to persevere after facing adversity.

Lastly, the findings from both hierarchical regression analyses supported the general findings in the literature that familial support, or neglect and abuse, were major contributors of psychosocial distress and functional impairment in Cambodian children. This highlighted the need to provide social services and develop interventions that focus on improving parenting practices in Cambodia. Other notable findings of the study include: 17.9% of the sample (19.4% of males, 16.4% of females) endorsed being physically abused, 5.5% (6.0% of males, 4.6% of females) endorsed being sexually abused, and 12.7% (12.9% of males, 12.6% of females) reported being emotionally abused. Of more clinical utility, using the highest 25% or 75th percentile of the sample distribution to determine caseness and at-risk youth: 1) A score of 8 or above on the K-CFIS indicated significant functional impairment; 2) A score of 48 or above on the CTQ total score indicated significant child abuse and neglect; and 3) A score of 22 and above of the C-SSA indicated significant distress using only the first 14 items of the scale.

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Chapter 1: **Introduction**

This Chapter provides a description of the constructs of psychosocial distress and functional impairment. Additionally, it briefly reviews the maintaining contextual factors contributing to the myriad of problems facing Cambodian youth today.

1.1 Psychosocial Distress: A Multifaceted Construct

Psychosocial distress (PD) is a psychological construct which has developed separately within distinct disciplines including mental health, academia, and general medicine. No consensus has been established in any of these fields regarding which particular elements constitute PD. However, the construct of PD generally includes a host of psychological capacities and weaknesses, which affects the way an individual assesses real-life stressors that cover events spanning the ordinary to the horrific. An individual's psychology is also moderated by an ancient evolutionary stress-response physiology and the presence of a supportive or punitive social environment.

Some researchers within the field of academia have aptly synthesized the social elements and symptoms of PD within both strength- and deficit-based categories (Tsang, Wong, & Lo, 2012). In their excellent review of child psychosocial distress measures, Tasng, Wong and Lo (2012) divided the following into the deficit-based category: 1) Psychological dysphoria, such as depression or anxiety; 2) Having impaired emotional awareness and a diminished ability to express emotions; and 3) Social maladjustment with peers, friends, and family. Their strength-based category included: 1) Psychological euthymia, or a general sense of well-being; 2) The ability to modulate, or regulate, emotional experience; 3) Prosocial behavior and interfamilial connectedness; and 4) Resilience, self-mastery, and positive self-view.

Additionally, researchers within the medical field have identified other aspects of psychosocial distress to include substance abuse, having a psychiatric history, sexual dysfunction or having a sexual abuse history, and functional impairment (Goldberg & Novack, 1992). Further, in an effort to examine the relationship between psychosocial stressors and disease morbidity, such as stroke and cardiovascular disease, other medical professionals have identified many adverse events which can increase disease risk and mortality. These distressing events have included: 1) Ongoing work-related stress and acute life stressors including bereavement and natural disasters (Everson-Rose & Lewis, 2005); and 2) Correlates of depression including "…caregiver strain, racial disparities, loss of income, and living in impoverished areas" (Brainin & Dachenhausen, 2013; p. 305). Other adverse stressors have included poverty and its effects, suicidality, chronic pain, gender-based violence, war- and atrocity-related trauma, political repression, and forced

relocations, each of which can contribute to the development of stress-related psychiatric conditions (Jacob, 2013).

More germane to the current study, the mental health authors of the Child Psychosocial Distress Screener (CPDS) defined the PD construct to include three "overlapping theoretical premises" (Jordans, Komproe, Ventevogel, Tol, & de Jong, 2008, p.291) which drove the development of the CPDS item content. They described psychosocial as mental health functioning that varies individually between each distinct cultural context. Second, they adhered to a "contextual model of distress" (Jordans et al., 2008, p.291) whereby the child is seen as dwelling within a specific culture that influences how they describe their distress symptoms and functioning. Third, both personal strengths and weaknesses, or resilience and protective factors, should be examined given that these often mediate a child's response to distress. Lastly, these authors define child as "middle childhood" (Jordans et al., 2008, p.291) and distress as "a continuum of nonspecific forms of suffering and problems" (Jordans et al., 2008, p.291). A more in-depth description of their study was written in the following Literature Review chapter. For the purposes of this study, we will be using the Jordans and colleagues' (2008) definition of child psychosocial distress.

However, a deeper academic foundation for each aspect of PD should be explored and established, given the considerable complexity of the PD construct and the pivotal role each aspect plays in the realm of clinical psychology. It is also important that every Cambodian student of psychology should, at the very least, familiarize themselves with these concepts, as knowledge of them may help in developing their own therapeutic orientation. This cursory review will include the works of just of a few of the greatest theorists and researchers in psychology, psychiatry, and neurology.

1.2 The Physiology of Distress

The roots of distress can be traced evolutionarily back to the vertebrate and mammalian layers of our human brain (Denver, 2009; Moreno & González, 2007). Several neural structures and systems, in particular, have been implicated in the literature as playing crucial roles in stress response and regulation, as well as underlying several psychological disorders including major depression and posttraumatic stress disorder (PTSD). These are the hypothalamic-pituitary-adrenocortical (HPA) axis, the medial prefrontal cortex (mPFC), the hippocampus, and the amygdaloid complex known more widely as the amygdala (Doom & Gunnar, 2013; Juruena, Cleare, & Pariante, 2004; Shin, Rauch, & Pitman, 2006). Kindly see Figure 1.

Both briefly and simplistically, the HPA axis stress response involves the sequential release of hormones: first from the hypothalamus and then the pituitary—both in the forebrain—followed by the adrenal glands located on top of the kidneys (Tomas, Newton, & Watson, 2012). High levels of cortisol, the hormone secreted by the adrenal gland, have been associated with major

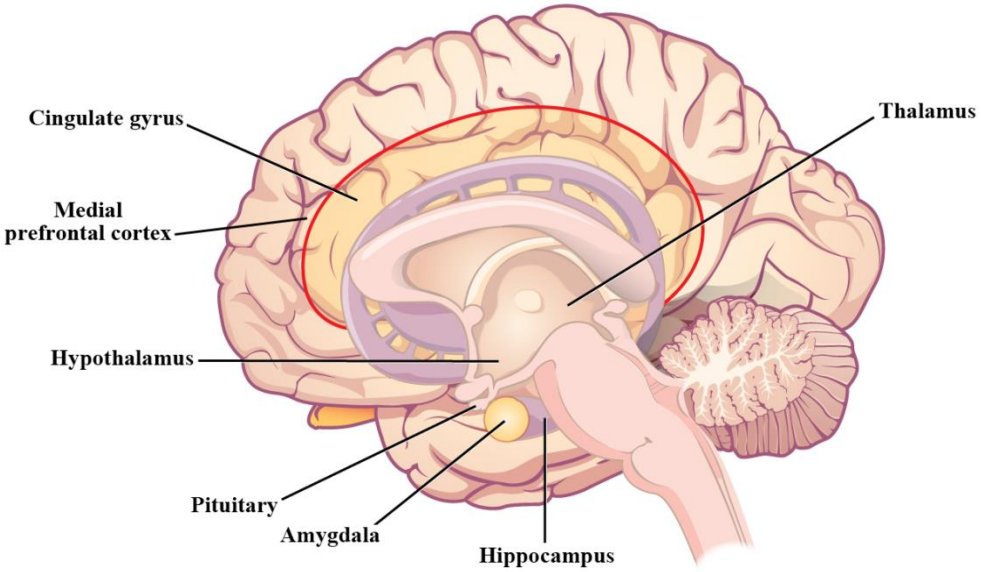

Figure 1. The brain regions associated with emotional functioning. Adapted from 35.3: The Central Nervous System, In UC David Biowiki, n.d., Retrieved April 6, 2016 from http://biowiki.ucdavis.edu/Textbook_Maps/OpenStax_Biology/ Copyright under the Creative Commons Attribution-Noncommercial-Share Alike 3.0 United States License. No reprint permission required for educational purposes.

depression, disordered eating, obsessive-compulsive disorder, and panic disorder (Juruena, Cleare, & Pariante). Attachment theorists have also noted that the presence of attachment figures can temper, or calm, the activation of the HPA axis in infants, whereas abuse and neglect can lead to dysregulation of the HPA axis during crucial developmental periods in infancy and adolescence, which in turn, can create vulnerabilities to psychopathology in adulthood (Doom & Gunnar, 2013).

Additionally, the amygdala is comprised of 13 nuclei, or dense neural cell groupings, whose functions span the learning—or conditioning—of feared stimuli, the formation emotional memories, as well as the activation of behavioral responses to pain and stress (Pabba, 2012; Shin, Rauch, & Pitman, 2006). The mPFC is integral in tempering amygdala activation by sending it inhibitory chemicals after receiving input from other areas of the brain, which evaluate whether or not environmental stimuli are truly threating to integrity of the self or loved-ones. Several neuroimaging studies examining the amygdala have demonstrated its hyperactivity in PTSD participants, and that this overactivation was positively correlated to PTSD severity (Armony, Corbo, Clément, & Brunet, 2005; Protopopescu et al., 2005; Rauch et al., 1996; Shin et al., 2004). Conversely, other neuroimaging studies have found that the mPFC had smaller volumes and diminished activation which was negatively correlated with PTSD severity (Britton, Phan, Taylor, Fig, & Liberzon, 2005; Carrion et al., 2001; De Bellis et al., 2002; Fennema-Notestine, Stein, Kennedy, Archibald, & Jernigan, 2002; Shin et al., 2004; Williams et al., 2006).

Lastly, other neuroimaging studies and one meta-analytic study have found reduced hippocampal volumes in individuals with PTSD and that reduced hippocampal volume was

correlated with PTSD and depression severity (Bremner et al., 2003; Gilbertson et al., 2002; Gurvis et al., 1996; Kitayama, Vaccarino, Kutner, Weiss, & Bremner, 2005; Vermetten, Vythilingam, Southwick, Charney, & Bremner, 2003; Villareal et al., 2002). Further, Vermetten and colleagues (2003) found increased hippocampal volumes and memory performance in 23 participants with PTSD after treating them with paroxetine, an antidepressant, for four months. However, no control group was used in this particular study, and so any inferences regarding their findings are limited due to the poor control of possible confounding variables. But, while there is some evidence to suggest that premorbid, or preexisting, smaller hippocampal volumes create a vulnerability to the development of PTSD (Gilbertson et al., 2002), it is not entirely clear whether psychological trauma can lead to reduced volumes in the hippocampus or whether smaller hippocampal volumes create a vulnerability to PTSD.

Either way, as evolution would have it, we humans are learning animals and psychotherapy has been found to change the activation levels in the mPFC and other regions in participants with PTSD, depression, and anxiety disorders (Messina, Sambin, Palmieri, & Viviani, 2013). This change in activation levels in the mPFC after psychotherapy is consistent with the theory of neuroplasticity and learning as posited by Donald Hebb (1949) in his book entitled, *The Organization of Behavior: A Neuropsychological Theory*. The primary hypothesis of this book, which is more widely-known as *Hebb's postulate*, is associated with and well-summarized by the phrase "…neurons wire together if they fire together" (Löwel & Singer, 1992, p. 211). But such neural reductionist models, which rely so heavily upon mere fractions of complex phenomena, cannot explain how the great Temples of Angkor were engineered or how the reliefs therein were so intricately carved. Nor, can they explain how the Robam Tep Apsara was choreographed or how the music of the great drama Lakhaon Basak was composed.

Furthermore, the debate between narrow *localizationists*, or advocates of the concept that the capacities of specific behaviours, such as emotional regulation, exist in specific regions of the brain, and *categorical behaviourists*, or advocates of the concept that the capacities of specific behaviors, such as emotional regulation, exist throughout the entire brain, lay beyond the scope of the current study. However, interested students would learn much from reading *The Working Brain: An Introduction to Neuropsychology* by the famous, Russian neuropsychologist Alexander Luria (1973). While written over 40 years ago, many of the ideas he presented in this work are still influential and valid today. Nonetheless, while our knowledge of the neurological basis of distress can inform, to a certain degree, various clinical interventions—it would be wise to take a broader contextual view of biology—because culture strongly influences how we understand and experience our physiology and, in particular, our physical symptoms of distress.

1.2.1 Cultural Idioms of Distress

The primary difference between the disciplines of psychology and psychiatry versus other specialties within the medical sciences is that psychiatry and psychology are concerned with treating *constructs* or syndromes, rather than specific and more tangible diseases and conditions. For example, an internist will treat an E. coli bacteria or intestinal worm infection, and an endocrinologist will treat diabetes, in much the same way across the world depending upon the available diagnostic tools and pharmacological interventions. The disease processes underlying diabetes, an underproduction of insulin by the pancreas, and the pathogens in an E. coli or intestinal worm infection generally do not vary across cultures. Additionally, simple blood tests can usually confirm the presence of each of these conditions.

This is not case for psychiatrists or psychologists; they study and treat mental health conditions or constructs, which can be broadly defined as complex and debilitating psychological phenomena that cannot be measured directly. For instance, while lower levels of certain chemicals in the brain, such as serotonin, as well as certain signs and symptoms, such as decreased motor activity and appetite, or depressed affect and mood can suggest the presence of a major depressive episode, no single blood test can confirm or rule out the presence of depression. Correct diagnosis in the psychiatric and psychological field is reliant upon the signs and symptoms demonstrated and described by the patient. The competency of the mental health professional in formulating appropriate diagnostic hypotheses and ruling out other conditions is also essential. Additionally, culturally specific symptoms and syndromes, or clusters of symptoms, as well as unique ethnophysiologies, or culturally distinct descriptions of physiology, can affect how an individual describes their psychological condition (Hinton, Kredlow, Pich, Bui, & Hofmann, 2013). Also, the knowledge and application of linguistic metaphors, or phrases, which describe specific symptoms can help capture elements of culturally-bound syndromes (Chhim, 2012; Hinton, Kredlow, Pich, Bui, & Hofmann, 2013). Comparing the Western construct of PTSD with other similar trauma-related Cambodian syndromes of help illustrate these points.

1.2.1.1 An Overview of the Western Construct of PTSD

The Western construct of PTSD, as we know it today, has evolved over time and has been called by many different names with the fields of psychiatry and military medicine. Medical scholars have attributed the earliest literary accounts of individuals struggling with trauma-induced symptoms to the most ancient works in existence, including The Iliad, the Greek epic (van der Kolk, 2010), whose authorship is attributed to Homer who lived over 3,000 years ago, as well as the Epic of Gilgamesh, of unknown authorship, which was written in Mesopotamia over 4,000 years ago (Birmes, Hatton, Brunet, & Schmitt, 2003). It was not until the 1800s, however, that Western physicians began to codify the syndromes of symptoms occurring in their patients who

Figure 2. A WWI German soldier jumps away from an exploding shell. Retrieved April 6, 2016 from http://i.imgur.com/BOchedA.jpg/. In the public domain.

had experienced acute psychological trauma. French psychiatrist Briquet (1859) called the condition *hysteria*, German neurologist Oppenheim called the condition *traumatic neurosis* in 1889 (van der Kolk, 2010), and the famous German psychiatrist Kraeplin applied the diagnostic label *fright neurosis* in 1896 (Friedman, Resick, & Keane, 2010).

Within the military realm, the debate over the etiology, or cause, of PTSD continues to this day. Furthermore, it has been politicized—then as now—since World War I (WWI), mostly over governmental refusal to compensate or decorate veterans for the condition, in addition to the clinical confusion over other comorbid combat-related conditions such as traumatic brain injury (TBI; Palmer, 2014). In essence, attending military medical professionals continue to debate whether PTSD is a physiological or psychiatric condition, mostly due to the overlap of TBI and PTSD symptoms, poorly defined diagnostic criteria, and unreliable clinical histories of their patients. Nonetheless, constructs similar to PTSD have been called by many names over the course of 150 years of war.

Beginning at the American Civil War era, the condition was referred to as *homesickness* and *nostalgia* (Campise, Geller, & Campise, 2006) or as *irritable heart* by American physician Da Costa (1871). Prior to WWI, British physician Arthur Myers (1870) called the condition *a soldier's heart*. During WWI, British Physician Charles Myers (1915) referred to it as *shell-shock*, but it was also diagnosed as "effort syndrome, war neurosis, gas hysteria, Da Costa's syndrome, irritable heart syndrome, and not-yet-diagnosed neurologic [sic]" (Campise, Geller, & Campise, 2006, p. 215). Kindly see Figure 2. During World War II, it was called "psychoneurosis, effort syndrome, combat exhaustion, battle fatigue, and operational fatigue" (Campise, Geller, & Campise, 2006, p. 215).

During the American War in Vietnam, U.S. soldiers were diagnosed as having "combat stress and posttraumatic stress syndrome" (Campise, Geller, & Campise, 2006, p. 215) or as having the *Vietnam veterans syndrome* or the *post-Vietnam syndrome* (Fleming, 1985).

The name and most of the criteria of PTSD, as we know it today, did not appear until the publication of the Diagnostic and Statistical Manual of Mental Disorders [DSM], Third Edition (DSM–III; American Psychiatric Association [APA], 1980), five years after American president Richard Nixon abandoned the American War in Vietnam and his South Vietnamese allies in the name of "peace with honor" (Nixon, 1973, January 23). Around this time, the lobbying efforts of several groups representing the interests of abused women and children, victims of gender-based sexual violence, as well as, Vietnam veteran strongly influenced the APA to include the PTSD diagnosis in the DSM-III (Friedman, Resick, & Keane, 2010). The DSM-III PTSD diagnostic criterion included: A) Experience of a distressing event; B) At least one of three re-experiencing criteria, such as nightmares or intrusive memories; C) At least one emotional numbing or diminished social interaction criteria; and D) At least two criteria from a mixed category, which included: symptoms of hyperarousal, such as impaired sleep or heightened startle response, feelings of guilt, impaired cognitive functioning, and increased symptom severity when exposed to trauma-related stimuli (APA, 1980).

Most Cambodian students of psychology should be familiar with the DSM, Revised Fourth Edition (DSM–IV-TR; American Psychiatric Association, 2000) diagnostic criteria for PTSD. The revised DSM–IV-TR criterion for PTSD differed from the prior DSM-III criterion, as follows: A) Witnessing was included, in addition to experiencing a life-threatening traumatic event—and that this experience involved feelings of helplessness, intense fear, or horror; B) The increased arousal upon exposure to trauma-related stimuli criteria was moved to the re-experiencing criterion; and F) The inclusion of a significant distress or functional impairment criterion. Further, the DSM-IV-TR criterion was used to develop the item content of the 17-item PTSD Check List – Civilian Version (PCL–C; Weathers, Huska, & Keane, 1991). A Khmer version of the PCL has been used as a criterion measure in other Cambodian culturally-bound trauma syndrome studies (e.g., Chhim, 2012; Hinton, Kredlow, Pich, Bui, & Hofmann, 2013) as well as a stand-alone measure of trauma in other Cambodian studies (e.g., Field, Muong, & Sochanvimean, 2013; Field et al., 2014). Given the controversy (Frances, 2013; Insel, 2013) surrounding the DSM, Fifth Edition (DSM-5; American Psychiatric Association, 2013) and that most of the relevant literature for the current study utilized the PCL and DSM-IV-TR criterion, little will be said of the DSM-5 PTSD diagnoses, other than that it currently includes two new criterion: 1) Negative changes in mood and thinking; and 2) Engaging in dangerous behaviours.

The rationale of the current author's somewhat exhaustive review of the Western concept of PTSD was two-fold: 1) Cambodian students of psychology would be well-served in knowing the history of PTSD as a diagnostic entity since they will be treating many individuals struggling with

aspects of the disorder; and 2) To underscore, or emphasize, that even within the same culture, psychological constructs are fluid and subject to change over time, sometimes in accordance with advances in science, and sometimes through the forces of political influence.

1.2.1.2 Baksbat: A Culturally-Bound Trauma Syndrome

After working with victim-survivors of the Khmer Rouge (KR) genocide, which will be described later in this Chapter, Cambodian psychiatrist Dr. Sotheara Chhim (2012) observed that many of his patients were describing trauma-related symptoms that were not listed as criteria in either the DSM-IV-TR or the International Statistical Classification of Diseases and Related Health Problems [ICD], 10th Edition (ICD-10; World Health Organization, 1992). Some of these other symptoms included self-proclaimed cowardice, submissiveness, and lacking the power of hearing and speech. Sotheara (2012) called this syndrome *baksbat*, a term used by defeated soldiers to describe their reluctance in returning to battle, which is translated into English as "broken courage" (Sotheara, 2012, p. 644). The author initially developed a list of baksbat symptoms through qualitative means, such as interviewing KR victim-survivors, mental health experts, clergy, and academics. These efforts resulted in a scale comprised of 32-items.

Sotheara (2012) then validated the baskbat inventory by subsequent quantitative means, including: 1) Exploratory factor analysis (EFA) in a sample of 390 consecutive participants from a mental health out-patient clinic in Phnom Penh; 2) Confirmatory factor analysis (CFA) in sample of 159 survivors of the Diamond Island Bridge stampede which occurred in Phnom Penh on November 22, 2010; and 3) Correlation and regression analyses using the PCL as the dependent and criterion variable. Using parallel analysis (PA; Horn, 1965) and visual observation of the scree plot as the primary methods of retaining factors, three factors, or subscales, were retained in the solution: 1) Broken courage; 2) Psychological Distress; and 3) Erosion of Self. Four items were removed from the scale for having communalities lower than the .3 level resulting in a scale of 28 items entitled the TPO Baksbat Inventory (TPO BI; Sotheara, 2012).

The CFA also confirmed the three-factor model as having the best fit. Each subscale had internal consistency values, as measure by Cronbach's alpha, to be between .83 and .90, with a total scale alpha coefficient of .93. Using Ponterotto and Ruckdeschel's (2007) rubric, each of these alpha values were rated as Excellent. Lastly, the PCL total score was significantly correlated with the TPO Baksbat Inventory total score (r = .65, p < .001), the Broken Courage subscale (r = .50, p < .01), the Psychological Distress subscale (r = .68, p < .01) and the Erosion of Self subscale (r = .33, p < .01). A final regression analysis found that only the Psychological Distress subscale contributed significantly to the PCL total score at β = .63, p < .001, which suggest that the other subscales measured culturally-specific trauma symptoms unique to Cambodian survivors of extreme psychological and physical distress not assessed by conventional Western measures of PTSD.

1.2.1.3 The Cambodian Symptoms and Syndrome Inventory

With over ten years of experience working clinically with Cambodian refugees in America who had survived the KR genocide, Dr. Devon Hinton has studied a many of the symptoms and syndromes commonly experienced and described by his patients. Over this period of time, he and his colleagues systematically and methodically studied each of these symptoms and syndromes in a series of over 15 peer reviewed journals (e.g., Hinton, Chhean, Fama, Pollack, & McNally, 2007; Hinton, Chhean, Pich, Hofmann, & Barlow, 2006; Hinton, Chhean, Pich, Um, Fama, & Pollack, 2006; Hinton, Hinton, Pich, Loeum, & Pollack, 2009; Hinton, Pich, Chhean, & Pollack, 2005; Hinton, D. E., Pich, V., Marques, L., Nickerson, & Pollack, 2010; Hinton, Pich, Safren, Pollack, & McNally, 2006; Hinton, Um, & Ba, 2001). This body of work culminated in the development of the Cambodian Symptoms and Syndrome Inventory (C-SSI; Hinton, Kredlow, Pich, Bui, & Hofmann, 2013).

Hinton and colleagues (2013) derived the 18 symptoms and 19 syndromes of the C-SSI from four distinct categories: 1) The biology of trauma, or somatic-based symptomology; 2) Ethnophysiological cultural syndromes, or collections of symptoms ascribed to culturally-bound physiological phenomena, such as a khyâl, or wind; 3) Metaphoric dimensions, or the use of cultural metaphors or tropes to describe symptoms, such as "'My brain is spinning' (wul khueu khabaal), meaning 'I am overwhelmed'" (Hinton et al., 2013, p.352); and 4) Traumatic reactions to trauma-related symptoms, such as dizziness, which were likely experienced during their traumatization. Hinton and colleagues (2013) then divided the 19 syndromes into somatic, emotional, cognitive, spiritual and agoraphobic or motion-sickness categories. The measure was then administered to 226 participants who had survived the KR genocide. The participants were then divided into three PTSD severity groups based on their PCL item endorsements: 1) no PTSD; 2) mild to moderate of PTSD; and 3) severe PTSD. Both independent t-tests and correlations with the PCL total score demonstrated increasing values according to each discretized group on the scale, subscale and item levels. Of note, the C-SSI total score also correlated positively and significantly with the PCL total score ($r = .67$, $p < .001$). A shorter version of the C-SSI called the Cambodian Symptom and Syndrome Addendum (C-SSA) is comprised of 15 items, which were selected based on their clinical "salience" (D. E. Hinton, personal communication, March 19, 2016). Hinton and colleagues (2013) cogently advocated for the use of culturally sensitive measures:

> All these trauma-caused symptoms will be interpreted in terms of the local ethnophysiology, ethnopsychology, and cultural syndromes, resulting in certain symptoms being highlighted and amplified; and depending on the ethnophysiology and cultural syndrome the particular symptom is attributed to, the person will have certain ideas about the cause, severity, and indicated manner of redress of the symptom. Somatic symptoms

may also be amplified by trauma associations and metaphoric resonances, which are further key symptom dimensions (p. 366).

It is the current author's own view that the biological systems we share as humans are largely responsible for the large effects sizes of association observed between Western measures of PTSD, such as the PCL, and culturally-specific measures of psychological trauma, such as the TPO BI (r = .65, p < .001) and the C-SSI (r = .67, p < .001) described above. In addition, the unique variance of the culturally-specific measures can be attributed mainly to their culturally-specific constructs, aside from any error inherent in all measurement.

1.2.2 The Psychology of Psychosocial

Aside from the myriad of potentially distressing events, the biological substrates of distress, and the cultural influences of psychological constructs of distress mentioned above, two integral aspects of the PD construct include the psychological and the social, both of which are vast constructs in their own right. Most notably, both social psychologists and psychiatrists have examined the interaction between an individual's psychology and the individual's respective social environment. For example, Aaron T. Beck is a prominent American psychiatrist and prolific researcher who was originally trained in psychoanalysis, the original form of psychotherapy posited by Sigmund Freud (1890). But, Beck eventually veered away from his psychoanalytic training during his attempts to experimentally confirm the Freudian theory that depression is an unconscious emanation of self-hatred (Hollon, 2010).

Through studying of the dreams of depressives, Beck found instead that their dream imagery was laden with elements of "loss and personal failing" (Hollon, 2010; p. 64). Further investigations into his depressives' waking thought processes led Beck to conclude that their depressed affect was more likely caused by their negative and biased views of themselves, their future, and the world around them (Beck, 1967). These findings formed the basis of his cognitive, or thought-based, theory of depression, which over time has been adapted by other clinical researchers who have developed empirically-supported interventions for many other forms of psychopathology, including psychotic spectrum and anxiety disorders (Hollon, 2010). A more contemporary view of his theory, stated succinctly, is that negative thoughts lead to negative emotions, which can lead to physiological reactions and behaviors, and in turn, increase negative thoughts and perpetuate the cycle. Beck, himself, credited the philosophical underpinnings of cognitive therapy to the ancient Greek Stoic philosophers, by quoting Epictetus as saying, "Men are not disturbed by things, but by the views which they take of them" (Beck et al., 1979, p. 8). So from this psychological perspective, intrapersonal attribution is paramount to any external event. Said another way, two people can view the same event quite differently depending upon the meaning and valence, or emotional quality, they attribute to the event.

1.2.3 The Social Psychology of Psychosocial

Social psychologists, too, have examined the concept of attribution, albeit within the context of other individuals. Stated concisely, social psychology is "the scientific investigation of how the thoughts, feelings and behaviours of individuals are influenced by the actual, imagined or implied presence of others" (Allport, 1954; p. 5). Social psychologists have generally concerned themselves with the biases we make in social or group settings. For example, regarding attributions, several theories have been posited and reaffirmed by significant independent studies. Most notably, the fundamental attribution error, which describes an individual's tendency to attribute the behavior of others to the qualities of their characters, whereas, if they were placed in the same situation, the same individual would ascribe his or her behavior to external factors outside the self (Ross, 1977).

But, more germane to the current study, social psychologists also examine altruistic behaviors, or benevolent actions done for others without any expectation of gain or reciprocity. Research has generally supported the notion that altruism was more likely to be demonstrated by an individual towards to their own relatives or those who were very young and very old (Hogg & Vaughan, 2010). Further, there is evidence to support both biological and learning theories of altruism. Most notably, children will generally exhibit more prosocial behavior when appropriately modelled, communicated, and reinforced in a positive manor (Hogg & Vaughan, 2010). But despite some social psychologists work on altruism, much of the discipline has focused on findings and theories which are somewhat disconcerting, and even horrifying given their implications for human behavior. But, while a comprehensive review of these studies go beyond the scope of this paper, they are nonetheless critically important to the unfamiliar reader, as they can aptly describe how ordinary people, such as the current author and reader, are capable of committing the kinds of human atrocities perpetrated in Cambodia during the latter half of the past century. Cambodian students of psychology, in particular, would be well served by familiarizing themselves with the works of Philip Zimbardo and colleagues (1971), Stanley Milgram (1963) and Albert Bandura (1999). Each of these studies are decribed in brief below.

