

THE ROLE OF CULTURE IN PAIN-RELATED CAREGIVER BEHAVIOR:
COMPARING CANADIAN, ICELANDIC, AND THAI CAREGIVERS OF
6–12-YEAR-OLD CHILDREN

by

Ólöf Kristjánsdóttir

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DEDICATION

to my eldest daughter Bára Guðmundsdóttir

– mamma elskar þig upp til tunglsins og til baka

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ABSTRACT

The aim of the study was to examine the role culture plays in caregiver's pain-related parent behaviors. This study used a cross-cultural survey design with a convenience sample of caregivers of 6-12-year-old children ($N = 547$) living in Canada ($n = 183$), Iceland ($n = 184$), or Thailand ($n = 180$). A team-translation approach included psychometric assessment and confirmatory factor analysis, ensuring an equivalent measurement model of cultural values, parenting styles, and pain-related caregiver responses across the three samples. Univariate analysis entailed comparing the average levels of, and multigroup structural equation modeling analysis of the relationships among, cultural values, parenting styles, and pain-related caregiver behaviors across Canadian, Icelandic, and Thai caregivers. Cross-country differences in the endorsement of cultural values (vertical individualism, horizontal individualism, and collectivism), parenting styles (authoritative and authoritarian), and pain-related behaviors (solicitousness and discouraging) emerged between Canadians and Thais, but not always in the expected direction. Icelanders were more similar to Thais than Canadians on the cultural values they endorsed. Country did not affect which cultural model of parenting (cultural values and parenting styles) caregivers adopted; thus, country did not predict pain-related behavior. Parenting styles mediated between cultural values and pain-related caregiver behaviors. Vertical/horizontal individualism, collectivism, and authoritative and authoritarian-parenting styles positively predicted solicitousness. Vertical individualism and authoritarian-parenting style were positive predictors of discouraging, whereas other predictors were not. Thesis results suggested that cross-country differences exist in how caregivers behave when their child is in pain. However, country does not appear to influence which cultural models of parenting caregivers adopted, including their pain-related behaviors. The four cultural models of parenting, predicting solicitousness, indicated that solicitousness may have different cultural meanings among individuals, and supports others' claims of solicitousness universality in a pediatric pain context. Future studies are needed to confirm if cultural models of parenting processes around pain-related caregiver behaviors are universal.

LIST OF ABBREVIATIONS USED

INDCOL	Individualism-Collectivism Scale
IRPEDNA	Inventory of Parent/Caregiver Responses to the Children's Pain Experience
PSDQ-SF	Parenting Styles and Dimensions Questionnaire - Short Form
TRAPD	Translation, Review, Adjudication, Pretesting, and Documentation team translation model

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CHAPTER 1: INTRODUCTION

Background

Pain is a universal phenomenon designed to protect individuals from bodily harm (Woolf, 2010). The International Association for the Study of Pain described pain as “an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage” (Merskey & Bogduk, 1994/2002, p. 210). Pain is a global health concern in children (World Health Organization, 2012) associated with negative health outcomes (Birnie, Boerner, & Chambers, 2014), and stated as a potential threat to public health (Taddio et al., 2012).

Pain can be classified as either acute or chronic. Acute pain is an umbrella term describing pain with short duration, lasting less than 3 months (e.g., immunization or surgical pain). Similarly, chronic pain is an umbrella term for pain with long duration, lasting more than 3 months (e.g., headaches or arthritis; American Academy of Pediatrics, 2001; Merskey & Bogduk, 1994/2002). Although acute pain protects individuals from bodily harm, chronic pain tends to only limit individuals’ functionality and quality of life (Woolf, 2010). Pain is a highly complex individual experience, expressed and communicated in different ways, and results from interactions between multiple and diverse factors (Riddell, Racine, Craig, & Campbell, 2014). This universal and multidimensional nature of pain requires a comprehensive understanding of all potential factors influencing children’s pain assessment and treatment.

Culture and Children's Pain

Culture has long been viewed as an important factor in understanding, assessing, and managing pediatric pain (McGrath & Unruh, 1987; Riddell et al., 2014). Culture contributes to children's learning and expression of pain, and is expected to influence all aspects of a painful episode (Bernstein & Pachter, 2003). According to the sociocommunication model of children's pain, culture is one of the four major factors that influence children's pain experience, with the others being the individual, the family, and the community (Craig, 2015; Riddell et al., 2014). This widely used model captures the many complex processes involved in children's pain experiences, and provides a conceptual link between the suffering child, and the child's surrounding environment, including culture.

One of the model's unique characteristics is placing the caregiver in the forefront of the child's pain experience. Although the model focuses on the vulnerability and dependency of the child, an associated focus is the importance of the child's family context. The family represents a unique miniculture around pain socialization, by combining prominent cultural values, family values, and available treatment options in the community (Craig & Riddell, 2003). The sociocommunication model of children's pain exemplifies how culture and family factors interact through elements like parenting, and direct pain socialization through parents' behaviors.

Pain-Related Parent Responses

The important role of the family is evident from well documented research linking caregivers, particularly parents, with children's pain development and experience (Birnie et al., 2014). This focus has prompted researchers to pay more attention to parents

(Palermo & Eccleston, 2009); especially, how parent behaviors impact children's pain and well-being (Birnie et al., 2014; Palermo & Chambers, 2005; Harrison et al. 2014). Researchers most often study solicitousness, discouraging, and promoting of well-behavior/coping. Generally, caregivers use of solicitousness and discouragement has aligned with negative child outcomes, whereas caregivers promotion of well-behavior/coping has aligned with positive child outcomes (Birnie et al., 2014). In the past, researchers have largely studied pain-related parent responses as an independent variable that relates to and impacts children's pain outcomes, but less on factors that may drive these parental behaviors (Caes, Vervoort, Eccleston, & Goubert, 2012).

Although solicitousness is generally an unhelpful response by parents, this behavioral pattern is common among caregivers during procedural pain (L. L. Cohen, Manimala, & Blount, 2000), chronic pain (Hermann, Zohsel, Hohmeister, & Flor, 2008), and everyday pain (Vervoort, Huguet, Verhoeven, & Goubert, 2011). These results have prompted some researchers to suggest solicitous tendencies are a universal response by parents to children's pain (McMurtry, McGrath, & Chambers, 2006). The suggestion of a universal pain-related parent response is intriguing and clinically relevant. However, this suggestion predominantly builds on studies that used samples from White/Caucasian middle-class families living in North America or Western Europe. Also, the few qualitative studies that used non-Westernized samples, suggested that in Southeast Asia, discouragement was more common than solicitousness caregiver behavior (Jongudomkarn, Aungsupakorn, & Camfield, 2006; Jongudomkarn, Forgeron, Siripul, & Finley, 2012). Furthermore, other researchers suggested that how parents socialize their children about pain may explain cross-cultural variances found in children's pain

behaviors (Kristjansdottir, Unruh, McAlpine, & McGrath, 2012). Thus, researchers do not know if pain-related parent responses are universal or culture-specific behaviors. The literature lacks study samples that are culturally diverse, and relies on statements that build on findings from only one culture, which are generalized to parents at large.

Anthropology and psychology have studied the link between culture and parent behavior for decades, and have found that everyday parent behaviors, like playing, are cultural specific (Carra, Lavelli, & Keller, 2014; Keller, Borke, Chaudhary, Lamm, & Kleis, 2010). Surprisingly, this topic has received little attention from pediatric pain researchers. The lack of evidence may be due to the complexity of studying children's pain and culture separately, let alone the two phenomena simultaneously (Clemente, 2014). Moreover, pediatric pain researchers have struggled to conceptualize and operationalize culture (Kristjansdottir et al., 2012).

Conceptual Issues in Studying Culture and Children's Pain

Culture is a complex concept, with many competing definitions (Taras, Rowney, & Steel, 2009). In the pediatric pain literature, researchers commonly use the terms race and ethnicity interchangeably with culture (Kristjansdottir et al., 2012). Researchers typically define race by biological factors, like skin color, but ethnicity by qualities such as language, religion, nationality, or heritage (Sheldon & Parker, 1992). Although ethnicity and race are common markers of memberships of specific groups living in a culture, they do not necessarily represent culture in a comprehensive way (Triandis, 2007). Kristjansdottir et al. (2012), in a systematic review, noted that the majority of cross-cultural comparisons were based on cultural proxies using nationality, ethnicity, or race. Although cultural proxies may be useful in exploring cross-cultural differences and

similarities, their explanatory value is limited. Instead, by linking these sociocultural variables with other cultural dimensions like beliefs, values, and practices, one may provide a more comprehensive understanding of culture. Furthermore, researchers should conceptualize culture specifically, using theoretical frameworks aligned with culture-specific elements, like cultural values and parenting styles (Kristjansdottir et al., 2012).

Cross-cultural psychology and its subdisciplines, have emphasized the susceptibility of everyday parent behaviors to the cultural context (Carra et al., 2014; Keller et al., 2010). These disciplines no longer limit themselves to cultural proxies like ethnicity and race. Instead, researchers have developed comprehensive theories, integrating concepts of culture and development. It is reasonable to assume these theoretical approaches would benefit pediatric pain research as well.

Cultural Models of Parenting

In their study of parents around the world, Greenfield (2009) and Keller (2007) emphasized that cultural models of parenting inform parents' socialization practices. These cultural models of parenting represent shared practices and ideas of a cultural group, oriented toward broader belief systems and socialization goals that foster culturally appropriate parent behaviors and child development. Based on the seminal theory of individualistic-collectivistic values (Hofstede, 1980; Triandis, 1995) and sociodemographic profiling, two main types of cultural models of parenting have been identified: the collectivistic, which emphasizes interdependence or relatedness, and the individualistic, which emphasizes independence or autonomy (Greenfield, 2009). The cultural model of collectivism is more common in Eastern and Southern regions of the world that have traditional rural communities. Cultural goals of interdependence,

conformity to group norms, obedience, modesty, and strong family relatedness are encouraged. The cultural model of individualism is more common in Western industrialized nations with urban, middle-class families. Goals of independence, self-expression, and self-reliance in children are encouraged (Greenfield, Keller, Maynard, Suzuki, & Charles, 2004). These cultural models of parenting, serve as the main organizers of specific socialization processes that shape parenting strategies, and lead to culture-specific developmental pathways of parenting and child development (Greenfield, Keller, Fuligni, & Maynard, 2003).

Researchers have applied the cultural models of parenting to study parenting practices around infant feeding (Harwood & Schoelmerich, 1999) and sleeping (Schulze et al., 2002), as well as parent responses to children's expressions of negative emotions (Chan, 2012; Chan, Bowes, & Wyver, 2009). Researchers used different designs in operationalizing cultural models. Harwood and Schoelmerich (1999) used interviews and observational data to compare beliefs and behaviors in middle-class Anglo (defined as individualist) and Puerto Rican (defined as collectivist) mother-infant pairs in everyday situations (e.g., feeding). They reported that Anglo mothers were more likely to encourage infants to self-feed (encourage autonomy), whereas their Puerto Rican counterparts directly feed their infants. Chan's (2012) study, in contrast, was a single-country-design survey linking Chinese mothers' beliefs about emotional socialization of their 6-8-year-old children, with their responses to children's expression of negative emotions. Results from the Chan study showed that mothers who endorsed "Guan" (collectivistic ideology), rather than Western childrearing ideas, were more likely to use

emotion-dismissing responses (i.e., discouragement), rather than an emotion-supportive approach (i.e., encouraging).

Methodological Issues in Studying Culture and Children's Pain

Cross-cultural research brings a host of methodological challenges unique to this type of study (Harkness et al., 2010), and in a recent systematic review of culture and pediatric pain, only 13% of the included studies showed strong methodological rigor, lacking, for example, information on instruments cross-cultural comparability (Kristjansdottir et al., 2012). This is unsurprising, because researchers develop most health instruments for use in a single language and culture, and do not standardize instruments for cross-cultural comparability (Harkness, van de Vijver, & Johnson, 2003). When using existing instruments, cross-cultural researchers cannot assume that the desired constructs are the same in different cultural contexts. Instead, they need to define and measure the universal so it addresses some culture-specific issues and concerns. In cross-cultural research, the goal is to capture the universal and the culture-specific elements in concepts and measurements. A balanced emic-etic methodology allows the etic advantage of using the same measure in all cultures for comparison, while still increasing the relevance of the procedure to culturally divergent participants (Berry, 1989; Reichenheim & Moraes, 2007).

Specifically, the goal of a translation is to make the target (new) instrument equivalent (comparable) to the source (original) instrument (van de Vijver & Leung, 2011). Equivalence is a key term in cross-cultural methodology, and implies comparability of constructs and tests scores from one population to another (van de Vijver & Harkness, 2003). Researchers have found various methods to achieve

equivalence (van de Vijver & Leung, 2011). The Survey Research Center (2011) recommended cross-cultural survey guidelines, including the translation, review, adjudication, pretesting, and documentation model, when conducting cross-cultural survey research. According to the cross-cultural survey guidelines, translation is a process that should be integrated into the research design, and emphasizes quality-control checks throughout the process. Furthermore, the Survey Research Center recommended that, to ensure and assess equivalence, researchers should use a multitude of methods, which are both qualitative (e.g., think-aloud interviews), and quantitative (e.g., confirmatory factor analysis).

Problem Statement

Although evidence indicates that culture is an important aspect of children's pain, culture remains an understudied concept. Culture is a complex and multidimensional phenomenon, which may explain the conceptual and methodological issues burdening the pediatric pain literature around culture. Therefore, a clear conceptualization and operationalization of culture is of critical importance for pediatric pain research.

The role of the family, particularly parents, in children's pain is significant. Parents are crucial for the transmission of culture. Even though placing a bandage on a toddler's "booboo," or giving a teenager a painkiller when complaining of a headache, may be considered the "normal" response by many North American parents, it may not be considered the appropriate response in other cultures. Knowledge and understanding of culture and pain is almost entirely confined to parent and child samples living in the United States, Canada, and Europe. This is problematic, as generalization from one culture to another may not be appropriate. This can be exacerbated when children and

parents are receiving healthcare from professionals belonging to different cultural backgrounds from their own. This may lead to communicational issues and barriers for optimal management and assessment of pain in all children. Although biological factors like age and sex may contribute to how parents respond to a child in pain, sociocultural elements may have a significant influence on these parental behaviors.

Given the complexity of children's pain, the significant role of parents, the complex nature of culture, and the limited research to date, it is essential that researchers use a theoretical approach to operationalize culture and its association with parental responses to children's pain. In this dissertation, cross-cultural developmental science was used to examine two cultural models of parenting. Furthermore, a sophisticated translation model was used, including translation, review, adjudication, pretesting, and documentation, to ensure data quality, and confirmatory factor analysis to ensure cross-cultural comparability of the measurements used.

Purpose Statement

The purpose of this study was to cross-culturally compare and explain differences and similarities in pain-related parent responses between parents of 6-12-year-old children living in modern (Westernized) countries that may differ along some important dimensions, with parents living in a more traditional (non-Westernized) country. Given that parents learn and maintain their parenting style in a cultural context (Keller & Greenfield, 2000; Keller et al., 2004), it is reasonable to assume that parents of school-age children have had the opportunity to develop culturally relevant ways of addressing their children's pain. Thus, participants in this study were parents of 6-12-year-old children.

Cross-cultural research should not only seek knowledge on cultural differences, but also isolate the source of these differences and discover what “active cultural ingredient” produces the potential variance (van de Vijver, Chasiotis, & Breugelmans, 2011). To isolate an active cultural ingredient, this study builds on the theory of cultural parenting models by the cross-cultural developmental scientists Greenfield (2009) and Keller (2007). Figure 1 shows the basic hypothesized mediation relationship between the study concepts of cultural values (individualism or collectivism), parenting styles (authoritative or authoritarian), and pain-related parent responses (discouraging or solicitous). Researchers can use structural equation modeling to discern how parenting styles may mediate the effect of cultural values on pain-related parent responses. Furthermore, cultural values and parenting styles could align with pain-related parent responses, through qualitatively different pathways in modern and traditional countries. That is, countries moderate the relationship among cultural values, parenting styles, and pain-related parent responses.

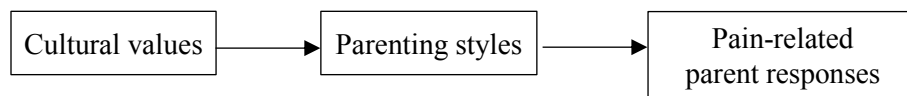


Figure 1 Basic conceptual model.

A cross-cultural methodological approach was used in this study. Researchers use a cross-cultural methodology when research involves more than one culture group, and translation of measurement tools is a major issue (Harkness, 2008; van de Vijver et al. & Matsumoto, 2011). The samples in this study came from diverse populations located on three continents (North America, Europe, and Asia), living in three different countries (Canada, Iceland, and Thailand), and speaking three different languages (English,

Icelandic, and Thai). The selection of the three study sites, Halifax (Canada), Reykjavik (Iceland), and Khon-Kaen (Thailand), was based on the cultural value profiles of these countries (i.e., high/low collectivism and individualism), as well as the *convenience* of pre-established connections with local research communities. The survey instruments used in this study were originally developed within a single language and culture, thus these instruments needed translation and cultural adaptation to the chosen populations and cultures. In designing this study, the cross-cultural survey guidelines were used as a frame of reference. For example, the translation, review, adjudication, pretesting, and documentation translation model (TRAPD), as well as, a confirmatory factor analysis, were used to ensure that the study instruments were equivalent (comparable) across the cultural groups studied.