Stanley Milgram (1961) conducted a well-known experiment on the obedience to authority. The participants were assigned as a teacher and were instructed to administer increasing levels of electrical shocks to learners, who were confederates, or actors who are part of the design of the study, if they responded incorrectly to a question. Another confederate dressed in a lab coat to signify his authority coaxed the participants to render the fake electrical shocks to the confederate learner who could not be seen, but heard. A large portion of the participants induced levels of electrical shock beyond the point of death. These findings highlighted our human susceptibility to authority figures who are able to exert pressure on normal individuals to commit brutal acts. After the experiment, the participants later justified their actions by blaming the authority figure, rather than taking personal responsibility.

Further, Philip Zimbardo and colleagues (1973) conducted a famous study called the *Stanford Prison Experiment* in which college student participants were recruited and randomly assigned the role as either prisoner or prison guard. Over time, the prison guards became increasingly more aggressive in their behaviour towards the prisoners. Most of the abusive incidents occurred at night when no authority figures were present. The findings indicated that people tend to conform to their socially imposed role rather than to their personalities, and that bad things can happen when there is a lack of sufficient leadership and discipline. The study also highlighted that situational or social factors had considerable influence in making average people behave cruelly, especially those who are given power over others.

Lastly, Albert Bandura (1999) described the process of *moral disengagement* or how average people can commit atrocities. Moral disengagement involves various psychosocial processes, including: moral justification, minimalizing the effects of one's actions, anonymity, redirecting the blame, and degrading the human value of others. Moral disengagement can explain how people can commit the horrors witnessed in the Pol Pot regime in Cambodia and the Holocaust during WWII. Obedience, the lack of taking personal responsibility for one's actions, the influence of the social environment, externalizing blame, and other psychological and social factors can explain why most of us would have behave in similarly ways if placed in the same context. It seems that we, as humans, have a capacity to do both great good and great evil.

So returning to the main topic to summarize, the PD construct generally involves: 1) Physiological distress, the roots of which grew along the trajectory of our human evolution; 2) The psychological intersection between thoughts and emotions which lead to an appraisal of external events; and 3) The social, which describes the influences, positive or negative, impressed upon the individual by others within social settings. The other topic of this report is concerned with a less complex construct: functional impairment due to psychosocial distress.

1.3 Mental Health Functional Impairment

In their excellent review of childhood mental health functional impairment measures, Winters, Collett and Myers (2005) emphasized the importance of measuring functional impairment in conjunction with other measures of psychological distress, given that functional impairment may not be proportional to symptom severity and that impairments may also be the causal factor in some psychological disorders. They also differentiate between two types of impairment: 1) *functional impairment*, which describes "specific deficits in multiple domains of functioning developing subsequent to a disorder" (Winters, Collett, & Myers, 2005, p. 309) and 2) *adaptive functioning*, which describes a broader construct consisting of both strengths and weaknesses across varying contexts, including cognitive, social, and academic arenas. They further noted the importance of including functional impairment measurement in treatment outcome, because it can further inform treatment. They substantiated this assertion, owing to the findings that functional

impairments often requires more time to improve, even after distress symptoms have abated (McKnight, & Kashdan, 2009; Winters, Collett, & Myers, 2005). Lastly, these authors also suggested that multiple informants—such as parents, teachers or coaches—across contexts, can improve the accuracy of impairment ratings given the contextual variability in function; and they caution against the use of a single, global score which can obscure dysfunction in specific areas.

Furthermore, both of the current major diagnostic manuals, the DSM-5 and ICD-10, describe functional impairment as sequela, or a co-occurring condition, of psychiatric disorders. However, there are slight differences between the two systems regarding how they operationalize functional impairment. The DSM-5 disorders generally include a criterion describing significant impairment or distress, but it does not differentiate between either, whereas the ICD-10 describes the level impairment consistent with each diagnosis, but does not include it as a criterion. Lastly, within the Western medical field, the terms activities of daily living (ADLs) and instrumental activities of daily living (IADLs) are often used to measure impairment in the elderly in other populations (Wolinsky et al., 2011). ADLs generally describe walking, dressing, eating, bathing, and transferring in and out of bed. IADLs are more complex and can include using a telephone, cooking, shopping, managing money and taking medication. While some of these impairments may appear to be easily to performed by most children over eight years of age, some of them are included in the functional impairment measure being examined in the current study, as they were identified by children, parents, and teachers as being markers of childhood functional impairment within the Cambodian context.

1.4 Problem Statement

The Problem Statement of the current study is nestled within contemporary maintaining factors of Cambodia. These maintaining factors continue to affect the mental health and well-being of Cambodian children, mostly through intractable poverty and poor parental practices, such as neglect. Cambodia's tragic history in later part of the 20th century is well described elsewhere, but many of the current maintaining factors of childhood psychological maladjustment emanate from this period. Stated concisely, Cambodia has struggled with autocratic rulers, civil war, and armed insurgencies since the French abandoned their quest for hegemony of Indochina during the 1950s.

1.4.1 Maintaining Factors in Cambodia

1.4.1.1 The Mental Health Status of Adults in Cambodia

The prevalence or incidence rates of adult psychiatric disorders in Cambodia vary considerably in the few existing published studies, mostly due to sampling and other methodological differences, but all have found generally high rates of PTSD, mood, anxiety, and psychotic spectrum disorders. Of note, Somasundaram, van de Put, Eisenbruch, and de Jong (1999) published one of the first studies examining the prevalence rates of MH disorders after the Final

Act of the Paris Conference on Cambodia was signed in 1991. They reported the diagnostic intake rates of 839 children and adults from four outpatient hospital-based clinics in Battambang province and Phnom Penh. Their findings included the following clinician diagnosed rates: Schizophrenia (18%), psychotic spectrum (15%), anxiety (18%), depression (14%), PTSD (3%), somatization disorder (2%), manic episode (3%), and organic psychosis (4%).

Next, two studies by de Jong and colleagues (2001) and de Jong, Komproe, and Van Ommeren (2003) surveyed the prevalence rates of common mental disorders in several post-conflict or war-torn countries including Algeria, Cambodia, Ethiopia, and Palestine. Cambodia, second only to Algeria, had high prevalence rates of PTSD (28.4%), mood disorders (11.5%), anxiety disorders (40.0%), and somatoform disorders (1.6%), with an aggregated disorder prevalence rate of 53.4%. Despite these high rates in Cambodia, the risk for developing a disorder was higher in Palestine, presumably because it is still in constant state of intermittent war.

In 2004, Dubios and colleagues conducted a mental health survey in Kampong Cham province which utilized the HSCL-25 and the Harvard Trauma Questionnaire (HTQ; Mollica et al., 1992), which is a measure that was developed to assess trauma exposure and symptoms relative to the experiences of the survivors of the Indochina Wars. They found the following prevalence rates based on the DSM-IV criteria in their sample of 769 adult respondents: depression (42.4%), PTSD (7.3%), and anxiety (53%). Additionally, 33.5% of the respondents endorsed significant impairment related to their mental illness. Lastly, a nation-wide mental health survey conducted by RUPP in 2012 found comparatively similar prevalence rates of anxiety (27.4%) and depression (16.7%), lower rates for PTSD (1.6% to 3.1%), and a high number of completed suicides at 42.4 suicides per 100,000 per year (Schunert et al., 2012).

Despite these high rates of adult mental illness, access to mental health care in Cambodia remains limited. The Leitner Center for International Law and Justice released a report on mental health based from a human rights perspective (McLaughlin, & Wickeri, 2012). They cited research which found large “treatment gaps” (McLaughlin, & Wickeri, 2012; p. 16) between the mental health disease burden and the amount of resources spent on mental health in low income countries, particularly in Southeast Asia. They also reported that there was almost no epidemiological studies or other data on mental health disorders in Cambodia, which the author stated led to continued inaction by policy officials to appropriately address and treat the country’s mentally ill. Lastly, the authors quoted a deputy from the Cambodian National Program for Mental Health who stated that the government spent only US$30,000 on mental health which amounted to roughly 0.02% of Cambodia’s entire health budget in 2011.

1.4.1.2 Gender-Based Violence in Cambodia

Other ongoing problems in Cambodia include limited access to social services, human trafficking, among other social ills (Gourley, 2009; McLaughlin & Wickeri, 2011; Sonis et al.,

2009; Van de Put & Eisenbruch, 2002). Additionally, widespread gender-based violence (GBV) is an ongoing social ill in Cambodia, just as in most—if not all—parts of the world (United Nations, 2015). For example, Cecil, Müller, and Indochina Research Ltd. (2005) surveyed 3,030 participants throughout Cambodia. Their findings included: 1) 22.5% of female respondents had been physically abused by their husbands; 2) 12% of men had been abused physically by their wives; and 3) 69% of the sample said that slapping, punching, and kicking was sometimes acceptable. Additionally, women held a more accepting attitude of all form of physical violence as compared to their male counterparts—except in its most extreme forms, such as stabbings, shootings or acid attacks. These incidence rates were consistent with the National Institute of Statistics (NIS), Directorate General for Health (DGH) and ICF International (ICF) 2015 Cambodian survey findings which examined the incidence rates in 17,578 female and 5,190 male respondents aged 15 to 49 years old. Their findings included: 1) 20% of females had experienced physical violence; 2) 6% of female respondents had experienced sexual violence; 3) 31% of female respondents had experienced spousal abuse; and 4) Half of all female respondents and 27% of male respondents agreed that the physical abuse of wives was justified for minor infractions.

Lastly, the Cambodia Ministry of Women's Affairs [MoWA] (2015) conducted the most recent GBV survey in a Cambodian random sample of 3,568 women aged 16 to 64 years. They separated their findings by intimate partner violence (IPV) and non-IPV violence which included acts perpetrated by males who were acquaintances, family members, teachers, strangers, or workplace employees. The incidence rates reported by the respondents for IPV included: 1) 15% had experienced physical abuse; 2) 32% had experienced emotional abuse; 3) 10% had experienced sexual violence; and 4) 32% reported that their children were present while they were being physically abused. The incidence rates reported by the respondents for non-IPV after the age of 15 years included: 1) 14% had experienced physical violence; 2) 4% had experience sexual violence; and 3) 18% had been coerced during their first sexual experience; and 4) 2% had been forced during their first sexual experience.

1.4.1.3 Maintaining Factors and Children's Mental Health

The rationale for reviewing the literature on adult mental health and GBV in Cambodia is that these maintaining factors, in addition to other factors, can negatively affect the mental health adjustment of children. Psychologists studying child development have recognized a number of influences which can lead to poor psychological outcomes. These include biological factors (e.g., genetic and other pre- and postnatal disease processes) and psychological factors (e.g., lower intelligence and difficult temperament), as well as early life stressors, including child abuse, social disadvantage, parental loss and substance abuse, and familial discord (Carr, 1999). Other environmental influences which can cause vulnerabilities in infancy and childhood include poor attachment, or parent-child bonding, and maladaptive parenting styles (Carr, 1999), which may

have been caused by their parents' own physical and sexual abuse histories, and psychological maladjustment (e.g., Carr, 1999; Bailey, Moran, & Pederson, 2007; Schwerdtfeger, & Goff, 2007; Stovall-McClough, & Cloitre, 2006). For instance, the mental health disorder prevalence rates for mothers in LAMICs was comparatively higher at 15.9% in the prenatal phase, and 19.8% in the postnatal phase, adding further risk to the psychological well-being of children in poorer countries (Fisher et al., 2012). Of note, both poverty and child abuse—which are associated with anxiety, depression and substance use—are considered the most preventable factors in the development of those mental health disorders (World Health Organization [WHO] & the Prevention Research Centre of the Universities of Nijmegen and Maastricht, 2004).

Also germane to the current study, Tol, Song, and Jordans (2013) reviewed 53 peer reviewed articles examining which factors affected childhood resilience in armed-conflict and post-conflict LAMICs. The authors defined resilience as a dynamic—rather than a static—construct, which can differ across cultures, intra-cultural strata, and gender. Given the mixed findings across these studies, only the most robust factors will be presented here. Individual protective and promotive factors included higher levels of positive self-view, adaptive coping, as well as higher intelligence and creativity. Familial promotive and protective factors included sufficient levels of parental supervision and support, in addition to healthy parental psychological functioning. The authors noted several limitations to their investigation, including the cross-sectional nature of most of the studies and the use of measures that may have been less sensitive to childhood distress idioms.

Lastly, childhood adherence to some cultural values, such as honor and familial cohesion, may cause distress in certain contexts (Akello, Reis, & Richters, 2010; Eggerman, & Panter-Brick, 2010). This may be true for some Cambodian children regarding prosocial behavior. However, the relationships between these factors are complex and not always clear. For instance, the intergenerational transmission of trauma from survivors of the KR genocide as manifested by the anxiety and depression symptoms in their children were generally mediated by maladaptive parenting, including role-reversing, rejecting, and overprotective parenting styles (Field, Om, Kim, & Vorn2011; Field, Muong, & Sochanvimean, 2013). As such, the current author suggests that caution and prudence should be employed when examining the causal relationships between risk and protective factors of mental health, not only in Cambodia, but elsewhere in the world.

1.4.1.4 The Mental Health Status and Abuse of Cambodian Children

Despite the complex interactions between protective factors and risks for children living in LAMICs, the mental health status of Cambodian children remains vastly understudied. In fact, to this author's knowledge, no nation-wide, random stratified sampling study of Cambodian child mental health prevalence or incidence has ever been published. This may be due in part to the paucity of validated measures for Cambodian children. While some extant measures assess multiple

DSM-5 (APA, 2013) diagnostic categories, such as the Youth Self-Report (YSR; Achenbach, 1991), the YSR is proprietary, has 112 items, and has been deployed primarily to Khmer refugee youth, but never validated or deployed in a Cambodian nation-wide study. The current author could also not find any validation study of the Khmer YSR, which is designed to assess 11-17 year olds. Lastly, Jegannathan, Kullgren, & Deva (2015) referenced an unpublished study, which involved a door-to-door census of 15 villages in the Cambodian province of Kandal. The researchers of the study utilized the Strengths and Difficulties Questionnaire (SDQ; Goodman, 2000) and reported that parents and teachers identified that 13% and 20% of children, respectively, manifested either emotional or behavioural problems. Of note, the original Khmer version of the SDQ has not been sufficiently validated and suffered from other methodological problems, such as having a missing item for both the teacher and parent versions published previously on the SDQ website.

As a result of the lack of validated prevalence measures and studies in Cambodia, researchers and clinicians in Cambodia generally rely upon global psychiatric prevalence rates, which hover around 20%. For example, the WHO (2001) reported a global neuropsychiatric disorder prevalence rate for children and adolescents with one or more disorders at being between 10% and 20% based on studies from Ethiopia, Germany, India, Japan, Spain, Switzerland, and the US. Kieling and colleagues (2011) published the same prevalence rates in their review of 16 surveys conducted within LAMICs. Belfer (2008) found similar rates in his excellent review of global child and adolescence MH prevalence. He concluded that up to 20% of children and adolescents struggled with a debilitating mental health disorder and that suicide was "ranked third as the leading cause of death among adolescents" (Belfer, 2008; p. 226).

In addition to mental health status of adults examined in the 2012 RUPP survey, 8.0% of the female respondents and 10.6% of the male respondents reported that they had experienced abuse as a child (Schunert et al., 2012). For the purposes of their study, child abuse was described as "physical or sexual violence or severe neglect" (Schunert et al., 2012; p. 16). Additionally, findings from the Cambodia's Violence Against Children Survey 2013 by the United Nations Children's Emergency Fund Cambodia (UNICEF) found that 6.4% of female respondents and 5.2% of male respondents aged 14 to 17 years reported at least one incidence of sexual abuse before the age of 18 years [Ministry of Womens' Affairs (MoWA), UNICEF, US Centers for Disease Control and Prevention (CDC), 2014]. The survey authors described sexual abuse as "unwanted sexual touching, unwanted sexual intercourse attempts, as well as forced or pressured intercourse" (MoWA, UNICEF, & CDC, 2014; p. 17). Furthermore, 52.7% of female respondents and 54.2% of male respondents reported at least one of incidence of physical violence prior to the age of 18 years.

Mothers were reported as being the most frequent perpetrator of physical violence within the home and male teachers were reported as being the most common perpetrator of physical violence outside the domestic setting (MoWA, UNICEF, & CDC, 2014). Relatively high rates of aggression

in Cambodian children—11.5% of the homes surveyed—were also found in the RUPP Cambodian Mental Health Survey (Schunert et al., 2012), which the authors attributed their parents' traumatic histories. Lastly and most importantly, child abuse has been associated with many adverse outcomes including psychological disorders, such as depression, anxiety, substance and process addictions, as well as suicidal ideation which can manifest at any time throughout the child's lifespan (Felitti et al., 1998; van der Kolk, Hopper & Crozier, 2001).

To summarize, the prevalence or incidence rates of adult psychiatric disorders in Cambodia vary considerably in the few existing published studies, mostly due to sampling and other methodological differences, but all have found generally high rates of PTSD, mood, anxiety, and psychotic spectrum disorders. Poverty and poor adult mental health adjustment in Cambodia, in addition to other factors, can negatively affect the mental health of children. Despite the complex interactions between protective factors and risks for children living in lower and middle income countries, the mental health status of Cambodian children remains vastly understudied. In fact, to this author's knowledge, no nation-wide, random stratified sampling investigation of Cambodian child mental health prevalence or incidence has ever been published. This may be due in part to the paucity of validated measures and the appropriate cut-scores for measures assessing specific disorders of Cambodian children. Additionally, assessing psychiatric disorders in children presents several nosological challenges in addition to cultural considerations (Caron &Rutter, 1991). One way of circumventing some of these obstacles is to assess the psychosocial distress and functional impairment of children using measures developed and validated within the Cambodian context.

Chapter 2: Literature Review

This Chapter provides a review of the germane literature of the Childhood Psychosocial Distress Screener (CPDS) and Child Functional Impairment Scale (CFIS). To the author's knowledge, only two studies have been published on the CPDS and only one study has been published on the CFIS. These investigations were summarized accordingly and then followed by the limitations of the literature.

2.1 Child Psychosocial Distress Screener

The CPDS was developed by Jordans, Komproe, Ventevogel, Tol, and de Jong (2008) to assess psychosocial distress in children living Burundi, a small, war-torn country in Central Africa just south of Rwanda. During the introduction of the study, the authors emphasized the burgeoning need of mental health services for children in LAMICs and that these needs should be met by comprehensive, culturally-sensitive, and community-based interventions. Additionally, they provided several reasons for developing the CPDS including: 1) The lack of culturally-sensitive, brief screening measures which assessed psychosocial distress in LAMICs; 2) The paucity of mental health workers in LAMICs which made wide-spread, clinical assessment untenable; 3) The use of measures in LAMICs that were originally developed in wealthy Western countries without any cultural consideration or local psychometric validation was dubious at best; and 4) A screener could be used to titrate limited mental health resources more effectively. The CPDS was created as part of a larger study which involved other war-torn countries including Sudan, Sri Lanka, Indonesia, and Nepal which aimed at developing a comprehensive and evidence-based psychosocial intervention for children at the community level.

An original pool of eight items were developed to measure each of the PD aspects reviewed in the Chapter One of the current study. Five steps were employed to translate the instrument. First, the items were translated from the original English questionnaire into Kirundi and then back translated to ensure lexical adherence. Second, they were reviewed by a bilingual mental health professional. Third, they were evaluated in child focus group discussion (FGD). Fourth, the scale was pilot tested with children in school, and then fifth, the back translation was compared to the original instrument by a Burundian psychologist. To improve the ecological validity of the measure, multiple FGDs comprised of teachers, children, community members, and parents were held to develop a list of probes for certain contextual questions, such as the type of distressing event a child may face in their geographic region, as well as the modality of distress expressed by the children. Lastly, the measure was field tested which resulted in the removal of one item and the development of instructions to optimize the administration procedure.

Random sampling was employed to select the schools of the participants. The construct validity was then explored in a sample comprised of 2,240 children. These participants were asked to complete the self-report items in class and their teachers were asked to endorse the teacher observation items for each child. The construct validity was then examined through CFA to examine the internal structure across the sample. The results showed that the CPDS had two factors consisting of child distress/poor resilience items and school-related items. The diagnostic accuracy of the CPDS was examined in 65 child participants and their teachers who were randomly selected from the large original sample. The diagnostic accuracy was examined by using receiver operating characteristic (ROC) analyses with the CPDS total score and caseness defined by the Kiddie-Schedule of Affective Disorder and Schizophrenia (K-SADS; Kaufman et al., 1997), a semi-structured clinical interview that examines specific mental disorders in children according to DSM-IV criterion. In-depth interviews were conducted in addition to the K-SADS assessments to define caseness. In other words, the sensitivity and specificity of the CPDS was determined by using ROC analyses using the K-SADS and in-depth interview as the criterion measure. The ROC analyses indicated that when using the optimal cut-off score of eight, the CPDS had a sensitivity of .80 and a specificity .65. However, the test-retest values were higher with a sensitivity at .94 and a specificity at .75, which was attributed by the authors to testing effects or the therapeutic effects of the clinical interview.

The Cronbach's alpha coefficient for the CPDS was also found to be *Unsatisfactory* at .53 using Ponterotto and Ruckdeschel's (2007) rubric. This low magnitude of internal consistency was attributed to the low number of items, which measure three distinct aspects of the PD construct. As such, another method of reliability was duly employed. The test-retest reliability was examined by administering the CPDS with 65 children two weeks after the initial clinical interview. The authors found a test-retest Spear-Brown coefficient of ρ_{sb} = .83, which was above the .70 convention of acceptable magnitude. Additionally, there was a significant different between the mean CPDS total scores of the children identified as needing psychiatric treatment versus those not needing treatment at $t(50) = 4.21$, $p < .000$. Given that the diagnostic utility of the instrument was examined with a sample size of only 65 children who were attending school, the generalizability of the findings may be limited for other war-torn or post-conflict LAMICs where access to education is limited. Most notably, less than half of all children between the ages of 13 and 18 years attended secondary school in Cambodia (NIS, DGH, and ICF, 2015). Despite these limitations, the results of the seminal CPDS study demonstrated that it was able to detect at-risk children who had been exposed to distressing events. However, the sensitivity and specificity of the screener indicated the need for replication in future research using stronger criterion measures.

2.1.1 Cross-Cultural Construct Validity of the CPDS

Jordans and colleagues (2009) proposed that each level of psychosocial and psychiatric intervention requires a specific screening method. At the primary intervention level, it is necessary to have screening tools to identify individuals at risk for psychiatric intervention and who need further evaluation. During the secondary intervention level, it is necessary to have screening tools to identify the presence of psychopathology requiring treatment. The numbers of mental health professionals in LAMICs are limited and the lack of sufficient screening tools at the primary level to identify children in need of therapeutic intervention is needed. Jordans et al. (2009) suggested that researchers and physicians pay less attention to culturally specific instruments which may be less sensitive to culturally bound conditions.

Their study examined the cross-cultural validity of the CPDS in four different samples using CFA. The researchers compared four a priori factor structures among each of the four LAMIC samples to examine two hypotheses: 1) Assess the goodness of fit of predetermined factor structures within the four samples; and 2) Assess the measurement equivalence of one common factor structure each sample. The participants is their study were children recruited from school settings in arm-conflicted countries, including Burundi (n = 4193), Sudan (n = 1629), Sri Lanka (n = 2573) and Indonesia (n = 1624). The participants' ages ranged from eight to 12 years.

The four models included: 1) The null model which was based on the premise that there were no relationships between any of the items; 2) A two-factor model with one factor consisting of all 5 child items and one factor consisting of both teacher items base on outcomes of the construct validation study of the CPDS in Burundi; 3) A model with three factors with one factor consisting of the three child-distress items, one factor consisting of the two items measuring poor child resilience, and one factor consisting of both teacher items based on the theoretical assumptions underlying the development of the instrument; and 4) A hierarchical model with a first-order PD factor and three second-order factors listed in the previous model. Also, the researchers discussed the construct validity in terms of examining the structure of each of the samples and the differences including the context specific factor loadings. That is, while the three factors were consistent, item loadings were different depending on the state of conflict within each of the study's LAMICs.

The CFAs supported a three-factor solution, which included child distress, poor resilience, and contextual/teacher observation in Burundi, Sri Lanka, and Indonesia. However, the Sudanese version demonstrated a better fit for a two-factor solution. An additional validity study of the Sudanese CPDS was recommended because of this finding. The researchers concluded that CPDS can be used cross-culturally but it was not appropriate to compare the scores across different settings. They also asserted that the CPDS can screen for non-specific psychosocial distress, in

primary and secondary intervention levels, owing to the fact that it was developed and validated in within the country it was administered.

The limitations of this study are mentioned as follows. The demographic information collected by the researchers was not broad and so the generalizability of the findings was somewhat limited. Also, teachers were used as informants and so the results can only be generalized to children attending school, which may limited in some war-torn or post-conflict LAMICs. Also, the researchers stated that the use of the CPDS has not been evaluated against more stringent criteria established by The UK National Screening Committee. Despite these shortcomings, the researchers again asserted that the CPDS can be used in mental health care programs in armed-conflict settings, but cautioned should be used against comparing the scores between different LAMICs.

2.2 Child Functional Impairment Scale

In the introduction section of their study on the development and validation of the Child Functional Impairment Scale (CFIS), Tol, Komproe, Jordans, Susanty, and de Jong (2011) noted that mental health was a significant contributor to the global burden of disease, especially in LAMICs where political violence can increase the prevalence of mental illness. They stated that most of the research and clinical assessment in LAMICs was comprised of evaluating specific disorders, such as PTSD, which generally examined the dose-response relationship between exposure to trauma and symptom severity. They cautioned against using these measures and methods which may not be sufficiently sensitive to the specific cultural distress idioms of child in LACIMs. Instead, they stated proposed the use of a culturally sensitive measure of functional impairment which could: 1) Identify youth in need of mental health services; 2) Help aid psychiatric diagnoses; 3) Service as an outcome measure in research and clinical assessment; and 4) Identify which symptom clusters are associated with the greatest areas of functional impairment. Their review of the literature also revealed a lack of culturally specific measure of functional impairment which served as their primary rationale for developing the CFIS.

In order to develop the CIFS for an Indonesian child sample, Tol and colleagues (2011) emulated the procedures utilized by Bolton and Tang (2002) to construct a measure of functional impairment for adults. A mixed method approach, using both qualitative and quantitative methods, was thus employed in two phases, as this was the recommended approach for adapting psychological measures across different cultures. The first phase consisted of developing of the CFIS by using qualitative methods, which included three procedures aimed at identifying the main categories and activities of functional impairment in children. The second phase involved the psychometric validation of the CFIS through quantitative means such as CFA and correlations with other measures which served as convergent and divergent criterion. Lastly, both a child and parent forms were developed, presumably to increase the scale's reliability.

During the development phase, the first procedure included brief observations by a researcher of two boys and two girls for a two-week period. The second procedure involved the administration of diaries to 40 children aimed at collecting and counting the daily activities that children engage in most often during their day. The children were asked to write down what they had been doing every hour. The third procedure involved a FGD comprised of nine children and involved: 1) Asking the children to brainstorm on their daily activities; 2) Clustering the activities into distinct categories; and 3) Achieving consensus on how important these categories were according to the group. The results of the FGD showed that the individual activities included keeping hygiene, sleeping, eating, and praying. The family activities category included household chores and relating to their parents. The school activities consisted of studying in school and school work scores, and then finally, peer activities included playing and socializing with friends.

The FGD results were similar to the diary collection procedure which identified 964 separate activities under the same four categories. Gender differences were found on religious activities, but no gender differences were observed from the participant observation and the FGD. The diary procedure results showed that children spend most of their time in individual activities for 13 hours, school activities for four hours, family activities for three hours, peer activities for three hours, and one hour per day on community activities.

The first phase resulted in the CFIS scale, which was comprised of 10 questions with four items for individual functioning, three items for family functioning, and three items for social functioning. An addition open-ended item that queried whether the child had any other functional impairment were not listed in the first 10 items. The items were rated along a four-point Likert-type scale because it was less complicated for children and avoided the tendency of children to choose the middle point on an item. The possible responses were as follows: 1) No impairment; 2) A little impairment; 3) Moderate impairment; and 4) Often cannot do the activity.