The overall goal of this study was to enhance future clinical and theoretical development around pain assessment and management, to better meet the needs of all families and children, regardless of their cultural background. Furthermore, two main objectives guided this study.

- The first aim was to determine how parents in different cultures respond to children's pain, and if there are cross-cultural differences/similarities in these outcomes. Furthermore, a goal was to test if the cultural models of parenting (see Figure 1) can help explain *why* parents respond to children's pain the way they do.
- A second aim was to ensure high-quality comparative data, through the application of best practice for cross-cultural survey guidelines. This

involved the cultural adaptation and validation of three measurement tools used by participants in the different research groups.

Significance Statement

Pain is an everyday experience in childhood. Before starting school, children can expect to get up to 20 immunizations (Taddio et al., 2009). Furthermore, after starting school, 11% to 38% of school children experience chronic pain (King et al., 2011). Pain is not only a common experience, but also a universal phenomenon that always occurs in a cultural context. Yet, culture is still a poorly understood phenomenon, as researchers have only begun to study the interaction between culture and pain development in children.

Health professionals and scientists are calling for research that accounts for culture in the context of children's pain, to provide a better cultural frame of reference in addressing current healthcare problems (American Psychological Association, 2003; Canadian Nurses Association, 2004). With today's globalization and migration into Western societies, studying culture is even more urgent. Populations are more heterogeneous than ever, and families of different cultures are now more common. In Canada, for example, about 21% of all 0-14-year-old children belong to visible minority groups (Statistics Canada, 2009). For Iceland, which has historically had a homogenous population, immigration rates have also increased extensively from 2% in 1996 to 8% in 2011, which has caused cultural diversity to increase (Statistics Iceland, 2012). This may be problematic, because children and parents belonging to cultural minorities and in need of pain-related healthcare, are already a vulnerable population (Kristjansdottir et al., 2012). Also, disparities exist in the access and quality of healthcare received by minority

children (Flores, 2010; Sakai et al., 2010), and in the pain treatment received by minority adults (Green et al., 2003).

Adapting a cross-cultural perspective in addressing pediatric pain questions can benefit clinical applications by providing culturally sensitive and appropriate healthcare and limit stereotyping. For example, although solicitous responses to children's pain may be the norm in Westernized cultures, that type of response might not be the case in non-Westernized cultures. A study of this nature would help prevent naive and ethnocentric assumptions, that "all cultures have as their idealized endpoint the Western scientist" (Greenfield, 2000, p. 232).

Although basic knowledge of cross-country differences in pain-related parent responses is informative and clinically relevant, going beyond cultural proxies like country, race, and ethnicity, by directly testing specific cultural elements or processes, it may be especially helpful for theory development. Additional information separating the nature (e.g., biological) and nurture (e.g., familial) influences on children's pain, and documenting culture-common (universal) versus culture-specific parental responses to children's pain, will help healthcare professionals provide appropriate care. This study creates the possibility to identify some universal best practices in how to promote positive parenting and child development around pain.

To date, no studies have been found that addressed cross-cultural differences in pain-related parent responses, where samples are compared between parents living in Western and non-Western cultures. Also, no studies have been found that examined the role of culture in pain-related parent responses through a cross-cultural comparative perspective, by including cross-cultural theories and methodology. Therefore, using a

cross-cultural approach, as is done in this study, will provide unique and innovative perspectives to scientists, educators, and practitioners caring for children with pain and their families.

CHAPTER 2: REVIEW OF LITERATURE

Culture is a complex phenomenon, which has resulted in multiple definitions of culture in the literature (Kroeber & Kluckhohn, 1952). Within health research, culture has been defined as “the accumulated beliefs, practices, attitudes, and values shared by a social collective. It can be construed as a lens through which one registers experience and that shapes and colors perceptions, interpretations, and responses to events” (Devins et al., 2009, p. 34). Culture has certain characteristics which scholars generally agree as being the following: (a) adaptive to the demands of its surrounding ecology; (b) shared (but not necessarily equally by individuals) through common cultural elements like language, symbols, history, time, and place; (c) patterned such that its influences are seen in all social systems (family, community, and institutions); (d) fluid, as it is reconstructed and enriched through generations, but also slow, as it takes approximately one to two generations for any major transformations to take place, and; (e) obtained, learned, and transmitted between generations, mostly as a childhood process (Schultz, Lavenda, & Rauch, 2009; Triandis, 2004b, 2007). Based on these characteristics, it is unsurprising that the family is the primary ground on which culture manifests itself, and the context in which culturally proficient adults result. Although culture helps mold parents, parents transmit and maintain culture through parenting (Bond & Lun, 2014; Cauce, 2008; Triandis, 1989).

With this close connection between culture and parenting in mind, culture can also be viewed as a “set of distinctive patterns of beliefs and behaviors that are shared by a group of people and that serve to regulate their daily living [including family life]. These beliefs and behaviors shape how parents care for their offspring” (Bornstein, 2012,

p. 212), in a multitude of settings, including pain socialization. An individual's early experiences lay the ground for his/her own parenting skills, and, even before becoming parents, these individuals have already developed culturally appropriate parenting beliefs, goals, values, and practices. Thus, although parents around the world strive to raise healthy and competent children, how parents accomplish this goal is linked to the culture in which parents live (Keller, 2007; Keller & Kartner, 2013).

Cultural Models of Parenting

Viewing parenting as a culturally constructed phenomenon, developmental scientists like Keller (2007), and Greenfield (2009) have found that parental behaviors are not random acts, but informed by *cultural models*. Cultural models represent shared practices and ideas of a cultural group, that are oriented toward broader belief systems, and socialization goals, that foster culturally appropriate parenting ideology and behaviors for the development of a competent child (Lamm & Keller, 2007). Cultural value orientations define these socialization goals and parenting ideology, as well as inform what culturally specific parenting practices and child outcomes are expected in the society (Greenfield et al., 2003; Keller et al., 2006). In short, cultural models represent “normative cultural belief systems” (Keller, 2013, p. 10) or “mindsets” (Keller & Kartner, 2013, p. 73) that guide childrearing and socialization for parents (Greenfield et al., 2004). Furthermore, within cultural models - culture situates in everyday contexts and behaviors, and is understood as a socially interactive process of shared activity (cultural practices) and shared meaning (cultural interpretations; Keller, 2007).

The conceptualizing of cultural models is grounded in the seminal theory of individualism and collectivism (Greenfield, 1994, 2000, 2009). This theory provides

“detailing cultural scripts for development and socialization” around two universal human needs, independence and interdependence (Keller, 2013, p. 3). From this theoretical conception, two cultural models are the cultural model of individualism, where the conception of competence emphasizes independence, and the cultural model of collectivism, where the conception of competence emphasizes interdependence (Greenfield & Suzuki, 1998; Keller, 2013; Keller & Kartner, 2013).

The *cultural model of individualism* is prototypical for Western industrialized contexts with urban, highly educated, middle-class families and societies that have strong economies, high technology, and heterogeneous populations (Greenfield, 2009; Keller, Borke, Yovsi, Lohaus, & Jensen, 2005). This model embodies parenting goals that emphasize individuality, independence, and self-maximization, and personality traits like self-esteem, self-reliance, self-confidence, and self-expression (Keller, 2007, 2013; Tamis-LeMonda, Wang, Koutsouvanou, & Albright, 2002). These outcomes are best achieved through authoritative parenting valuing two-way horizontal communication, and parent responses that encourage children’s self-expression (Greenfield & Suzuki, 1998, 2001; Kagitcibasi, 2005, 2007). Thus, authoritative parenting is considered particularly adaptive to Westernized societies, because it aligns with individualistic goals and qualities valued in the cultural model of individualism. In other words, individualistic values manifest in authoritative parent–child communication styles (Greenfield & Suzuki, 1998, 2001; Greenfield et al., 2006; Kagitcibasi, 2005, 2007).

The *cultural model of collectivism*, in contrast, is prototypical for non-Western contexts with an agrarian economy, where modernization processes may or may not yet have taken place, such as the southern parts of the world. These are often rural and

traditional communities with homogenous populations, low socioeconomic-status families, and family structures that encompass extended relatives, like grandmothers and aunts (Greenfield, 1994, 2009; Keller, 2007, 2013). This model embodies socialization goals that emphasize group membership and interdependence, stressing children's loyalty and responsibility toward their family and respect of elders, and encouraging personality traits like honesty, responsibility, reliability, self-control, and obedience (Chao, 1995; Friedlmeier, Schäfermeier, Vasconcellos, & Trommsdorff, 2008; Tamis-Lemonda et al., 2002). These outcomes are best achieved through authoritarian parenting, valuing hierarchical parent-child interaction and emotional/behavioral self-regulation (Greenfield et al., 2006; Keller & Kärtner, 2013). Thus, authoritarian parenting is particularly adaptive to non-Westernized societies, because it aligns with collectivistic goals and qualities valued in the cultural model of collectivism. In other words, collectivistic values manifest themselves in authoritarian parent-child communication styles (Greenfield & Suzuki, 1998, 2001; Kagitcibasi, 2005, 2007). Although researchers hypothesize the two cultural models have predisposed parenting styles, all parents do not uniformly adhere to them, and one can expect significant variation in each country.

According to the cultural model of parenting, parents in all societies have the primary goal of developing a socially competent child, but the meaning of "competence" depends on whether the society emphasizes predominantly collectivistic or individualistic values (Greenfield et al., 2004; Keller, 2003). In short, these value systems translate into action through the "mediation" of parenting styles (Keller, 2007, p. 103).

Furthermore, specific *ecosocial contexts* stress and prioritize collectivistic-individualistic value systems differently, thereby leading to various manifestations of the

basic cultural model (Keller & Kartner, 2013). In other words, ecosocial contexts moderate (change) the relationships among the components of a cultural model. The ecosocial context refers to external factors like geography (e.g., urban vs. rural), family structure (e.g., number of family members), economy, and sociodemographic (e.g., education levels), that define a population (Keller, 2007; Keller & Kartner, 2013).

Developmental scientists talk about cultural models as representing “universal” processes or mechanism (Greenfield, 2000, p. 236), which, depending on the context, create pathways that mainly enforce individualistic or collectivistic socialization and parenting goals. Various “manifestations” of individualistic and collectivistic pathways exist (Keller & Kartner, 2013, p. 70), but one pathway usually dominates more strongly to influence how parents behave when socializing their children (Tamis-LeMonda et al., 2008).

These cultural models of parenting have helped researchers study and understand how culture relates to parenting behaviors. The majority of the research has focused on infants by looking at mothers’ nurturing practices (M. H. Bornstein, Tal, & Tamis-LeMonda, 1991; M. H. Bornstein, et al., 1992), feeding practices (Harwood & Schoelmerich, 1999), and sleeping practices (Schulze et al., 2002; Shimizu et al., 2014). Researchers have found, for instance, that maternal behaviors in infant care (sleeping, feeding, or playing) differ significantly between mothers living in different ecosocial contexts encouraging the collectivistic cultural model (e.g., rural Africa or India), compared to mothers living in environments encouraging the individualist cultural model (e.g., urban Germany or the United States). Mothers emphasizing collectivistic socialization goals use significantly more “proximal” parenting practices (i.e., body

contact, body stimulation, synchronic mother-infant vocal exchanges), compared to their counterparts who used more “distal” practices (i.e., face-to-face contact, object stimulation, and sequential mother-infant vocal exchange; Keller, 2007).

Less research describes noninfant parenting practices. Studies include, for example, practices around preschoolers’ sleeping (Milan, Snow, & Belay, 2007), and day-to-day child-rearing (e.g., child viewing television, reading to child; Jose, Huntsinger, Huntsinger, & Liaw, 2000), as well as practices related to adolescents’ education (like involvement and monitoring; Spera, 2006). Two studies considered parent responses to children’s expression of negative emotions (Chan, 2012; Chan et al., 2009). These studies described emotional socialization practices of mothers of 6- to-8-year-old children living in urban Hong Kong, China ($n = 198$; Chan et al., 2009). Through structural-equation modeling, Chan et al. (2009) found that mothers who adopted authoritarian-parenting styles responded to children’s emotional expressions through an emotion-discouraging approach, whereas mothers who adopted an authoritative-parenting style responded using an emotion-encouraging approach. In another paper, Chan (2012) reported that the education levels of these mothers had a significant impact on the handling of their children’s emotions. As mothers’ education level increased, they more often adopted an expression-encouraging approach, but less often an emotion-dismissing approach (Chan, 2012).

The terminology for cultural models is not uniform, in the sense that the conceptualization and the definitions of cultural models vary, exemplified by the different names attached to them (e.g., independence/interdependence and autonomy/relatedness), and the variables researchers use to conceptualize and operationalize the models. For

example, parenting styles (Greenfield & Suzuki, 1998), and parenting ethnotheories (Keller, 2007) are both terms that refer to value-based parenting ideology. In this study, the cultural model of parenting used two multidimensional variables: cultural values and parenting styles.

Cultural Values: Collectivism and Individualism

Historically, values are the critical core of a culture (Kroeber & Kluckhohn, 1952). Cultural values transmit between generations, are found in all societies, and link societal ideologies across history and time (Plog & Bates, 1979; Triandis, 1995). Cultural values provide a “set of lenses” (Triandis, 2004b, p. 13) to view the world, informing people about what is valuable, acceptable, important, and right (Knafo & Schwartz, 2003). These shared societal assumptions influence human behavior (Scupin, 2006).

The value contrast that has gained the most influence among cross-cultural researchers is between individualism and collectivism (M. H. Bornstein & Bornstein, 2007; Triandis, 2001b), specifically Triandis’s theory of individualism and collectivism. According to Triandis (2002), individualism and collectivism are “umbrella constructs” (p. 209), distinguishing individuals into different groups depending on prevailing core cultural values or syndromes that exist in societies. Here a cultural syndrome represents “a pattern of shared attitudes, beliefs, categorizations, self-definitions, standard operating procedures, unstated assumptions, norms, roles, and values that is organized around a theme” (Triandis, 2004a, p. 555). Thus, a cultural syndrome carries relevant actions, behaviors, and ways of interpreting and processing information (Oyserman & Lee, 2008).

Collectivism and individualism are complex constructs, defined in numerous ways (Oyserman, Coon, & Kemmelmeier, 2002). Generally speaking, individualism and

collectivism describe how individuals perceive and interact in in-group memberships. In-groups are people to whom an individual feels similar (e.g., family), whereas out-groups are comprised of strangers (Triandis, 1994, 2001a). Individualism and collectivism differ on four main attributes:

- How people define themselves: individualists define themselves as autonomous or independent from groups, whereas collectivists define themselves as an aspect of their in-group (i.e., they are interdependent with in-groups);
- How people structure their goals: individualists prioritize personal goals over in-group goals, whereas collectivists prioritize group goals and needs above their own;
- How individual behavior is predicted and determined: individualists' social behavior is best predicted by attitudes (what one wants to do), than by norms (what one should do), whereas for collectivists, norms and attitudes are both important, and;
- How relationships are viewed for personal advantages/disadvantages: for individualists, when the disadvantages of a relationship exceed the benefits, the relationship may end, whereas for collectivists, in-group relationships are very important, even if no personal benefit follows (Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, 1995, 2002).

These attributes create differences in the ways individuals communicate with each other and express their emotions (Schultz et al., 2009; Triandis, 2000).

Most cultures have a mixture of individualistic and collectivistic elements, not necessarily shared in a similar or equal fashion by all persons. This creates individual variation in cultures (i.e., subcultures; Triandis, 1995, 2007). However, a predominant cultural syndrome generally prevails in each culture, leading to more between-culture than within-culture variation (Triandis, 1993). Individualism and collectivism differ in their geographic and demographic distribution. In general, individualism occurs primarily in societies that are Western, heterogeneous, have geographical mobility (e.g., not islands), and social mobility. Furthermore, the upper classes of societies, individuals with higher education levels, men, and older individuals tend to be more individualistic than lower social classes, individuals with less education, women, and younger individuals. In contrast, collectivism occurs mostly in traditional cultures and relatively homogenous societies (Oyserman & Lee, 2007; Triandis, 1993, 1995).

For example, a meta-analysis showed that compared to many other locations, North Americans are higher in individualism and lower in collectivism, which is also the case for most English-speaking countries (Oyserman et al., 2002). However, when one compares Western countries on an individualism-collectivism continuum, Western European countries tend to be more collectivistic than North Americans. Even so, when comparing North American countries, Canada rates higher on collectivism compared to the United States, despite other striking similarities. Much of Asia, Africa, and Latin America have strong collectivistic patterns (Hofstede, 2001; Oyserman & Sorensen, 2009; Triandis, 1993).

Individualism and collectivism are multidimensional constructs, not opposite poles of one dimension, and thus can take different forms in different cultures, and in

different individual situations (e.g., family vs. occupation). Here, horizontal and vertical dimensions are the main contrasting patterns, reflecting a distinction in the way individuals view themselves and their society (Singelis et al., 1995; Triandis, 1995).

The horizontal-vertical distinction involves differences in the way individuals view themselves and their society. *Horizontal* orientation emphasizes societal equality, and individuals view themselves as fundamentally similar to others in the society, expecting everybody to have similar status and access to resources. *Vertical* orientation emphasizes hierarchy and acceptance of inequality. People view themselves as different from others along a hierarchy, where those on the bottom get fewer privileges and power than those on the top (Singelis et al., 1995; Triandis, 1995, 2011). When the horizontal-vertical dimension combines with the individualism-collectivism dimension, four cultural patterns emerge.

Horizontal individualism reflects the extent to which individuals attempt to be distinct, without desiring special status. Individuals view themselves as completely autonomous, and believe equality between individuals is an ideal state (egalitarian). Society emphasizes fairness, freedom, and pleasure, and values individual traits like confidence and self-reliance. Personal choice drives behaviors without necessarily comparing oneself to others (e.g., “I often do my own thing”). Individuals behave similarly in in-groups and in out-groups, and emotions are long lasting and most frequently individually focused (e.g., anger). Sweden is considered a society exemplifying this type of individualism (Singelis et al., 1995; Triandis, 1993, 2011).

Vertical individualism reflects the extent to which individuals attempt to be distinct and desire special status. Individuals view themselves as completely autonomous

and accept that inequality exists among individuals. Individuals strive for improved status and want to stand out; modesty is not a desirable quality, but self-reliance is. Here, competition (e.g., “competition is the law of nature”) and comparison (e.g., winning is everything) drive behavior. The United States is the usual example of a society that promotes this type of individualism (Singelis et al., 1995; Triandis, 1995).

Horizontal collectivism assesses the extent to which individuals emphasize interdependence, but do not submit readily to authority. Individuals view themselves as part of a collective (e.g., “if a coworker gets a prize, I would feel proud”), and view all members as equal. People emphasize sharing, helping, and maintaining group harmony, as well as individual traits like duty, obedience, and modesty. Individual behaviors tend to be very different when in in-groups, versus out-groups. Individuals provide little feedback on their own experience to social situations; emotions tend to be of short duration, and mostly other focused (empathy). The Israeli kibbutz exemplifies a society promoting this type of collectivism (Triandis, 1993, 2011).

Vertical collectivism assesses the extent to which individuals emphasize interdependence and competition with groups. This scale highlights meeting the needs and wishes of those in power. Individuals view themselves as part of a collective, willing to accept hierarchy and inequality in that collective. Relationships are hierarchical and although individuals view themselves as different from others, they perceive the group to be more important than the individual. Maintaining group harmony is significant. Sacrificing for the group is a virtue (e.g., “sacrificing my self-interest for the benefit of my group”). People emphasize meeting the needs and expectations of those in authority, as well as subordinating personal goals to group goals, and sacrificing for the group.

Scholars have used villages in India as an example of a society that promotes this type of collectivism. In general, horizontal individualism and vertical individualism highlight self-reliance, whereas horizontal collectivism and vertical collectivism highlight the maintenance of social harmony (Triandis, 1993, 1995, 2011).

All cultures encompass these four cultural patterns to some degree, but cultures tend to have a predominant pattern, thereby allowing characterization of a culture as primarily vertical individualism, horizontal individualism, vertical collectivism, or horizontal collectivism (Triandis, 2000, 2007). Most individuals possess all four cultural patterns to some degree, but individuals tend to have a predominant cultural pattern, activated depending on the situation (Triandis, 1995, 2001a). For example, an individual may endorse strong individualistic values toward coworkers, but weak values to core family members. Furthermore, an individual may value independence, but simultaneously find it important to be well connected to immediate family members. This group of individuals is highly diverse (Triandis, 1993, 2001b).

Parenting Styles: Authoritative, Authoritarian, and Permissive

Examining parenting styles can capture the normal variation in parents' efforts to socialize their children. This core parenting concept relates to parental values, goals, and practices, as well as child outcomes (Chan et al., 2009; Darling & Steinberg, 1993). Parents convey their parenting style to their children "through body language, temper, tone of voice, emotional displays, and quality of attention" (M. H. Bornstein & Zlotnik, 2008, p. 497).

As one of many ways of defining parenting styles (Spera, 2005), Darling and Steinberg (1993) viewed parenting style as "a constellation of attitudes toward the child

that are communicated to the child and create an emotional climate in which parents' behaviors are expressed" (p. 493). Here parenting style is the context in which parents raise their children, where parents emphasize their socialization goals, enforce values, exhibit parenting practices, and develop children.

One may categorize parenting styles in different ways (Spera, 2005), but Baumrind's (1967, 1971) typology of parenting styles is the most respected and prominent theoretical approach (Sorkhabi, 2005). Baumrind (1967, 1971) specified three main parenting styles. The *authoritative-parenting style* represents a child-centered family context, where parents provide high expectations, clear rules, and guidance to their children, and apply only modest punishment if deemed needed. Parents respond well to their children's needs by using high nurturance that supports a child's individuality. Parents encourage open parent-child communications along with the expectation that children will express their feelings, needs, and wants.

The *authoritarian-parenting style* represents a hierarchical family context. Parents have high expectations for their children, asserted by demand for obedience and respect for authority. Nurturance tends to be low, and parents control high potential through harsh forms of punishment. Parents discourage children's autonomy; parent-child communication patterns are hierarchical. Parents discourage verbal give and take and children's emotional expressions.

The *permissive-parenting style* is a mellow family style. Parents maintain a high level of nurturance, but low demand for maturity and self-control. Children have the freedom to do whatever they wish, with limited restrictions, guidance, or rules for the

child to learn from or follow. Communications are open between parent and child, and parents avoid punishment (Baumrind, 1978; M. H. Bornstein & Zlotnik, 2008).

Researchers have extensively studied the effects of each of these three parenting styles on children's health and development, showing that, in general, the authoritative-parenting style provides more positive child outcomes compared to the other two (Sleddens, Gerards, Thijs, de Vries, & Kremers, 2011; Spera, 2005). However, the implications of one parenting style may vary for children from different cultural and socioeconomic contexts (L. Bornstein & Bornstein, 2007; Firmin & Castle, 2008). For example, Baumrind (1972) found that Black girls from the most authoritarian families showed the strongest independence and self-assertiveness, whereas for White girls, these outcomes would be found in authoritative families. This result has led researchers to challenge the commonly held view that the authoritative-parenting style is always the best style for children's outcomes (Ang & Goh, 2006; Stevenson-Hinde, 1998).

In the literature, the use of the terms parenting styles and parenting practices differ, and are often used interchangeably (Spera, 2005). Researchers need to better distinguish these concepts to aid in understanding the parenting process; parenting practices involve specific behaviors aimed at the child and encompass what parents do (e.g., distract or minimize). Parenting practices are context dependent, influenced equally by characteristics of the child and the parent (Blissett & Haycraft, 2008; Darling & Steinberg, 1993; Spera, 2005).

Parenting style is generally believed to be characteristics that do not change across contexts or time (L. Bornstein & Bornstein, 2007; M. H. Bornstein & Zlotnik, 2008). Parents adopt or learn what parenting style to use. What parenting style

individuals adopt is said to be based on a number of factors, which include the characteristics of the parent, and also those of the individual child (e.g., age and gender). One important determinant is family education, in that those with higher education levels tend to use a more authoritative-parenting style, whereas families with less education tend to use a more authoritarian-parenting style (M. H. Bornstein & Zlotnik, 2008; Zervides & Knowles, 2007). More importantly, the culture in which individuals live is believed to socialize parents to adopt specific parenting styles. Of particular influence are the cultural values systems which are most predominant within a society (Baumrind, 1980; M. H. Bornstein, 2012).

Relationship Between Cultural Values and Parenting Styles

The empirical link between cultural values and parenting styles builds on single nation and multination studies, suggesting that authoritative parenting is the most common and generally accepted style of parenting in individualistic societies, whereas the authoritarian-parenting style appears to be more common in collectivistic societies (Chen et al., 1998; Liu & Guo, 2010; Rudy, Grusec, & Wolfe, 1999; Su & Hynie, 2011). However, a controversy exists on the universality of parenting styles, with some researchers arguing that Westernized theories are unable to capture the culture-specific meaning of parenting styles inherent in non-Western contexts (Ang & Goh, 2006), whereas others argue, that although the meaning and outcomes of these parenting styles may differ, they do represent universal structures of parenting (Sorkhabi, 2005).

Only a few researchers explored the relationship between parenting styles and the vertical-horizontal dimensions of individualism-collectivism. When adding these dimensions, different relationships emerge. For example, Su and Hynie (2011) explored

factors influencing the parenting style (authoritative vs. authoritarian) of mothers of 2-6-year-old children living in China and Canada. The authors found a significant positive correlation between authoritative-parenting style and horizontal individualism ($r = .22$, $p < .01$), as well as horizontal collectivism ($r = .26$, $p < .01$), that differed from the general thinking about collectivism. Similarly, Georgiou, Fousiani, Michaelides, and Stavrinides (2013) conducted a study with teenagers in Cyprus, finding a positive correlation between authoritarian-parenting styles and vertical collectivism ($r = .31$, $p < .01$) and vertical individualism ($r = .30$, $p < .01$).

These two studies indicate that vertical-horizontal dimensions provide additional information pertaining to the traditional individualism-collectivism measurement and its relationship with parenting styles. They show that these relationships are more complex and not as straight forward as thought. Given how scarce this particular literature is, this study will build its hypotheses on the more extensive conventional literature around cultural values and parenting styles.

Parental Responses to Child Pain

The importance of parental responses in understanding childhood pain is well documented, showing that how parents respond to a child's pain can influence the child's pain experience and well-being (Birnie et al., 2014; Palermo & Chambers, 2005). Parents may engage in a broad repertoire of behaviors when their child is in pain. Researchers categorized the most prevalent behaviors studied into three groups: solicitousness, promotion of coping and well-behaviors, and discouraging.

Solicitousness is when parents encourage or reinforce pain symptoms by giving frequent attention to the pain through verbal empathetic reassurance, like saying "it's

okay” or “I understand”. It can also involve the parent providing the child physical reassurance like, giving privileges, or relieving the child from responsibilities, or the parent deciding to stay home from work. These parental protective behaviors promote attention to the pain (Huguet, Miro, & Nieto, 2008; Van Slyke & Walker, 2006).

Promotion of coping/well-behaviors involves parental verbal and physical expressions like distracting behaviors that encourage the child to engage in activities that focus their attention away from the pain, or remain active in a painless way. Promotion of coping and well-behaviors involves informing the child about pain conditions, and advising them how to cope with the pain. It not only involves distracting behaviors, but also includes situations in which parents attend to the child’s pain, and prompt active coping (e.g., “why don’t you take a bath, it will help you relax and feel better”; Hermann et al., 2008; Huguet et al., 2008).

Discouragement of a child’s pain expression involves parental verbal and physical expressions toward the child. Parents may minimize (e.g., “it’s not that bad”), criticize (e.g., “why are you crying so much”), ignore (e.g., not listen), or express agitation about the pain (e.g., parent shows distress; Bush & Cockrell, 1986; Hermann et al., 2008; Van Slyke & Walker, 2006).

The pain-related parental responses literature has mainly focused on child-pain outcomes by surveying parents and children from pain or pain-free populations (Hermann et al., 2008; Huguet et al., 2008), and through observation during painful pediatric procedures in clinical and experimental settings (Chambers, Craig, & Bennett, 2002; Moon, Chambers, & McGrath, 2011).

Solicitous parental responses generally align with negative child outcomes (e.g., increased pain, distress, disability, pain-catastrophizing) for children with procedural pain (Moon et al., 2011), experimental pain (Chambers et al., 2002), and chronic/recurrent pain (Achiam-Montal & Lipsitz, 2014). Studies looking at solicitousness in healthy participants have been far fewer and have shown somewhat different results. For example, in the Vervoort et al. (2011) study, sampling 386 Dutch school children and their parents, solicitousness could decrease the likelihood of child disabilities, but only when elicited by fathers of children with high levels of pain catastrophizing. These discrepancies between positive and negative child pain outcomes can be accounted for by the specific sample compositions (e.g., cultural background, age and gender proportions), pain contexts (healthy vs. pained), or measurement tools used by these studies.

Promotion of coping and well-behaviors has aligned with positive and negative child-pain outcomes. That is, among children with chronic/recurrent pain, promotion of coping aligns with higher levels of child pain-related problem solving and pain-related social support (Hermann et al., 2008), but also with higher intensity of pain complaints (pain frequency and intensity; Hermann et al., 2008) and disability (Claar, Simons, & Logan, 2008). In healthy children, promotion of coping behavior aligns with decreased disability (Vervoort et al., 2011), and higher levels of pain-related problem solving (Hermann et al., 2008), but also higher pain frequency (Hermann et al., 2008). These studies show that in the majority of the cases, promotion of coping and well-behavior promotes positive pain outcomes for children. These studies also show that child pain is very complex, where the same pain-related parent behavior can simultaneously have a negative and positive effect on the child's pain experience.

Discouraging pain-related parental responses have been associated with negative child-pain outcomes in healthy children and children with pain. Discouraging is shown to increase pain catastrophizing in healthy children (Vervoort et al., 2011), and children with recurrent pain (Hermann et al., 2008). It is also shown to increase disability (Claar et al., 2008), and somatic symptoms in children with chronic and recurrent pain (Claar et al., 2008; Hermann et al., 2008; Simons, Claar, & Logan, 2008). Of the three pain-related parent behavior categories discussed, parental discouraging has provided the most consistent results around child pain outcomes, by predicting negative pain outcomes.

Theoretical and research evidence suggests that how parents respond to children's pain is a complex process (Riddell et al., 2014). Parent-child interactions are bidirectional, with child and parent characteristics interacting with various surrounding contextual factors (Craig & Riddell, 2003). Available evidence shows that the psychological parameters of the child (e.g., pain history, anxiety, and catastrophizing), and of the parent (e.g., gender and catastrophizing), may influence how parents respond to their child's pain (Goubert, Vervoort, Ruddere, & Crombez, 2012; Hechler et al., 2011; Vervoort et al., 2011). For example, a Spanish study with parents of healthy school-age children found that parents of younger children (6-10 years), compared with those of older children (11-18 years), scored higher on discouraging tendencies. This same study also found that children's gender influenced parent behaviors, in that parents tended to score higher on solicitousness and the promotion of coping/well-behaviors if the child was a boy (Huguet et al., 2008). Researchers studying a German sample did not report similar results (Hermann et al., 2008). This discrepancy may relate to the specific

sample compositions (e.g., cultural background, age and gender proportions), pain contexts (healthy vs. pained), or measurement tools used by these studies.

The main limitation of the literature around pain-related parent behaviors is that studies have primarily used samples of parents and children living in the United States, Canada, and Western Europe. This leaves the largest portion of the world's population, unstudied. Therefore, without further research, this evidence cannot be generalized to individuals living in very different cultures.

This brings us to the second issue associated with this literature, which is the lack of knowledge explaining why, rather than how, parents respond to a child's pain (Caes, Vervoort, Eccleston, et al., 2012). In fact, researchers have pointed out that cultural factors may play an important role in explaining pain-related parent responses (Hermann et al., 2008; Kristjansdottir et al., 2012). As to date, no study was found exploring the link between parenting styles, cultural values, and pain-related parental responses. Furthermore, only a few studies have considered the relationship between pain-related parent behaviors, cultural values, and parenting styles separately.

Relationship Between Pain-Related Parent Responses and Cultural Values

Two comparative studies were found looking at cultural values and caregivers' behaviors around children's pain (O'Neill, Pillai Riddell, Garfield, & Greenberg, 2016; Vinall, Riddell, & Greenberg, 2011). Both studies were carried out in Canada in the same lab, and used English-speaking participants. Vinall et al. (2011) explored maternal ($n = 80$) self-reported cultural heritage and the mothers observed soothing behaviors following their infants' immunization. Here, culture was conceptualized as being either collectivistic or individualistic, but operationalized based on the mothers' continental

heritage (e.g., Africa, Asia, or America). Results showed that of the seven soothing behaviors analyzed, only one soothing behavior was different between these two groups. Specifically, mothers of an individualist cultural heritage used more affectionate soothing behaviors compared to mothers of collectivist cultural heritage.

O'Neill et al. (2016) explored caregivers ($n = 393$) self-reported cultural heritage and their observed emotional availability after their infants' immunization. Instead of classifying participants into individualistic and collectivistic cultures based on their cultural heritage, a different approach was taken. That is, a validated scoring system was used where caregivers received a score on a specific Individualistic Scale (Taras, Steel, & Kirkman, 2012). Participants received a score based on their cultural heritage (country/region). For example, a caregiver reporting the U.S. as their cultural heritage would receive a higher score on the Individualistic Scale compared to someone from China. Results showed that caregivers that reported cultural heritage that were highly individualistic, tended to show greater emotional availability for their infants following immunization, compared to those from cultural heritages that were less individualistic.

These two studies provide important information to build upon. These studies were, however, based on only English speaking caregivers living in Canada, which limits the generalizability of the findings. Also, all caregivers from the same country were assumed to have the same cultural values and there were no measurements of caregivers' own cultural values. Despite the limitations, by identifying and linking caregivers' cultural background with collectivism and individualism, and pain-related caregiver behaviors, the authors show that cultural values are important factors to consider for future studies.

Qualitative data was used in studies examining pain-related parent behaviors in collectivistic cultures (Forgeron et al., 2009; Jongudomkarn et al., 2006; Wiroonpanich & Strickland, 2004). Conducted within hospital settings in Thailand, these studies described Thai parents as using discouraging behaviors when their children experienced pain. It is important to note that these studies were not specifically looking at collectivistic and individualistic value systems. However, the possibility that differences in pain-related parental responses do exist, between caregivers living in predominantly individualistic versus predominantly collectivistic countries, is further exemplified in a systematic review on culture and procedural pediatric pain (Kristjansdottir et al., 2012). Here, authors reported a cross-cultural difference in children's behavioral expression of pain. Specifically, Caucasian U.S. children were found using more overt pain behavioral expressions (e.g., crying) compared to non-Caucasian U.S. children. This is important given the significant role parents play in children's pain socialization.