As mentioned previously, the second phase of the Tol and colleagues (2011) study tested the psychometric properties of the CFIS through quantitative methods. The children for this phase were selected from a school-based intervention program using a random cluster method. The pilot study was conducted within a politically violent and unstable setting. Children and their parents were randomly selected resulting in 403 children and 385 parent participants. The Cronbach's alpha of the CFIS for children was .77, which rated as *Fair* using Ponterotto and Ruckdeschel's (2007) rubric. The alpha coefficient for the parent form was .74 for their parents, which was rated as Unsatisfactory/Fair using Ponterotto and Ruckdeschel's (2007) rubric. To determine the test-retest reliability of the CFIS, 51 children were selected using convenience sampling and were readministered the CFIS after a two-week period. Using the Spearman-Brown coefficient, the test-retest reliability for the child form was found to be $\rho_{sb} = .78$.

To examine the convergent and divergent validity of the measure, the researchers used the Child PTSD Symptom Scale (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001), the Depression

Self-Rating Scale (DSRS; Birleson, 1981), Kidcope (Spirito, Stark, & Williams, 1988), and the Social Support Inventory Scheme (SSIS; Paardekooper, De Jong, & Hermanns, 1999. The correlations of the CFIS with the other psychological measures were significant and in the hypothesized direction, but the magnitudes of the correlations were smaller than expected. For example, the CFIS child-rated score was moderately correlated with depressive symptoms (r = .30, p < 0.001), as measured by the DSRS, and child trauma idioms (r = .39, p < 0.001) identified during the qualitative phase. The CFIS child also had a small magnitudes of correlation with exposure to traumatic events (r = 0.18, p < 0.001), PTSD symptoms (r = 0.14, p < .01), as measured by the CPSS, and social support (r = -0.22, p < .001), as measured by the SSIS. However, it did not correlate significantly with the resilience construct as measured by Kidcope. The CFIS parent form correlated with lower magnitudes on their ratings for their children's depression symptoms (r = .19, p < .001), as rated by the DSRS, PTSD (r = .13, p < 0.01), as measured by the CDSS, and social support (r = -.13, p < 0.05), as measured by the SSIS. The construct validity of the CFIS fitted well with the researcher's a priori model. That is, CFA of the child's CFIS identified an optimal correlated four-factor solution including four individual activities items, two family activities items, two school activities items, and two peer activity items. The additional eleventh open item was not included in the analyses.

The researchers offered several suggestions for developing the CFIS in other settings. First, they suggested developing gender-specific scales which might increase their associations with other measures of psychological distress. Also, given the lower magnitudes of correlation and the poor internal structure of the parent form of the CFIS, the authors suggested only developing a child form. Future studies should also examine if fewer qualitative techniques are required in order to develop an instrument with similar psychometric properties to further minimize the cost and increase the feasibility of developing the measure. Shorter participant observations and conducting multiple FGDs were recommended. In conclusion, the authors stated that these procedures to develop new instruments of functional impairment for children in different cultural settings could help improve the accuracy of epidemiological surveys, baseline assessments, as well as target interventions where mental health resources are limited.

2.3 Limitations of the Literature

The most glaring limitation in the literature reviewed above is that neither the CPDS nor the CFIS have been developed and validated within the Cambodian context. In fact, very few published measures have been developed or translated specifically for Cambodian youth, aside from the Adolescent Attachment Measure (Field, Tzadikario, Pel, & Ret, 2014), the Cambodian Developmental Assessment Test (Rao et al., 2012), the Child Exploitation Psychosocial Assessment Tool (CEPAT; Bass, Bolton, & Bearup, 2010), the Parents' Academic Involvement Scale (Eng, 2013), and the Khmer version of the Strengths and Difficulties Questionnaire (SDQ;

Goodman, 2000). Of these childhood measures, only the CEPAT and the SDQ assesses the levels of psychological distress and behavioural dysfunction, but the SDQ has not yet been sufficiently validated in Cambodia. Further, the few extant surveys and studies that examine the mental health adjustment of Cambodian children have generally employed measures of distress or psychiatric disorders developed and validated in adult populations, such as the Indochinese version of the Hopkins Symptom Checklist-25 (HSCL-25; Mollica, Wyshak, de Marneffe, Khuon, & Lavelle, 1987), the CSSI, and a Khmer version of the PCL-C (Field & Chhim, 2008; Sonis et al., 2009). The use of adult measures, which may be less sensitive to childhood symptoms and distress idioms, in child samples necessarily limit the applicability and inference of any findings. Much to Tol and colleagues (2011) credit, they took the time and care to translate childhood measures of distress into Khmer, including the CPSS and DSRS, to use as criterion to validate the CFIS. Additionally, Field, Om, Kim, & Vorn (2011) and Field, Muong, and Sochanvimean (2013) used other childhood measures which had been translated into Khmer for their studies, including the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) and the Relationship with Parents Scale (RPS; Alexander, 2003).

Nonetheless, an additional question can be raised from the literature review concerning the factor structure of the CPDS. In their first study, Jordans and colleagues (2008) found that a two-factor solution was optimal in their original sample of 2,240 Burundian children. However, in their cross validation study, Jordans and colleagues (2009) concluded that a three-factor structure was optimal in a larger sample of 4,193 Burundian children. As mentioned earlier, these researchers provided a rationale as to why CFA was better than EFA in identifying the underlying structure of a scale. Again, the current author holds a more balanced view of the two techniques in that they are complementary rather than superior to one another, and that both have their strengths and weaknesses. The current author suggests using EFA to identify the empirical structure of a scale, and then use CFA to examine iterations of the empirical structure, which may include a hierarchical model and other theoretical, or a priori, models. This perspective was substantiated through Monte Carlo simulation analyses by Gerbing and Hamilton (1996) which suggested that EFA should be employed prior to CFA. Another argument for the inclusion of EFA is the possibility of unwittingly excluding a model that accounts for more variance and is more closely aligned with the actual underlying factor structure of a scale.

Disagreements in methodology such as these are ubiquitous, or very common, in psychology and statistical research. It is up to the reader, and Cambodian students of psychology, to examine as much of the available literature as possible on any method or finding in question and then make their own conclusions. At this point, it will only be noted that EFA has never performed on the CPDS or CFIS in the published literature, and that robust psychometric analyses of any new or translated measure is essential in cross-cultural psychology for establishing their socio-ecological validity.

2.4 Exploratory Aims, Hypotheses and Research Questions

The CDPS is one of the very few measures, which is designed to be used in low- and middle-income countries—especially those in war-torn or post-conflict settings. LAMICs, including Cambodia, generally lack sufficient numbers of trained mental health professionals, and so the CPDS was developed to be administered by non-experts. An additional advantage of the CPDS is that it based in a contextual model of distress, which is balanced against resilience and protective factors. Further, the CPDS incorporates an additional rater, their teacher, who presumably adds objective incremental reliability to the brief assessment. As such, the CPDS can help identify children who are especially vulnerable and affected by the exposure to stressors due to low individual resilience and poor social support (Jordans, 2008). As the CPDS does not include a measurement of the impairment in daily activities—which are an important component to assessing the severity of a child's mental health symptoms—the development and validation of the K-CFIS can also aid psychiatric diagnosis and identify those in need of intervention. In the long term, and once sufficiently validated, these tools could be used to conduct nation-wide survey studies to help identify the most pressing mental health problems confronting the youth in a LAMIC.

2.4.1 Exploratory Aims

Given the cogent rationale of developing the CPDS and CFIS in a LAMIC noted above, the first exploratory primary aim of the current study was to develop both measures within the Cambodian context. The second exploratory aim of the current study was to examine the psychometric properties of the Khmer versions of the CPDS (K-CPDS) and CFIS (K-CFIS) in order to establish their socio-ecological validity. The validation analyses included both descriptive and inferential statistics, including item analyses, correlation, EFA, CFA, and hierarchical multiple linear regression (HMLR) analysis. The current study will also provide normative information on all of the clinical measures used in the study and provide suggested cut-scores on the pertinent clinical measures which may aid in identifying children in need of mental health services. Because no gold standard criterion measure was employed in the design of the current study, such as a clinician-based diagnosis using a structured clinical interview, the 75th percentile score will be used. This is based on the 20% global prevalence rate of childhood psychiatric disorders generally cited on the literature and described in the Problem Statement in Chapter One of the current study. An additional 5% was included to capture those at risk of developing a disorder or of having significant levels of distress and impairment. Lastly, clinical prevalence rates gleaned from the other criterion measures in the current study will be reported in order to provide prevalence rates and inform future research.

2.4.2 Hypothesis

Because both of the CPDS studies (Jordans et al., 2008; 2009) used only CFA and ROC psychometric analyses, no hypotheses based on known effect sizes could be derived. As such, investigations into the factor structure of the K-CPDS will be explored under the Research Questions listed below the Hypotheses. However, Tol and colleagues (2011) used correlations, which are effect sizes, to establish the convergent and divergent validity of the CFIS, and so several hypotheses could be derived. Accordingly, the following hypothesis of the current study is as follows:

1. Functional impairment, as measured by the K-CFIS, will correlate positively and significantly with psychological distress, as measured by the HSCL-25, the SDQ Total Distress subscale, and the C-SSA, in a Cambodian child sample.

2.4.3 Research Questions

As mentioned in the above Hypotheses section, several research questions were derived from the Literature Review section. It should be noted here that the term *research question* can refer to two connotations, or definitions, in psychological research. The first definition describes the primary question or questions of a study, which can drive the design and hypotheses of the investigation. The second definition refers to more specific questions that have not been explored in previous research and so specific hypotheses based on effect sizes cannot be empirically derived. These are listed as questions, rather than in the form of a statement, such as the case for hypotheses. Additionally, Tol and colleagues (2011) suggested developing different measures for boys and girls given the findings in their Indonesian child sample. As such, the gender effects of the K-CFIS was also examined as a research question. That being said, the second definition was used to formulate the following research questions of the current study:

1. Will the levels of functional impairment, as measured by the K-CFIS, will differ significantly between male and female participants, in a Cambodian child sample?
2. Does the K-CPDS and K-CFIS demonstrate satisfactory convergent and divergent validity in a Cambodian child sample?
3. After controlling for demographic variables, which clinical variables account for the greatest amount of variance in the K-CPDS in a Cambodian child sample?
4. After controlling for demographic variables, which clinical variables account for the greatest amount of variance in the K-CFIS in a Cambodian child sample?

Chapter 3: **Methodology**

The research protocol for the current study was approved by the National Ethics Committee for Health Research under the project title *Cambodian Psychosocial Distress Screener* which was conducted after the current study using similar measures in a large, nationwide random clustered sample. The co-principal investigators were Lieke van Domburgh, Ph.D., Assistant Professor and Head of the Research and Development Department at Vrije Universiteit Medical Center Amsterdam (VUmc) and Ms. Sek Sisokhom, Head of the Psychology Department at RUPP. The current study was funded and supported by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Nuffic, VUmc, and Maryknoll Cambodia. All of the data for the current study were collected during the last quarter of 2013, except for the test-retest data, which was collected in November of 2015. GIZ provided the funds for the test-retest analyses.

3.1 Development of the Khmer Version of the CPDS

The seven questions of the original CPDS were translated from English into Khmer by a bilingual, Cambodian masters-level psychologist. The Khmer translations were then reviewed and iteratively modified where appropriate by a RUPP research group consisting of students from the Master of Clinical Psychology and Counseling program (MCPC) at RUPP and supervised by the first primary co-investigator of the current study, Lieke van Domburgh, Ph.D. Following the translation, culturally specific probes were identified using children, parents, and teacher FGDs. The parent and child FGDs were conducted to identify the probes for item 1, which queried the type of adverse events commonly experienced by children, and item 3, which described the idioms, or the signs and symptoms, of distress in children. The teacher FGDs were conducted to identify the probes for item 6, which queried teachers about which concerning or problematic behaviors commonly exhibited by their students.

3.1.1 K-CPDS Focus Group Discussions

Nine people, mostly Maters level psychology students or volunteers from related fields, were selected to facilitate and take notes during in the FGDs. They were trained by the first primary co-investigator of the current study. The FGD facilitators were instructed on how to create an emotionally safe environment, as well as how to encourage each participant to respond during the discussion in order to capture the broadest range of answers. A total of four student FGDs were conducted from primary and secondary schools in both Phnom Penh and Takeo province. Takeo province was selected because it was considered demographically rural in nature. Each focus group consisted of eight child participants with an equal number of males and females from each demographic area and school level. The following questions were asked during the child FDGs:

1. What adverse events have you witness or experienced?
2. What were the symptoms you experienced after you witnessed or experienced those adverse events?

While one facilitator led the group, the other facilitator wrote down the responses on a large easel pad. After the FGD concluded, the child participants were given pens and notebooks for their participation. The responses were then translated from Khmer into English by the facilitators. If a word or phrase was difficult to translate, a descriptive term would be listed instead. A total of four parent FGDs were conducted with a combined total of 31 male and female participants. Two parent FGDs were conducted in Takeo province and two parent FGDs were conducted in Kampong Chhnang province. Due to the high number of parents in Phnom Penh who declined to participate—most of whom cited their busy work schedules or working hours—only two parents in Phnom Penh were interviewed using semi-structured, in-depth interviews.

Teachers from the same schools where the student FGD participants attended were also recruited for the teacher FGDs. In Phnom Penh, three teacher FGDs were conducted with 10 participants per group. In Takeo province, two teacher FGDs were held with eight participants in each group consisting of an equal number of male and female participants. The same two questions from the child FGDs were used with the teachers and parents, but were modified slightly to capture the adults' perspectives more accurately. Two additional questions were added for the parent and teacher FGDs, including:

3. What problems or worrisome behaviours have you observed in your child/student?
4. How regular has your child's/student's attendance been at school during the last month?

The parent participants were given $10 each for their participation and the teacher participants were given towels for their participation. After each respective FGD concluded, the responses were translated from Khmer into English by the facilitators. Similarly, if a word or phrase was difficult to translate, a descriptive term would be listed instead.

3.1.2 Coding and Selecting the K-CPDS Probes

A coding group consisting of four Masters students and four professors from the Psychology Department at RUPP was assembled to select the item probes. All of the responses from each of the student, parent, and teacher FGDs were first combined and coded. Coded responses were then grouped into salient categories and summed. Those responses with the highest level of endorsement were then retained as probes for K-CPDS items 1, 3, and 6. From the child, teacher and parent FGDs, nine adverse event probes were identified for item 1. See Table 1. Eight child distress symptoms or probes were identified by the children participants for item 3. See Table

Table 1
Adverse Events from the K-CPDS Focus Group Discussions

English	Khmer
Flooding, lightening, fire, serious traffic accident, serious violence, robbery, being separated from parents, death of a loved-one, serious illness (self or someone else), poverty	គ្រោះទឹកជំនន់ រន្ទះបាញ់ ភ្លើងឆេះផ្ទះ គ្រោះថ្នាក់ចរាចរណ៍ ធ្ងន់ធ្ងរ អំពើហិង្សាធ្ងន់ធ្ងរ ការប្លន់ ការឃ្លាតឆ្ងាយពីឪពុកម្តាយ មាននរណាម្នាក់ស្លាប់ (មានជំងឺធ្ងន់ធ្ងរ នរណាម្នាក់ឈឺ អាចខ្លួនប្អូនផ្ទាល់ ឬ) និងក្រីក្រ

Note. The most frequent responses from the focus group discussions comprised of 32 children, 31 parents, and 46 teachers from Phnom Penh, Takeo province, and Kampong Chhnang province.

Table 2
Distress Symptoms from the K-CPDS Child Focus Group Discussions

English	Khmer
Feeling scared, feeling hopeless, trembling, being absent-minded, fainting, being reluctant to talk, crying, getting easily angered	ភ័យខ្លាច អស់សង្ឃឹម ញ័រ ភ្លឹកៗ ជិតខ្សត់គរ មិនចង់និយាយ យំ ឆាប់ខឹង

Note. The most frequent responses from child focus group discussions comprised of 32 children from Phnom Penh and Takeo province.

Table 3
Child Distress Symptoms from the K-CPDS Parent and Teacher Focus Group Discussions

English	Khmer
Absent-minded, poor attention, appears upset or sad, doesn't participate in group activities, appears angry or frightened.	ភ្លឹកៗ ពុំមានបម្រុងប្រយ័ត្ន ក្រៀមក្រំ មិនចូលរួមក្នុងក្រុម ឆាប់ខឹង មានជម្លោះ

Note. The most frequent responses from parent and teacher focus group discussions comprised of 31 parents and 46 teachers from Phnom Penh, Takeo province, and Kampong Chhnang province.

2. Lastly, the child distress symptoms observed by the teachers and parents included six probes, which are listed in Table 3.Base on the original CPDS by Jordans and colleagues (2008) method, seven items were developed including five items for children respondents and two items for teacher respondents. Each item was scored using a three-point Likert-type scale: 0) Not at all; 1) A little; and 2) A lot. Also, according to the specifications suggested by Jordans and colleagues (2009), each of these points had a pictorial representation of a cup filled with increasing levels of a fluid which can help younger children visualize their level of endorsement. Kindly see Appendix A and B for the final version of the K-CPDS in both Khmer and English.

3.2 Development of the Khmer Version of the CFIS

The methodology for the development of K-CFIS was based largely on the original Tol, and colleagues (2011) study. The current study employed the same qualitative methods including FGDs and dairy keeping of child participants from both primary and secondary schools to develop the item content. However, the current study did not utilize brief observations of child participants as the original authors had done. This was consistent with Tol and colleagues (2011) suggestion to explore if fewer qualitative methods were sufficient to develop the item content, which would reduce the cost and time burden of developing the measure in other settings.

Non-random, purposive sampling was employed to recruit child participants from primary and secondary schools in Phnom Penh City and Takeo Province. In Phnom Penh City, one class from two primary schools were selected for recruitment. In the Takeo Province, students were recruited from one primary school and from one secondary school. In total, 180 child participants assented to participate in the development phase of the current K-CFIS study.

3.2.1 K-CFIS Focus Group Discussions

The FGDs for the K-CFIS were conducted at the same time as the K-CPDS FGDs where appropriate and each FGD followed the similar structure. First, in order to develop rapport with the child FGD participants, each were asked about their names, grades, favourite activities, and which vocation they wanted to pursue as adults. They were then given a stack of small adhesive note paper to write down as many of their daily activities they could think of using one piece of paper per activity. Each of the responses were then placed on a large easel pad and the child participants were asked to divide the responses into daily activity categories by group consensus. After conducting the FGDs, the group facilitators translated all of the responses from Khmer to English. If a particular response was difficult to translate, a brief description of the activity would be listed instead.

3.2.2 K-CFIS Daily Journal Collection

Diary keeping was also employed to identify the most important aspects of child functioning. One class was selected from a primary school and a secondary school from both Takeo Province and Phnom Penh, in addition to one private school in Phnom Penh. Two facilitators from the FGDs were assigned to administer the dairies and provided instructions for the child participants. The participants were instructed to write down their daily activities from morning until they retired for the evening for two weeks. The participants were instructed to draw a chart in their diary that captured their activity information including the time, activity, place, and people involved in each respective activity. After seven days, the facilitators returned to ensure that children were filling out the diaries, and then collected them after two weeks. Seven diaries from

each class were then selected to code and score. For their participation, every child received a pen and booklet, and the teachers got towels

3.2.3 Coding and Developing the K-CFIS Item Content

A coding group consisting of four Masters students and four professors from the Psychology Department at RUPP was assembled to select the item content. All of the responses from each of the student FGDs were combined and coded. The coded responses were then grouped into salient categories and summed. From the both the journal coding and FGDs, four main categories of daily functioning were identified, including: Self-care, school activities, family activities, and enjoying free-time at home. Then, each identified activity was added to the measure as a question following Tol and colleagues (2011) methodology which was comprised of 10 questions and an additional open-ended question which queried dysfunction in any other activity not listed first ten items. All 11 questions were queried along a four-point, Likert scale, including: 0) Not at all; 1) A little; 2) Quite a bit; and 3) Extremely. Each of response had a corresponding pictorial representation of cup filled with increasing amounts of a fluid which helped the children visualize their endorsement level or magnitude of functional impairment.

3.3 Pilot Testing the K-CPDS, the K-CFIS and Other Measures

Both the K-CFIS, K-CPDS and other measures in the current study were pilot tested in a fifth-grade class from a primary school in Phnom Penh, which was comprised 13 girls and 19 boys. Two facilitators were trained how to introduce the reason for the study, describe the pictorial response scale of each measure, and proctor the class throughout the administration. Less than 5% of the students had difficulty completing the measure due to their reading ability. Five students were not familiar with the phrase *sexual abuse*. Despite this, the term sexual abuse was not removed because it was a relevant term and the test battery would be administrated to adolescents as well. As a result, no iterative changes to the questionnaires were made.

3.4 Validating the K-CPDS and the K-CFIS

In order to examine the concurrent validity of the K-CFIS and K-CPDS, several other measures were administered as well. A large sample size was recruited in order maximize generalizability and ensure sufficient numbers for factor analyses.

3.4.1 Sampling Method and Participants

Given that the primary aim of the current study was to validate the K-CPDS and K-CFIS and not conduct a nation-wide prevalence study, non-random, purposive sampling was employed. However, the current study did recruit students from both urban and rural areas in order to maximize the generalizability of the findings. Battambang City was selected because the economic

standards of the people living there was similar to those who live in Phnom Penh (Ministry of Planning, National Institute of Statistics, 2013). The rural area participants were selected from the Moung Ruessei District, which is located southeast of Battambang Province. The Moung Rusey District of Battambang was selected to represent a typical rural area population. The schools were selected according to the discretion of the Ministry of Education and recruited based on the available educational service areas.

In Phnom Penh, one primary school and one secondary were selected. In Battambang City, two primary schools and two secondary schools were selected. Four primary schools and five secondary schools were selected from the rural Moung Ruessei District. The schools were selected based on the decision of the Education Director in each respective area. In Battambang Province, the school principals were informed of the current study one to three days in advance prior to the administration. The School Director assigned the test administration times based on the class schedules of the schools.

3.4.2 Demographic Characteristics of the Sample

The total original sample consisted of 1,675 student participants. The sample was comprised of students aged eight to 17 years with an average age of 12.66 years (*SD* = 2.11). The students were from recruited from Phnom Penh City (*n* = 357), Battambong City (*n* = 392), and the Moung Ruessei District (*n* = 926). Please see Table 5. Participants were enrolled in Grade 4 through Grade 9. The total number of primary school participants was 789, with an average age of 10.63 years (*SD* = 1.56) and the total number secondary school participants was 857, with an average age of 13.73 years (*SD* = 1.35). Additionally, 42 teacher participants were recruited from the targeted schools to respond to the teacher-related items of the K-CPDS.

Ten cases who reported that their mother was not living at home reported that their step-mother was living at home. Similarly, another 10 cases who reported that their fathers were not living at home, stated that their step-father was living at home. 117 cases (7.1%) reported that they were not living with either parent or any step-parent.

Table 4
Continuous Demographic Characteristics of the Sample

Variable	*M*	*SD*	Median	Mode	Min	Max
Student Age	12.28	2.12	12.28	13	6	23
Household Members	6.23	2.37	6.00	5	2	23
Household Earners	2.32	1.26	2.00	2	0	12

Note. The Household Members variable was missing 23 cases (0.14%). The Household Earners variable was missing 34 cases (2.1%).

Table 5
Categorical Demographic Characteristics of the Sample

Variable	Category	Frequency	Percentage
Gender	Male	797	49.3%
	Female	818	50.7%
Demographic Area	Urban	717	43.6%
	Rural	926	56.4%
City/Geographic Region	Phnom Penh City	325	19.8%
	Battambang City	392	23.9%
	Battambang Rural	926	56.4%
Student Grade	Grade 4	250	15.2%
	Grade 5	253	15.4%
	Grade 6	268	16.3%
	Grade 7	203	12.4%
	Grade 8	357	21.7%
	Grade 9	312	19.0%
Type of House	Thatched house	43	2.6%
	Wooden house with tin roof	728	44.8%
	Wooden house with tile roof	154	9.5%
	Brick house	427	26.3%
	Wood and brick house	274	16.9%
Mother at home	Yes	1487	90.5%
	No	156	9.5%
Father at home	Yes	1388	84.5%
	No	255	15.5%

Note. n = 1643 except for the following variables. The gender variable was 28 cases (1.7%). The Type of house variable was missing 17 cases (1.0%).

The open-ended responses from the child participants regarding their parents' occupations were coded using the Hollingshead Occupational Factor (Hollingshead, 1975). See Table 6. A bilingual, master's level Cambodian psychologist and an American doctoral level psychologist reviewed each different response and used consensus to code which category was most appropriate. While cultural and economic differences between America and Cambodia precluded an exact application of the Hollingshead rubric, care was taken to make appropriate assumptions to guide the categorization of the current sample's parental vocation into a relative occupational rubric consistent with the Cambodian context. For example, if a child reported that their parent was a farmer and owned no land, they were coded as a farm labourer. If the child reported that their parent was a farmer and owned land, they were coded as a farm labourer, they were coded as a small farm owner. Small farm owners were coded as 4) Skilled Manual/Craftsman and accounted

Table 6
Father and Mother Hollingshead Occupational Scale

Parent	Hollingshead Category	Frequency	Percentage
Father	0. Househusband	8	0.5%
	1. Farm Laborers and Service Workers	65	4.0%
	2. Unskilled Workers	144	8.8%
	3. Machine Operators and Semiskilled Workers	90	5.5%
	4. Skilled Manual Workers and Craftsmen	881	53.6%
	5. Clerical and Sales Workers	7	0.4%
	6. Technicians and Semiprofessionals	8	0.5%
	7. Managers and Minor Professionals	13	0.8%
	8. Administrators and Lesser Professionals	150	9.1%
	9. Executives and Major Professionals	35	2.1%
	Died	86	5.2%
	Do Not Know	154	9.4%
Mother	0. Housewife	529	32.2%
	1. Farm Laborers and Service Workers	38	2.3%
	2. Unskilled Workers	57	3.5%
	3. Machine Operators and Semiskilled Workers	13	0.8%
	4. Skilled Manual Workers and Craftsmen	725	44.1%
	5. Clerical and Sales Workers		
	6. Technicians and Semiprofessionals	1	0.1%
	7. Managers and Minor Professionals	4	0.2%
	8. Administrators and Lesser Professionals	85	5.2%
	9. Executives and Major Professionals	8	0.5%
	Died	30	1.8%
	Do Not Know	152	9.3%

Note. n = 1643. The Father Occupation variable was missing two cases (0.1%). The Mother Occupation variable was missing one case (0.1%).

for the largest category among both genders, but this was not readily apparent due to the category label. Also, given that income level was not queried, it was not possible to differentiate between small, medium or large business owners. Despite these shortcomings, it was felt that using some established rubric to categorize occupation would provide some insight in to the division of labour along gender and demographic region in the sample, as well as, provide a measure of SES for more detailed analyses.

Neither of the father and mother *Do Not Know* responses correlated significantly with the student age variable, suggesting that this particular response was not due to the age of the children. Phi coefficients were calculated to examine the associations between the dichotomized Do Not Know response and the parents' Living at Home status. The Do Not Know response did correlate

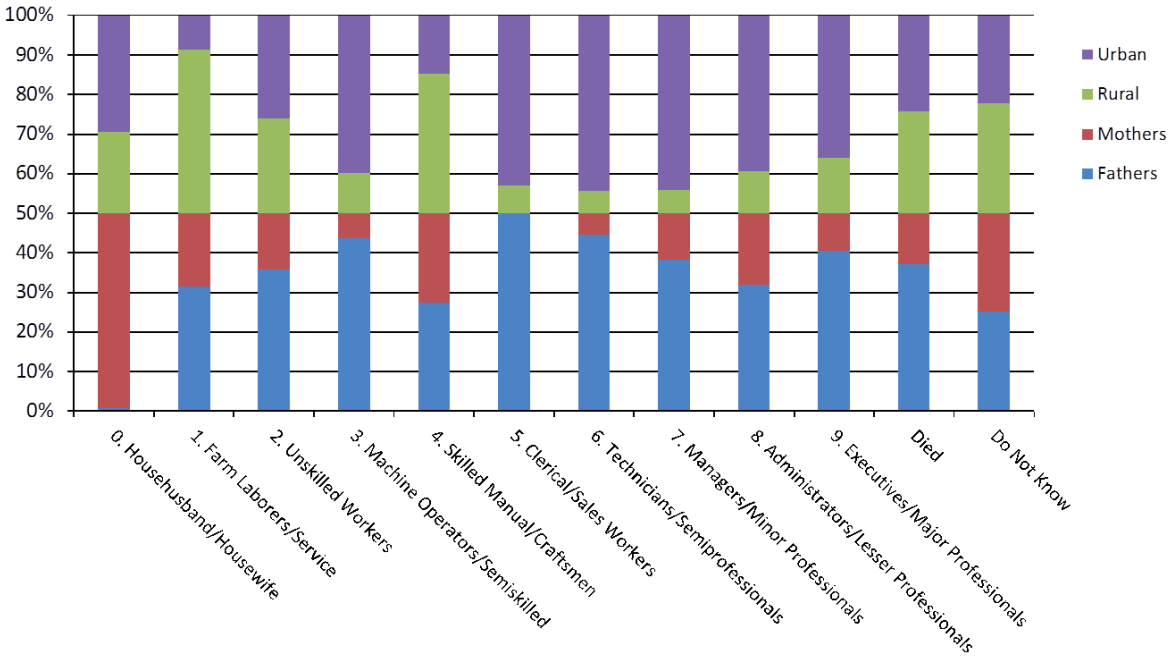

Figure 3. The proportional distributions of labour by gender and demographic region for the child participants' parents. Kindly note that while only 50% is ascribed to each variable, these are not absolute values, but proportional and based on different levels of endorsement, which varied across categories.

significantly and negatively with the father's status of living at home, at $\phi(1641) = -.064$, $p < .01$, and was nearly significant for mother's status living at home, at $\phi(1641) = -.047$, $p = .056$. The results of this peripheral analysis suggest that sociological factors, rather than age-related cognitive ability, were more influential in the child's lack of knowledge regarding their parents' vocation.

The division of labour between genders and demographic areas was generally consistent with expectations. Kindly see Figure 3. That is, fathers from urban areas had the highest paying or most prestigious vocations. As noted previously, the nearly equal gender division and higher rural proportion of Skilled Manual/Craftsman is due to small farm owners falling under this category. Surprisingly, the proportion of households with mothers working as housewives was relatively equal between rural and urban areas, suggesting that higher paying jobs for men in urban areas were allowing for the perpetuation of traditional gender roles, as opposed to having the mother enter the work force out of economic necessity.

3.4.3 Measures

The measures administered in the validation study of the K-CPDS and C-CFIS included a general demographic questionnaire which queried sociodemographic information including age, gender, education, number of family members at home, ownership of land, and ownership of livestock and household appliances. Other clinical data was collected from the child participants by administering the measures below. The teacher participants only responded to the last two questions of the C-CPDS.

3.4.3.1 Khmer Version of the CPDS

The K-CPDS is an instrument that was adapted for use in Cambodia. It was developed and validated previously in Burundi, Sudan, Sri Lanka and Indonesia as a measure of psychosocial distress in children (Jordans, et al., 2009). The measure has seven items including five items for children to respond to and two items for teachers which, in total, measure the traumatic events, current distress, resilience, and the observation of teachers on the child's distress and school attendance. The current study employed similar qualitative methods, including child, parent, and teacher focus group discussions, to develop the item probes for items 1, 3 and 6. These probes described culturally specific adverse events, child distress idioms, and problem behaviours commonly exhibited in the academic settings. The items were endorsed along a three-point Likert scale, which used pictures of cups with increasing amounts of fluid to help child participants visualize their level of endorsement.

3.4.3.2 Khmer Version of the CFIS

The development of the Khmer version of the Child Functional Impairment Scale was based largely on the original methodology proposed by Tol, Komproe, Jordans, Susanty, and de Jong (2011). In their study, Tol and colleagues (2012) proposed the use of a culturally sensitive measure of functional impairment which could: 1) Identify youth in need of mental health services; 2) Help aid psychiatric diagnoses; 3) Serve as an outcome measure in research and clinical assessment; and 4) Identify which symptom clusters are associated with the greatest areas of functional impairment. Their review of the literature also revealed a lack of culturally specific measure of functional impairment which served as their primary rationale for developing the CFIS.

The current study employed similar qualitative methods including child, parent, and teacher focus group discussions as well as dairy keeping of child participants from both primary and secondary schools to develop the item content. These qualitative methods led to a 10-item measure which assessed three primary categories of daily functioning including: self-care, academics, and family relations. The 10-item measure was pilot tested in classroom and an additional unspecified item, querying difficulty with other activities not listed in the scale, was added for a total of 11 items. A more detailed description of this measure was described previously.

3.4.3.3 Adverse Events Inventory

The list of adverse events identified from the CPDS FGDs was added to several traumatic events selected from the HTQ and then compiled into a 15-item dichotomous measure. No time limit regarding when the event took place was provided in the instructions, and so the summed score describes life-time exposure to adverse events. The items were listed based on their levels of endorsement during the FGDs and so their inclusion was not based on an a priori subscales structure.

3.4.3.4 Child Traumatic Questionnaire

The Childhood Trauma Questionnaire (CTQ; Bernstein et al., 1994) was originally developed by as a 70-item retrospective measure of childhood abuse. Its psychometric properties were examined in several in two adult substance abuse samples from two US hospitals. The item content was derived from an exhaustive review of the child abuse and neglect literature. Three of the items were written to assess the level of response bias related to social desirability or under reporting of maltreatment given the sensitive nature of the questions. An additional brief structured interview, the Childhood Trauma Interview (CTW), was developed in concert with the CTQ in order to examine the validity of both measures. The researchers utilized PCA and the interpretability criterion to identify a four-component solution of the CTQ: 1) Physical and emotional abuse; 2) Sexual abuse; 3) Physical neglect; and 4) Emotional neglect. Ten of the items were removed from the PCA analyses, including the three response bias items, because of their low inter-item correlations, component loadings, or content ambiguity. The internal consistency of the scale and all subscales were sufficient, and their magnitudes of association with the CTW supported both measures content validity. Nevertheless, all of the 10 excluded items were retained for future research aimed improving the content and structural validity of the CTQ.

More accurate and rigorous statistical methods were employed in a subsequent study by Bernstein and colleagues (2003), which examined the CTQ in a normative and three clinical samples—including an adolescent psychiatric inpatient sample. EFA, CFA, multiple group comparisons, and latent means analyses were performed and resulted in a 28-item version comprised of six subscales: 1) Emotional abuse; 2) Physical abuse; 3) Emotional neglect; 4) Physical neglect; 5) Sexual abuse; and 6) an additional three-item Minimization-Denial (MD) subscale to measure response bias. This CTQ Short Form (CTQ-SF; Bernstein et al., 2003) demonstrated sufficient reliability, validity, as well as the same five-factor structure across all samples. The items are rated along a five-point Likert scale as follows: 1) Never true; 2) Rarely true; 3) Sometimes true; 4) Often true; and 5) Very often true.

3.4.3.5 Cambodian Symptom and Syndrome Addendum

With over ten years of experience working clinically with Cambodian refugees in America who had survived the KR genocide, Dr. Devon Hinton has studied a many of the symptoms and syndromes commonly experienced and described by his patients. Over this period of time, he and his colleagues systematically and methodically studied each of these symptoms and syndromes in a series of over 15 peer reviewed journals (e.g., Hinton, Chhean, Fama, Pollack, & McNally, 2007; Hinton, Chhean, Pich, Hofmann, & Barlow, 2006; Hinton, Chhean, Pich, Um, Fama, & Pollack, 2006; Hinton, Hinton, Pich, Loeum, & Pollack, 2009; Hinton, Pich, Chhean, & Pollack, 2005; Hinton, D. E., Pich, V., Marques, L., Nickerson, & Pollack, 2010; Hinton, Pich, Safren, Pollack, & McNally, 2006; Hinton, Um, & Ba, 2001). This body of work culminated in the development of the

Cambodian Symptoms and Syndrome Inventory (C-SSI; Hinton, Kredlow, Pich, Bui, & Hofmann, 2013).

Hinton and colleagues (2013) divided the 18 symptoms and 19 syndromes of the C-SSI into four distinct categories: 1) The biology of trauma, or somatic-based symptomology; 2) Ethnophysiological cultural syndromes, or collections of symptoms ascribed to culturally-bound physiological phenomena, such as a *khyâl*, or wind; 3) Metaphoric dimensions, or the use of cultural metaphors or tropes to describe symptoms, such as "'My brain is spinning' (*wul khueu khabaal*), meaning 'I am overwhelmed'" (Hinton et al., 2013, p.352); and 4) Traumatic reactions to trauma-related symptoms, such as dizziness, which were likely experienced during their traumatization. A shorter version of the C-SSI called the Cambodian Symptom and Syndrome Addendum (C-SSA) is comprised of 15 items, which were selected based on their "clinical salience" (D. E. Hinton, personal communication, March 19, 2016). The items are rated along a four-point Likert scale as follows: 1) Not at all; 2) A little; 3) Quite a bit; and 4) Extremely. Item 15 differs from the other items as it queries the number of item 14 sleep paralysis or "Ghost pushes you down," episodes.

3.4.3.6 Indochina Version of the Hopkins Symptom Checklist-25

Assembled from items from various existing measures, the Hopkins Symptom Checklist (HSCL) was first developed by Derogatis, Lipman, Rickels, Uhlenhuth, and Covi (1974) to assess "somatization, obsessive-compulsive, interpersonal sensitivity, anxiety, and depression" (Derogatis et al., 1974; p. 1). This original version contained 58 self-report items and was validated within several clinical and normative American adult samples. Other versions of the HSCL with more items followed, but a shorter version comprised of 25 items was developed by Winokur, Winokur, Rickels, and Cox (1984) to diminish testing burden and narrowed the focus of the inventory to assess symptoms of anxiety and depression in the general medical practice setting. The Indochinese versions of the HSCL-25 were then developed by Mollica, Wyshak, de Marneffe, Khuon, and Lavelle (1987) though appropriate translation and back-translation into Khmer, Vietnamese, and Lao. The measures' cut-scores were derived using the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM–III; American Psychiatric Association [APA], 1980).

The Anxiety subscale has 10 items and the Depression subscale has 15 items. The items are rated along a four-point Likert scale, accordingly: 0) Not at all; 1) A little; 2) Quite a bit; and 3) Extremely. In clinical settings, subscale scores are summed and then divided by the number of items per subscales. Cut-scores within Cambodian refugee samples are 1.75 for both the subscales. Despite being normed in adult refugee samples, the Khmer version of the HSCL-25 has been frequently used in studies examining anxiety and depression in Cambodian child samples.

3.4.3.7 Strengths and Difficulties Questionnaire

The single-sided Strengths and Difficulties Questionnaire (SDQ; Goodman, 2000) is comprised of 25 items divided into five subscales including Emotional Symptoms, Conduct Problems, Hyperactivity/Inattention, Peer Problems, and Prosocial Behaviour. An additional Total Difficulties subscale is an aggregate of the first four subscales. The SDQ has several versions including teacher, parent, and self-report versions for children ages 11 to 17 years, and teacher and parent versions for children aged four to 10 years. The SDQ has been translated in over 60 languages and used in epidemiological studies or as an outcome measure (Vostanis, 2006). The factor structure and subscale internal consistency of the SDQ is varied across forms and languages, as would be expected. While many studies have supported the theoretical five-factor model, others have found competing four- and three-factor solutions (Stevanovic et al., 2015). Unfortunately, the history of the SDQ in Cambodia has been less than remarkable.

The first Khmer translation that was accepted by the original measure's author was removed from the SDQ website (http://www.sdqinfo.com/) after it was discovered that item 18 was missing from the translation. A second translation was attempted, but the standard translation/reverse-translation, expert review, and pilot test protocol was not followed and hence subjected the translation to possible lexical nonadherence. While similar in content to the original Khmer translation, the current study utilized and based its analyses on this second translation.

3.4.4 Procedures

Children under the age of 16 years were informed about their volunteer participation and were asked to have their parents sign an informed consent on their behalves and return it to school prior to the test administration. The researchers collected the informed consent forms and gave the children the set of questionnaires. The children who were over 16 years of age were explained about the informed consent process. Those who did not agree to participate were not given the questionnaires. For those who agreed, they were requested to sign a consent form and then given the questionnaires.

The children were seated in their usual classroom and the data collectors gave the introductions to the children and their teachers, respectively. The children were instructed to fill out their name and unique ID number for the teachers' questions on their children questionnaire. The data collectors then checked every child questionnaire for accuracy. The children were then instructed to take out the teacher questionnaire that was attached to the children's questionnaires. Then, the researchers collected and handed them to their respective teacher. The children were instructed on how to use the pictorial scale of cups to helped them to assess their response. Some of the children had difficulty filling in their birthday, thus the birthday list had to be collected from their teachers. After the children completed the questionnaires, the researchers reviewed the

Table 7
Recruitment Locations by Province, School, and Number of Children

Province	School Name	Number	Percentage
Phnom Penh City	Santomuk Primary	188	11.4%
Battambang Rural	Primary Pray Touch	144	8.8%
Phnom Penh City	Santomuk Secondary	137	8.3%
Battambang Rural	Rusey Krang Secondary	124	7.5%
Battambang Rural	Secondary Pray Svay	121	7.4%
Battambang Rural	Preay svay Primary	111	6.8%
Battambang City	Anuk Wat Secondary	108	6.6%
Battambang City	Net Young Secondary	105	6.4%
Battambang Rural	Secondary Pray Touch	104	6.3%
Battambang Rural	Secondary Kortos	102	6.2%
Battambang City	Wat Kompaeng Primary	101	6.1%
Battambang Rural	Primary Korkos	96	5.8%
Battambang Rural	Primary Hun Sen Moung	93	5.7%
Battambang City	2 Thnou Primary	78	4.7%
Battambang Rural	Secondary Moung	31	1.9%

Note. n = 1643. Thirty-two participants were removed during the dataset cleaning process.

the materials to ensure response accuracy. After the children handed in their questionnaires, they were given a note book and the participating teachers received a towel as incentives for their participation.

3.4.5 Data Collectors and Locations

A total of seven supervisors managed 12 data collectors in the three target areas: Phnom Penh City, Battambang City and the Moung Ruessei District of Battambang Province. All data collectors were fourth-year bachelor students of psychology at RUPP and had experience in deploying surveys related to psychology. The supervisors were experienced in deploying large surveys related to psychology and social work, most of whom were Masters level psychology students. The supervisors and data collectors were trained by the first co-principal investigator and two professors from the Psychology Department at RUPP. Training was conducted over a course of three days prior to deploying the survey. The number of child participants who were recruited from each target area is list in Table 7 by school.

3.4.6 Power Analyses

In order to assume that a test statistic can correctly reveal a significant finding, the analysis must have sufficient statistical power. Statistical power—the probability of correctly rejecting the

null hypothesis—is based on four related variables: the size of the sample (*n*), the effect size (*ES*), the alpha criterion (α), and the type of test statistic. The alpha criterion is the probability of incorrectly rejecting the null hypothesis (H_o) when it is true, which is also known as Type I error. The alpha criterion is typically set at .05 within the social sciences, but may increase to .10 for less rigorous inquiries or decrease to .01 when testing multiple hypotheses (Cohen, 1992). Depending on the test statistic, *ES* can describe the magnitude of association between variables, the magnitude of difference between groups on a particular variable, among other effects. When calculating bivariate correlations, an *ES* of .1 it is considered small, .3 is considered medium, and .5 is considered a large *ES*. Generally speaking, as *n* increases, the power of the statistic and the probability of detecting a smaller ES increase accordingly. As power increases, the probability of a Type II error, or accepting the H_o when it is false, decreases. Power at the .8 level or above is considered acceptable in the social sciences (Gelman & Hill, 2007). All power analyses in the current study were calculated using the G*Power 3 software Version 1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007).

3.4.6.1 Hypothesis 1

Hypothesis 1 of the current study stated: Functional impairment, as measured by the K-CFIS, will correlate positively and significantly with exposure to traumatic events and psychological distress, as measured by the HSCL-25, the SDQ Total Distress subscale, the C-SSA, and the qualitative exposure to adverse events variable, in a Cambodian child sample. The largest correlation in the Tol and colleagues study was .39, $p < .001$. Using .39 as the *ES*, 1643 as the sample size, an α of .05, the post hoc power level was calculated to be .951, which was well above the .80 level and sufficient for hypothesis testing.

Chapter 4: Data Analyses and Results

This chapter presents the results of the Preliminary Analyses, followed by the results of the Exploratory Aims, the Hypotheses, and the Research Questions. All analyses were performed using the SPSS 23 Statistics software package published by International Business Machines Corp. (IBM) for the Microsoft Windows environment. The EFAs were performed using several criteria to select the number of factors to retain in the solution, including visual examination of the scree plot, and more analytically though employing two different statistical tests: 1) Parallel analysis (PA; Horn, 1965); and 2) Velicer's (1976) minimum average partial (MAP) test. The revised O'Connor (2000) SPPS syntax was used to calculate both the MAP tests and PAs. The CFAs were performed using the IBM AMOS 23 software in order to determine optimal model fit. The moderation analysis CTQ MD scale was conducted using the custom PROCESS macro for SPSS by Hayes (2013). The ω calculations for the scale and subscale reliability for the K-CPDS were performed using the Omega software by Watkins (2013).

Lastly, all of the clinical variables were assessed as having non-normal distributions through visual examination of their Q-Q plots and significant Kolmogorov–Smirnov (K-S) tests ($p < .05$), and so non-parametric tests were employed where appropriate. The only clinical variable distribution that approached normality was the K-CPDS total score. Given their positive skew, all of the CFIS item and total score variables were transformed using the square root transformation which produced better symmetry, as well as skewness and kurtosis values within the critical ranges of 2 and 8, respectively. The transformed variables were used for the EFA and regression analyses. The bootstrapping technique was employed during the CFAs using the untransformed K-CFIS variables to correct for their assymetry.

4.1 Data Entry and Missing Data

All of the data from the paper questionnaires collected during the validation phase were entered into SPSS and verified using the double entry method. An analysis of all the clinical variables demonstrated that 87.9% of the variables has at least one case missing, 20.4% of the cases were missing at least one variable, and that 0.26% of the total variables were missing. The patterns of missingness also appeared to be random. Kindly see Figure 4. Missing data originally was described by Rubin (1976) as being attributed to several mechanisms: missing completely at random (MCAR), missing at random (MAR), or not missing at random (NMAR). Statistician and psychologists differ in their connotation, or use of the term *random*, where the statisticians refer to random as probabilistic rather than deterministic or causal as understood generally by psychologists (Schafer, & Graham, 2002). Data that are MCAR demonstrate no association to the missing item or other observed variables in the dataset.

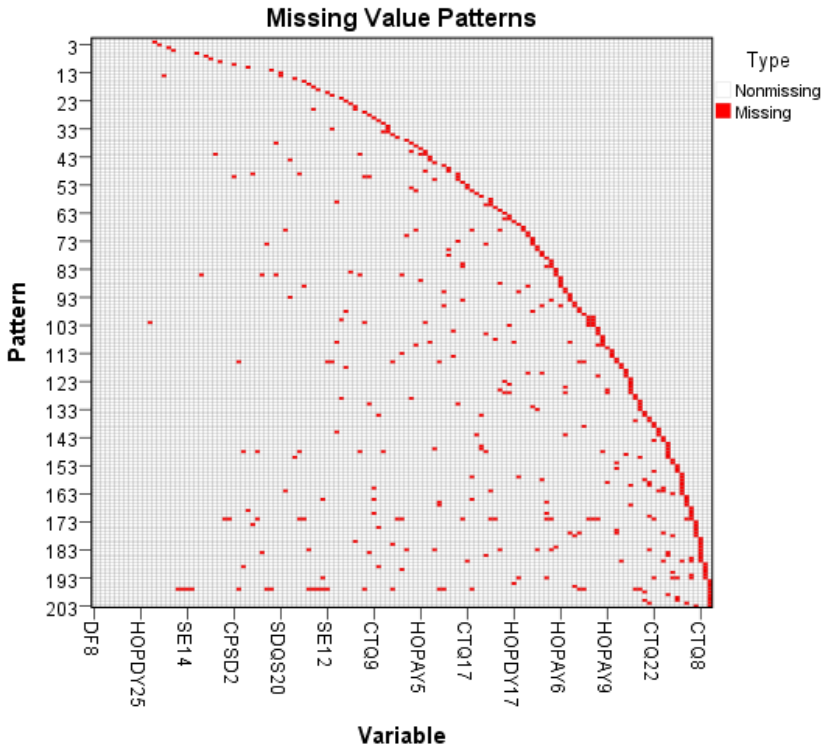

Figure 4. The missing data pattern across the entire dataset of clinical variables. The missing pattern generally appeared random in nature.

For example, 32 cases from the original data set were missing the two teacher items and several single items from other criterion measures. It turns out that these cases were from one class and the reason for why this data was missing was unknown. Because the missing data likely had nothing to do the observed values themselves, the missing data itself, or characteristics of the sample, and may have been due to experimenter error—that is, the questionnaires were not copied or distributed accurately—these cases were considered MCAR and removed listwise from the dataset. Often, partial data that gets lost through some unknown mechanism to the researcher is used to describe MCAR data in the literature. MCAR is the only condition in which listwise deletion is appropriate, otherwise it can lead to biased results and wrong conclusions regarding hypothesis testing (Schlomer, Bauman, & Card, 2010).

MNAR data is described as missing data that is associated with the missing variable itself as well as other observed variables in the dataset. This may be due to the sensitivity of the question and the reluctance of the participant to answer the question. Several statistical analyses have been proposed to identify, or at least rule out, other mechanisms such as MAR or MCAR, but all are assumptions which have their shortcoming and generally require a statistician's level of knowledge to perform and are time intensive (Rhoads, 2012). For an excellent review and critique of these methods, see Rhoads' (2012) cogent review. The difficulty of identifying the underlying mechanism is based in not knowing the actual source of the missing data and so assumptions, which are usually examined with more complex models, must be made and tested. These tests are

not included in most common statistics software, such as SPSS. However, the reasons for identifying the type of missingness is important because all imputation methods, or means to replace the missing values, assume a particular mechanism, such as MAR.

Despite the difficulties in knowing exactly which mechanism is causing the particular values to be missing, some assumptions can be made based on the data characteristics and parameters, such as examining the number of missing values and their patterns, and should be done as long as the method's limitations are listed and appropriate caution is stated in the results. For the current dataset, all clinical variables were examined using the available methods in SPSS. First, none of the data were identified as MCAR using Little's MCAR test ($p > .05$), however, this does not necessarily exclude the MAR mechanism. Second, a review of the missing data revealed that the largest number of missing cases belonged to the CTQ data. The CTQ included many of the more sensitive questions regarding sexual, physical, and emotional abuse and neglect, and were missing in nine to 16 of the cases, which is relatively small compared to the size of the dataset, but nonetheless, suggests the possibility of the MNAR mechanism in the CTQ data. Further, separate variance t-tests were performed on all the clinical variables which examined whether there were differences on a particular item between participants who answered the questions versus those who did not. Those t-tests that were not significant, suggested the possibility of MAR, however the results across the dataset were mixed, and not a definitive test of MAR.

Despite the above analyses, MAR was assumed for all clinical variables, except the CTQ data, based on: 1) The pattern and number of missing data at the scale level; 2) The design of the study, which included multiple measures and so some data were expected to be missing; 3) No strong evidence of MNAR was found for any of the other clinical variables, except possibly for the CTQ data; 4) All of the variables in the dataset has 1% or less of the cases missing; 6) Using the expectation maximization (EM) technique when MAR is assumed and the data is actually MNAR often leads to unbiased results (Schafer, & Graham, 2002); and 7) Significant dummy variable bivariate correlations and binary logistic regressions were found with other CTQ items suggesting the plausibility of a MAR mechanism. As such, the EM technique, which assumes the MAR mechanism, was employed to impute the variables of the missing clinical data. However, the findings of the imputed CTQ data should be interpreted with greater caution, despite the relatively small number of missing data, and lack of definitive evidence for MNAR.

The age variable was imputed using another method prior to running the EM technique. The birth year, month, and day were all queried during the validation phase of the current study. One hundred and thirty-five (8.2%) of the cases were missing the day variable, 58 cases (3.5%) were missing the month variable, and were 32 cases (1.9%) missing the year variable. Missing birthdate data is not uncommon in LAMICs given the higher frequency of home births and that hospitals generally do not issue birth certificates (Montagu, Yamey, Visconti, Harding, & Yoong, 2011). The Demographic and Health Survey (Rutstein & Rojas, 2006) method was used to impute

the medians for the missing birthdate data as follows. For the cases missing the birthdate day variable, a fifteen was entered, and for cases missing both the day and month, the year midpoint, or 15 July was entered. If the year was missing, no imputation was performed. The age of the participants were then calculated by subtracting the full birthdates from the testing dates. The final step involved imputing the missing age variables using the EM technique which allows for the specification of independent variables during the regression phase to increase the accuracy of the imputation. The demographic area, school, and grade variables were used as predictors or independent variables during the EM age calculations.

4.2 Preliminary Analyses

The following preliminary analyses contain the descriptive statistics of all the clinical variables of the current study, including the K-CPDS and the K-CFIS. These analyses also list the internal consistency values as measured by Cronbach's alpha and, where appropriate, the Spearman-Brown coefficients. The omega coefficient calculation is listed in the CFA section for the K-CPDS, where it was demonstrated to be the optimal measure of internal consistency because of the measure's strong three-factor structure.

4.2.1 K-CPDS and K-CFIS

The preliminary analyses for the K-CPDS and K-CFIS are listed below. The mean scores for the K-CPDS and K-CFIS total scores were 4.45 (*SD* = .179) and 5.66 (*SD* = 5.17), respectively. The Cronbach's alpha level was highest for the K-CFIS scale total at .84 and lowest for the K-CPDS at .37, which was moderate and unsatisfactory, respectively, according to Ponterotto and Ruckdeschel's (2007) rubric. Given the assumptions under which Cronbach's alpha is valid, including unidimentionality and tau-equivalence, the K-CPDS value should be considered an underestimation and was examined in the Exploratory Aims section in greater detail. A CFA bi-factor model was used to calculate an omega coefficient of .59 for the K-CPDS, which was a more accurate estimate of the scale's internal consistency due to its multi-dimensional structure. This was slightly higher than the original CPDS study, however, Jordans and colleagues (2008) used Cronbach's alpha to assess the internal consistency of their Burundi scale. If they would have used the omega coefficient to assess the internal reliability of the scale, it would likely have been higher and perhaps even have fallen into an acceptable range. The K-CPDS subscale alpha levels were somewhat higher, but still unsatisfactory according to Ponterotto and Ruckdeschel's (2007) rubric. The Spearman-Brown coefficient was employed as the best measure of internal consistency for the subscales containing only two items (Eisinga, Grotenhuis, & Pelzer, 2013).

Table 8

K-CPDS and K-CFIS Descriptive Statistics

Scale/Subscale	*M*	*SD*	α	ρ_{sb}	ω	Median	Mode	Min	Max
K-CPDS Total Score	4.45	1.79	.37		.59	4.00	4	0	11
K-CPDS Distress	1.95	1.29	.64			2.00	3	0	6
K-CPDS Poor Reliance	1.94	1.02		.56		2.00	2	0	4
K-CPDS Academic Problems	0.55	0.84		.55		2.00	0	0	4
K-CFIS Total Score	5.66	5.17	.84			4.00	0	0	33

Note. n = 1643. K-CPDS = Khmer Child Psychosocial Distress Screener. K-CFIS = Khmer Child Functional Impairment Scale. *M* = mean; *SD* = standard deviation; α = Cronbach's alpha coefficient; ρ_{sb} = Spearman-Brown reliability coefficient; ω = Omega coefficient. The ρ_{sb} was used as a measure of internal consistency on the subscales comprised of only two items.

Table 9

Correlation Matrix of the K-CPDS and Demographic Variables

Variables	1	2	3	4	5	6
1. Student Age	—					
2. Gender	-.03	—				
3. Area (Rural vs. Urban)	-.11**	-.03	—			
4. K-CPDS (Total Score)	.17**	-.04	-.24**	—		
5. K-CPDS (Distress Subscale)	.20**	.06*	-.09**	.65**	—	
6. K-CPDS (Poor Resilience Subscale)	-.04	-.07**	-.16**	.51**	-.09**	—
7. K-CPDS (Academic Prob. Subscale)	.12**	-.12**	-.20**	.48**	.02	.05*

Note. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. Negative correlations with the Gender and Area variables indicate associations with male and rural areas. All tests are two-tailed. *p < .05; **p < .01.

The association of pertinent demographic variables with the K-CPDS total and subscales were examined using Spearman correlations and are listed in Table 9. The results show that the age of the participants was positively and significantly associated correlated with the K-CPDS total score at .17 (p < .01), the K-CPDS Distress subscale at .20 (p < .01), and the K-CPDS Academic Problems subscale at .12 (p < .01). These results indicate that older children in the sample reported greater levels of distress, and their teachers reported higher levels of school-related problems. Also, children from rural areas endorsed greater levels of distress and poorer resilience, and their teachers reported greater difficulties in their school performance. Regarding gender at the subscale level, females tended to endorse greater levels of distress, albeit, at a small magnitude (ρ = .06, p < .05) as compared to their male counterparts. Male participants tended to report poorer resilience (ρ = -.07, p < .05) and teachers endorsed greater levels of academic difficulties for boys (ρ = -.20, p < .01), as compared their female counterparts.

Table 10
Correlation Matrix of K-CFIS Total and Demographic Variables

Variables	1	2	3
1. Student Age	—		
2. Gender	-.03	—	
3. Area (Rural vs. Urban)	-.11**	-.03	—
4. K-CFIS (Total)	.01	-.06*	-.06*

Note. K-CFIS = Khmer Version of the Child Functional Impairment Scale. Negative correlations with the Gender and Area variables indicate associations with male participants and rural areas. All tests are two-tailed. *$p < .05$; **$p < .01$.