Taken together, the literature suggests variation in pain-related parental responses, and that these variations may relate to cultural elements like individualism and collectivism. Solicitousness appears to be a normative behavior among Westernized parents when their children experience pain (Blount et al., 1989; L. L. Cohen et al., 2000; Hermann et al., 2008; Vervoort et al., 2011), but does not appear to be a normative behavior for parents belonging to non-Westernized cultures. For those parents the norm might be to discourage pain expression in their children.

Relationship Between Pain-Related Parent Responses and Parenting Styles

Two studies were found linking parenting styles with pain-related parent behaviors (Bush & Cockrell, 1987; Hermann et al., 2008). The study by Hermann et al.

(2008), was conducted in Germany, and considered factors influencing pain-related parent behaviors of 47 mothers of children (8-16 years), either suffering from recurrent abdominal pain, or serving as healthy controls. Parenting styles were measured using the Parental Child-Rearing Inventory (Krohne, Kiehl, Neuser, & Pulsack, 1984). This scale was developed in Germany, and answered by the children. This parenting style measure consisted of six subscales: praise, blame, inconsistency, support, restrictive behaviors, and punishment intensity. Information on mothers' pain-related behaviors was sought from the mother and the child using the Pain-Related Parent-Behavior Inventory (Hermann et al., 2008). This instrument consisted of three subscales: solicitousness, distracting behaviors, and discouraging/ignoring responses. The researchers did not analyze the two groups of children, ill versus healthy, separately. Results showed a positive correlation between supportive parenting style and parental solicitousness behavior ($r = .59, p < .001$), and supportive parenting style and distraction behavior ($r = .45, p < .01$). Further, parenting styles involving restrictive ($r = .53, p < .001$), blaming ($r = .53, p < .001$), and inconsistent parenting ($r = .59, p < .001$), aligned with discouragement. Although parenting styles (Parental Child-Rearing Inventory; Krohne et al., 1984) and pain-related parent behaviors (Pain-Related Parent-Behavior Inventory; Hermann, 2008) were measured separately, the authors provided limited information on the parenting style measurement, other than it was a common measurement used in Germany.

The second study by Bush and Cockrell (1987), examined if parenting styles could predict mothers' behaviors toward children in stressful medical situations. Using an observational design, 50 mothers and their ill children (4-10 years) participated, while

waiting for the physician in a clinical examining room in an outpatient pediatric health clinic. The researchers measured parenting style with mothers' responses to the Child-Developmental Questionnaire (Zabin & Melamed, 1980), which focuses on parental discipline using the following five subscales: positive reinforcement, punishment, force, reinforcement of dependency, and modeling/reassurance. Further, authors videotaped and rated the observed pain-related parental responses during the premedical event on the Dyadic Prestressor Interaction Scale (Bush, Melamed, Sheras, & Greenbaum, 1986), which consists of six subscales: informing, distracting, reassuring, ignoring, restraining, and agitation. Results showed that the observed frequency of mothers' pain-related behaviors, in some cases, significantly related to their reported parenting styles. That is, those mothers applying positive-reinforcement styles, used more distracting practices ($r = .39, p < .05$), but those who tended to apply a modeling/reassuring parenting style, were more likely to provide reassurance to their pained children ($r = .32, p < .05$). A limitation with this study was how little information was provided on the parenting style measurement, and how similar the measure was to that of parent pain-related behaviors' measurement. Although the authors stated they were measuring parenting styles, they appeared more to be measuring self-report of parent behavior. Despite these limitations, these two studies suggest a positive relationship between pain-related solicitousness and authoritative-parenting style, on the one hand, and a positive relation between discouraging and authoritarian-parenting style, on the other hand.

Summary of the Literature

Cultural values and parenting styles can be described as the basic unit of cultural models. Cultural models are multidimensional constructs that are situated within specific

ecosocial contexts. Horizontal-vertical individualistic-collectivistic cultural values describe a complex relationship between individuals and others, and the emphasis individuals place on their own versus others needs and goals. Generally, countries and individuals have predominant cultural value systems. Western countries are shown to adhere more towards individualistic values, while non-western countries adhere more towards collectivistic values. In both cases the emphasis on horizontal or vertical values varies.

Parenting styles – authoritative, authoritarian, and permissive – describe different emotional climates in which parents socialize their children to become competent members of a society. The parenting style parents adopt is related to their cultural value ideology. The literature indicates that caregivers in individualistic cultures are more authoritative in their parenting styles, while individuals in collectivistic cultures are more authoritarian. However, evidence looking at the relation between horizontal-vertical collectivistic-individualistic values and parenting styles is very limited.

Pain-related parent behaviors can be classified as being solicitous, discouraging, and promoting coping/well-behavior. The quantitative literature on pain-related parent behavior is based on samples from Western countries. This literature indicates that solicitousness is a normative response among parents with children experiencing pain. Furthermore, parents living in Canada who report their cultural heritage as being more individualistic than collectivistic tend to show more emotional availability following their infants' immunization. Individualistic cultural values and authoritative parenting styles both promote individuals' emotional expression.

Limited research has been done on pain-related parent behaviors in non-Western countries. Only a few qualitative studies were found describing the relationship between caregivers and their pained child within a hospital setting. Based on the descriptions from these studies, pain-related discouraging seemed a common response among caregivers. Collectivistic cultural values and authoritarian parenting style both discouraged individuals emotional expression.

Proposed Cultural Models of Parenting

Based on the forgoing discussion, the hypothesized theoretical framework for this dissertation is shown in Figure 2. This framework renders what Keller (2007) described as the ecocultural model of development. This mediation model specifies relationships among the predictor (cultural values), mediator (parenting styles), and outcome (pain-related caregiver behavior) variables. The cultural values are hypothesized to transmit their effects through parenting styles, because the cultural values are expected to cause caregivers to choose a specific parenting style. Parenting styles are expected to cause changes in caregiver behavior toward child pain. In this way, parenting styles can change parental behavior, as a result of the influence of cultural values. This is a mechanism by which the predominant cultural values impact parents' use of parenting styles, by which the parenting style leads to specific parental behavior around pain. In other words, it is here where parenting styles act as the “go between” variable.

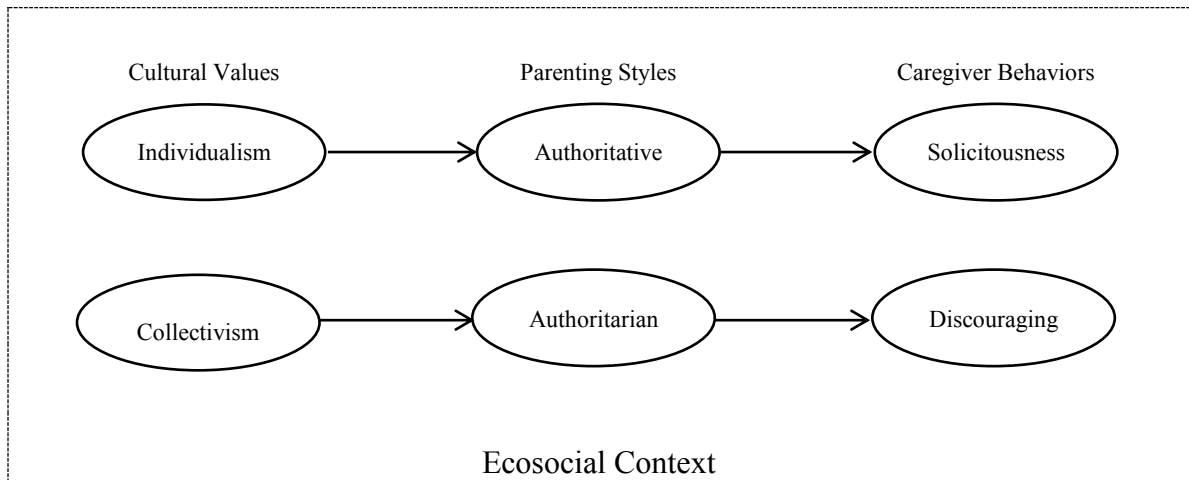


Figure 2 Hypothesized cultural models of parenting.

Note: The black headed arrows indicate positive significant pathways between predictors, mediators, and outcome variables.

Figure 2 indicates hypothesized causal pathways among cultural values, parenting style and caregiver behavior in responding to child pain. The black arrows represent positive and significant association between predictor, mediator, and outcome variables. In accordance with Keller's (2007) theory, these pathways are expected to be primed by ecosocial contexts (shown by the dashed box in Figure 2). Here ecosocial context refers to external factors like, the physical environment structure (e.g., climate, geography), population parameters (e.g., mortality), and socioeconomic structure (e.g. family structure, economy, education levels; Keller, 2007). An ecosocial context is expected to change the relations between the variables in the model. As a moderating variable, the ecosocial context will either increase or decrease the strength of the effect of cultural values on parenting styles and pain-related parent responses. That is, these ecosocial factors are expected to moderate the relationship between cultural values (individualism, collectivism), and parenting styles (authoritative, authoritarian), and therefore influence what pain-related behavior parents use (solicitous, discouraging).

Although there are many possible relationships between the model variables in Figure 2 (not included for clarity purposes), two primary socialization pathways are believed to cause pain-related behaviors: (a) the individualistic pathway, shown on the top, leading to a solicitous response, and; (b) the collectivistic pathway, shown at the bottom, leading to a discouraging response. Because the two pathways coexist – that is one does not exclude the other – both predictors can affect both outcome variables. However, one outcome is more likely, depending on the ecosocial context in which the caregiver lives.

An individualistic ecosocial context (urban Westernized middle-class) is expected to prime the individualistic pathway in Figure 2 (top line). In other words, this context increases the strength of horizontal-vertical individualistic values effects on authoritative-parenting style and solicitousness, while decreasing the strength of horizontal-vertical collectivistic effects on authoritarian parenting style, and discouraging. In other words, an individualistic context changes the strength of the association so that there is: (a) an increase of strength between horizontal/vertical individualism, authoritative-parenting style, and solicitousness, and; (b) a decrease of strength between horizontal-vertical collectivism, authoritarian-parenting style, and discouraging.

In contrast, a collectivistic ecosocial context (rural non-Westernized) is expected to prime the collectivistic pathway in Figure 2 (lower line). In other words, this context increases the strength of horizontal-vertical collectivistic values effects on authoritarian-parenting style and discouraging, while decreasing the strength of horizontal-vertical individualistic effects on authoritative-parenting style and solicitousness. Stated another way, a collectivistic context changes the strength of the association resulting in: (a) an

increase of strength between horizontal/vertical collectivism, authoritarian-parenting style, and discouraging, and; (b) a decrease of strength between horizontal-vertical individualism, authoritative-parenting style, and solicitousness.

The emphasis of this study was on the parenting process, not parenting effects. Therefore, child outcomes are not part of the theoretical framework, and not shown in Figure 2. Also, the figure does not show permissive parenting styles, or promotion of coping/well-behavior pain-related responses. This is because the permissive parenting style has not been found as a normative way of parenting in any particular culture (Greenfield, 1998). The promotion of coping/well-behavior concept is not shown as the literature does not suggest cross-cultural differences regarding pain-related parental promotion of coping/well-behavior.

Study Objective and Hypotheses

The primary purpose of this study was to empirically test the proposed conceptual framework. More specifically, the objectives of this study were (a) to examine cross-country differences and similarities between caregivers living in individualistic-dominant versus collectivistic-dominant countries in levels of the study constructs, and (b) to examine if pain-related parent responses can be explained based on individualistic-socialization versus collectivistic-socialization pathways shown in Figure 2, and whether ecosocial contexts prompt these associations. Outcomes will indicate whether the cultural model of parenting behaviors is specific to or generalizable across societies.

This study tested seven hypotheses. Hypotheses 1 to 3 used a traditional approach of conceptualizing culture as a group variable. Here, country of residence was expected to create differences in the mean levels of study variables. Hypotheses 4 to 7 used a

comprehensive approach to studying culture, where culture was viewed as a latent variable or a pathway (process), that can only be understood as a complex relationship between multiple variables and where sophisticated statistical approaches, like structure equation modeling, are needed.

Hypotheses 1 to 3. Cross-Country Comparison of Study Variables

Research Question 1: Is there a difference in the average levels of study variables between caregivers from a collectivistic ecosocial context and caregivers from an individualistic ecosocial context (country)?

Hypothesis 1: Significant differences exist between levels of horizontal/vertical individualism/collectivism in caregivers who live in individualistic-dominant ecosocial contexts versus collectivistic-dominant countries. That is, caregivers living in an individualistic country are more likely to value horizontal/vertical individualism than caregivers living in collectivistic countries. Likewise, caregivers living in a collectivistic country are more likely to value horizontal/vertical collectivism than their individualistic counterparts.

Hypothesis 2: Significant differences exist between levels of authoritative versus authoritarian-parenting styles in caregivers living in individualistic-dominant countries versus those in collectivistic-dominant countries. That is, individualistic caregivers are more likely to value authoritative-parenting styles than collectivistic caregivers. Likewise, collectivist caregivers are more likely to value authoritarian-parenting style than individualistic caregivers.

Hypothesis 3: Significant differences exist between levels of solicitousness and discouragement in caregivers living in individualistic-dominant countries

versus collectivistic-dominant countries. That is, individualistic caregivers are more likely to value solicitous responses than collectivistic caregivers. Likewise, collectivistic caregivers are more likely to value discouraging responses than individualistic caregivers.

Hypotheses 4 to 7. Testing the Hypothesized Cultural Model of Parenting

Research Question 2: Does ecosocial context moderate the relationship between cultural values, parenting styles, and pain-related parent responses?

Hypothesis 4: For caregivers living in predominantly individualistic ecosocial contexts, a stronger association will exist between individualistic values, authoritative-parenting styles, and solicitous behavior, compared with caregivers living in predominantly collectivistic ecosocial contexts.

Hypothesis 5: For caregivers living in predominantly collectivistic ecosocial contexts, a stronger association will exist between collectivistic values, authoritarian-parenting style, and discouraging behavior, compared with caregivers living in predominantly individualistic ecosocial contexts.

Research Question 3: Do cultural values affect pain-related parent responses through parenting styles?

Hypothesis 6: Individualism will have a positive mediating effect through authoritative-parenting style on solicitous behavior.

Hypothesis 7: Collectivism will have a positive mediating effect through authoritarian-parenting style on discouraging behavior.

CHAPTER 3: METHODS

Cross-Cultural Approach

Cross-cultural research promotes understanding of cultural influences on human behavior, and identification of culture-universal and culture-specific aspects of human behaviors. The analyses in this study are comparative in nature, and build on theory and hypothesis testing. In doing so, one of the main challenges is the establishment of comparable instruments across the different cultural sites.

Researchers usually develop their instruments to be used in a single language or culture, and cross-cultural comparability is seldom built-in in the process of constructing those instruments. Such instruments can be used in other cultural contexts, but the measured construct or behavior should be validated as culturally appropriate and relevant across the cultural contexts and populations studied (Harkness, Mohler, & van de Vijver, 2003; van de Vijver & Matsumoto, 2011). A critical and unique part of designing a cross-cultural study, therefore, is to ensure that the abstract concepts are understood similarly, and that instruments measure the same constructs the same way among the target population. In this study, valid translation methods and statistical analysis were applied, both of which are associated with determining the equivalence (invariance) of the translated measures (Harkness, van de Vijver, & Johnson, 2003; van de Vijver & Leung, 2011).

Equivalence is a key term in cross-cultural research that addresses the comparability of a construct and test scores from one population to another (van de Vijver & Leung, 2001). Specifically, it is “the degree to which survey measures or questions are able to assess identical phenomena across two or more cultures” (Harkness,

van de Vijver & Mohler, 2003, p. 351). Despite various types of equivalence reported in the literature, experts agree that the concept and its instrument need to be interpreted the same way across compared cultures (T. P. Johnson, 1998, 2006). In this study, three types of equivalence were tested:

1. Content equivalence is established when the content of items/questions is relevant and acceptable to the studied population (Flaherty et al., 1988). To ensure an instrument has content-equivalence, individual items may need modification, items may be deleted, and new items may be added (Flaherty et al., 1988);
2. Semantic equivalence refers to the meaning attached to each item, ensuring it is the same in each culture, after translation in the language and idiom of each culture (Flaherty et al., 1988). In cross-cultural study, content and semantic equivalence can be tested using team-translation models, where the translation process becomes an integral part of the study design. In this study, a five-step translation model was followed for evaluation of comparability, established by Harkness (2003) and recommended by the Cross-cultural Survey Guidelines (Survey Research Center, 2011). The translation model has the five following steps: translation, review, adjudication, pretesting, and documentation (Harkness, 2003; Survey Research Center, 2011), and;
3. Measurement equivalence or invariance implies that an instrument measures the same construct with similar precision across populations (Hui & Triandis, 1985). Although researchers use both terms – equivalence and invariance –

in the realm of structural equation modeling, the common term is invariance. Measurement invariance is applied to various components of measurement models and generally means that different groups share the same components and processes of certain phenomena. Measurement invariance takes different forms with varying degrees of stringency. When structural relationships are tested, configural and metric invariance are tested (Vandenberg & Lance, 2000): (a) configural invariance evaluates whether “participants belonging to different groups conceptualize the constructs in the same way” (Cheung & Rensvold, 2002, p. 235), and; (b) metric invariance evaluates whether participants respond to items in the same way. Instruments have metric invariance if scales have the same metric units across groups (equality of scaling unit). That is, “the strength of the relations between specific scale items and their respective underlying construct are the same across groups” (Milfont & Fischer, 2010, p. 115). Both configural and metric invariances are defined in more detail in the statistical section of this chapter.