The K-CFIS total score did not correlate significantly with the age variable. However, both male participants and students living in a rural areas reported the same significant levels of impairment (ρ = -.06, $p < .05$). Of note, the small significant and negative associations between gender and demographic area (ρ = -.11, $p < .05$) indicated that there were more males in the rural subsample of participants compared to females.

A peripheral test-retest reliability study for the K-CFIS and K-CPDS was conducted after the initial validation portion of the current study was completed, given the low internal consistency of the K-CPDS. A primary school class comprised of 39 students in Kom Port Province was recruited for the study. All requisite protocols were followed accordingly and the test administrations were conducted 10 days apart. Two students were absent for the second administration. After reviewing the data, one student participant scored a 31 on the K-CFIS during the first administration and then scored a one on the subsequent administration. Given that this magnitude of change was likely attributable to careless responding, the case was considered invalid and removed from further analyses. Several values were also missing and the EM imputation method was employed given the minimal number of missing values and lack of evidence for NMAR. Further, the two missing total scores from the second administration were imputed using demographic variables and initial test items which had no missing values.

The test-retest reliabilities were then calculated accordingly. For the K-CFIS, the test-rest coefficients were: 1) Spearman-Brown coefficient = .87; and 2) Average ICC (2, 1) = .86, with 95% CI (0.72, 0.93). For the K-CPDS, the values were: 1) Spearman-Brown coefficient = .58; and 2) Average ICC (2, 1) = .58, with 95% CI (0.18, 0.79). Given that teachers are tasked with responding to items 6 and 7, an examination of the absolute agreement was of interest. For the current test-retest sample, the absolute agreement for the two academic items endorsed by the teacher was Single ICC (3,1) = .58, with 95% CI (0.31, 0.76). Despite having only two items, the level of intra-rater agreement was expected to be larger assuming the teacher was more proficient in rating attendance and behaviour. Suggestions for improving the reliability of these two teacher items are provided in the Discussion chapter of the current study.

4.2.2 Adverse Events Inventory

The adverse events identified during the qualitative phase of the K-CPDS development queried during the quantitative phase, in addition to several items from the HTQ, were to examine the amount of exposure to adverse events experienced by the sample. Seeing a dead body, worrying about family problems, and experience or witnessing serious violence were rated as the top three adverse events. The mean number of adverse events experienced by the sample was 3.62 (*SD* = 2.55) and the total number for each case was used in subsequent analyses to measure the exposure to adverse life events. The KR-20 for the scale was *r* = .65, but based on: 1) The variance between the item level means and standard deviations; and 2) The increased levels of endorsement among items, the tau-equivalence assumption was not met. As such, this magnitude likely represented a lower bound of internal consistency. A cursory principal component analysis was also performed,

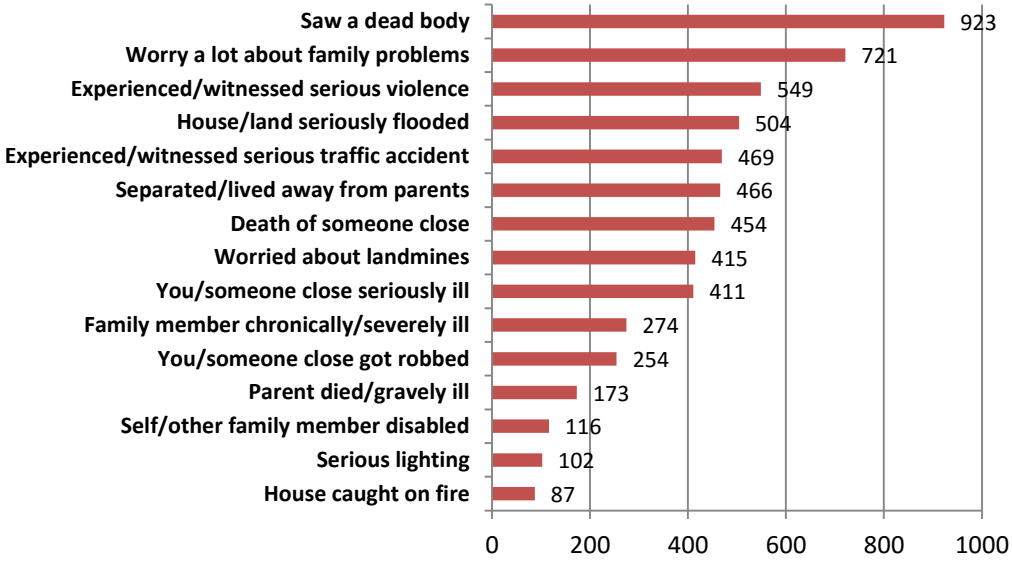

Figure 5. Total number of adverse events experienced by the sample.

which was equivalent to a categorical PCA for dichotomous items, and the results suggested a two-component solution using PA and the MAP test. However, the components failed to meet the interpretability criteria, most likely because of the differing incident rates of the events and atheoretical construction of the scale. Despite these weak psychometric characteristics, the scale did demonstrate sufficient concurrent validity as shown in Table 30, which offered some evidence for the potential utility of the scale.

4.2.3 Childhood Trauma Questionnaire

The descriptive statistics for the CTQ are listed in Table 11. Given that each of the subscales had five items, the magnitudes of the mean for each subscale implied the level of endorsement across the sample. The lowest mean was for the Sexual Abuse subscale at 5.62 (*SD* = 1.92), followed by the Physical Abuse subscale at 6.36 (*SD* = 2.41) and the Emotional Abuse

Table 11
CTQ Subscales Descriptive Statistics

Scale/Subscale	*M*	*SD*	α	Median	Mode	Min	Max
CTQ Emotional Abuse	6.97	2.60	.65	6.00	5	5	23
CTQ Physical Abuse	6.36	2.41	.72	5.00	5	5	14
CTQ Sexual Abuse	5.62	1.92	.75	5.00	5	2	24
CTQ Emotional Neglect	12.50	4.78	.77	12.00	10	5	25
CTQ Physical Neglect	10.45	2.97	.33	10.00	9	5	21
CTQ Minimization/Denial (Continuous)	8.61	2.52	.42	9.00	11	3	15
CTQ Minimization/Denial (Dichotomous)	0.65	0.79	.46	.00	0	0	3

Note. n = 1643. CTQ = Childhood Trauma Questionnaire; *M* = mean; *SD* = standard deviation; α = Cronbach's alpha coefficient.

subscale at 6.97 (*SD* = 2.60). The Emotional Neglect subscale mean was the largest at 12.50 (*SD* = 4.78), followed by the Physical Neglect subscale at 10.45 (*SD* = 2.97). Of note, several items directly queried whether or not the participant believed that they were either physically, sexually, or emotionally abused. Examining only these questions in the sample, which were missing 28 values for gender, 17.9% of the sample (19.4% of males, 16.4% of females) endorsed being physically abused, 5.5% (6.0% of males, 4.6% of females) endorsed being sexually abused, and 12.7% (12.9% of males, 12.6% of females) reported being emotionally abused.

Examining the association between the demographic variables and each of the CTQ subscales also reveals similar associations in Table 12. The age variable demonstrated small, yet mixed significant associations with the Emotional Abuse subscale (ρ = .08, p < .01), the Physical Abuse subscale (ρ = -.09, p < .05), the Sexual Abuse subscale (ρ = -.08, p < .05), the Emotional Neglect subscales (ρ = -.08, p < .05), and the dichotomous MD subscale (ρ = -.07, p < .05). These correlations showed a slight tendency for younger participants to endorse neglect or abuse, but this was not true for Emotional Abuse or Physical Neglect. However, male participants consistently endorsed more abuse and neglect symptoms, except for the Emotional Abuse subscale, whereas female participants reported higher levels of MD items. Likewise, child participants from rural areas consistently endorse higher levels of neglect and abuse, where as those from urban areas were more likely to report higher levels of MD items. Lastly, the neglect subscales demonstrated higher associations with both MD subscales, suggesting greater social desirability biases for these items, compared to the abuse items which were small, yet significant.

EFA was performed without the three-item MD subscale items and revealed a three-factor solution: 1) Abuse; 2) Neglect; and 3) Sexual abuse. See Table 13. The abuse and neglect subscales simply loaded onto two respective factors rather than four. Interestingly, two of the Physical Neglect items (1 and 6)—not having enough to eat and having to wear dirty clothes—had poor loadings and were removed from the scale. This was surprising given the ubiquity of poverty and

Table 12
Correlation Matrix of the CTQ and Demographic Variables

Variables	1	2	3	4	5	6	7	8	9
1. Age	—								
2. Gender	-.03	—							
3. Area (Rural vs. Urban)	-.11	-.03	—						
4. CTQ Emotional Abuse	.09**	.03	-.09**	—					
5. CTQ Physical Abuse	-.09**	-.10**	-.06*	.50**	—				
6. CTQ Sexual Abuse	-.08**	-.07**	-.13**	.31**	.36**	—			
7. CTQ Emotional Neglect	-.08**	-.10**	-.22**	.22**	.20**	.21**	—		
8. CTQ Physical Neglect	-.03	-.11**	-.27**	.30**	.27**	.23**	.49**	—	
9. CTQ MD (Continuous)	-.01	.06*	.16**	-.14**	-.12**	-.13**	-.60**	-.36**	—
10. CTQ MD (Dichotomous)	-.07**	.07**	.24**	-.19**	-.11**	-.08**	-.51**	-.33**	.69**

Note. CTQ = Childhood Trauma Questionnaire-Short Form. Negative correlations with the Gender and Area variables indicate associations with male and rural areas. All tests are two-tailed. *$p < .05$; **$p < .01$.

Table 13
Correlation Matrix of Demographic Variables, the K-CTQ-26, and the C-SSA

Variables	1	2	3	4	5	6	7
1. Age	—						
2. Gender	-.03	—					
3. Area (Rural vs. Urban)	-.12**	.04	—				
4. K-CTQ-26 Abuse	.01	-.05	.11**	—			
5. K-CTQ-26 Neglect	-.10**	-.10**	.24**	.25**	—		
6. K-CTQ-26 Sexual Abuse	-.03	-.05	.10**	.42**	.19**	—	
7. CTQ MD (Continuous)	-.01	.05*	-.17**	-.17**	-.59**	-.13**	—
8. C-SSA	.20**	.06**	.18**	.38**	.04	.24**	-.01

Note. K-CTQ-26 = Childhood Trauma Questionnaire-Short Form-26; MD = Minimization/Denial subscale; Cambodian Symptoms and Syndromes. Negative correlations with the Gender and Area variables indicate associations with male and rural areas. All tests are two-tailed. *$p < .05$; **$p < .01$.

its presumed association with food insecurity, as well as the dusty rural environments of Cambodia. Neither item correlated significantly with the MD scale, nor were their levels of endorsement particularly low compared to the other items. So, some other confounding variable or variables were likely the influence. Another anomaly involved item 25, which queried if the individual believed she or he was emotionally abused. The item loaded onto the Sexual Abuse scale rather than the Abuse subscale. While emotional abuse is concomitant with sexual abuse, it may also be a cultural distress idiom of sexual abuse in Cambodia, and so the translation of this item should be re-examined. Cursory CFAs were employed to compare the original five-factor structure with the empirical three-factor model consisting of the remaining 22 items using the Bollen-Stine bootstrapping method to correct for item asymmetry. The three-factor K-CTQ-26 model was superior across all fit indices and suggested better discriminate validity with lower magnitudes of

correlations between factors or subscales. Lastly, given the lack of diagnostic criteria of convergent measures for abuse and neglect in the Cambodian context, the aforementioned highest 20% or 80th percentile was used as a relative cut-score. When doing so, those individuals scoring at 50 or above on the CTQ total abuse and neglect score could be considered experiencing significant abuse or neglect.

4.2.4 Strength and Difficulties Questionnaire

The descriptive statistics for the SDQ are listed in Table 14. Given that each of the subscales had five items each, the magnitudes of the means indicate the level of endorsement across the sample. The levels of endorsement for emotional and behavioural problems were generally consistent, with the Conduct Problems subscale being endorsed at lower levels. The Prosocial subscale was endorsed to a much higher degree, likely owing to the social desirability of the items. The low internal consistency for the Peer Problems subscale suggested some problems with the subscale's psychometric characteristics in the current Cambodian sample or with the translation itself.

Table 14
SDQ and Subscales Descriptive Statistics

Subscale	*M*	*SD*	*α*	Median	Mode	Min	Max
SDQ Emotional Problems	2.85	2.20	.68	3.00	2	0	10
SDQ Conduct Problems	1.42	1.46	.47	1.00	0	0	8
SDQ Hyperactivity	2.55	1.73	.41	2.00	3	0	10
SDQ Peer Problems	2.93	1.52	.08	3.00	2	0	10
SDQ Total Distress	9.75	4.73	.71	9.00	7	0	30
SDQ Prosocial	6.01	2.29	.68	6.00	5	0	10

Note. n = 1643. SDQ = Strengths and Difficulties Questionnaire.

Table 15 lists the correlations with the SDQ subscales and demographic variables. Older age was generally associated with higher levels of distress and behavioral problems, except for peer problems, which tended to be endorsed at higher levels by younger participants. Female students tended to endorse higher levels of distress, Emotional Problems and Prosocial behavior whereas male participants endorsed more behavioral problems. This is consistent with the literature on gender differences regarding externalizing and internalizing behaviors. Rural participants also tended to endorsed higher levels of distress and prosocial behavior. Of note, the Prosocial subscale was significantly associated with the Emotional Problems subscale, but not the Total Distress subscale. Other unpublished research in Cambodia has found similar findings (Laezer, Högger Klaus & Sisokhom, 2015). This apparent inconsistency it is likely due to the phenomenon of Cambodian children who report higher levels of prosocial behavior also tend to endorse greater levels of distress. This finding is consistent with research that has found that prosocial behavior

Table 15
Correlation Matrix of the SDQ and Demographic Variables

Variable	1	2	3	4	5	6	7	8
1. Student Age (Years)	—							
2. Gender	-.03	—						
3. Area (Rural vs. Urban)	-.11**	-.03	—					
4. SDQ Emotional Problems	.17**	.16**	-.10**	—				
5. SDQ Conduct Problems	.07**	-.02	-.01	.33**	—			
6. SDQ Hyperactivity	.03	-.08**	.01	.23**	.47**	—		
7. SDQ Peer Problems	-.17**	-.06**	-.02	.13**	.28**	.22**	—	
8. SDQ Total Distress	.06**	.03*	-.06*	.70**	.71**	.70**	.54**	—
9. SDQ Prosocial	.16**	.14**	-.11**	.21**	-.21**	-.29**	-.21**	-.13**

Note. SDQ = Strengths and Difficulties Questionnaire. Negative correlations with the Gender and Area variables indicate associations with male participants and rural areas. All tests are two-tailed. *p < .05; **p < .01.

Table 16
The SDQ and K-SDQ Subscales Descriptive Statistics

Subscale	*M*	*SD*	*A*	Median	Mode	Min	Max
SDQ Emotional Problems	2.85	2.20	.68	3.00	2	0	10
SDQ Conduct Problems	1.42	1.46	.47	1.00	0	0	8
SDQ Hyperactivity	2.55	1.73	.41	2.00	3	0	10
SDQ Peer Problems	2.93	1.52	.08	3.00	2	0	10
SDQ Total Distress	9.75	4.73	.71	9.00	7	0	30
SDQ Prosocial	6.01	2.29	.68	6.00	5	0	10
K-SDQ Emotional/Behavioral Problems	5.54	4.12	.78	5.00	5	0	26
K-SDQ Prosocial	12.38	4.23	.81	13.00	12	0	20

Note. n = 1643. *M* = Mean; *SD* = Standard deviation; α = Chronbach;s alpha coefficient; Min = Minimum score; Max = Maximum score; SDQ = Strengths and Difficulties Questionnaire; K-SDQ = Khmer Version of the Strengths and Difficulties Questionnaire.

was associated with greater child distress when their parents rated their child's own self-appraisal of their prosocial behavior (Taylor & Wood, 2013). This solution required that some of the reverse-scored items retained their raw scoring in order to maintain the interpretability of each factor. Cursory CFA in the sample was not performed to confirm this finding in the current study.

4.2.5 HSCL-25 and the C-SSA

The descriptive statistics for the HSCL-25 and C-SSA are listed below in Table 18. Both the summed totals and mean scores for the scale and subscale are listed for the HSCL-25. The authors originally suggested using the mean items score in to compare the levels of anxiety and depression, which contained different item numbers. As is shown in Table 18, the mean summed depression score is higher than the mean summed anxiety score. However, this is an artifact of the item count in each subscale, that is, the depression subscale contains 15 items, whereas the anxiety

subscale contains 10 items. When examining the average mean item score for anxiety and depression, the sample was actually reporting greater levels of anxiety. Using the cut-off score of 1.75 for both scales originally suggested by Mollica and colleagues (1992), which were normed in an adult refugee sample, 1.2% of the current child sample would be diagnosed with anxiety and 0.7% would be diagnosed with depression. These rates and cut-off scores appear to clearly underestimate the magnitude of distress and incidence of these disorders in children.

The alpha levels for the HSCL-25 Anxiety scale are rated as good/excellent, fair/moderate for the Depression subscale, excellent for the HSCL-25 total scale, and good for the C-SSA total score using Ponterotto and Ruckdeschel's (2007) rubric. Through examining the correlation matrix of the pertinent demographic variables with the C-SSA, the HSCL-25 subscales and total score in Table 19, clearer patterns emerge. For example, older age, female gender, and living in a rural area was consistently associated with greater levels of distress. Also of note, the C-SSA and HSCL-25 total score correlated with each other at the $\rho = .75$, $p < .01$ level. This is magnitude of association is consistent with the magnitudes of associations between other culturally-bound measures of distress and other Western constructs of distress, such as Baksbat and PTSD.

The HSCL-25 demonstrated a unitary or single-factor structure in an EFA in the current sample. Cursory CFA analyses were performed to compare the single- and the two-factor (Depression and Anxiety) models of the HSCL-25 using the bootstrapping method to correct for the skewed item-level data. While the two-factor model showed slightly better fit values, the high correlation between the Anxiety and Depression subscales ($r = .92$, $p = .000$) did not support its discriminate validity despite the analysis being an examination of model fit. The C-SSA also demonstrated a single-factor solution if item 15, which queries the number of sleep paralysis episodes, "Ghost pushing you down," was removed prior to performing an EFA. Lastly, the C-SSA correlated highly with the HSCL-25 anxiety subscale ($\rho = .72$, $p < .000$) and the HSCL-25 depression subscale ($\rho = .69$, $p < .000$).

Table 17
The HSCL and the C-SSA Descriptive Statistics

Scale/Subscale	*M*	*SD*	*α*	Median	Mode	Min	Max
HSCL-25 Anxiety (Summed)	4.15	4.08	.84	3.00	1	0	30
HSCL-25 Depression (Summed)	5.68	5.34	.83	4.00	0	0	35
HSCL-25 Total (Summed)	9.84	8.85	.90	8.00	3	0	62
HSCL-25 Anxiety (Item Mean Score)	0.42	0.41		0.30	.10	0	3.00
HSCL-25 Depression (Item Mean Score)	0.38	0.53		0.38	.00	0	2.33
HSCL-25 Total (Item Mean Score)	0.39	0.35		0.32	.12	0	2.48
C-SSA Total	21.00	5.20	.85	20.00	15	0	57

Note. $n = 1643$. HSCL-25 = Hopkins Symptom Checklist-25. C-SSA = Cambodian Symptom and Syndrome Addendum. α = Cronbach's alpha coefficient.

Table 18
Correlation Matrix of the Distress and Demographic Variables

Variables	1	2	3	4	5	6
1. Student Age	—					
2. Gender	-.03	—				
3. Area (Rural vs. Urban)	-.11**	-.03	—			
4. HSCL-25 (Anxiety)	.17**	.11**	-.19**	—		
5. HSCL-25 (Depression)	.23**	.07**	-.12**	.70**	—	
6. SDQ Total Distress	.07**	.03	-.06*	.50**	.50**	—
7. C-SSA	.20**	.06**	-.17**	.72**	.68**	.44**

Note. HSCL-25 = Indochinese Version of the Hopkins Symptom Checklist-25; SDQ = Strengths and Difficulties Questionnaire; C-SSA = Cambodian Symptom and Syndrome Addendum. Negative correlations with the Gender and Area variables indicate associations with male participants and rural areas. All Spearman correlations are two-tailed. *$p < .05$; **$p < .01$.

4.3 Exploratory Aims

The second exploratory aim of the study, after the qualitative phases of developing the K-CPDS and K-CFIS, was to examine the psychometric characteristics of both measures in a large sample of children attending primary and secondary schools from both rural and urban areas of Cambodia. Item analyses, EFA, and CFAs were employed to examine the internal consistency and structural validity of both measures.

4.3.1 The Psychometric Properties of the K-CPDS

The following item-level analyses provided some insight into the K-CPDS and why its internal consistency, as measured by Cronbach's alpha, was so low at. .37. First, the measure contains only seven items and assesses three distinct constructs. Second, as noted in the Introduction Chapter, psychosocial distress is a very broad construct, which captures aspects of distress, resilience, and as in the case of the K-CPDS, academic functioning as rated by an additional informer, the participant's teacher.

A review of the inter-item statistics of the measure also elucidated the reasons for the low alpha level. Given that each of the items in the K-CPDS are rated along a three-point scale, the magnitude of endorsement across the sample for each items can be inferred from the item means. Items 4 and 5 had the highest means, ranging from .93 to 1.00, which suggest the greatest level of endorsement, as compared to the distress items which had means between .55 and .75. The lowest items of endorsement were the academic items, 6 and 7, which were rated by the teachers and had means of .26 and .30. All of the items had similar standard deviations, which suggest similar ranges of endorsement across the sample.

Table 19
K-CPDS Item Means and Standard Deviations

Subscale	Item	*M*	*SD*
Distress	1. Did you experience any aversive events(s)?	.65	.55
	2. Have you been distressed by these events?	.75	.54
	3. Are you distressed or experiencing problems, lately?	.55	.60
Neglect/Poor Resilience	4. Are there people that you feel are supporting and helping you with your problems? (R)	.93	.67
	5. How much do you feel able to deal with your problems yourself? (R)	1.00	.54
Academic Problems	6. Have you observed any problems or worrisome behaviors in this child?	.26	.49
	7. How regular has the child attended school during the last month?	.30	.52

Note. n = 1643. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener; (R) = Reverse-scored item. The Academic Problem items, 6 and 7, were rated by the student participants' respective teachers.

An examination of the inter-correlation item provides further insight into the low alpha level for the K-CPDS. Kindly see Table 20. The first three items, which measures the participants' exposure to recent adverse events, level of distress from the first item stressor, and current level of distress all correlate between .34 ($p < .01$) and .43 ($p < .01$). The next two items which measure resilience and are reverse scored query the participants' level of support and perceived ability to cope with adversity. These items correlate with each other at the .39 ($p < .01$) level. Lastly, item 6 and 7, query the participants' teacher regarding the respective students' recent school attendance and whether or not they have demonstrated any behavior consistent with childhood distress. These two items correlated at the .33 level ($p < .01$). The inter-item correlations between these three groups of items are relatively low, ranging between .07 and -.13 ($p < .01$), but generally fall between -.04 and .04 at insignificant levels.

The item-total statistics were also low with corrected item total-correlations ranging between .078 and .256. The items which contributed the most to the overall scale reliability were the first three items measuring distress, followed by the two academic items rated by the participants' teachers. The poor resilience items contributed the least, with item 4 being the only item whose removal would increase the scale alpha. The correlation magnitudes and directions for items 3 and 4 considerably undermine the scale's overall construct validity. This is discussed in more detail in the Discussion chapter of this report, but simply noted here, all subsequent weak content validity findings stem from the weak psychometrics of items 3 to 7 in the current sample.

Table 20
K-CPDS Inter-Item Correlation Matrix

Item	1	2	3	4	5	6
1. Experienced aversive events(s)	—					
2. Distressed by these events	.43**	—				
3. Current distress or problems	.34**	.37**	—			
4. People supporting/helping (R)	-.04	-.11**	-.04	—		
5. Self-reliance/coping ability (R)	-.02	-.13**	-.07**	.39**	—	
6. Problems/concerning behaviors in school	.03	-.01	-.01	.02	.02	—
7. Regular school attendance	.01	.03	-.01	.05*	.07	.33**

Note. n = 1643. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. The Academic Problem items, 6 and 7, were rated by the student participants' respective teachers. All tests are two-tailed. Spearman rho correlations were employed because the item response values could be considered rank in nature given their gross level of measurement. *p < .05; **p < .01.

Table 21
K-CPDS Item-Total Statistics

K-CPDS Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. Experienced adverse events(s)	3.79	2.47	.256	.218	.274
2. Distressed by these events	3.70	2.57	.203	.254	.306
3. Current distress or problems	3.90	2.48	.203	.176	.303
4. People supporting/helping (R)	3.51	2.59	.079	.156	.387
5. Self-reliance/coping ability (R)	3.44	2.73	.107	.159	.359
6. Problems/concerning school behaviors	4.19	2.76	.132	.146	.345
7. Regular school attendance	4.15	2.69	.154	.146	.333

Note. n = 1643. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. (R) = Reverse scored. The Academic Problem items, 6 and 7, were rated by the student participants' respective teachers. Only Item 4 would increase the scale Cronbach's alpha if removed.

4.3.1.1 The Factor Structure of the K-CPDS

As noted previously, the factor structure of the K-CPDS was examined first through EFA and confirmed through CFA. Given the approximately normal distribution of the measure, the maximum likelihood extraction method was employed (Fabrigar, Wegener, MacCallum, & Strahan, 1999). Varimax rotation was selected in the EFA because of the low correlations between the items with the three-factor solution identified by Jordans and colleagues (2009). All EFA assumptions were examined prior to interpreting the results. No outliers were detected using the assumption of outliers using the outlier labeling method with a multiplier of 2.2 (Hoaglin & Iglewicz, 1987). In addition, the relationships between K-CPDS variables were found to be linear though visual examination of their respective scatterplots. Next, the suitability of the EFA was examined prior to analysis and all appropriate assumptions were met.

Table 21
K-CPDS EFA Eigenvalues

Initial Eigenvectors			
Factor	Total	% of Variance	Cumulative %
1	1.82	25.94	25.94
2	1.42	20.23	36.17
3	1.30	18.52	64.69
4	.68	9.72	74.42
5	.64	9.15	83.56
6	.60	8.63	92.19
7	.55	7.81	100.00

Note. *n* = 1643. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. EFA = Exploratory factor analysis. The three-factor solution accounted for 64.69% of the total EFA variance.

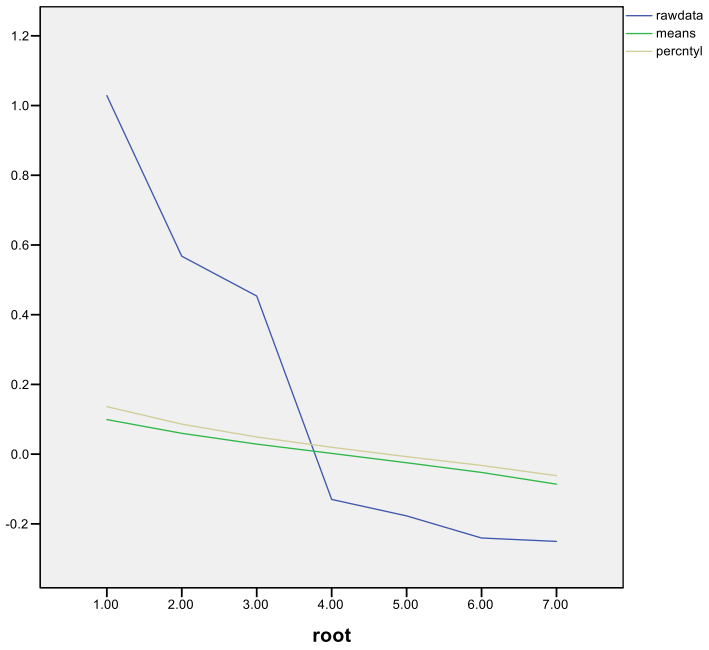

Figure 6. K-CPDS EFA scree and EFA PA plots. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener; EFA = Exploratory factor analysis; PA = Parallel analysis. The blue line represents the scree plot from the eigenvalues of the raw K-CPDS data and the yellow and green represents the eigenvalues generated from the EFA PA. Eigenvalues of the scree plot appearing above the yellow and green PA lines represent true, or greater than change, variance. The scree plot falls below the grey PA line at item 4, suggesting a three-factor solution.

The number of factors in the optimal EFA solution was determined both subjectively using the traditional method of visually examining the scree plot, as well as, analytically using two different statistical tests: 1) Parallel analysis (PA; Horn, 1965); and 2) Velicer's (1976) minimum average partial (MAP) test. PA involves performing EFAs on randomly generated matrices based on the number variables of the measure being studied, as well as the number of cases in the original

Table 23
Factor Loadings for the K-CPDS with Varimax Rotation

K-CPDS Item	Factor		
	1	2	3
2. Distressed by these events	**.680**	.034	-.133
1. Experienced adverse events(s)	**.624**	-.001	.008
3. Current distress or problems	**.535**	-.012	-.041
7. Irregular school attendance	.012	**.892**	.034
6. Problems/concerning behaviors in school	.002	**.421**	.015
5. Self-reliance/coping ability (R)	-.030	.003	**.799**
4. People supporting/helping (R)	-.073	.037	**.482**

Note. n = 1643. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener; (R) = Reverse-scored item. The Academic Problem items, 6 and 7, were rated by the student participants' teachers. Factor loadings greater than .310 are emphasized in bold and denote their respective factor, or subscale, in the solution.

sample. The amount of variance accounted for by each factor, or eigenvalue, in the original EFA was then compared to the averaged eigenvalues of the randomly generated matrices. Only those factors in the original EFA with eigenvalues greater than the randomly generated matrices are retained in the solution, thus determining the number of components with greater than chance—or true—variance. A MAP test is performed by first calculating a correlation matrix of the variable means and then squaring the average coefficient, or average correlation between the variable means, of the matrix. A PCA of the respective data set is calculated and after partialing out the variance from the first component of the PCA, the average coefficient of the matrix is squared again. Then the variance of the first and second components are partialed out of the matrix and the average coefficient of the matrix is calculated and squared again. This step is repeated after adding each subsequent component. The component with the lowest, or minimal, average squared coefficient is the last component in the solution to be retained. The revised PA and MAP SPSS code published by O'Connor (2000) was utilized for determining the number of factors to retain in the current study. The revised code allowed for calculating the PA values from the raw data and EFA extraction, rather than principal component analysis values, which includes unique and random variance.

Visual examination of the scree plot and PA all converged on a three-factor solution which accounted for 64.46% of the total model variance. The MAP test resulted in the only incongruent solution, which suggested a single-factor structure. By examining the factor loadings in Table 23, the three-factor solution met the interpretability criterion, in fact, it was the same general three-factor solution identified by Jordans and colleagues (2009).

The three-factor solution was then validated using CFA, which was also employed to compare the model fit of other possible models. These models included: 1) A correlated three first-order factor model; 2) An uncorrelated three first-order factor model; 2) A correlated two first-order factor model with separate student and teacher factors; and 3) A hierarchical model with a general PD second-order factor. Further, in order to identify a more accurate reliability estimate of the K-CPDS, an essentially tau-equivalent model, which assumes a single first-order factor with similar item content and precision, was examined to test whether or not these assumptions under which Cronbach's alpha coefficient are valid were met under the three-factor EFA model. Lastly, a bidirectional model was performed in order to calculate coefficient ω, which is a more accurate estimate of reliability for scales with more than one factor.

Multivariate normality (MVN), an assumption of CFA, was tested prior to examining the results of each K-CPDS model using the Bollen-Stine bootstrap test (Bollen & Stine, 1992) and Mardia's (1970) coefficient of multivariate kurtosis. Each model was found to be significant suggesting that the K-CPDS items deviated significantly from multivariate normality. However, given the large sample size and skewed distribution several items of the K-CPDS—both of which are limitations to these tests (Horswell, 1990; Kim & Millsap, 2014)—a scatterplot of Mahalanobis distances and paired χ^2-values was visually examined. The scatterplot fell approximately upon straight line which suggested the data were sufficiently MVN (Burdenski, 2000). See Figure 7. Therefore, no method to correct for multivariate non-normality was employed during the K-CPDS CFAs.

Several model fit indices were used to compare the fit of the potential models of the K-CPDS CFAs. X^2 is a test of absolute or overall fit of the proposed model to the actual sample data. (Hooper, Coughlan, Mullen, 2008). Generally, the lower the X^2 value, the better the fit, however, X^2 is less accurate in large samples and in data with non-normal multivariate distributions. Degrees of freedom, or *df*, in terms of X^2 is calculated by subtracting a formula based on the number of items, or observed values, and the number of parameters in the model, such as factor loadings, error terms, etc. The *p* values for X^2 above .05 suggest sufficient model fit, however, large samples may never reach this threshold. CMIN/DF or normed X^2 is X^2 divided by *df*, which was originally proposed by Wheaton, Muthen, Alwin, and Summers (1977), can reduce some of the X^2 limitations, but there is no agreed upon value, which can range between 2 and 5. A larger value indicates poorer model fit. The comparative fit indices (CFI) is considered an incremental fit indices and is less sensitive to sample size. CFI values above .95 are considered a good fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) compares the user model with an optimally chosen model with fewer parameters, that is, a less complex model (Byrne, 1998). A cut-off value below .06 is considered a good fit (Hu & Bentler, 1999). Lastly, PCLOSE is probability that RMSEA is below the .05 threshold. The model fit results of these CFA models are listed in Table 24. Also, in order to aid the visualization of each model, their are presented below.

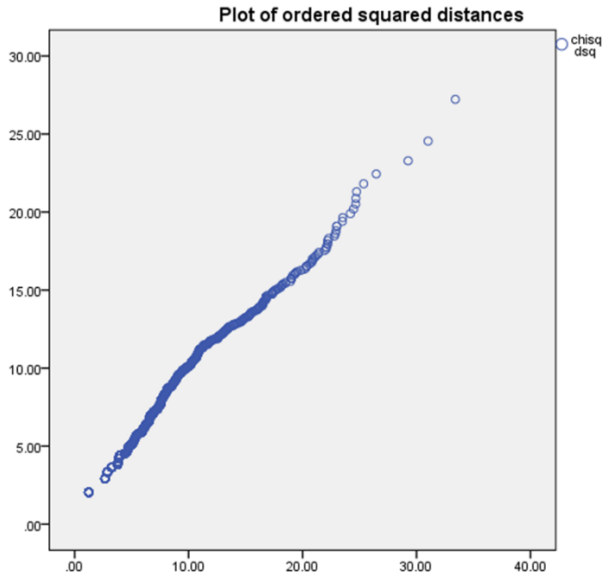

Figure 7. Scatterplot of the K-CPDS Mahalanobis distances and paired χ^2-values. The plot fell along an approximately straight line suggesting multivariate normality.

The comparative fit indices (CFI) is considered an incremental fit indices and is less sensitive to sample size. CFI values above .95 are considered a good fit (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) compares the user model with an optimally chosen model with fewer parameters, that is, a less complex model (Byrne, 1998). A cut-off value below .06 is considered a good fit (Hu & Bentler, 1999). Lastly, PCLOSE is probability that RMSEA is below the .05 threshold. The model fit results of these CFA models are listed in Table 24. Also, in order to aid the visualization of each model, they are presented below.

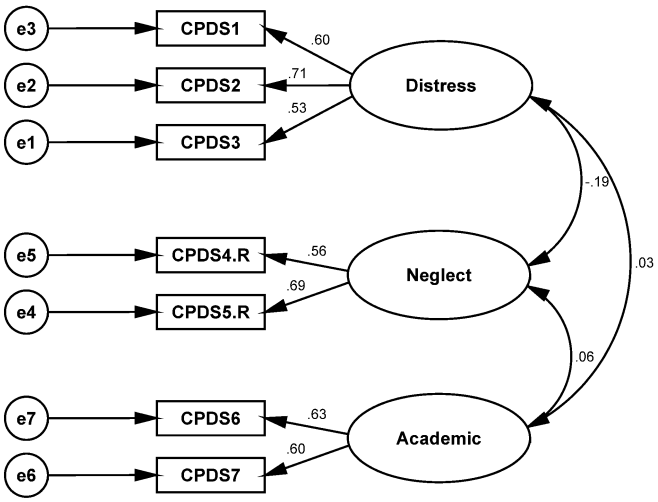

Figure 8. K-CDPS CFA Model 1: Correlated three-factor model. All of the factor loadings range from .53 to .71. Also, the correlation values between the Distress and Neglect/Poor Resilience factor was -.19, which is consistent with the negative correlations between these subscales.

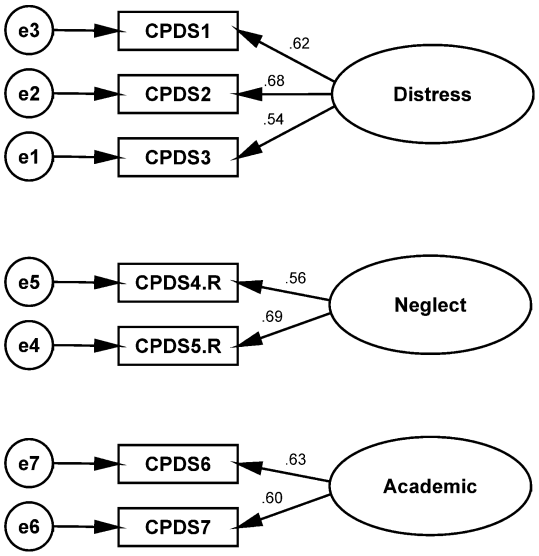

Figure 9. K-CPDS CFA Model 2: Uncorrelated three-factor model. All of the factor loadings range from .54 to .69, which is a nested model and nearly the same as Model 1, but without the correlated factors.

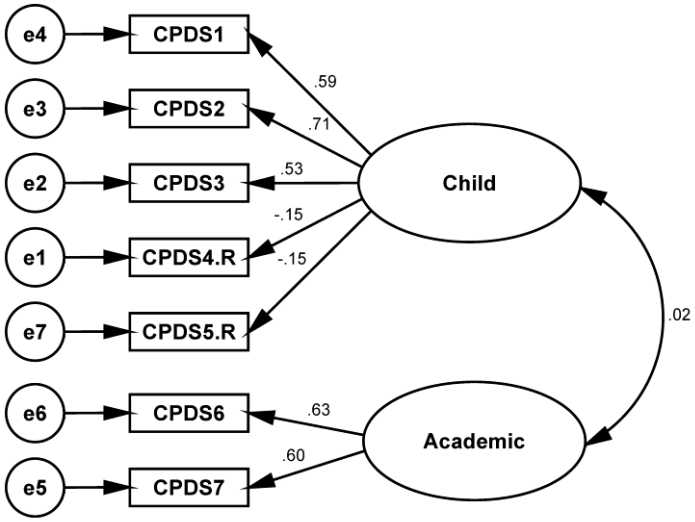

Figure 10. K-CPDS CFA Model 3: Correlated two-factor model. This two first-order correlated factor model was based on Jordan et al., 2008 solution. All of the factor loadings were similar to models 1 and 2, except for the Neglect/Poor Resilience items, which were -.15, suggesting these items likely load onto another factor.

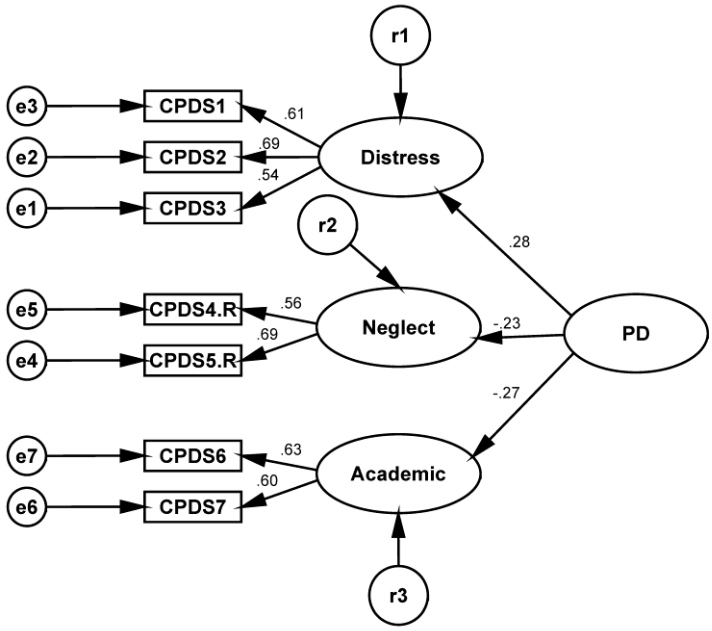

Figure 11. K-CPDS CFA Model 4: Second-order model with three first-order factors. Given the low number of items for each first-order factor, two of the second-order factors needed to be constrained in order to achieve model identification. The negative loadings and correlations precluded this model from being a viable solution.

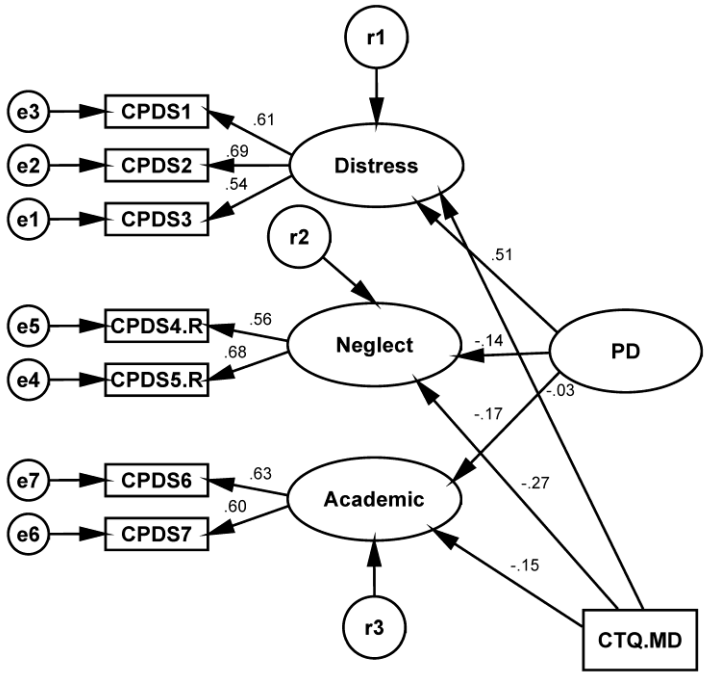

Figure 12. K-CPDS SEM with CTQ MD scale. For demonstration purposes, the effects of the CTQ MD scale were added to the first-order factors. When doing so, the factor loading from the second-order factor to the first-order Distress factor increased from .28 to .51, whereas the loadings from the Neglect/Poor Self-Reliance and Academic Problems factors decreased from -.23 to -.14, and -.27 to -.17, respectively. This suggests that other variables outside of Model 4 and the K-CPDS, such as social desirability, can also explain the negative loadings and associations within the K-CPDS structure.

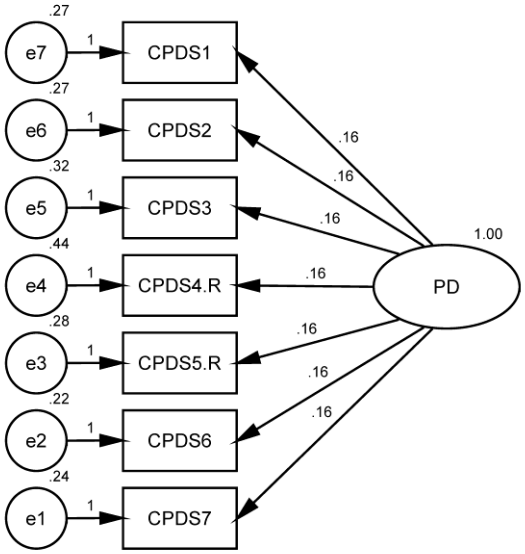

Figure 13. K-CPDS Model 5: Essentially tau-equivalent model. Chrobach's alpha coefficient assumes tau-equivalence, which describes a scale with a single factor comprised of items with similar content and accuracy. The unstandardized factor estimates are shown. The fit for this model was poor indicating that the K-CPDS was not essentially tau-equivalent and so Cronbach's alpha likely underestimated the true reliability of the total scale.

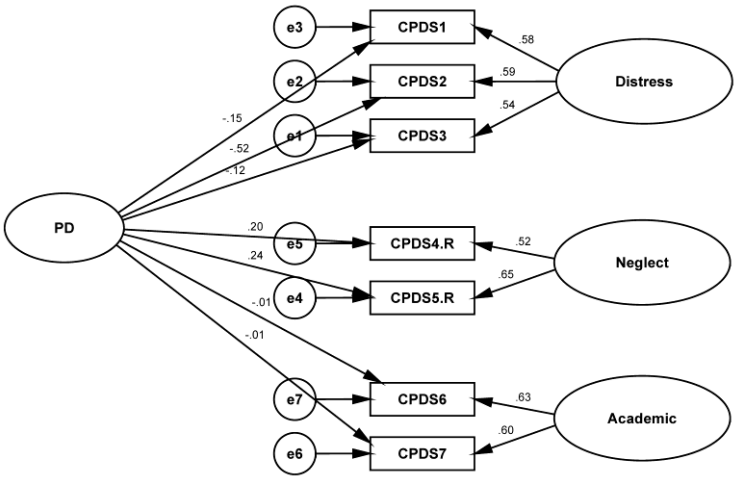

Figure 14. K-CPDS Model 6: Bi-factor model. In order to calculate the ω coefficient, a bi-factor model was performed. Given the poor loadings and hierarchical *ω* coefficient values of the general PD factor, the bi-factor model was considered suboptimal despite the model's fit indices.

While some models fit indices suggested a better fit, negative factor loadings, high modification indices and observed item errors, and imposed user constraints precluded all but Model 1 and 2 for consideration. As such, the better fitting model for the K-CPDS was Model 1. The reason for ruling out the other more complex models included the low number of items per factor, the low correlation between factors, and the necessity of applying user constraints in order to achieve model identification. Furthermore, Model 5 indicated that the K-CPDS was not

Table 24
Model Fit Indices for the K-CPDS CFAs

Model	X^2	*df*	*p*	CMIN/DF	CFI	RMSEA	PCLOSE
1	25.917	13	.017	1.994	.989	.025	.999
2	49.528	16	.000	3.095	.972	.036	.980
3	277.600	14	.000	19.829	.778	.107	.000
4	41.798	14	.000	2.986	.977	.035	.980
5	1028.543	20	.000	51.427	.149	.175	.000
6	14.573	13	.335	1.121	.997	.009	1.000

Note. X^2 = Chi-squared test of absolute fit. *df* = degrees of freedom. CMIN/DF = normed X^2. CFI = comparative fit indices. RMSEA = root mean square error of approximation. PCLOSE = the probability that RMSEA is below .05. While some models fit indices suggested a better fit, negative factor loadings, high modification indices and observed item errors, and imposed user constraints precluded all but Model 1 and 2 for consideration. As such, the better fitting model for the K-CPDS is Model 1.

essentially tau-equivalent and so Cronbach's alpha likely underestimated the actual magnitude of the scale's internal consistency. A bi-factor model was calculated in order to compute ω using the factor loadings of the general PD factor and first-order factors. The results revealed ω values of .588 for the total K-CPDS scale, .674 for the Distress subscale, .564 for the Neglect/Poor Resilience subscale, and .549 for the Academic Problems subscale. Of particular note, the ω coefficient for the K-CPDS scale of .59 was significantly higher than the original alpha coefficient of .37.

4.3.2 The Psychometric Characteristics of the K-CFIS

In order to examine the psychometric characteristics of the K-CFIS, the item-level analyses were performed. The item means ranged between .37 and .64, whereas their standard deviations ranged between .66 and .84. Both of these ranges are comparatively small, suggesting similar levels of endorsement across the sample. The lowest endorsed impairment item was maintaining hygiene and those items pertaining to family tended to be endorsed at a higher level. These similar means and standard deviations, aside from item 1, suggest similar item content.

An examination of the inter-item correlation matrix also provided similar findings. That is, most items correlated with each other at similar levels, between .178 and .457, with most correlations falling between the .25 and .35 level. This generally supports a single dimensional scale as there appeared to be no apparent discriminate level of association between items or groupings consistent with subscales, aside from a very few items. For example, item 7, which taps difficulty at school had the highest correlation with items 6 (ρ = .457, p < .001), which queried for difficulty spending time with friends. This follows logically, given that children spend most of their time with friends at school. The lowest correlation was between item 10, difficulty enjoying free time, and item 3, difficulty eating (ρ = .147, p < .001). The item-total statistics reveal similar

Table 25
K-CFIS Item Means and Standard Deviations

K-CFIS Item	*M*	*SD*
1. Difficulty maintaining hygiene	.37	.73
2. Difficulty sleeping	.47	.69
3. Difficulty eating	.59	.84
4. Difficulty helping parents	.61	.83
5. Difficulty helping family business	.54	.84
6. Difficulty spending time with friends	.46	.74
7. Difficulty at school	.47	.73
8. Difficulty studying at home	.50	.72
9. Difficulty spending time with family	.64	.81
10. Difficulty enjoying free time	.46	.66
11. Difficulty with other activities	.55	.83

Note. n = 1643. K-CFIS = Khmer Version of the Child Functional Impairment Scale.

findings in that all of the items are relatively consistent. The removal of any item would lower the scale alpha, suggesting that each item contributed to the scale's overall consistency and construct. Item 10, difficulty enjoying free time, also had the lowest corrected item-total correlation and squared multiple correlation, suggesting it was less descriptive of the other items.

Table 26
K-CFIS Inter-Item Correlation Matrix

K-CFIS Item	1	2	3	4	5	6	7	8	9	10
1. Maintaining hygiene	—									
2. Sleeping	.342**	—								
3. Eating	.312**	.342**	—							
4. Helping parents	.357**	.293**	.282**	—						
5. Helping family business	.283**	.226**	.303**	.346**	—					
6. Spending time with friends	.297**	.278**	.265**	.312**	.295**	—				
7. At school	.346**	.342**	.264**	.310**	.284**	.457**	—			
8. Studying at home	.308**	.246**	.235**	.253**	.198**	.261**	.308**	—		
9. Spending time with family	.299**	.263**	.251**	.298**	.238**	.262**	.238**	.349**	—	
10. Enjoying free time	.228**	.274**	.178**	.229**	.199**	.264**	.298**	.244**	.270**	—
11. Other activities	.312**	.231**	.253**	.259**	.238**	.275**	.275**	.344**	.355**	.253**

Note. n = 1643. K-CFIS = Khmer Version of the Child Functional Impairment Scale. All tests were two-tailed. Spearman rho correlations were calculated because the item response values could be considered ranked in nature given their gross level, or limited range, of possible responses, as well as their skewed distribution. *p < .05; **p < .01.

Table 27
K-CFIS Item-Total Statistics

K-CFIS Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
1. Difficulty maintaining hygiene	5.29	22.495	.524	.292	.817
2. Difficulty sleeping	5.19	22.905	.498	.268	.819
3. Difficulty eating	5.06	22.422	.443	.222	.824
4. Difficulty helping parents	5.05	21.823	.541	.300	.815
5. Difficulty helping family business	5.11	22.221	.472	.246	.822
6. Difficulty spending time with friends	5.20	22.141	.575	.381	.812
7. Difficulty at school	5.19	22.148	.581	.397	.812
8. Difficulty studying at home	5.16	22.734	.504	.283	.818
9. Difficulty spending time with family	5.01	22.104	.519	.299	.817
10. Difficulty enjoying free time	5.19	23.594	.411	.193	.826
11. Difficulty with other activities	5.11	22.041	.504	.278	.819

Note. n = 1643. K-CFIS = Khmer Version of the Child Functional Impairment Scale. All of the items would reduce the Cronbach's alpha of the scale if removed, indicating that each item contributes to the scale's internal consistency.

4.3.2.1 The Factor Structure of the K-CFIS

In order to identify the underlying factor structure of the K-CFIS, the same procedures used to identify the factor structure of the K-CPDS were employed. First, EFA was conducted to examine the empirical underlying factor structure, and then CFA was employed to confirm the empirical findings and other a priori models. Given that each of the K-CFIS items were positively skewed, the squared transformation was performed prior to EFA using the maximum likelihood extraction method. The square transformation produced better symmetry for each variable than any other log or inverse transformation. All EFA assumptions were examined prior to interpreting the results. No outliers were detected using the assumption of outliers using the outlier labeling method with a multiplier of 2.2 (Hoaglin & Iglewicz, 1987). In addition, the relationships between K-CFIS variables were found to be linear though visual examination of their respective scatterplots. Next, the suitability of the EFA was examined prior to analysis and all appropriate thresholds were met. The results produced indicated a unidimensional scale with item loadings ranging from .452 to .613. Interestingly, the EFA PA suggested a weak three-factor solution. All the other method variations, including using different rotation and extraction methods, also suggested a single factor solution. Visual examination of the scree plot and MAP test all converged on a single-factor solution which accounted for 37.47% of the total model variance. The PA was the only discrepant criterion which suggested a weak three–factor solution.

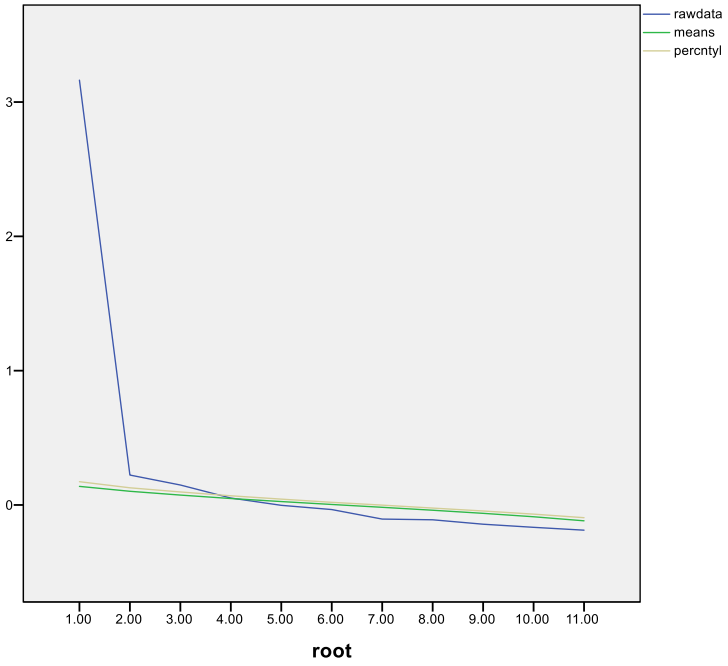

Figure 15. K-CFIS EFA scree and PA plots. K-CFIS = Khmer Version of the Child Functional Impairment Scale; EFA = Exploratory factor analysis; PA = Parallel analysis. The blue line represents the scree plot from the eigenvalues of the raw K-CFIS data and the yellow and green represents the eigenvalues generated from the EFA PA based on the raw dataset. Eigenvalues of the scree plot appearing above the yellow and green PA lines represent true, or greater than change, variance. The scree plot falls below the grey PA line at item 4, suggesting a weak three-factor solution.

Table 28
K-CFIS EFA Eigenvalues

Initial Eigenvectors			
Factor	Total	% of Variance	Cumulative %
1	4.152	37.747	37.747
2	.957	8.704	46.451
3	.862	7.836	54.287
4	.784	7.127	61.413
5	.755	6.861	68.275
6	.682	6.204	74.478
7	.619	5.630	80.108
8	.590	5.359	85.467
9	.583	5.298	90.765
10	.571	5.188	95.953
11	.445	4.047	100.000

Note. *n* = 1643. K-CFIS = Khmer Version of the Child Functional Impairment Scale. EFA = Exploratory factor analysis with transformed item variables were used in the calculation. Only one factor could be extracted indicating that the K-CFIS was unidimensional.

Visual examination of the scree plot and MAP test all converged on a single-factor solution which accounted for 37.47% of the total model variance. The PA was the only divergent criterion which suggested a weak three–factor solution.

Multivariate normality (MVN), an assumption of CFA, was tested prior to examining the results of each K-CFIS model using the Bollen-Stine bootstrap test and Mardia's coefficient of multivariate kurtosis. Each model was found to be insignificant suggesting that the models deviated significantly from the data. Additionally, the scatterplot of Mahalanobis distances and paired χ^2-values was visually examined. The scatterplot did not fall upon straight line which suggested the data were not MVN. (Burdenski, 2000). Kindly see Figure 16.

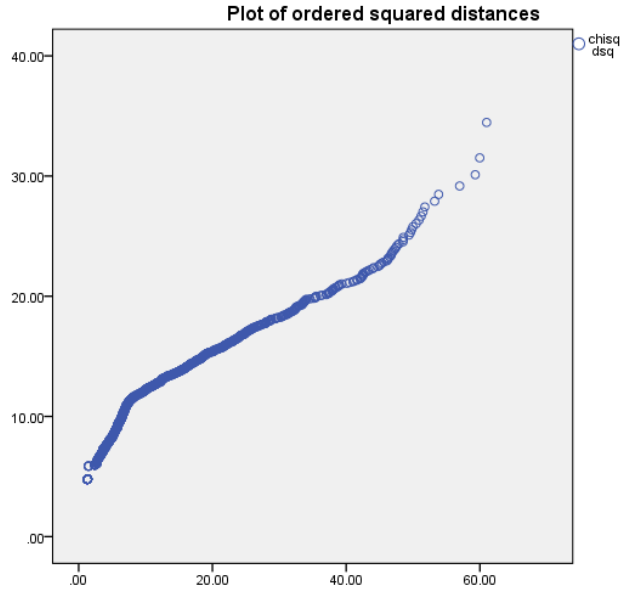

Figure 16. Scatterplot of the K-CFIS Mahalanobis distances and paired χ^2-values. The plot deviation from a straight line suggested multivariate asymmetry.