Later, this chapter elaborates on the methods used to address equivalence issues, after a brief description of the study population, sample, and procedure. The translation section will elaborate the steps taken to ensure content and semantic equivalence of the translated measures. The section on statistical analyses will describe the tests of measurement invariance.

Samples

Country Study Sites

Three countries were selected to represent three cultural groups: Canada (Halifax¹), Iceland (Reykjavik), and Thailand (Khon Kaen). Each culture offers a unique range of cultural values and parenting styles. This selection was made on the basis of theory and pre-established connections with local research communities (van de Vijver & Leung, 1997).

Canada–Halifax.

Halifax (population over 390,000) is the capital city of Nova Scotia (population over 921,000), one of Canada's (population over 33 million) 10 provinces. Canada, a North American country, is a multicultural society inhabited by more than 260 ethnic groups. However, Halifax has relatively lower levels of diversity with only 8.1% of the population being immigrants. According to Statistics Canada (2011), the majority of the Halifax population is Canadian-born (90.6%), speaks English primarily (90%), and affiliates with the Christian religion (74%). Halifax, like other parts of Canada, belongs to a wealthy nation with a democratic government, strong economy, well-developed education system, publicly funded health services, and well-developed private-health-insurance system (Central Intelligence Agency, 2016c; Gough, 2011; Thomson, Osborn, Squires, & Jun, 2012).

¹ Halifax was chosen based on convenience. Some might dispute that Halifax represents Canada, because Canada is a multicultural country, with 10 provinces and 3 territories. For convenience, Halifax will be referred to as Canada in this thesis.

Scholars described Canada as an individualistic-focused society that endorses similar individualistic and collectivistic values to those of the United States (Hofstede, 1980; Oyserman et al., 2002). In Hofstede's classic study of national cultures, Canada scored 80 on the 0–100 Individualism Index (where 0 is collectivist and 100 is individualist), and was among the top four of 50 nations studied. Note that countries or cultures with scores greater than 50 are labeled individualistic, while those with scores less than 50 are labeled collectivistic (Hofstede, 1980, 2001). Similarly, on the World Value Survey II that rated 53 nations on an individualism-collectivism scale (1 is collectivist and 10 is individualist), Canada was rated at 8.50 (Suh, Diener, Oishi, & Triandis, 1998). Canada and the United States are assumed to have similar cultures, and some researchers used the term “American” to describe residents of the United States and Canada (Oyserman et al., 2002). When considering the vertical and horizontal dimensions of the individualism-collectivism scale, earlier studies indicated a vertical-individualist trend in North America (Triandis, 1996; Triandis & Singelis, 1998). However, more recent findings show that the North American populations tends to be more horizontal on the individualism scale than vertical on the individualism scale (Devins et al., 2009; Nelson & Shavitt, 2002). When North American population are compared to Scandinavians (i.e., Danes) however, North Americans tend to score higher than Scandinavians on vertical individualism (Nelson & Shavitt, 2002).

Canada is also known as a child-friendly society, where authoritative parenting is promoted (Bailey, 2003; Doherty, 2001), and is the predominant style of parenting (Hein & Lewko, 1994). When comparing Canadian parents with parents from collectivistic

cultures, Canadian parents consistently score higher on authoritative parenting (Cheah & Chirkov, 2008; Liu & Guo, 2010; Rudy & Grusec, 2001; Su & Hynie, 2011).

Iceland–Reykjavik.

Reykjavik (population over 213,000) is the capital region of Iceland (population over 330,000), where the majority of Iceland’s population lives in this city (Statistics Iceland, 2016). Iceland is an island in northern Europe that demonstrated accelerated economic growth in the second half of the 20th century. Today, Iceland is a modern society with a free capitalist economy and a democratic political system that provides universal post-secondary education and publicly funded health care (Central Intelligence Agency, 2016b; Halfdanarson, 2010; Thomson et al., 2012). The Icelandic nation is homogenous and cohesive, 93% of the population are Icelandic citizens that speak Icelandic, and 75% belong to the Evangelical Lutheran Church of Iceland (G. Hauksson, Statistics Iceland, personal communication, September 13, 2014). Even so, cultural diversity has increased significantly, with immigration rising from 2% in 1996 to 8.4% in 2014 (H. Sigurdardottir, Statistics Iceland, personal communication, September 12, 2014).

Iceland is a society with a unique combination of collectivistic and individualistic cultural values, and Icelanders are described as having worldviews that are “somewhere halfway between Americans and Scandinavians” (Ólafsson, 2003, p. 14). Although independence is considered a virtue to Icelanders, equality is considered a basic human right (Eyjolfsdottir & Smith, 1997). Iceland was not included in Hofstede’s seminal study on nations’ cultural values (Hofstede, 1980), but the World Value Survey II rated Iceland 7.00 on the 1 (collectivist) to 10 (individualist) scale, indicating that it is a more

individualistic rather than collectivistic society (Suh et al., 1998). Iceland was not included in any of the studies found exploring horizontal/vertical individualism/collectivism cultural patterns. However, the Icelandic society resembles that of the Danish. Iceland and Denmark have strong historical ties, and Danish culture is an integral part of Icelandic society. For example, the Danish language is taught in all elementary schools. On Hofstede's Individualism Index, Danes scored 74. Based on these scores, Denmark can be identified as an individualistic culture. However, Denmark is less individualistic than Canada (Hofstede, 1980, 2001). On horizontal–vertical dimensions, Danish individuals value the horizontal rather than the vertical dimension of individualism (Nelson & Shavitt, 2002; Sivadas, Bruvold, & Nelson, 2008).

From early on Icelandic children are expected to help out domestically, take on responsibilities, be independent, and learn how to work with others. Historically, Icelandic childhood involves much freedom and limited adult supervision (Jonsson & Olafsson, 1991). However, in a longitudinal study (1997 to 2009) on adolescents' substance use, parental monitoring was shown to be increasing among Icelandic parents (Kristjansson et al., 2010). With respect to parenting styles, studies using self-reports from community samples of adolescents showed that authoritative-parenting and neglectful-parenting are the most commonly used styles by Icelandic parents (Adalbjarnardottir & Hafsteinsson, 2001; Blondal & Adalbjarnardottir, 2009).

Thailand–Khon Kaen.

The city of Khon-Kaen (population over 140,000; KhonKaen.com, 2013), in the province of the Isan region, is located in the northeastern part of Thailand (population about 68 million; Central Intelligence Agency, 2016a). Of Southeast Asian countries,

Thailand is the most developed, and the only one never to have been colonized (H. E. Smith, Nieminen, & Win, 2005). Thailand is traditionally an agrarian society, but its industrial sector is rapidly growing. It has a free economy, and provides primary (i.e., grades 1 to 12) universal education and health care (Central Intelligence Agency, 2016a; H. E. Smith et al., 2005). The Thai population is homogeneous, and as of the 2000 census, 99.8% of the population in Khon-Kaen is of Thai nationality and 99.4% is of Buddhist religious affiliation (National Statistics Office, 2000).

Thailand is a collectivistic society that builds on tradition and hierarchy (Boonmathya, 2003; Hughes, 2011; H. E. Smith et al., 2005). For example, Thailand was among the lowest ranking nations on Hofstede's Individualism Index, scoring 20/100 (Hofstede, 1980, 2001). Similarly, the World Value Survey II rated Thailand at 3/10 on the individualism–collectivism scale; 1 (collectivist) to 10 (individualist; Suh et al., 1998). On the horizontal/vertical and individualism/collectivism spectrum, within-culture comparisons show that Thais score highest on vertical-collectivism (Pornsakulvanich & Dumrongsiri, 2009; Watchravesringkan, McCabe, & Yurchisin, 2005) and perhaps, horizontal-collectivism (McCann et al., 2010).

Parenting in collectivistic and individualistic cultures differ, with the former traditionally being more authoritarian, intrusive, and restrictive (Chao & Tseng, 2002; Rudy & Grusec, 2006). Studies using Thai parents are few and with contradicting results. Most recent study shows that Thai parents, even those with high socioeconomic status, are more likely to use authoritarian-parenting styles (Yotyodying & Wild, 2014), while others do not (Miller et al., 2011). These discrepancies may relate to the differences in sample characteristics and measurements used in the studies.

Participants Sample

Structural equation modeling is a large sample technique. With general guidelines for structural equation modeling suggesting a sample size with a minimum of 100 to 200 cases/observations per group (e.g., Kline, 2005, 2011). Aiming for the upper limit, the goal was to recruit a sample of 200 participants in each country, bringing the total intended sample to 600 participants.

Caregivers of 732 school-age children (6-12-years old) from urban metropolitan areas in Canada (Halifax $n = 300$), Iceland (Reykjavik $n = 252$), and Thailand (Khon-Kaen $n = 180$) responded to an invitation to participate in the study. Of the 732 caregivers who agreed to participate, 548 completed the survey. Of this, 183 were from Canada, 185 were from Iceland, and 180 were from Thailand. One participant was excluded from the Icelandic sample due to an excessive amount of missing data.

Convenience sample techniques were used to select participants at all study sites. To decrease potential sample bias, a set of inclusion criteria of individuals, at all study sites, was created and enforced (Häder & Gabler, 2003). The inclusion criteria for the study were (a) a child was between the ages of 6 and 12 years, (b) the caregiver was a resident of the chosen area in each country, and (c) the caregiver understood the local language/dialect. Also, only one caregiver per household could participate.

Procedures

Recruitment

Conducting survey research in a cross-cultural research context often involves different ways to approach participants across the various research sites. With the help of

local colleagues, the most feasible way to recruit prospective participants was tailored to each study site. This led to somewhat different recruitment methods at the three sites, although the key components were common to all sites.

In Canada, participants were recruited using posters at various locations. These sites included hospitals, universities, libraries, local sports clubs, boys' and girls' clubs, grocery stores, and websites. A small number of participants were obtained through snowball recruitment (word of mouth).

In Iceland, nine public elementary schools were contacted. Of these, five schools agreed to participate. Recruitment methods were designed in collaboration with the Principals of each school. Except for one school, all parents received an e-mail with information about the study. School staff contacted parents through online information and through a learning-management system used by all public elementary schools in Iceland (<https://mentor.is>). In the one remaining school, the school staff arranged to have an information letter/flyer about the study sent home with each child. Also, in two schools, school staff placed information about the study on bulletin boards.

In Thailand, recruitment was through one local public elementary school. Key teachers in the school contacted parents and informed them about the study's purpose and procedure, following a standard script. Parents signed up for a prearranged event in the school where the survey would take place.

All participants received a token of appreciation for their time and effort (Canada, a \$20 movie pass; Iceland, two prepaid movie tickets; Thailand, 180 ฿ or approximately \$6.00 CAN), and were also supplied with a summary of the results.

At all three sites the same common practices, which included the use of: appropriate “logos” on recruitment material, offering of rewards/compensations, and a promise of full anonymity. These recruitment techniques were used since research has shown that they promote participation, and simultaneously minimize social desirability, regardless of country (Couper & de Leeuw, 2003; Dillman, 2000).

Data Collection

All participants completed a survey package that consisted of three main questionnaires and a number of demographic questions. At all three sites, data was accrued through self-administered questionnaires. Participants in Canada and Iceland used online questionnaires, but Thai participants used a paper-based version. The decision to use the paper-based questionnaire in Thailand was due to local Khon-Kaen researchers’ assessment of the availability of the Internet.

In all countries, the survey contained 214 multiple-choice questions, but some items ended with an open-ended option. Participants’ contact information was collected to mail the token gift as compensation. Participants were also informed that their private information would be treated with strict confidentiality.

In Canada, data collection took place between January 18, 2010 and February 10, 2010, using the Opinio survey software hosted on Dalhousie University’s online server. This system has security and confidentiality features to protect the anonymity of respondents. Participants obtained a username and password for access to the survey. Participants were informed that the survey was estimated to take between 25 and 45 minutes to complete, and that they could use a “pause/save” button as needed. To ensure informed consent, participants first read the study information letter and then indicated

“accept/consent” if they wished to continue. Completion of the survey was considered as consent.

In Iceland, data collection took place between April 19, 2010 and April 29, 2010, using the same system used with the Canadian sample.

In Thailand, data collection took place between March 2, 2011 and March 15, 2011. The survey package was completed using paper copies. Two research assistants were available to help parents fill out the questionnaires if needed. The children’s school teachers served as gatekeepers to participants, informing interested participants about the study, and making a list of prospective parents. This list was used to ensure that only one parent or legal guardian per child, per family, answered the survey. On arriving at the school, a research assistant greeted participants and explained the survey purpose and procedure, and provided a designated area where participants filled out the survey. Research assistants obtained informed consent first, then offered any assistance if needed.

Ethics

Ethics approval was sought and received from all three study sites. In Canada, ethical approval was obtained through the IWK Health Centre Research Ethics Board. In Iceland, ethics approval was obtained from the National Bioethics Committee of Iceland. In Thailand, ethics approval was obtained from the Khon-Kaen University Ethics Committee for Human Research.

Measures

When selecting the study’s measurement tools, the following criteria were used: each measure was to derive from an accepted theoretical definition of the concept, and

each measure was to demonstrate acceptable psychometric properties (Sidani et al., 2010). Following these criteria, the following instruments were chosen:

1. The Inventory of Parent/Caregiver Responses to the Children's Pain Experience² [IRPEDNA; see Appendix A] measured caregivers' pain-related behaviors;
2. The Parenting Styles and Dimensions Questionnaire - Short Form [PSDQ-SF; see Appendix B], measured caregivers' parenting styles, and;
3. The Individualism-Collectivism Scale [INDCOL; see Appendix C] measured caregivers' cultural-value orientations.

The Inventory of Parent/Caregiver Responses to the Children's Pain Experience (IRPEDNA)

The IRPEDNA (Huguet et al., 2008) was, at the time this study began, the only valid and reliable measure to use with parents of healthy 6-16-year-old (school-aged) children. IRPEDNA includes 37 self-reported items that capture three interrelated scales: solicitousness, discouragement, and promotion of well-behaviors and coping behaviors of parents in response to their child's pain behavior. The *solicitousness scale* is based on 15 items, and measures parents positive and negative reinforcement of a child's pain behavior. Positive reinforcement means the parent gives the child something pleasant when the child has pain (e.g., "I will get home as early as I can"), whereas negative reinforcement is when the parent eliminates something unpleasant (e.g., "We take care of all his/her obligations and chores at home while he/she is in pain and discomfort"). The

² The original name in Catalan was Inventari de Respostes dels Pares-Cuidadors davant l'Experiència de Dolor de Nens i Adolescents.

discouragement scale, measured with 10 items, captures parental responses that ignore/discourage the child's pain (e.g., "I ignore him/her") and criticize the child's pain behavior (e.g., "I tell him/her not to complain so much"). Finally, the *promotion of well behaviors and coping scale* is a 12 item scale that encompasses parental responses that promote adaptive behaviors (e.g., "I tell him/her to ... listen to music or watch television") and coping (e.g., "I tell him/her that he/she can cope with the problem by saying things like "You're strong").

Items are scored with 1 indicating "Never" through 2 ("Very Occasionally"), 3 ("Sometimes"), 4 ("Quite Often"), and 5 indicating "Always." The solicitousness scale contains 15 items, represented as a total score ranging from 15 to 75. The discouraging scale contains 10 items, with a total score ranging from 10 to 50. The promotion of well behaviors and coping scale contains 12 items, with a total score ranging from 12 to 60. The scores indicate the degree to which a parent endorses a particular response. The scale with the highest overall mean indicates the preferred response for that parent.

The conceptualization of the IRPEDNA originated in the social-learning model of parental/caregiver influence (Fordyce, 1976), and items derive from a review of the available adult and pediatric measurements of pain-relevant responses from significant others, and through interviews with parents of schoolchildren. Items were derived from parents whose children experienced acute or chronic pain.

The IRPEDNA was not designed as a cross-cultural tool, but has been translated into other languages. The English version is a translation of the original Catalan version. It has also been translated into Dutch (Vervoort et al., 2011) and German (Hermann et al., 2008). IRPEDNA has shown good construct (criterion) validity with Catalan samples and

shown good Cronbach's alpha (.80–.89) in European samples (Catalan, Dutch) on all three scales (Huguet et al., 2008; Vervoort et al., 2011). Further, the IRPEDNA scale closely matches the German child-and-parent versions of the Pain-Related Parent Behavior Inventory at item level and scalar structure (Hermann et al., 2008). Most recently IRPEDNA was used in Venezuela with parents of children with postoperative pain. Authors provided neither psychometric information, nor reported any problems in using the measurement (Esteve et al., 2014).

Before translating the English IRPEDNA version, the instrument was pretested with English-speaking participants in Canada ($n = 7$), resulting in minor modifications (see Appendix D). Following the translation, the psychometric properties of the IRPEDNA were tested for each sub-sample (Canada $n = 183$, Iceland $n = 184$, Thailand $n = 180$), and the pooled sample (pooled $N = 547$). Principal component factor analysis showed problematic loadings between the solicitous and coping factors. However, no

Table 1 Correlations between IRPEDNA scales by Canada ($n = 183$), Iceland ($n = 184$), Thailand ($n = 180$), and pooled ($N = 547$).