As stated previously, the non-transformed variables were used for the CFAs because the bootstrapping technique was employed with maximum likelihood estimation to correct for asymmetry and produced more accurate adjusted X^2 and fit indices. The single- and three-factor solution were examined, including a tau-equivalent model and a model with the open item 11, "Difficulty with other activities" removed. These models were numbered as: 1) A single-factor model with all 11 items; 2) A 10-item single-factor solution without item 11; 3) A correlated three first-order factor solution. Further, in order to identify a more accurate reliability estimate of the K-CFIS, an essentially tau-equivalent model, which assumes a single first-order factor with similar item content and precision, was examined to test whether or not the Cronbach's alpha was supported as a sufficient measure of internal consistency for the scale. The model fit results of these CFA models are list below in order to aid the visualization of each model, they are presented below.

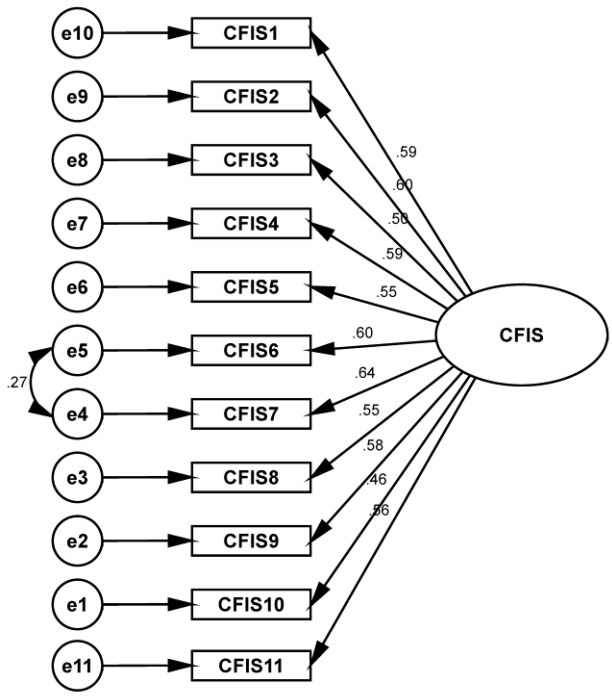

Figure 17. K-CFIS Model 1: Single-factor solution with all 11 items. All of the factor loadings range from .46 to .64. Given the relatively high correlation of items 6 and 7 (ρ = .457,' p < .001), their error terms were allowed to correlate on all the CFAs.

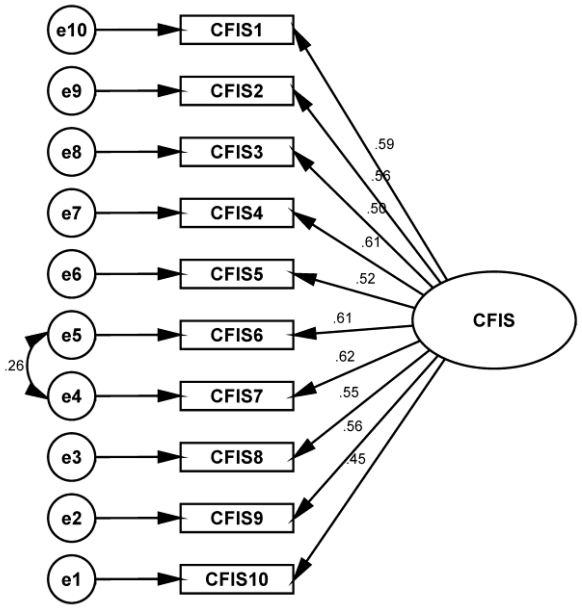

Figure 18. K-CFIS Model 2: Single-factor solution with item 11 removed. All of the factor loadings range from .45 to .62. This model showed superior fit compared to the 11-item solution, so item 11 was trimmed from the remaining CFAs.

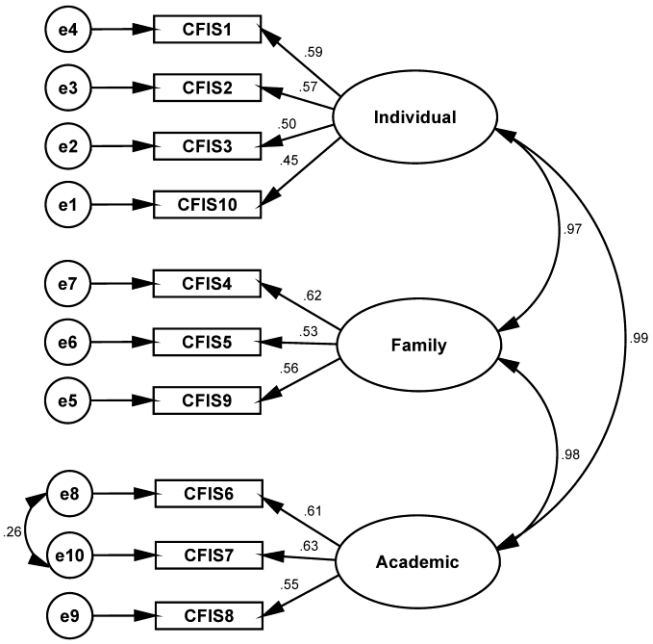

Figure 19. K-CFIS Model 3: The three first-order factor solution with item 11 removed. All of the factor loadings range from .46 to .64. While this model demonstrated sufficient fit, the correlations between the factors did not support the factors' incremental or discriminate validity, despite this being a model fit examination. Hence, this model was not considered.

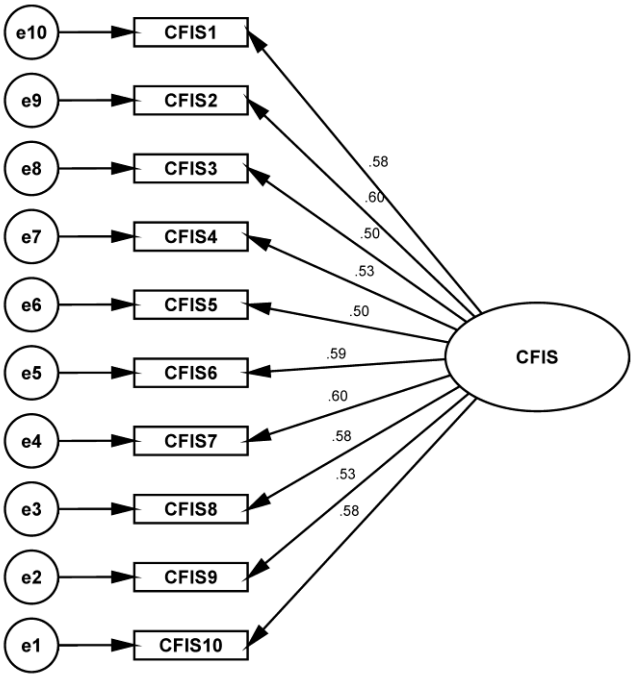

Figure 20. K-CFIS Model 4: Essentially tau-equivalent solution with item 11 removed. Most of the factor loadings were slightly higher than Model 1 and ranged from .50 to .60. The fit indices were poorer than Model 1 supporting the use of Cronbach's alpha to estimate the internal consistency of the K-CFIS.

Table 29
Model Fit Indices for the K-CFIS CFAs

Model	X^2	*df*	*p*	CMIN/DF	$M_{BS\text{-}X}{}^2$	S.E.	CFI	RMSEA	PCLOSE
1	218.185	43	.000	5.074	68.344	.354	.958	.050	.505
2	166.365	34	.000	4.893	55.161	.320	.964	.049	.600
3	165.174	31	.000	5.328	50.496	.304	.964	.051	.372
4	367.072	44	.000	8.343	71.803	.372	.912	.067	.000

Note. X^2 = Chi-squared test of absolute fit. *df* = degrees of freedom. CMIN/DF = normed X^2. $M_{BS\text{-}X}{}^2$ = Mean Bollen-Stine bootstrap X^2. S.E. = Standard error for the $M_{BS\text{-}X}{}^2$. CFI = comparative fit indices. RMSEA = root mean square error of approximation. PCLOSE = the probability that RMSEA is below .05. Model 2, the trimmed 10-item model, demonstrated the best fit.

The high correlations between the factors on Model 3, .94 to .98, did not support their incremental or discriminate validity, despite this being a model fit analyses. Hence, Model 3 was not considered. The poorer fit for the essentially tau-equivalent model as compared to the single-factor solutions in Models 1 and 2 supported the use of Chrobach's alpha to estimate the scales internal consistency. The fit indices between Model 1 and 2 were then compared. Model 2, the 10-item solution, was selected given its slightly better fit indices.

4.4 Hypothesis 1

Hypothesis 1 of the current study stated: Functional impairment, as measured by the K-CFIS, will correlate positively and significantly with exposure to traumatic events and psychological distress, as measured by the HSCL-25, the SDQ Total Distress subscale, the C-SSA, and the qualitative exposure to adverse events variable, in a Cambodian child sample. As such, the following null and alternative hypotheses are listed below.

> **H_0**: Functional impairment, as measured by the K-CFIS, did not correlate positively and significantly with exposure to traumatic events and psychological distress, as measured by the HSCL-25, the SDQ Total Distress subscale, the C-SSA, and the qualitative exposure to adverse events variable, in a Cambodian child sample.
>
> **H_1**: Functional impairment, as measured by the K-CFIS, correlated positively and significantly with exposure to traumatic events and psychological distress, as measured by the HSCL-25, the SDQ Total Distress subscale, the C-SSA, and the qualitative exposure to adverse events variable, in a Cambodian child sample.

As listed in Table 30, the results indicate that the K-CFIS total score correlated positively and significantly with the qualitative adverse life events variable at $\rho = .212$, $p < .001$ level, and at the $\rho = .313$ to .367, $p < .001$ level with all of the distress variables. As such, the null hypothesis was rejected in favor of the alternative hypothesis. In other words, child functional impairment was

Table 30
Correlation Matrix of K-CFIS with Adverse Life Events and Distress Variables

Variables	1	2	3	4	5
1. K-CFIS Total Score	—				
2. Adverse Life Events	.212**	—			
3. SDQ Total Distress	.313**	.309**	—		
4. HSCL-25 Anxiety	.367**	.410**	.500**	—	
5. HSCL-25 Depression	.365**	.410**	.502**	.704**	—
6. C-SSA Total	.365**	.422**	.437**	.715**	.683**

Note. n = 1643. K-CFIS = Khmer Child Functional Impairment Scale. HSCL-25 = Hopkins Symptom Checklist-25. C-SSA = Cambodian Symptom and Syndrome Addendum.

associated with adverse life events at a small *ES*, and medium *ESs* for measures of distress. As such, Hypothesis 1 was considered supported by the data.

4.5 Research Questions

4.5.1 Research Question 1

Research Question 1 of the current study stated: Will the levels of functional impairment, as measured by the K-CFIS, differ significantly between male and female participants, in a Cambodian child sample? In order to answer this question, the Mann-Whitney U test was employed given the asymmetry of the K-CFIS distribution. See Table 31. Also, given the similar symmetry of the K-CFIS distribution for both genders, their mean ranks were compared. See Figure 21. The results indicated that male participants reported greater levels of functional impairment as compared to their female counterparts. Whether or not separate forms should be developed for each gender as suggested by Tol and colleagues (2011) was reviewed in the Discussion chapter of the current study.

Table 31
Mann-Whitney U Test of the K-CFIS by Gender

Variable	Boy *MR*	Girl *MR*	*U*	*z*	*p*
K-CFIS Total Score	833.73	782.93	305,464	-2.196	.028

Note. K-CFIS = Khmer Child Functional Impairment Scale. *MR* = Mean Rank. *U* = Mann-Whitney U test statistic. *z* = standardized test statistic. *p* = asymptotic significance (two-sided test).

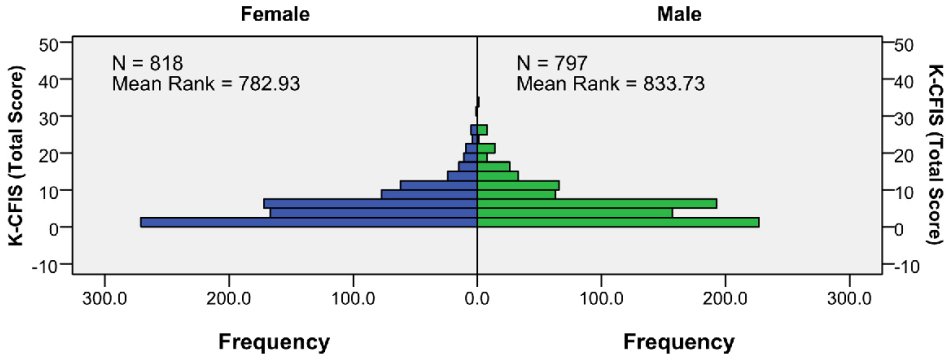

Figure 21. The symmetry of the K-CFIS distribution for both genders. K-CFIS = Khmer Child Functional Impairment Scale. The symmetry allowed for the comparison of their mean ranks rather than their medians.

4.5.2 Research Question 2

Research Question 2 of the current study stated: Does the K-CPDS and K-CFIS demonstrate sufficient convergent and divergent validity in a Cambodian child sample? In order to answer this question, Spearman correlation matrices examining the associations between the K-CPDS, the K-CPDS Subscales, the K-CFIS, and other criterion measures were calculated accordingly in Tables 32 through 35.

Table 32 lists the K-CPDS, the K-CPDS subscales, and the K-CFIS correlations. First the magnitudes of association will be examined between the K-CFIS total, the K-CPDS subscales and the K-CFIS total score. The correlations between the K-CPDS total score and the K-CPDS subscales ranged between ρ = .653, p < .001 and ρ = .481, p < .001, with the Distress subscale having the highest correlation and the Academic subscale having the lowest. The magnitudes of association between each K-CPDS subscales were significantly lower, however. Of note, the association between the K-CPDS Distress and Poor Support/Resilience subscales was significantly negative and small at ρ = -.086, p < .001, with no significant correlation between the Distress and Academic subscales. This discrepant finding is reviewed in the Discussion section.

Table 32
Correlation Matrix of the K-CPDS and the K-CFIS

Variables	1	2	3	4
1. K-CPDS Total Score	—			
2. K-CPDS Distress	.653**	—		
3. K-CPDS Poor Resilience	.508**	-.086**	—	
4. K-CPDS Academic	.481**	.017	.052*	—
5. K-CFIS Total Score	.252**	.302**	.026	.065**

Note. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. K-CFIS = Khmer Version of the Child Functional Impairment Scale. All tests are two-tailed. *p < .05; **p < .01.

Table 33
Correlation Matrix of the K-CPDS, the K-CFIS, the HSCL-25, and the C-SSA

Variables	1	2	3	4	5	6	7	8
1. K-CPDS Total Score	—							
2. K-CPDS Distress	.653**	—						
3. K-CPDS Poor Resilience	.508**	-.086**	—					
4. K-CPDS Academic	.481**	.017	.052*	—				
5. K-CFIS Total Score	.252**	.302**	.026	.065**	—			
6. HSCL-25 Anxiety	.268**	.342**	-.002	.053*	.367**	—		
7. HSCL-25 Depression	.242**	.346**	-.065**	.070**	.365**	.704**	—	
8. C-SSA Total Score	.264**	.342**	-.029	.083**	.360**	.715**	.683**	—
9. CTQ MD (Continuous)	-.217**	-.046	-.228**	-.133**	-.057*	-.016	.001	-.014

Note. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. K-CFIS = Khmer Version of the Child Functional Impairment Scale. HSCL-25 = Hopkins Symptom Checklist. C-SSA = Cambodian Symptoms and Syndromes Addendum. CTQ = Childhood Trauma Questionnaire-Short Form. MD = Minimization Denial subscale. All tests are two-tailed. *$p < .05$; **$p < .01$.

Table 33 is comprised of the Spearman correlation matrix of the K-CPDS, K-CFIS, and other distress measures, including the HSCL-25 and C-SSA. The CTQ MD subscale was also listed to examine its association with the other scales and subscales. First, the K-CPDS total score correlated significantly and positively with all three distress measures between the .242 and .268 levels. The K-CPDS Distress subscale was associated similarly to the other distress measures, but at a higher magnitude between .342 and .346. The K-CPDS Poor Resilience/Support subscale only had a small yet significant correlation with the HSCL-25 Depression subscale at ρ = -.065, p < .001, which was similar to the level between the level between the K-CPDS Distress and Poor Resilience/Support subscales. Next, the K-CPDS Academic subscale had small but significantly positive associations with the distress measures, ranging between the .053 and .083 levels, even though it was not associated with the K-CPDS Distress subscale. These findings were not supportive of the K-CPDS Poor Resilience/Support and Academic subscale's concurrent validity. Lastly, the K-CFIS was associated with all three distress measures at the ρ = .36, p < .001 range. These results generally supported the content and incremental and discriminate validity of the K-CFIS. Of note, the CTQ MD subscale was not associated with the K-CPDS Distress subscale or other distress measures, but was associated with the K-CPDS Poor Resilience/Support and Academic subscales. This suggested that the K-CPDS Poor Resilience/Support and Academic subscales were more susceptible to social desirability influences, yet no symptom validity measure was used in the current study to examine the accuracy of reported distress levels.

The associations between the K-CPDS, K-CFIS and CTQ subscales are listed in Table 34. The K-CPDS total score correlated significantly and positively with all the CTQ abuse and neglect subscales and had the highest magnitudes with the Emotional Abuse and both neglect subscales which ranged between the .257 and .313 levels. The K-CPDS Distress subscale had similar

associations with the Emotional and Physical Abuse subscales, but a lower magnitude for the Physical Neglect subscale at $\rho = .175$, $p < .001$ and no significant association with the Sexual Abuse or Emotional Neglect subscales. The K-CPDS Poor Resilience/Support subscale was correlated significantly and positively with the CTQ Emotional and Physical Neglect subscales at the .2 level, but had smaller magnitudes for all three abuse subscales which ranged between the .049 and .084 levels. The K-CPDS Academic subscale had small yet positive and significant correlations with all the CTQ abuse and neglect subscales, ranging between the .065 and .174 levels. The K-CFIS total score had positive and significant correlations with all CTQ abuse and neglect subscales with larger magnitudes for the Emotional Abuse, the Physical Abuse, and the Physical Neglect subscales which ranged between the .317 and .403 levels. Lastly, the CTQ MD subscale correlated negatively and significantly with the K-CFIS and all of the CTQ and K-CPDS subscales except for the K-CPDS Distress subscale. Of particular note, the CTQ MD scale had medium effect sizes with the CTQ neglect subscales.

These results generally support the content validity of the K-CFIS, but not for the K-CPDS. It cannot be known, however, if the varying associations among the scales and subscales are due to the differing incidences of abuse and neglect, the effect of social desirability, the low reliability of the K-CPDS subscales, or some other confounding variable. Despite this, higher levels of distress and impairment were generally associated positively with emotional and physical abuse and neglect, except for the K-CPDS Poor Resilience/Support and Academic subscales, which were less robust and more equivocal in their relations to the CTQ variables.

Table 35 lists the Spearman correlation matrix of the K-CPDS, K-CFIS, SDQ, and CTQ MD variables. In order to simplify interpretation, the SDQ subscales will be examined by its three main constructs: 1) Emotional distress as measured by the Emotional Problems subscale; 2) Behavioral problems as measured by the Conduct Problems, the Hyperactivity, and the Peer Problems subscales; and 3) Prosocial behavior as measured by the Prosocial subscale. The K-CPDS total score correlated with the SDQ in all the expected directions. It was positively and significantly associated with the Emotional Problems subscale at $\rho = .175$, $p < .001$, the behavioural problems subscales between .120 and .183, $p < .001$, and the Prosocial subscale at $\rho = -.145$, $p < .001$. The K-CPDS Distress subscale correlated significantly and positively with the SDQ Distress and Total Distress subscales at $\rho = .338$, $p < .001$ and $\rho = .253$, $p < .001$, respectively. The magnitudes of association were smaller, yet positive and significant, for the behavioural problems subscales between the .059 and .177 levels, $p < .001$.

The K-CPDS Distress subscale also had a significant and positive correlation with the SQD Prosocial subscale at $\rho = .053$, $p < .05$. While this positive correlation with distress was not consistent with much of the child prosocial literature (e.g., Singh, Junnarkar, & Sharma, 2015; Trommsdorff, Friedlmeier, & Mayer, 2007; Wentzel & McNamara, 1999), it was not a statistical anomaly. That is, the SDQ Prosocial subscale correlated with the other criterion distress measures

in the current study, including the HSCL-25 subscales and C-SSA between .133 and .159, $p < .001$. The K-CPDS Poor Resilience/Support subscale was not significantly correlated with the SDQ Distress subscale, which was generally consistent with the other convergent measures of distress. The K-CPDS Poor Resilience/Support subscale did have small, yet positive and significant correlations, with the behavioural problems subscales which fell between the .07 and .09, $p < .001$ levels. The strongest magnitude of association between the K-CPDS Poor Resilience/Support subscale was with the SDQ Prosocial subscale at $\rho = -.257$, $p < .05$. The patterns of association between the K-CPDS Academic subscale and SDQ subscales were similar, but slightly lower in magnitude as compared to the K-CPDS Poor Resilience/Support subscale.

After reviewing the associations between the K-CPDS and K-CFIS with the other convergent validity measures in the study, several salient associations were identified. First, the total scale scores of the K-CPDS and K-CFIS total scores were sufficiently supported by their associates with the other convergent validity measures. That is, their correlations were in the expected direction and relative magnitudes. Second, one exception to this was the SDQ Prosocial subscale which correlated significantly and negatively with the K-CPDS total score and, to a lower magnitude, the K-CFIS total score. This will be discussed in further detail in the Discussion chapter of this study.

The K-CPDS Distress subscale was also generally supported by its associations with the convergent validity measures. Third, several inconsistent findings were found with the K-CPDS Poor Resilience/Support and the Academic subscales, however. For example, the K-CPDS Poor Resilience/Support subscale had small, negative and significant correlations with the K-CPDS Distress and HSCL-25 Depression subscales, but none of the other distress scales, which may be an artefact of the inherently low reliability of the two-item scale or some other confounding factor. Conversely, it demonstrated satisfactory convergent validity with the CTQ subscales in that it correlated positively and significantly with all subscales, but had its highest magnitudes of association with the CTQ neglect subscales, which follows in that one of the items queries familial support. Additionally, the K-CPDS Poor Resilience/Support subscale also demonstrated sufficient convergent validity with its small, yet positive and significant correlations with the SDQ behavioural problems subscales and a relatively larger significant and negative correlation with the SDQ Prosocial Scale.

Lastly, the K-CPDS Academic subscale had a small, significant and positive correlation with the K-CFIS scale total score. It was expected to be larger in magnitude given that both measure the construct of childhood functioning, however, it may have been attenuated by being endorsed by an observer: the children's teachers. However, the K-CPDS Academic subscale was generally supported by the other convergent measures, including the distress, the abuse and neglect, the behavioural problems, and prosocial subscales.

Table 34
Correlation Matrix of the K-CPDS, the K-CFIS and the CTQ Subscales

Variables	1	2	3	4	5	6	7	8	9	10
1. K-CPDS Total Score	—									
2. K-CPDS Distress	.653**	—								
3. K-CPDS Poor Resilience	.508**	-.086**	—							
4. K-CPDS Academic	.481**	.017	.052*	—						
5. K-CFIS Total Score	.252**	.302**	.026	.065**	—					
6. CTQ Emotional Abuse	.257**	.265**	.050*	.093**	.403**	—				
7. CTQ Physical Abuse	.186**	.188**	.049*	.087**	.305**	.504**	—			
8. CTQ Sexual Abuse	.133**	.046	.084**	.124**	.186**	.308**	.353**	—		
9. CTQ Emotional Neglect	.259**	.045	.284**	.174**	.119**	.223**	.200**	.205**	—	
10. CTQ Physical Neglect	.313**	.175**	.229**	.140**	.317**	.297**	.272**	.225**	.487**	—
11. CTQ MD (Continuous)	-.217**	-.046	-.228**	-.133**	-.057*	-.139**	-.117**	-.127**	-.595**	-.355**

Note. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. K-CFIS = Khmer Version of the Child Functional Impairment Scale. CTQ = Childhood Trauma Questionnaire-Short Form. All tests are two-tailed. *$p < .05$; **$p < .01$.

Table 35
Correlation Matrix of the K-CPDS, the K-CFIS and the SDQ Subscales

Variables	1	2	3	4	5	6	7	8	9	10	11
1. K-CPDS Total Score	—										
2. K-CPDS Distress	.653**	—									
3. K-CPDS Poor Resilience	.508**	-.086**	—								
4. K-CPDS Academic	.481**	.017	.052*	—							
5. K-CFIS Total Score	.252**	.302**	.026	.065**	—						
6. SDQ Emotional Problems	.237**	.338**	-.025	.013	.269**	—					
7. SDQ Conduct Problems	.178**	.117**	.088**	.089**	.223**	.332**	—				
8. SDQ Hyperactivity	.183**	.097**	.095**	.103**	.201**	.234**	.470**	—			
9. SDQ Peer Problems	.120**	.059*	.079**	.057*	.141**	.125**	.284**	.221**	—		
10. SDQ Total Distress	.271**	.252**	.066**	.094**	.313**	.696**	.709**	.697**	.537**	—	
11. SDQ Prosocial	-.145**	.056*	-.257**	-.102**	-.091**	.207**	-.213**	-.292**	-.213**	-.130**	—
12. CTQ MD (Continuous)	-.217**	-.046	-.228**	-.133**	-.057*	-.026	-.187**	-.196**	-.150**	-.185**	.267**

Note. K-CPDS = Khmer Version of the Child Psychosocial Distress Screener. K-CFIS = Khmer Version of the Child Functional Impairment Scale. SDQ = Strength and Difficulties Questionnaire. CTQ = Childhood Trauma Questionnaire-Short Form. All tests are two-tailed. *$p < .05$; **$p < .01$.

In sum, the concurrent validity of the K-CFIS was generally supported across measures, however, the K-CPDS Poor Resilience/Support and Academic subscales were not, especially given their negative and null associations with the K-CPDS Distress subscale, which should be positive if they were measuring the same construct. A rationale for this finding was provided in the following Discussion section.

4.5.3 Research Question 3

Research Question 3 of the current study stated: After controlling for demographic variables, which clinical variables account for the greatest amount of variance in the K-CPDS in a Cambodian child sample? In order to answer this question, hierarchical multiple linear regression (HMLR) was conducted to determine which variables including adverse life events, the CTQ neglect scales, the C-SSA, HSCL-25 subscales, and the SDQ total score account for any unique variance of total K-CPDS score after controlling for demographic variables including age, gender, demographic area, and socioeconomic status (SES). For the current study, SES was operationalized by performing a categorical principal component analysis (CatPCA) on the parents' Hollingshead occupational variables and dichotomous asset ownership variables which included automobiles, motorbikes, electronics, etc., and categorical type of home. A two-component solution comprised of an occupational component and an assets component was considered optimal. The object scores from the CatPCA were then used in the subsequent HMLR analyses if they correlated with the K-CPDS or K-CFIS total score.

For Research Question 3, the K-CPDS total score was used as the dependent variable. The following demographic variables were entered individually into the model: student age, demographic area, and SES assets object score. The gender and SES occupational object score variables did not correlate with the K-CPDS total score and so they were not entered into the analyses. The following clinical variables were then entered into the model in the following order: the adverse life events, the CTQ Emotional Abuse and Physical Neglect variables, and then the distress variables, which included the SDQ Total Distress and C-SSA total score. This followed the theoretical model that adverse life events may create vulnerabilities to distress, but that magnitude of distress could be mediated by parental support. While the CTQ abuse neglect variables assess parental neglect, the opposite of neglect could reasonably be considered support, and that HLMR analysis only consider variance accounted for rather than directional magnitude of association. As such, adverse life events, parental support, and child distress were entered in this order following this rationale.

Regression diagnostics were performed to interpreting the results of the HMLR analyses. The following assumptions were met: independence of residuals, linear relationships between independent and dependent variables, no multicolinearity or influential points, no significant

Table 36
Summary of K-CPDS Hierarchical Multiple Linear Regression Analysis

Model	*IV*	*R*	R^2	$R^2\Delta$	*B*	*SE*	β	*t*
1		.178	.032	.032				
	Age				.151	.021	.178	7.329**
2		.280	.078	.047				
	Age				.129	.020	.153	6.399**
	Demographic Area				-.785	.086	-.217	-9.096**
3		.317	.100	.022				
	Age				.089	.021	.105	4.250**
	Demographic Area				-.321	.112	-.089	-2.862**
	SES (Assets)				-.369	.058	-.206	-6.362**
4		.366	.134	.033				
	Age				.067	.021	.080	3.246*
	Demographic Area				-.319	.110	-.088	-2.896*
	SES (Assets)				-.315	.057	-.176	-5.495**
	Adverse Life Events				.135	.017	.188	7.950**
5		.443	.197	.063				
	Age				.090	.020	.106	4.453**
	Demographic Area				-.212	.107	-.059	-1.984
	SES (Assets)				-.236	.056	-.132	-4.183**
	Adverse Life Events				.091	.017	.127	5.315**
	CTQ Emotional Abuse				.094	.017	.136	5.560**
	CTQ Physical Neglect				.115	.015	.191	7.665**
6		.463	.214	.018				
	Age				.083	.020	.098	4.139**
	Demographic Area				-.222	.106	-.061	-2.102*
	SES (Assets)				-.228	.055	-.127	-4.077**
	Adverse Life Events				.062	.018	.086	3.507**
	CTQ Emotional Abuse				.053	.018	.077	2.955*
	CTQ Physical Neglect				.104	.015	.172	6.890**
	SDQ Total Distress				.039	.010	.104	3.847**
	C-SSA				.029	.009	.083	3.174*

Note. K-CPDS = Khmer Version of the Children Psychosocial Distress; SES = Social Economic Status; CTQ = Childhood Trauma Questionnaire; C-SSA = Cambodian Symptoms and Syndromes Addendum; SDQ = Strength and Difficulties Questionnaire; *IV* = independent variable. R^2 is the amount of the K-CPDS total score variance explained by the model. $R^2\Delta$ is the variance of the dependent variable explained by the last variable entered into the HMLR model. *B* is the unstandardized coefficient and β is the standardized coefficient. *SE* is the standard error and *t* is the estimated coefficient *B* divided by its respective *SE*. *p < .05. **p < .001.

outliers, independence of residuals, and normal distribution of residuals. There was mild heteroscedasticity of residuals, however, Berry and Feldman (1985) and Tabachnick and Fidell (2001) have demonstrated that mild heteroscedasticity has minimal effects on significance tests.

The results of K-CPDS HMLR analyses are displayed in the Table 36. The model change statistics in Table 36 reveal the most pertinent results of this analysis. That is, age accounted for 3.2%, demographic area for 4.7%, SES assets accounted for 2.2%, adverse life events accounted for 3.3%, the CTQ neglect and abuse variables account for 6.3%, and the distress variables accounted

for 1.8% of the K-CPDS total score. All of the variables contributed significantly to each respective model and accounted for 21.4% of the K-CPDS total score. While the magnitude of these variances are relatively small, there significance demonstrates the broad construct of the K-CPDS and that demographic variables should be taken into account when appropriate. Lastly, the CTQ variables accounted for the greatest amount of variance suggesting that parental support, or neglect and abuse, is a stronger predictor in the expression of child psychosocial distress.

4.5.4 Research Question 4

Research Question 4 of the current study stated: After controlling for significant demographic variables, which clinical variables account for the greatest amount of variance in the K-CFIS scale score in a Cambodian child sample? In order to answer this question, another HMLR analysis was conducted to determine which variables including: the adverse events variable, the CTQ Physical Neglect and Emotional Abuse subscales, the C-SSA total scale, the SDQ Total Dis account for any unique variance of the total K-CFIS score after controlling for any significant demographic variables. For Research Question 4, the K-CFIS total score was used as the dependent variable. All of the demographic variables were either not correlated with the K-CFIS total score or their variance attributed to less than 1% of the CFIS total score, and so they were removed from the analyses.

The following clinical variables were then entered into the models in the following order: the adverse life events variable, the CTQ Emotional Abuse and Physical Neglect subscales, and then the C-SSA total score. Again, the K-CFIS HMLR analyses followed the similar theoretical model that adverse life events may create vulnerabilities to functional impairment, but that functional impairment could be attenuated by parental support. This is consistent with the model described by Tol and colleagues (2011). While the CTQ Emotional Abuse and Physical Neglect subscales assess aspects of parental neglect and abuse, the opposite of neglect could reasonably be conceptualized as support. Since, the HLMR analysis only considers variance accounted for in the models in the change statistics, rather than any directional magnitude of association as with correlations, the CTQ variables were interpreted as parental support, or simply as punitive parenting. As such, the adverse life events, the parental abuse/neglect, and the child distress variables were entered in this order to be consistent with this rationale.

Regression diagnostics were performed to interpreting the results of the HMLR analyses. The following assumptions were met: independence of residuals, linear relationships between independent and dependent variables, no multicolinearity or influential points, no significant outliers, and independence of residuals. However, the distribution of the residuals was highly skewed and so the dependent variable, the K-CFIS total, score was base-10 log transformed, which corrected the violation of this assumption. Additionally, there was significant heteroscedasticity of

Table 37
Summary of K-CFIS Hierarchical Multiple Linear Regression Analysis

Model	*IV*	*R*	R^2	$R^2\Delta$	*B*	*SE*	β	*t*	BS CI 95%
1		.168	.028	.028					
	Adverse Life Events				.024	.004	.168	6.47**	[.017, .032]
2		.428	.183	.155					
	Adverse Life Events				.008	.004	.058	2.32*	[.001, .015]
	CTQ Emotional Abuse				.036	.004	.267	10.19**	[.029, .042]
	CTQ Physical Neglect				.025	.003	.234	9.28**	[.022, .034]
3		.477	.227	.044					
	Adverse Life Events				-.002	.004	-.013	-.50	[-.009, .005]
	CTQ Emotional Abuse				.026	.004	.190	6.86**	[.019, .032]
	CTQ Physical Neglect				.025	.003	.212	8.56**	[.020, .031]
	SDQ Total Distress				.008	.002	.080	2.83*	[.002, .010]
	C-SSA				.013	.002	.199	7.32**	[.009, .017]

Note. K-CFIS = Khmer Version of the Child Functional Impairment Scale; CTQ = Childhood Trauma Questionnaire; C-SSA = Cambodian Symptoms and Syndromes Addendum; SDQ = Strength and Difficulties Questionnaire; BS CI 95% = Bootstrapping confidence intervals for unstandardized coefficient. R^2 is the amount of the K-CFIS total score variance explained by the model. $R^2\Delta$ is the variance of the dependent variable explained by the last variable entered into the HMLR model. *B* is the unstandardized coefficient and β is the standardized coefficient. *SE* is the standard error and *t* is the estimated coefficient *B* divided by its respective *SE*. *p < .05. **p < .001.

residuals and so the bootstrapping technique using 2,000 samples was employed to provide more accurate unstandardized predictor value confidence intervals to adjust for this violated assumption.

The results of K-CFIS HMLR analyses are displayed in the Table 37. The model change statistics in Table 37 reveal the most pertinent results of this analysis. First, the adverse life events variable was originally significant at 2.4% on model 1, but lost significant variance as the other variables were entered. This left the CTQ and the distress variables accounting for 15.5% and 4.4% respectively. The lack of significant variance for the demographic variables may be attributable to the measure's well-balanced content among these variables. Again, the CTQ variables accounted for the greatest amount of variance suggesting that parental support, or neglect and abuse, is one of the strongest factors in the expression of child functional impairment.

Chapter 5: Discussion

This chapter provides a review of the current study's findings, including possible interpretations and comparisons with the germane literature. Discussions of the Preliminary Analyses, Exploratory Aims, Hypothesis, and Research Questions are presented below.

5.1 Preliminary Analyses

5.1.1 K-CPDS and K-CFIS

Neither CPDS studies (Jordans et al., 2008 & 2009) listed the descriptive statistics of the larger study samples, however, the original study did list the means and standard deviations for the smaller Burundi diagnostic subsample. While only comprised of 52 participants, the pooled mean and standard deviation was calculated for a limited comparison and was found to be 7.84 (SD_p = 2.22). The current study's sample had a mean of 4.45 (SD = 1.79). The difference may be attributed to the higher number of participants indicated for treatment in the Burundi subsample, as well as the more recent political violence in the African country at the time of administration. The internal consistency of both the Jordans and colleagues (2008) and the current study were low with alpha levels of .53 and .37, respectively. Given that alphas were likely lower estimates of the scales' consistencies, the omega coefficient was calculated for the current study and found to be .59. It is unknown what the Jordan and colleagues (2008) omega coefficient would be, but it would likely be higher, at least in the .70 range, and a more accurate measure of its internal consistency. Lastly, the Spearman-Brown test-retest values for the Burundi and Cambodian samples were .83 and .58, respectively.

The lower levels of internal consistency and test-retest reliability of the current sample likely stem from three primary sources: 1) The brevity and breadth of the measure; 2) The actual construction of the measure administered to the validation sample; and 3) The susceptibility of biased responding to items 4 and 5. More specifically, the actual test administered to the validation sample of the current study reversed the item endorsement direction for items 4 and 5, that is, rather than increasing in order of value like the other items, the items were endorsed in the reverse direction. This may have unnecessarily confused some of the participants. A simple fix would be to keep the same endorsement order for every item. Lastly, items 4 and 5 also correlated with the CTQ MD scale, a measure of response bias, which also likely added to measurement error. In sum, keeping the order of the endorsement the same for every item and increasing the two-item subscales to three items would increase the reliability of the scale. Also, the omega coefficient should be employed to measure the scale's internal consistency, rather than the alpha coefficient if the scale is not tau-equivalent. The reliability might also be increased by providing teachers with a

specific rubric for items 6 and 7, as well as instructions that they refer their attendance records to inform their responses more accurately.

The mean score on the function impairment instrument for the Indonesian sample was 17.96 (*SD* = 5.49). Children scored highest on impairment in hygiene, sleeping, and household chores. For the current Cambodian sample, the mean score was 5.66 (*SD* = 5.17) and impairment in helping parents, spending time with family, and eating were endorsed at higher levels. The higher mean score for the Indonesian sample may be explained by the temporal proximity to the political violence there. Sleeping difficulty is also consistent with several psychological disorders and so the Indonesian sample may simply be more traumatized by comparison. The internal consistency and test-retest reliability were higher for the current sample at α = .84 and ρ_{sb} = .87, as compared to the Indonesian sample at α = .77 and ρ_{sb} = .78. These differences may be attributed to gender differences embedded in the cultural of the sample. As Tol and colleagues (2011) noted that separate forms for male and female children may appropriate in their Indonesian sample, this may be so only in cultures where boys and girls functioning or behaviour are significantly different. This might be the case in predominately Muslim countries or in other cultures with more desperate gender roles. Listing the alpha levels for each gender, when differences among them are suspect, may substantiate or undermine these assertions.

5.1.2 Adverse Events Inventory

Despite the weak psychometric characteristics of the Adverse Events Inventory, such as low internal consistency and construct validity, the scale did demonstrate sufficient concurrent validity, which suggested potential utility of the scale. Given the research nature of the measure, it can be easily modified. For example, items can be adjusted to improve their salience along a more theoretical structure, such as family, social arena, and natural disaster subscales. The scale's scoring could also be transformed from a dichotomous to a Likert scale, and any pertinent content from a qualitative portion of a future study can be incorporated into the measure. Lastly, given the high level of endorsement of adverse events in some of the participants from the current study, a time constraint regarding when the adverse event took place should be emphasized, especially when administering the measure to younger participants.

5.1.3 Childhood Trauma Questionnaire

One notable strength of the CTQ is the inclusion of the MD subscale to measure response bias which Bernstein and colleagues (1994) considered minimizing or denying maltreatment. Within the Cambodian context, this is a novel construct and it may also be measuring adherence to culturally specific values. Bernstein and colleagues (1994) originally suggested scoring the MD subscale items as dichotomous, that is, only giving a score of one to those items that were endorsed at the maximum value, giving a total possible score of three for the scale. However, MacDonald

and colleagues (2016) conducted a large, multinational meta-analysis and concluded that the MD subscale could be utilized as a continuous variable. Further, they found that the CTQ Emotional Neglect subscale was especially susceptible to minimization or denial, particularly at the higher levels. This is exactly what the data form the current study found.

Of note, inter-item analyses suggested that the translation of MD scale item 10 should be reviewed, given that its deletion would increase the subscale's validity. Lastly, cursory moderation analysis of the K-CTQ-26 MD scale was performed using the K-CTQ-26 Neglect subscale as the independent variable and the C-SSA scale as the dependent variable. The moderating effects of the MD scale were found to be conditional, or significant, only with MD values over 9 with increasing effect sizes thereafter. These moderation effects, the lack of correlation between the MD subscale and the C-SSA, and the high correlation between the MD subscale with the K-CTQ-26 Neglect subscale, can explain the insignificant correlation found between the K-CTQ-26 Neglect subscale and the C-SSA scale.

In sum, the K-CTQ-26 demonstrated sufficient psychometrics, but a different factor structure than original short form study. Further, the translation of items 1, 6, 10, and 25 should be re-examined and consideration regarding the addition of *traditional healer* and *monk* to item 9 may increase cultural salience. The MD also provides unique insight into response bias or adherence to cultural values, both deserving of future study.

5.1.4 Strength and Difficulties Questionnaire

As noted previously, the use of the SDQ in Cambodia has been unremarkable, owing either to questionable translations or other methodological flaws. The current study found a strong two-factor solution, which undermined the measure's use of identifying groups of behavioural or emotional problems. If future Khmer translations find the same two-factor solution, the utility of using the SDQ's peripheral functionality based on their large proprietary datasets—which are rely on the five-factor solution—will likely be compromised.

5.1.5 HSCL-25 and C-SSA

Several noteworthy findings of the current study included: 1) Both the HSCL-25 and C-SSA demonstrated single-factor solutions in EFAs; 2) The use of the published HSCL-25 cut-scores for diagnostic purposed would vastly underestimate the prevalence of anxiety and depression in Cambodian youth; and 3) The HSCL-25 did not demonstrate sufficient incremental or discriminate validity in subsequent CFAs or regression analyses in the current study. As such, while the HSCL-25 may be a sufficient measure of general psychological distress and be used as a criterion measure, the use of other measures developed specifically for Cambodians that contain fewer items, such as the C-SSA, may be more prudent in studies involving Cambodian youth. Lastly, for an excellent review of child psychiatric comorbidity and its various causes—including

sample heterogeneity, insufficient diagnostic criteria and methodology—kindly see Caron and Rutter's (1991) paper which cogently presents possible explanations of these findings.

5.2 Exploratory Aims

5.2.1 The Psychometric Characteristics of the K-CPDS

The psychometric characteristics of the K-CPDS were generally weak, owing to several factors stated previously: 1) Distinct levels of endorsement among items within the same subscale; 2) Low inter-item correlations, especially between factors or subscales; 3) The low number of items per factor, which required the CFA models to be constrained for identification; and 4) The weak and negative magnitudes of association between factors. Despite these findings, the K-CPDS did reflect the same three-factor structure identified by Jordans and colleagues (2009), however, the correlations between factors were much lower in the current study. While Jordans and colleagues (2009) also found negative item loadings between the Poor Resilience/Social Support and Distress subscales in two of their samples, the associations between their respective factors were still stronger, between .22 and .69, as compared to the current sample, which fell between -.19 and .06. Lastly, the K-CPDS assess three distinct constructs using seven items. While two items per construct or factor is possible using EFA, CFA requires at least three items per latent variable to be just-identified, so the observed variables or items needed to be constrained in order to produce an identifiable model.

These findings, in addition to those in the Preliminary Analyses, indicate that the K-CPDS did not demonstrate sufficient reliability or construct validity. Possible solutions for increasing the psychometric characteristics of the K-CPDS include: 1) Keeping the order of the endorsement the same for every item; 2) Providing teachers with a scoring rubric for items 6 and 7, as well as instructions that they refer their attendance records to inform their responses more accurately; and 3) Increasing the two-item subscales to three items, such as adding an item that queries teachers about the students' actual level of academic performance, and adding a resilience item, which queries the ability to persevere after facing adversity. While adding two items to the scale is the most drastic of these recommendations, it should be considered if the first two recommendations do not enhance the measure's reliability and construct validity.

5.2.2 The Psychometric Characteristics of the K-CFIS

The psychometric characteristics of the K-CFIS were much stronger than the K-CPDS. The internal consistency and test-retest reliability were acceptable. All item analyses indicated that each item had similar variance and contributed to the overall scale. The EFAs suggested a single factor solution and the CFAs confirmed this. The essentially tau-equivalent model had much larger fit indices than the unconstrained solutions and so the scale's internal consistency could be assessed

using Cronbach's alpha. In conclusion, these reliability and validity analyses support the use of the K-CFIS as a measure of functional impairment for youth in Cambodia.

5.3 Hypothesis 1

In essence, this was an examination of the discriminate and concurrent validity of the K-CFIS examined more extensively in Research Question 2. Child functional impairment was associated with adverse life events at a small *ES*, and medium *ESs* for the measures of distress. These magnitudes were generally consistent with the Tol and colleagues (2011) study, except for the PTSD scale. The scale demonstrated sufficient convergent and divergent validity with the K-CFIS total score correlating with the Adverse Events Inventory at the .2 level and with three different distress scale/subscales at the .3 level. PTSD was the only distress scale to correlate significantly at .18 level in the Toll and colleagues (2011), but PTSD was not assessed in the current study.

5.4 Research Questions

5.4.1 Research Question 1

The Mann-Whitney U test examining the gender effects of the K-CFIS revealed a significant value at z = -2.2196, $p < .05$. However, in order to appreciate the standardized z value, the effect size should be calculated using the formula: $r = z/(\sqrt{n})$. An r value of .05, which is exceedingly small, was found. So, while the test was significant, the effects were negligible in the current sample. This likely reflects the contrasts between the Khmer culture and the more conservative and Muslim Indonesia sample in the Tol and colleagues (2011) study. While both could be considered conservative by Western standards in regards to how females are socialized, Cambodia likely falls between Western and Islamic on the ideological continuum. Complicating the interpretation of the results, Protestant children were also included in the sample and FGDs, given that the political violence was between adherents of both these faiths. Although Tol and colleagues (2011) did note that the FGDs included nine children including six Muslim children and three Protestant children, they did not list religion characteristics of the validation sample. As such, any further interpretation would be conjecture. In regards to the current sample, the results do not provide the evidence to support the development of two distinct forms based on gender.

5.4.2 Research Question 2

The results indicated that the K-CFIS demonstrated satisfactory convergent and divergent validity in the current sample, but that the K-CPDS did not. In brief, the K-CFIS correlated all the distress variables at the .3 level, the CTQ abuse and neglect variables between the .1 and .4 levels, and and the SDQ clinical variables between the .1 and .2 levels. When examining the association

between the K-CFIS and CTQ total scale and SDQ total distress scores for simplicity, the Spearman rho coefficients were found to be .344 and .313, at $p < .001$, respectively. So in sum, the K-CFIS correlated with all the distress, abuse and neglect, and problem behaviour variables at the .3 level and at more varying magnitudes at the subscale levels, all of which were in expected or acceptable ranges. The K-CPDS faired more poorly. Each of the Neglect/Poor Self-reliance and Academic functioning subscale's poor psychometrics has already been noted previously. These inherent weaknesses form the bases of how the divergent and convergent validity with the other content validity measures were unacceptable.

5.4.3 Research Question 3

All of the demographic and clinical variables of the HMLR model accounted for 21.4% of the K-CPDS total score. While the magnitudes of each variance are small, there significance demonstrates the broad construct of the K-CPDS and that demographic variables should be taken into account where appropriate. Lastly, the CTQ variables accounted for 6.3% of K-CPDS total score, which was the greatest amount of variance. This suggests that parental support, or neglect and abuse, are stronger predictors of child psychosocial distress compared to age, gender, SES, and exposure to traumatic events. Further research is required to examine the question of whether this relationship holds for the entire Khmer youth population. Lastly, given the poor psychometrics of the K-CPDS, these results should be interpreted with appropriate caution.

5.4.4 Research Question 4

None of the demographic variables contributed significantly to the HMLR model. The lack of significant variance for the demographic variables may be attributable to the measure's well-balanced content yielded from the qualitative phase of the study. The remaining model accounted for 23.7% of the K-CFIS total score. Again, the CTQ variables accounted for the greatest amount of variance suggesting that parental support, or neglect and abuse, is one of the strongest factors in the expression of child functional impairment. Further research is required to examine the question of whether this relationship holds for the entire Khmer youth population.

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Appendix A
English and Khmer Versions of the K-CFIS

Khmer Child Functional Impairment Scale (K-CFIS)

Instructions: We would like to ask you now about activities that you do in your daily life. This means your activities at home, at school and during your free time. In the past two weeks, have you had any difficulty with your daily activities? The expression "any difficulty" does *not* refer to any difficulty related to a physical disability.

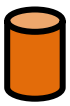
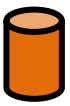
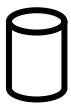
Please mark the glass that is closest to how much difficulty you felt within the last two weeks.

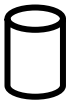
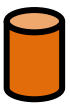
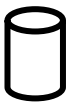
In the past 2 weeks:	Not at all (0)	A little bit (1)	Quite a bit (2)	Extremely (4)
1. Have you had any difficulty maintaining your hygiene (e.g., brushing your teeth, bathing yourself, changing your clothes)?	☐ 	☐ 	☐ 	☐ 
2. Have you had any difficulty sleeping (falling asleep, waking up, waking up often)?	☐ 	☐ 	☐ 	☐ 
3. Have you had any difficulty eating (breakfast, lunch, sweets, snacks, dinner, but not because of lack of food)?	☐ 	☐ 	☐ 	☐ 
4. Have you had any difficulty helping your parent(s) or caregiver do household chores or help take care of your siblings (e.g., wash dishes, wash clothes, clean the house, look after sister/brother)?	☐ 	☐ 	☐ 	☐ 
5. Have you had any difficulty helps out at the farm, shop or restaurant of the family?	☐ 	☐ 	☐ 	☐ 

In the past 2 weeks:	Not at all (0)	A little bit (1)	Quite a bit (2)	Extremely (4)
6. Have you had any difficulty (enjoying) playing with your friends (e.g. playing football or traditional games, talking, during recess in school)?	☐ 	☐ 	☐ 	☐ 
7. Have you had any difficulty at school (e.g., going to school, pay attention to the teacher, studying)?	☐ 	☐ 	☐ 	☐ 
8. Have you had any difficulty studying at home (e.g., doing homework, preparing for exam, preparing your bag for school)?	☐ 	☐ 	☐ 	☐ 
9. Have you had any difficulty enjoying or spending time with your brother(s)/sister(s) or family?	☐ 	☐ 	☐ 	☐ 
10. Have you had any difficulty spending or enjoying free time on your own (e.g., watching TV, playing games, surfing the internet, listening to music, reading a book)?	☐ 	☐ 	☐ 	☐ 
11. Any difficulty with other activities?	☐ 	☐ 	☐ 	☐ 

សកម្មភាពប្រចាំថ្ងៃ (K-CFIS)

។ <u>សេចក្តីណែនាំ៖</u> កំរងសំនួរខាងក្រោមនេះ ស្តីអំពីសកម្មភាពប្រចាំថ្ងៃរបស់ប្អូន នៅផ្ទះ នៅសាលារៀន និងពេលទំនេរ ។ សំនួរទាំងនេះចង់ដឹងពីអាម្មរណ៍របស់ប្អូន ចំពោះសកម្មភាពដែលប្អូនធ្វើរាល់ថ្ងៃ។ តើប្អូនមាន <u>ការលំបាក</u> ក្នុងការធ្វើសម្មភាពនេះដែរឬទេក្នុងរយៈពេល **២សប្តាហ៍**ចុងក្រោយមកនេះ? <u>ការលំបាក់</u> ក្នុងការធ្វើសម្មភាពប្រចាំថ្ងៃមិនមែនបណ្តាលមកពីផ្នែកណាមួយនៃរាងកាយរបស់ប្អូនមានបញ្ហានោះទេ ប៉ុន្តែបណ្តាលមកពី<u>អាម្មណ៍</u>របស់ប្អូន<u>មិនរីករាយ</u>ក្នុងការធ្វើសកម្មភាពទាំងនោះ។ សូមប្អូនឆ្លើយនឹងកម្រងសំនួរខាងក្រោមដោយគូសសញ្ញា✓ក្នុងប្រអប់ ដែលគិតថាពិតសម្រាប់ប្អូន។

ក្នុងរយៈពេល២សប្តាហ៍ចុងក្រោយនេះ	គ្មានសោះ 0	បន្តិចបន្តួច 1	ខ្លាំងបង្គួរ 2	ខ្លាំងណាស់ 3
១.តើប្អូនមានការលំបាកជាមួយការធ្វើអនាម័យខ្លួនប្រាណរបស់ប្អូនដែរឬទេ? (ឧ. ងូតទឹក សិតសក់ លុបមុខ ដុសធ្មេញ ផ្លាស់ប្តូរសំលៀកបំពាក់)	☐ 	☐ 	☐ 	☐ 
២. តើប្អូនមានការលំបាកជាមួយនឹង ការគេង/ដេក ដែរឬទេ? ដូចជា (ដេកលក់មិនលក់ ពិបាកភ្ញាក់ពីដេក)	☐ 	☐ 	☐ 	☐ 
៣. តើប្អូន មានអាម្មណ៍មិនចង់ញ៉ាំអាហារឬចំណីដែរឬទេ? ដូចជាញ៉ាំបាយ (ពេលព្រឹក ថ្ងៃត្រង់ ពេលល្ងាច) បង្អែម និងនំចំណី	☐ 	☐ 	☐ 	☐ 
៤.តើប្អូនធ្លាប់មានអារម្មណ៍លំបាក ក្នុងការជួយឪពុកម្តាយឬម៉ែដោះ ធ្វើការងារផ្ទះ ឬជួយមើលថែទាំ បងប្អូនដែរឬទេ? ដូចជា (លាងចាន បោកសំលៀកបំពាក់ សំអាតផ្ទះ និងមើលប្អូនប្រុស ស្រី)	☐ 	☐ 	☐ 	☐ 
៥. តើប្អូនធ្លាប់មានអាម្មណ៍មិនចង់ជួយធ្វើការងារក្នុងគ្រួសារ ដូចជា ការងារស្រែចំការ លក់ដូរ ឬហាងលក់បាយ	☐ 	☐ 	☐ 	☐ 

ក្នុងរយៈពេល២សប្តាហ៍ចុងក្រោយនេះ	គ្មានសោះ 0	បន្តិចបន្តួច 1	ខ្លាំងបង្គួរ 2	ខ្លាំងណាស់ 3
៦. តើប្អូនធ្លាប់មានការលំបាកនៅសាលារៀនដែរឬទេ (ឧ.ស្តាប់គ្រូពន្យល់ ការរៀនក្នុងថ្នាក់ និងទៅសាលា)	☐ 	☐ 	☐ 	☐ 
៧. តើប្អូនធ្លាប់មានការលំបាកជាមួយនឹងការរៀននៅផ្ទះ (ឧ.លំហាត់គ្រូដាក់ឲ្យ រៀបចំកាបូបទៅរៀន)	☐ 	☐ 	☐ 	☐ 
៨. តើប្អូនធ្លាប់មានការលំបាកក្នុងការចំណាយពេលវេលាឬលេងជាមួយបងប្អូនប្រុស ស្រី និងសាច់ញាតិក្នុងគ្រួសារដែរឬទេ?	☐ 	☐ 	☐ 	☐ 
៩. តើ ប្អូនធ្លាប់ មានការលំបាកជាមួយនឹងការលេងកំសាន្តនៅពេលទំនេរ(ម្នាក់ឯង) ដែរឬទេ? ដូចជា (មើលទូរទស្សន៍ លេងហ្គេម លេងអ៊ីនធឺរណេត ស្តាប់ចំរៀង/ភ្លេង និងអានសៀវភៅ)	☐ 	☐ 	☐ 	☐ 
១០. តើប្អូនធ្លាប់មានការលំបាក ក្នុងការចូលរួមលេងជាមួយ មិត្តភ័ក្តិដែរឬទេ (ឧ. លេងបាល់ទាត់ លេងល្បែងប្រជាប្រិយខ្មែរ ជជែកគ្នាលេង និងពេលចេញលេង)	☐ 	☐ 	☐ 	☐ 
១១. តើប្អូន ធ្លាប់មានការលំបាកជាមួយនឹងសម្មភាពផ្សេងទៀត ដែលមិនបានរៀបរាប់ខាងលើដែរឬទេ?	☐ 	☐ 	☐ 	☐ 

van Domburgh, L., Sovandara, K., Tim, P., Christophersen, A., Ann, S., & Palmer, E. (2016). The Child Psychosocial Distress Screener and the Child Functional Impairment Scale: Development and validation of two Cambodian mental health screening measures. Royal University of Phnom Penh: Phnom Pehn, Cambodia.