		Discouraging	Soliciting
Canadian	Coping	0.084	0.457
	Discouraging	1.000	-0.178
Icelandic	Coping	0.307	0.367
	Discouraging	1.000	-0.255
Thai	Coping	0.462	0.772
	Discouraging	1.000	0.358
Pooled	Coping	0.316	0.550
	Discouraging	1.000	0.075

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

single problematic item was found simultaneously in all four samples. Thus, all items were retained (see Appendix E). Table 1 shows the intersubscale Pearson's correlations between the IRPEDNA scales. Results showed that the solicitousness and coping factors

were highly correlated, especially for the Thai sample ($r = .772$), indicating that these were not separate constructs. Table 2 shows the internal consistency of the IRPEDNA scales, but all three scales had adequate Cronbach's α -coefficient values ($>.70$). Because of the high correlation between the solicitousness and the coping scales, the coping scale was omitted. Only the solicitousness and discouraging scales were used in subsequent statistical analysis.

Table 2 Cronbach's alpha reliability for IRPEDNA scales by Canada (n = 183), Iceland (n = 184), Thailand (n = 180), and pooled (N = 547).

	Canada	Iceland	Thailand	Pooled
Coping	.811	.834	.888	.850
Solicitousness	.884	.914	.850	.877
Discourage	.833	.747	.731	.792

The Parenting Styles and Dimensions Questionnaire - Short Form (PSDQ-SF)

The PSDQ-SF (Robinson, Mandleco, Olsen, & Hart, 1995, 2001) consists of 32 self-report items listing parenting behaviors: (a) The authoritative scale, which has 15 items measures the dimensions of warmth, support, regulation, and autonomy granting (e.g., "I emphasize the reasons for rules"); (b) The authoritarian scale, based on 12 items, measures the dimensions of verbal hostility, physical coercion, and non-reasoning/punitive (e.g., "I spank when my child is disobedient"), and; (c) The permissive scale, based on 5 items, measures indulgence (e.g., "I spoil our child").

The PSDQ-SF asks parents to rate the frequency of each type of behavior on a 5-point Likert-type scale (1 = "never" to 5 = "always"). A mean score is computed for each scale. The scores indicate the degree to which each parent endorsed a particular style. A high score indicates a strong affinity for a particular parenting style. The parenting style

scale with the highest overall item mean indicates the preferred parenting style for parenting.

The conceptualization of PSDQ-SF (Robinson et al., 1995, 2001) originated from Baumrind's (1966, 1971) theory of parenting with typologies of authoritative, authoritarian, and permissive parenting styles. Robinson et al. (1995, 2001) developed this questionnaire for parents of preschool and school-age children. Parenting styles were not viewed as polar opposites, but rather as representing different parental dimensions. Researchers credit the PSDQ with measuring parenting styles, representing parents' attempts to control and socialize their children in the domain of normal parenting (not abusive), independent of the context (Darling & Steinberg, 1993; Robinson, 1996).

The PSDQ-SF questionnaire has shown to have concurrent validity (Robinson et al., 1995), face validity (Önder & Gülay, 2009), criterion validity (long version: Scheidegger, 2007), and adequate psychometric properties (Locke & Prinz, 2002). A recent review shows that for North American, and international samples, the reliability for the authoritative and authoritarian scales was generally satisfactory to good, but for the permissive scale, the reliability was commonly insufficient (Olivari, Tagliabue & Confalonieri, 2013).

Many researchers have tested this instrument cross-culturally. Concept equivalence, between the Chinese and the American versions of the authoritative scale and of the authoritarian scale is reported (P. Wu et al., 2002). Measurement invariance of the scales has been observed in Lithuania (Kern & Jonyniene, 2012), Turkey (Önder & Gülay, 2009), and Japan (Lau, 2006). Although international studies have supported the three-factor structure of the PSDQ-SF, the permissive scale has been reported as

problematic, and often been omitted by researchers (Lau, 2006; Sung, 2007; P. Wu et al., 2002).

Before translating the English PSDQ-SF version, English-speaking participants in Canada pretested the instrument ($n = 7$), resulting in minor changes (see Appendix D). Following the translation, the psychometric properties of the PSDQ-SF were tested in each individual sample (Canada $n = 183$, Iceland $n = 184$, Thailand $n = 180$), and for the pooled data ($N = 547$). Principal component factor analysis showed that overall, the authoritative factor had the cleanest loading, and the permissive factor had the poorest loadings (see Appendix F). The intersubscale Pearson's correlations results showed that the factors had separate qualities (see Table 3).

Table 3 Correlations between PSDQ-SF scales by Canada ($n = 183$), Iceland ($n = 184$), Thailand ($n = 180$), and pooled ($N = 547$).

		Authoritarian	Permissive
English	Authoritative	-0.422***	-0.178*
	Authoritarian	1.000	0.376***
Icelandic	Authoritative	-0.413***	-0.295***
	Authoritarian	1.000	0.386***
Thai	Authoritative	0.246***	0.245**
	Authoritarian	1.000	0.557***
Pooled	Authoritative	-0.221	-0.086*
	Authoritarian	1.000	0.535

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

However, internal consistency analysis showed that the permissive scale had Cronbach's α -coefficient values below .70 in all samples, that is, it was not internally reliable (see Table 4). Based on these psychometric assessments, only the authoritative and authoritarian scales were used, not the permissive, in subsequent statistical analysis.

Table 4 Cronbach's alpha reliability for PSDQ-SF scales by Canada (n = 183), Iceland (n = 184), Thailand (n = 180), and pooled (N = 547).

	Canadian	Icelandic	Thai	Pooled
Authoritative-parenting style	.847	.886	.895	.890
Authoritarian-parenting style	.812	.715	.738	.797
Permissive-parenting style	.683	.675	.554	.633

The Individualism-Collectivism Scale (INDCOL)

The INDCOL (Singelis et al., 1995) is a self-report measure listing cultural values. It consists of 32 items that are divided into two main scales - the collectivism scale (16 items) and the individualism scale (16 items). The collectivism scale consists of two eight-item sub-scales comprising the horizontal collectivism scale (8 items) and vertical collectivism scale (8 items). Similarly, the individualism scale consists of two eight-item sub-scales comprising the horizontal individualism scale (8 items) and the vertical individualism scale (8 items). INDCOL builds theoretically on Triandis (1995) theory of collectivism and individualism, and on Fiske's (1992) relational-model theory. It consists of four dimensions - describing how individuals perceive themselves, and interact with others - which are:

1. The *collectivist dimension* emphasizes interdependence between the individual and the group. Collective goals, norms, traditions, and authority figures are valued, and regulate individuals' behaviors and communications, by, for example, restricting overt emotional expression;
2. The *individualist dimension* emphasizes independence of individuals from a group. Here the value is on personal freedom and fulfillment of personal goals, where individual attitudes rather than group norms influence behavior

and social communication. Thus, full emotional expression is expected and even necessary for personal well-being;

3. The *horizontal dimension* reflects traits emphasizing sameness in social rank. Horizontal cultures emphasize equality and equally divided resources. Individuals see themselves as similar and equal to one another, even if they fulfill different roles within society, resulting in more egalitarian social behavior. In a perfectly horizontal conceptualization, a CEO and a janitor would be considered equal to each other (of equal social rank), and;
4. The *vertical dimension* reflects acceptance of inequalities among group members. Vertical cultures emphasize hierarchy, seen as a natural and important state. Individuals are viewed as unique from one another. A hierarchical relationship exists such that some have more authority and privilege than others. Inequality is acceptable and authorities strongly influence individuals' behavior. In a vertical conceptualization, a CEO and a janitor have very different social ranks (see Table 5; Triandis, 1995, 1996; Triandis & Gelfand, 1998).

Table 5 INDCOL four dimensions and examples.

Value dimensions	Individualism Value independence and distinction from group	Collectivism Value interdependence and inclusion to group
Vertical Value hierarchy and status in group	Vertical individualism "Winning is everything"	Vertical collectivism "I usually sacrifice my self-interest for the benefit of my group"
Horizontal Value equality and similarity in group	Horizontal individualism "Being a unique individual is important to me"	Horizontal collectivism "My happiness depends very much on the happiness of those around me"

When these four dimensions are combined the four 8-item sub-scales are created:

1. The *vertical individualism* describes individuals who emphasize their independence, self-reliance, uniqueness, and competition, characterized as vertical individualism. These individuals expect inequality;
2. The *horizontal individualism* aligns with individuals who see themselves as independent, self-reliant, and unique, but not competitive; thus, these individuals expect equality;
3. The *vertical collectivism* characterizes individuals as interdependent, but gives goals of the group a higher priority than personal individual goals. Yet, they view relationships with others in hierarchical terms; thus, inequality is acceptable, and;
4. The *horizontal collectivism* represents individuals who see themselves as interdependent and similar to others in a nonhierarchical manner; thus, they expect equality (see Table 5).

The INDCOL asks participants to rate on a 9-point scale (1 = “strongly disagree” to 9 = “strongly agree”) based on how much they agree with statements that tap into a wide range of social values, beliefs, and attitudes. A mean score is computed for each scale. However, a low score does not imply acceptance of the “obvious opposite.” For example, strong disagreement with Item 2 of the vertical individualism, “Winning is everything” does not mean the individual believes that winning is nothing. Winning could be important in some endeavors but not others – winning is “not” everything.

The INDCOL has good construct (divergent and convergent) validity (Singelis et al., 1995; Triandis & Gelfand, 1998). Previous studies also provided some range for reliability. The coefficient alphas for vertical individualism, horizontal individualism,

vertical collectivism, and horizontal collectivism, with North American samples ranged between $\alpha = .47$ and $\alpha = .83$; for European samples between $\alpha = .53$ and $\alpha = .77$, and; for Asian samples between $\alpha = .46$ and $\alpha = .81$ (Gushue & Constantine, 2003; Guss, 2011; Kemmelmeier et al., 2003; Robert, Lee, & Kim-Yin, 2006; Singelis et al., 1995). Factor analyses (Singelis et al., 1995) and confirmatory factor analyses (Chiou, 2001; Robert et al., 2006) have demonstrated the defined subscales are relatively constant. INDCOL is one of the most respected and commonly used tools to measure collectivism and individualism (Oyserman et al., 2002; Oyserman & Lee, 2008; Shavitt et al., 2006).

Before translating the English INDCOL version, it was pretested with English-speaking participants in Canada ($n = 7$), resulting in minor modifications (see Appendix D). Following the translation, the psychometric properties of INDCOL were tested in each individual country (Canada $n = 183$, Iceland $n = 184$, Thailand $n = 180$), and within the pooled data ($N = 547$). Principal component factor analysis showed some problematic

Table 6 Correlations between INDCOL scales by Canada (n = 183), Iceland (n = 184), Thailand (n = 180), and pooled (N = 547).

	HC	HI	VC	VI	Individualism	Collectivism
Canadian						
HC	1.000	0.198*	0.551***	-0.091	0.046	0.879***
HI		1.000	0.327***	0.316***	0.758***	0.300***
VC			1.000	0.166*	0.294***	0.882***
VI				1.000	0.858***	0.043***
Individualism					1.000	0.195*
Icelandic						
HC	1.000	0.251***	0.540***	0.037	0.166*	0.900***
HI		1.000	0.247***	0.362***	0.799***	0.283***
VC			1.000	0.159*	0.244***	0.853***
VI				1.000	0.849***	0.106
Individualism					1.000	0.230**
Thai						
HC	1.000	0.508***	0.814***	0.164*	0.396***	0.952***
HI		1.000	0.567***	0.508***	0.881***	0.564***
VC			1.000	0.197*	0.449***	0.953***
VI				1.000	0.856***	0.189*
Individualism					1.000	0.443***

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; VI=vertical individualism; HI=horizontal individualism; VC= vertical collectivism; HC= horizontal collectivism

items, however, none of these items appeared simultaneously within all four samples. In the Thai sample, the items for the vertical collectivism scale loaded highly on the horizontal collectivism scale (see Appendix G). The intersubscale Pearson's correlations results showed that the horizontal collectivism factor and vertical collectivism factors were highly correlated, especially for the Thai ($r = .814$) sample (see Table 6). Finally, the internal-consistency reliability of the vertical collectivism scale was low in the Canadian ($\alpha = .634$) and Icelandic ($\alpha = .614$) samples (see Table 7). On the basis of these findings, the collectivism scale was used, rather than the vertical-horizontal collectivism subscales, in all further analyses. The other scales (i.e., vertical individualism, horizontal individualism, and collectivism) were deemed reliable and to have construct validity.

Table 7 Cronbach's alpha reliability of INDCOL by Canada (n = 183), Iceland (n = 184), Thailand (n = 180), and pooled (N = 547).

	Canada	Iceland	Thailand	Pooled
Individualism	.829	.822	.782	.792
Collectivism	.758	.817	.908	.839
VI	.818	.809	.610	.741
HI	.782	.753	.746	.755
VC	.634	.614	.849	.725
HC	.700	.793	.830	.789

Note. VI=vertical individualism; HI=horizontal individualism; VC= vertical collectivism; HC= horizontal collectivism

Background and Demographic Variables

All data concerning the background/demographics of the child and the caregiver was gathered using caregiver self-report. The *relationship of the respondent* to the child was coded as mother, father, stepmother, stepfather, legal guardian, sister, aunt, uncle, grandmother, and grandfather. Respondents indicated their *age* in the categories of 20–24 years, 25–29 years, 30–34 years, 35–39 years, 40–44 years, 45–49 years, 50–54 years, 55–59 years, 60–64 years, 65–69 years and 70+ years. Respondents' *marital status* was coded in the categories of married, common law, divorced/separated, remarried, widowed, and never married. In addition, socioeconomic information was collected, including *education* and *occupation* of the respondents and their spouses. Occupation was collected as an open-ended question. However, it was not possible to code those responses, particularly in the Thai sample, so that variable was dropped. Education level was assessed using an eight-level ordinal scale: less than 7th grade, junior high school graduate, some high school, high school graduate, trade school or community college, partial university (at least 1 year), bachelor's degree, and graduate school (including professional training such as doctor, dentist, or lawyer). An open-ended category called "Other" was included.

Apart from the child's age and gender, information about the *child's pain frequency* was collected by asking parents how often the child had experienced headache, stomach ache, back ache, joint pain, and other pain complaints in the last 3 months. Each of these was scored on a 5-point scale, with 1 being "Seldom or never," 2 "About once a month," 3 "About once a week," 4 "More than once a week," and 5 being "Most days" (Stanford, Chambers, Biesanz, & Chen, 2008). Participants were also asked to select one of seven items as *the child's most recent pain experience*: the list included headache, stomach ache, back ache, joint pain, needle pain (e.g., immunization), everyday pain (bumps and bruises), or other pain. Further, participants were asked how many times in the last 3 months their child had stayed home from school due to pain using a 4-point scale: 1 = "Never," 2 = "One to three times," 3 = "Four to six times," and 4 = "More than seven times." Finally, data pertaining to *chronic illness* and to *prior hospitalizations* were collected as binary variables (Yes/No).

Translation Process of Study Measurements

The translation process was an integral part of the study design, and the translation, review, adjudication, pretesting, and documentation translation model was applied (Harkness, 2003; Survey Research Center, 2011). It starts with a source-language instrument, and through its five interconnected steps, ends with a target-language instrument. Here an interdisciplinary group of individuals, with widespread knowledge of the local language and culture, gathered and used numerous procedures to maximize equivalence (Harkness, Villar, & Edwards, 2010; T. W. Smith, 2004). The goal was to develop translations that "ask-the-same-questions." This meant that, for the instrument to be culturally appropriate and relevant, in some cases, it was necessary to adapt items to

the specific context (Harkness, 2007; Survey Research Center, 2011). The following section describes the five-step translation, review, adjudication, pretesting, and documentation translation process and its procedures, used to translate the main study instruments (source language) from English to Icelandic and Thai (target language).

Step 1: Forward Translation

In each country, two bilingual translators independently forward-translated the source instruments into their mother language. Translators were asked to: (a) focus on translating the meaning of items rather than using a literal word-for-word translation; (b) use language understood by a 5th-grade student, and; (c) document translational issues. In this step, each language had two translations of the target language version measurement (Target Language 1 and Target Language 2). Each language version was created by a different translator. The two same language versions provided more material to choose from when creating the final version.

Step 2: Review

Professional content experts (i.e. child pain, parenting, and cultural values) native to each culture and fluent in the English language as well as their native Icelandic (total $n = 9$) or Thai (total $n = 4$) were asked to review the two language versions. Experts were chosen based on their theoretical and research knowledge in their field of study (i.e., child pain, parenting, or cultural values) and the target culture. The professional experts were e-mailed instructions on how to complete the review. They were asked to assess the translation of the measure, using the Target Language 1 and Target Language 2 versions, as well as the source language version. With this material, each reviewer was asked to

rate, using a binary “yes” or “no” code, whether each item: (a) was comprehensible and clear; (b) had comparable meaning conveyed in the source language and target language versions; (c) was relevant and acceptable in the target culture, and; (d) should be deleted from the scale or replaced with a new item to better capture the desired qualities in the target culture.

Furthermore, each reviewer was asked to provide written suggestions to improve an item or the measurement tool. Based on reviewers’ recommendations, a single target-language version was developed.

In Iceland, three community members then reviewed the revised target language version. These individuals were all parents who belong to the target culture. Community members were asked to review the translation based on their experience, to choose between any competing item-translation alternatives, if provided, add/omit item if deemed appropriate for cultural sensitivity, and comment on the adequacy of the translation and correspondence to the source item. This community review stage was not used in Thailand, due to lack of resources.

Step 3: Adjudication

As the primary adjudicator, the researcher speaks Icelandic and English but does not speak or understand Thai. Thus, a second adjudicator (P. Siripul, faculty member at Khon-Kaen University, Thailand), with appropriate knowledge, language, and survey proficiencies, took on that role in Thailand (Harkness, Pennell, & Schoua-Glusberg, 2004). Adjudicators were responsible for all decisions on improving the translation of the target language survey. Adjudicators coordinated discussions with and between team members to resolve any ambiguities and discrepancies, and decided on the most

appropriate translation of items. This iterative process continued until the first draft of the target language version was ready for pretesting.

Step 4: Pretesting

To test if the target language translations met acceptable standards of comprehension, validity, and reliability, the team executed three pretesting methods – qualitative interview, back-translation, and pilot testing – in Iceland and Thailand. Combined pretesting techniques created a comprehensive design that benefited from strengths and minimized weaknesses of each method (Survey Research Center, 2011).

Qualitative interviews.

Using a think-aloud technique (Campanelli, 2008), the team interviewed parents in Iceland ($n = 5$) and Thailand ($n = 2$). All interviews were tape-recorded and lasted approximately 1 to 2 hours each. Here, interviewers encouraged participants to verbalize their thoughts while answering the overall survey. The objective was to reveal the thought process involved in interpreting a question and arriving at an answer. These interviews provided new information, and data that assisted in finding problems in survey instructions, items, or questions (Presser et al., 2004; Willis, 2004).

Back-translation.

New translators, those who had not yet participated, were sought to back-translate the survey instruments in Iceland ($n = 1$) and Thailand ($n = 2$). Back translation means a professional translator translated the target language questionnaire back into the source language (Icelandic to English; Thai to English). This method aimed to identify discrepancies in the forward translation by detecting problems and highlighting gross

inconsistencies or conceptual errors in the translation. The emphasis here was on meaning, the comparability of meaning with the target language, and clarity of wording (Harkness, 2003; van Widenfelt et al., 2005).

Pilot testing.

After making necessary revisions and coming to agreement about the first target language version of the survey, a pilot test was conducted in which parents, representing the target population in Iceland ($n = 6$) and Thailand ($n = 5$), completed the survey. This method identified translation issues, as well as whether the reading level, the administrative mode, and respondent burden, were appropriate in each target culture (Survey Research Center, 2011; van Widenfelt et al., 2005). These results helped in developing the final target language version of the Icelandic and Thai survey questionnaires.

Copyediting.

Before signing off on a final version of the target language version, a copyeditor edited the translation. The copyeditor focused specifically on language and grammar editing.

Step 5: Documenting.

Throughout the translation process, the adjudicators documented issues and problems, until the team reached consensus on the final target language version. If items needed adaptation (could not be translated word-for-word), the reason was reported and coded using a coding system, but each code represented the specific adaptation needed (language = 1, culture = 2, concept = 3, and measurement = 4 [none = 0]; see Appendix

H). Documentation was intended to improve the translated versions, identify potential problem items, and provide information on questionnaire development.

Statistical Methods

Statistical analyses were conducted with IBM SPSS 20.0 statistical software and analysis. Structural-equation modeling was conducted with the lavaan (Rosseel, 2012) package in R statistical software, version 3.1.2 (R Core Team, 2013). Statistical significance was set at $p < .05$ unless otherwise noted.

Data-Preparation Analysis

All variables were examined for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis using grouped and ungrouped data. Missing-values analysis and missing-value-pattern analysis were executed for each group separately, using the expectation-maximization method (Tabachnick & Fidell, 2013). No cases with missing values were systematically distributed through any of the data sets. For the overall data set, five cases had more than 10% missing values. However, except for one case, their missing values were randomly distributed on the dependent and independent variables, and if dropped in the analysis, showed no significant impact on their mean. One case from the Icelandic sample was deleted, as it had more than 59% missing values, leaving 184 cases in the Icelandic group. Overall, the proportion of missing data of all the cells was minimal (0.2%, 1.3%, and 0.6% for Canada, Iceland, and Thailand, respectively).

In the cross-group analysis, missing values were replaced by the respondent's mean score on the specific subscale, if that participant had answered at least half of the

items of that scale. For example, if one person had a missing value for one item, the mean score from the rest of the items was used to replace that value (Hawthorne & Elliott, 2005). For the structural equation modeling analysis, missing data was replaced using the full-information-maximum-likelihood-estimation approach, which provides unbiased parameter estimates, improves power, and is superior to listwise deletion and single imputation (Enders & Bandalos, 2001).

In checking the distributional characteristics of the data, skewness and kurtosis of each measured variable, along with potential outliers were examined. Because the study sample size was greater than 300 (or 150 per group), the criteria for normality was an absolute score of $|\leq 2|$ for skew and kurtosis values; also, outliers were identified as cases with standardized scores in excess of 3.29 ($p < .001$, two-tailed test; Tabachnick & Fidell, 2013). Critical values for skewness ranged from 0.10 to 2.11, but for kurtosis, the critical ratios ranged from 0.10 to 9.61. Twenty univariate outliers were identified (Thailand = 15, Iceland = 3, and Canada = 2), but when explored, they appeared to be a legitimate part of the population. Also, the analysis in each country, with and without these outliers, was the same. Thus, outliers were retained.

Background Demographic Analysis

Frequency counts, and percentages were used to describe the demographic backgrounds across the three cultural groups. For assessing the similarity and differences of demographic backgrounds across three cultural groups, the ANOVA was used for numeric variables and the Chi-Square (χ^2) test for categorical variables. If main effects were significant, this was followed by pairwise comparisons.

Cross-Country Analysis

For the analyses of Hypotheses 1 to 3, non-parametric alternatives that do not rely on the normality assumption were used to compare cultural values (Hypothesis 1), parenting style (Hypothesis 2), and pain-related caregiver behaviors (Hypothesis 3). Kruskal–Wallis statistics tested country differences in the rank sums, followed by Mann–Whitney U pairwise comparisons, with adjusted p values to correct for Type 1 error (Field, 2013). Kruskal–Wallis test statistics were transformed to partial eta squared (η^2) so to have a standardized effect-size measure: η^2 represents the proportion of variance accounted for in the outcome by country (Field, 2013) and is complementary to r^2 (or R^2). Based on J. Cohen’s (1988) guidelines, effect size can be interpreted as .01, .06, and .14 for small, medium, and large effects, respectively (Morse, 1999).

Structural Equation Modeling

For the analyses of Hypotheses 4 to 7, structural equation modeling was used. Structural equation modeling is a comprehensive statistical approach that uses a family of statistical methods to test a theoretical model. Structural equation modeling allows testing of complex relationship patterns among variables, allowing hypothesis testing among observed (i.e., measured or manifest) and unobserved (i.e., latent or construct) variables in multiple samples (Hoyle, 2014). Structural equation modeling consists of two main models: the measurement model which links specified observed variables (i.e., items or measures) to unobserved (i.e., latent) variables or factors, and the structural model which specifies the relationship between the unobserved variables (J. Wang & Wang, 2012).

Structural equation modeling uses goodness-of-fit indices to evaluate how well each model corresponds to the data, and in the process of invariance testing, to determine

if one model is better than another. Typically, researchers divide models into absolute and comparative indices.

First, absolute indices examine closeness of fit between the model and the data. That is, these indices try to estimate the amount of deviation between the values of the data matrix from the raw data, and the values of the data matrix estimated from a model. The overall Chi-Square statistics between two data matrices, which is a popular fit index, are reported. However, due to its sensitivity to violations from normality, this method is no longer used as one of the main set of fit-index statistics (Byrne, 2001; R. B. Kline, 2013). The root-mean-square error of approximation, a modified Chi-Square statistic, summarizes the deviation of values between the raw and model-based matrix, and is a common measure of absolute goodness-of-fit. Typically, the root-mean-square error of approximation $\leq .06$ represented an adequate fit. Another absolute fit index used is the standardized root mean square residual, which estimates the goodness-of-fit by using the standardized values of the data matrix, instead of raw values used in the root-mean-square error of approximation. Standardized root mean square residual values $< .08$ indicated adequate fit (Hooper, Coughlan, & Mullen, 2008).

Although absolute indices assess the goodness-of-fit of the starting model to the raw (unrestricted) data, comparative indices compare the fit of two different models; the one under development to some baseline model (typically, the currently predominant theoretical framework). The indices for these model comparisons include comparative fit index, and the Tucker–Lewis Index. For both, values over .90 indicate adequate fit (Hooper et al., 2008; Kline, 2011). The goodness-of-fit indices provide information on how well the measurement and structural models fit the actual data matrixes in this study.

Overall, the evaluation of model fit rests on the levels of these four criteria: root-mean-square error of approximation, standardized root mean square residual, comparative fit index, and the Tucker–Lewis Index. Models with acceptable levels of fit were determined if at least three of these four indices showed adequate fit. Finding an adequate fit is a prerequisite for moving further in the structural equation modeling analysis, whether it pertains to the measurement model or the structural model testing.

Before testing the hypothesized structural model, the measurement model needed to be developed. Overall the structural equation modeling was conducted in four steps. The first two steps developed the measurement model (i.e., the part of the model that relates the measured indicators to their respective latent variables) using confirmatory factor analysis. The following two steps involved the actual testing of the hypothesized structural model (i.e., the part of the model which shows the hypothesized relationships among the latent variables) using structural equation modeling. In the following sections, each of the four steps are discussed and how they relate to Hypotheses 4 to 7.

Testing the measurement model.

As stated earlier, before the structural model can be tested, a measurement model needs to be developed. Thus, in Step 1, single-group confirmatory factor analysis was done to test whether the items comprised good indicators of a given latent construct in each individual country sample, and for a pooled sample. Separate analysis provided an overview of how consistent measurement model results were, and if research could proceed to multigroup testing. Step 2, involved multigroup measurement-invariance testing to ensure that the constructs being measured did have the same meaning across the cultural groups.

Why was measurement invariance tested?

Invariance testing is a hierarchical process that involves restricting specific parameters across groups. Measurement invariance was tested, as it reveals whether the measuring instruments are measuring the same thing across the three different groups. In fact, measurement invariance is a prerequisite for any structural-group comparisons (i.e., Steps 3 and 4 discussed later).

Measurement invariance is generally defined with varying degrees of stringency, depending on which parameters are constrained to be equal across groups. The most commonly tested levels of measurement invariance are: configural invariance (all parameter patterns are equal across groups), and metric invariance (factor loadings weights are identical across groups) (Vandenberg & Lance, 2000).

Configural invariance is the most basic, least restricted, and least parsimonious level of invariance. Here, all model parameters are freely estimated across groups (with no restrictions placed). Configural invariance addresses if the forms of the model are the same, if the number of latent constructs is the same for the three populations, and if the same variables load on each latent construct. In other words, it evaluates whether the number of factors in the measurement model is the same across groups, and with the same factor structure for the same set of items across groups. If retained, one can assume that the overall factor structure is the same across all samples (Cheung & Rensvold, 2002). Configural invariance, is limited to the factor structure, and thus does not imply that caregivers in the three countries are responding to the items in the same way.

Metric invariance is a more stringent test for measurement invariance. This test assesses whether the factor loadings of each unobserved variable are equivalent across

groups. In other words, it addresses if instruments and factors relate in the same manner across different groups. Metric invariance is established by showing that factor loadings of instrument items are equivalent (or invariant or the same) cross-culturally. Metric invariance reveals if cross-cultural caregivers' responses to various instrument items can be meaningfully compared; that is, if all samples give equal weight and value to all items, and the relationships between unobserved variables and factors are equally strong across all samples. Without metric invariance, the meaning of unobserved variables can shift across groups; thus, metric invariance is essential for meaningful group comparisons (Cheung & Rensvold, 2002).

How was measurement invariance tested?

Multigroup confirmatory factor analysis was used to test measurement invariance. Here, the theoretical model (see Figure 3) was compared with the observed structure in the three samples. To assess the comparability of factor structures, models were compared in a hierarchical order (nested comparisons). This entails that, one by one, competing models decrease the number of parameters; that is, they increase their parameter constraints, with each model becoming more and more restrictive by constraining the factor structure to be the same across groups. For example, the metric invariance model constrained all factor loadings to be the same across groups. Here all models were assessed to determine how well they fit the data, using goodness-of-fit indexes.

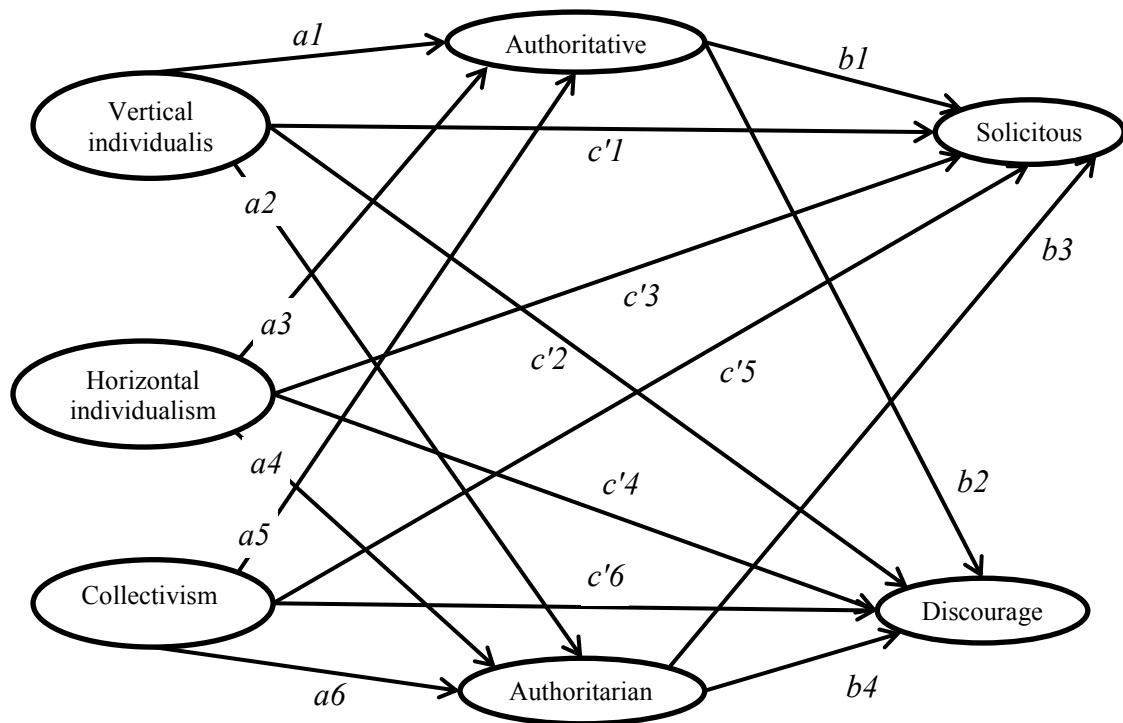


Figure 3 Hypothesized structural model and its direct paths.

Note. a = effect of caregiver ratings of cultural value on parenting style; b = effect of caregiver ratings of parenting style on pain-related caregiver behavior; c' = direct effect of caregiver ratings of cultural value on pain-related caregiver behavior.

As noted earlier, the multigroup confirmatory factor analysis tests are a series of comparisons between models that have least restriction and models that are nested (i.e., have more restrictions) from the others. Typically, researchers compare models with parameters freely estimated, to models in which parameters are constrained in some way (in this case, constrained to equality across groups). Here, the less restrictive model was used as a baseline to evaluate the more restrictive model. When comparing nested models, Cheung and Rensvold's (2002) Δ CFI (comparative fit index) rule was used. If Δ CFI values for both models differed by .01 or more, they were deemed significantly different, and the model with the lower comparative fit index was preferred. If the Δ CFI was less than .01, the models were deemed non-significantly different, and the more parsimonious model (i.e., the constrained model) was preferred.

To summarize, steps one and two involved developing the measurement model. The configural invariance model was tested because it reveals if participants from all three countries conceptualize the constructs (i.e., cultural values, parenting styles, and pain-related caregiver behavior) in the same way, that is, associate same item-parcels with the same latent constructs. The metric invariance was tested to ensure that the strength of the relationships between scale item-parcels and the underlying construct was the same across the three countries (Cheung & Rensvold, 2002).

Testing the structural model.

In this study, structural equation modeling was applied to test whether the direct and indirect pathways in the hypothesized structural model are moderated by ecosocial context. The aim of the moderation was to specify if the ecosocial context in the three countries increases or decreases the strength of the effect of cultural values on pain-related caregiver behaviors (Hypothesis 4 and Hypothesis 5). Furthermore, the structural equation modeling was also used to test if parenting styles mediated the effects of cultural values on pain-related caregivers' behaviors. The aim of the mediation was to specify how the predictor variables (vertical individualism, horizontal individualism, and collectivist values) affected outcome variables (solicitous and discouraging behavior) through mediators (authoritative and authoritarian-parenting style; Hypothesis 6 and Hypothesis 7).

Hypotheses 4 to 7 were tested using multigroup structural equation modeling. Multigroup structural equation modeling analysis involves fitting a structural model to several groups simultaneously, formulating between-group constraints to the model estimations to make them more similar between groups, and then to investigate specific

hypotheses about these differences through model comparisons (Yaman et al., 2010). Researchers compared models between less restricted (e.g., factor loadings constrained to equality across groups, but paths and covariances allowed to freely vary) and more restricted (e.g., constraining regression paths to equality across groups) models. In the context of this study, constraints were placed on the regression coefficients parameters to be set at equality across the three countries. By comparing the model with paths freely estimated to one where paths are constrained to equality across groups, potential differences in the magnitude of paths across countries can be assessed through a nested-model comparison.

Moderation analysis.

Hypotheses 4 and 5 were tested in Step 3 of the structural equation modeling using moderation analysis. A moderation (interaction) variable is a “variable that affects the direction and/or strength of the relationship between an independent or predictor variable and a dependent or criterion variable” (Baron & Kenny, 1986, p. 1174). Moderation tells a researcher if the relationship between the independent and dependent variables varies across countries (Bond & van de Vijver, 2011; Marsh, Wen, Nagengast, & Hau, 2014). The goal of moderation analysis was to test if ecosocial context (country) moderated the relation specified in the theoretical model. Specifically, Hypothesis 4 tested if an individualistic ecosocial context (i.e., Canada and Iceland) creates a horizontal/vertical individualism-authoritative-solicitous pathway. Hypothesis 5 tested if a collectivistic ecosocial context (i.e., Thailand) created a collectivism-authoritarian-discouraging pathway. This was done through moderation analysis.

Hypothesis 4 and Hypothesis 5 were tested by placing between-group constraints on regression paths, and assessing if similarities emerged between groups (i.e., countries). The main points of Hypothesis 4 and Hypothesis 5 were to test if the structure was similar, by comparing a model with regression coefficients freely estimated, to a model with regression coefficients constrained to equality across groups. If the freely estimated models fit the data better, one must conclude that there are cross-cultural differences. However, if both models fit equally well, then the more parsimonious (constrained) model of no cultural differences should be accepted (Little, Rhemtulla, Gibson, & Schoemann, 2013). In this case, no cultural differences in the magnitude of paths emerged. In this study regression coefficient parameters, not variance between variables, was explored. When relationships are defined as regression paths, the associations are thereby estimated as unique effects, controlling for all other specified regression pathways (Little, 2013).

It is important to note that the results for the moderation analysis are very important, as they determined whether a single-group structural equation modeling or multigroup-structural equation modeling would be used to test Hypotheses 6 and 7.

Mediation analysis.

Hypotheses 6 and 7 were tested in Step 4 of the structural equation modeling using mediation analysis. Mediation indicates how or why independent variable(s) affect dependent variable(s) through mediator(s). Specifically, hypothesis 6 tested if horizontal/vertical individualism would have a positive mediation effect through authoritative-parenting style on solicitousness. Hypotheses 7 tested if collectivism would have a positive mediation effect through authoritarian-parenting style on discouraging.

Direct and indirect pathways tested.

Figure 3 shows all the hypothesized direct paths for each predictor (cultural values) with each of the mediating (parenting styles) and outcome variables, and direct paths among the mediating and outcome variables (i.e., *a*, *b*, and *c'*). Furthermore, Table 8, defines the paths for the direct, total, and indirect effects in the hypothesized structural model. When describing pathways in the structural model, the terms *a*, *b*, *c*, and *c'* paths were used, to align with the nomenclature used by Baron and Kenny (1986) in a seminal article presenting mediation analysis to psychologists for the first time. Thus, using this terminology facilitates understanding by other researchers.

Table 8 Hypothesized direct and indirect paths in defining the structural model.

Predictor (X)	Mediator (M)	Outcome (Y)	<i>a</i> path	<i>b</i> path	<i>c'</i> path (direct effect)	<i>a x b</i> (indirect effect)
VI	Authoritative	Solicitous	<i>a1</i>	<i>b1</i>	<i>c'1</i>	<i>a1 x b1</i>
VI	Authoritative	Discourage	<i>a1</i>	<i>b2</i>	<i>c'2</i>	<i>a1 x b2</i>
VI	Authoritarian	Solicitous	<i>a2</i>	<i>b3</i>	<i>c'1</i>	<i>a2 x b3</i>
VI	Authoritarian	Discourage	<i>a2</i>	<i>b4</i>	<i>c'2</i>	<i>a2 x b4</i>
HI	Authoritative	Solicitous	<i>a3</i>	<i>b1</i>	<i>c'3</i>	<i>a3 x b1</i>
HI	Authoritative	Discourage	<i>a3</i>	<i>b2</i>	<i>c'4</i>	<i>a3 x b2</i>
HI	Authoritarian	Solicitous	<i>a4</i>	<i>b3</i>	<i>c'3</i>	<i>a4 x b3</i>
HI	Authoritarian	Discourage	<i>a4</i>	<i>b4</i>	<i>c'4</i>	<i>a4 x b4</i>
Collectivism	Authoritative	Solicitous	<i>a5</i>	<i>b1</i>	<i>c'5</i>	<i>a5 x b1</i>
Collectivism	Authoritative	Discourage	<i>a5</i>	<i>b2</i>	<i>c'6</i>	<i>a5 x b2</i>
Collectivism	Authoritarian	Solicitous	<i>a6</i>	<i>b3</i>	<i>c'5</i>	<i>a6 x b3</i>
Collectivism	Authoritarian	Discourage	<i>a6</i>	<i>b4</i>	<i>c'6</i>	<i>a6 x b4</i>

Note. VI = vertical individualism, HI = horizontal individualism.

The following is a description of each path tested in the structural equation modeling:

1. The *a*-paths represent the effect of the predictor variables on the mediator variables. For example, path *a1* defines the effect of vertical individualism on authoritative style, while controlling for all other predictor variables (i.e., collectivism and horizontal individualism);

2. The b-paths represent the effect of the mediator variables on the outcome variables. For example, path b1 defines the effect of authoritative-parenting style on solicitous, while controlling for all other predictor and mediating variables in the model (i.e., collectivism, horizontal individualism, and authoritarian);
3. The c'-paths (often called direct effects) represent any remaining link between predictor and outcome after controlling for mediators. For example, path c'1 refers to the direct effect of vertical individualism on solicitousness, after controlling for collectivism, horizontal individualism, authoritative, and authoritarian parenting;
4. The c-paths (often called total effects) represent the total effect of predictor on outcome, before adding the mediating variables into the model. For example, path c1 defines the total effect of vertical individualism on solicitousness, before authoritative and authoritarian-parenting styles are added into the model. However, other predictor variables are still controlled for when calculating these paths (i.e., collectivism and horizontal individualism), and;
5. The a x b paths represent the indirect effect of the predictor on the outcome through mediator variables. The a x b paths are calculated by multiplying the a-path and b-path together, and are mathematically equivalent to the difference of the c and c' paths (c-c'; Preacher & Hayes, 2008). For example, path ab1 shows the indirect effect of vertical individualism on solicitousness through the authoritative style, after controlling for all other predictor and mediating variables. In other words, it demonstrates that the total effect (path

c1) decreases when the mediating variable (i.e., authoritative parenting style) is added to the model.

The mediation analysis was based on Preacher and Hayes's (2008) framework, where the total effect (path c) does not need to be significant, the focus is on the size of the indirect effect, and mediation is only said to occur as long as the indirect effect is statistically significant.

Significance testing of mediation using bootstrapping.

After calculating the indirect effects, the bias-corrected bootstrapping method (5,000 resamples) was used to assess statistical significance. Significant mediation ($p < .05$) occurs when the 95% confidence interval of the indirect effect does not include zero (Preacher & Hayes, 2008). To provide a sense of the magnitude of the significant indirect effects for the mediation models, if the indirect effect was significant, the ratio of indirect to total effect was also calculated to assess the effect size (P_M) of the mediation [$P_M = ab/ab + c'$]. The numerator quantity represents the estimated mediated effect and the denominator quantity represents the total effect (MacKinnon, Fairchild, & Fritz, 2007; Preacher & Hayes, 2008; Preacher & Kelley, 2011).

Assumptions.

One critically important assumption underlying structural equation modeling analysis is that the data are multivariate normal,³ which is very difficult to satisfy with social data. When the assumption of multivariate normality is violated, as in this case, the

³ Is “an extension of a normal distribution to multiple variables. It is a probability distribution of a set of variables...” (Field, 2011, p. 790) and in grouped data it is the “sampling distributions of the means of variables that are to be normally distributed” (Tabachnick & Fidell, 2013, p. 79).

robust maximum likelihood estimation can be used to address this problem. This method performs well across different levels of nonnormality and model complexity (Lei & Wu, 2014). Another method to minimize the violation of normality uses item parceling. When using item parceling, two or more items were combined to create parcels, which were then used (instead of the original items) as observed indicators of the latent constructs in the structural equation modeling analysis (Hall, Snell, & Foust, 1999; Little, Cunningham, Shahar, & Widaman, 2002). Given that parceling not only lowers the likelihood of distribution violations, but also “trivializes” the problem of item noninvariance in multigroup analysis (Little, 2013, p. 294), no item was deleted and all relevant items were used when creating the parcels. To create the parcels, recommendations from Little et al. (2002, 2013), and Matsunaga (2008) were applied to do the following:

1. construct domain-representative parcels for each subscale (latent variable), by randomly assigning a similar number of items into one of three parcels using a random-number generator (Random.org, 1988/2015);
2. calculate an average score in each parcel;
3. use the same parceling scheme for all groups, and;
4. use all items when creating parcels. Appendix I shows the items and parcels in this study.

Finally, the bootstrapping method (with 5,000 iterations of resampling) was used. The bootstrapping method is a nonparametric approach to effect-size estimation and hypothesis testing, preferred when addressing nonnormality distribution in data and to correct bias for non-random or complex sampling (Preacher & Hayes, 2008). Further, the

bootstrapping approach is an effective method to test indirect (mediated) effects, as it provides accurate Type I error rates and greater power (MacKinnon, Lockwood, & Williams, 2004).

CHAPTER 4: RESULTS

This chapter presents the results of the study. It begins with presenting and describing the demographic characteristics of the study samples. This is followed by the results of the hypotheses testing concerning cross-country differences in the levels of: individualism and collectivist values (Hypothesis 1), authoritative and authoritarian-parenting styles (Hypothesis 2), and solicitous and discouragement responses to the pain of children (Hypothesis 3). These tests reveal information about average level differences across countries. This is followed by the testing of the fitness of the measurement model and the hypothesized structural model of pain-related caregiver behavior: That is, testing Hypotheses 4 to 7.

Based on conventional steps, it was necessary, before testing the structural model (i.e., Hypotheses 4 to 7), to define the seven-factor measurement model, and to show that it had invariance across the three cultural groups using single and multigroup confirmatory factor analysis. Following this, the actual testing of the hypothesized structural model was executed.

This included testing Hypotheses 4 and 5, i.e., that ecosocial contexts, individualistic (Canadian and Icelandic; Hypothesis 4) and collectivistic (Thai; Hypothesis 5) moderate the relationships between cultural values, parenting styles and pain-related caregiver behaviors differently. The moderation analysis was done through structural equation modeling, by choosing the best-fitting structural model; by systematically constraining regression paths to equality across ecosocial contexts (countries), and examining changes in model fit, as well as interpreting path coefficients of the final selected model. This process yields information to determine if single or

multigroup analyses were to be used in the subsequent structural equation modeling analysis. The following structural equation modeling mediation analysis, used bootstrapping, to test if a V/H individualism-authoritative-sollicitous pathway (Hypothesis 6) and a collectivistic-authoritarian-discouraging pathway (Hypothesis 7) would emerge.

Demographic Background of Samples

Data was collected from 547 caregivers: 183 from the Canadian sample, 184 from the Icelandic sample, and 180 from the Thai sample. Table 9 and Figure 4 summarize the demographic characteristics of the study sample. Table 9 provides the count and percentage (n (%)) of the total for that country for categorical variables, and the mean and standard deviation (M (SD)) for continuous variables. At first glance, Canadian and Icelandic caregivers were similar in all demographics measured except children's age. Thai caregivers, however, differed from the other two in caregiver age, caregivers' type of relationship with the child, family education, child hospitalization, and child recurrent pain.

Table 9 Demographic characteristics by country and pooled.

	Canada		Iceland		Thailand		Pooled	
	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%	<i>n</i>	%
Caregiver type								
Mother	158	86.3	149	80.9	118	65.6	425	77.7
Father	25	13.7	35	19.0	31	17.7	91	16.6
Other	0	0	0	0	31	17.2	31	6.0
Caregiver age	<i>M</i> = 39.68 <i>SD</i> = 5.61		<i>M</i> = 39.81 <i>SD</i> = 6.6		<i>M</i> = 42.67 <i>SD</i> = 9.73		<i>M</i> = 40.7 <i>SD</i> = 7.62	
Caregiver married	156	85.3	151	82.1	143	79.9	450	82.3
Family max education								
Less than 7th grade	0	0	0	0	2	1.1	2	0.4
Junior high graduate	0	0	3	1.6	27	15.0	30	5.5
Some high school	3	1.6	5	2.7	22	12.2	30	5.5
High school graduate	5	2.7	28	15.2	29	16.1	62	11.3
Trade school/community college	33	18.0	2	1.1	32	17.8	67	12.2
Partial university	31	16.9	14	7.6	7	3.9	52	9.5
University degree	64	35.0	71	38.6	43	23.9	178	32.5
Graduate school/professional training	47	25.7	61	33.2	18	10.0	126	23
Child age	<i>M</i> = 8.62 <i>SD</i> = 1.86		<i>M</i> = 9.25 <i>SD</i> = 1.95		<i>M</i> = 9.29 <i>SD</i> = 2.1		<i>M</i> = 9.05 <i>SD</i> = 1.99	
Child sex (female)	80	43.7	89	48.9	94	52.2	263	48.1
Child chronic illness (yes)	18	9.8	17	9.2	23	12.8	58	10.6
Child hospitalization (yes)	43	23.5	50	27.2	103	57.2	196	35.8
Child days missed school due to pain								
0 times	119	65.0	132	71.7	129	71.7	380	69.2
1–3 times	54	29.5	46	25.0	50	27.8	150	27.5
4–6 times	8	4.4	5	2.7	0	0	13	2.4
7 times or more	2	1.1	1	0.5	0	0	3	0.5

Note. Canada *n* = 183. Iceland *n* = 184. Thailand *n* = 180. All Data *N* = 547.

For the analysis, female participants identified as mother, stepmother, or female legal guardian of the target child were categorized as mothers. Similarly, male participants identified as father, stepfather, or male legal guardian were categorized as fathers. Chi-square test showed that, overall, significantly more caregivers, or 425 (80%) of participants, were mothers ($\chi^2(2, 547) = 26.982, p < .0001$).

Significantly more Thais, compared to Canadian and Icelandic participants, reported not being either the child's mother or father ($\chi^2(2, 546) = 70.275, p < .0001$). In

the Thai “Other” category ($n = 31$), a majority (65%) were grandmothers. Overall, most caregivers were married (82.4%), and the pattern for marital status did not differ by country ($\chi^2(2, 546) = 3.526, p < .474$).

Caregivers’ age was collected as a numeric value and ranged from 22 to 67 years, and was significantly different between groups ($F(2,546) = 9.138, p < .0001$). A Tukey post hoc test revealed that Thai caregivers were significantly older than Canadian ($p < .001$) and Icelandic ($p < .001$) caregivers.

Using an ordinal coding of educational level (from 1 to 8), an ANOVA showed a significant difference between groups ($F(2,544) = 62.441, p < .0005$). A complementary, non-parametric chi-square test showed significant group differences on maximum family education levels ($\chi^2(2,547) = 94,552, p < .0001$) with Thais reporting lower educational levels than Canadians ($p < .0001$) and Icelanders ($p < .0001$). Most Canadian and Icelandic families had postsecondary education, whereas Thai families tended to have trade school or community college education levels. Although the undergraduate degree was the most frequently reported education level in all countries (i.e., Canada, 35%; Iceland, 39%, and; Thailand, 24%), the Thai sample had much higher proportion with primary education only.

Children’s ages were collected as a numeric value and ranged from 6 to 12 years and were relatively similar across groups. Significant differences between groups ($F(2,546) = 6.586, p < .001$) on children’s age emerged with Canadian children being significantly younger than those in Iceland ($p < .01$) and Thailand ($p < .01$). However, the age difference was not substantial and all children were within the expected age range, and therefore child age should not have any impact on overall findings.

The proportion of boys and girls did not differ significantly across the three samples. No significant differences arose between countries on chronic illness. However, significant differences emerged between countries on experience of hospitalization ($\chi^2(2, 547) = 53.927, p < .0005$), with Thais reporting a rate over 57%, compared to Canadians with around 23%, and Icelanders with around 27%. A variable was created that combined chronic illness with hospitalization in each country, the analysis of which showed no significant differences ($\chi^2(2, 547) = 1.210, p < .546$). This result implied that hospitalizations were not necessarily due to chronic illness, but possibly because of differences in healthcare practices.

When caregivers were asked if the child had missed school due to pain in the last 3 months, 30% answered yes. When days missed were treated as an ordinal variable with four levels (see Table 9), the overall mean corresponded to a value between 0 to 3 days missed. Furthermore, the prevalence was significantly higher in the Canadian group than the Thai group ($p < .01$). When explored, the difference could be explained by eight Canadian caregivers reporting the days missed as “4–6 times”, and two who reported “7 times or more.” No Thai caregiver reported that many days. In other words, these differences were likely due to a small number of outliers.

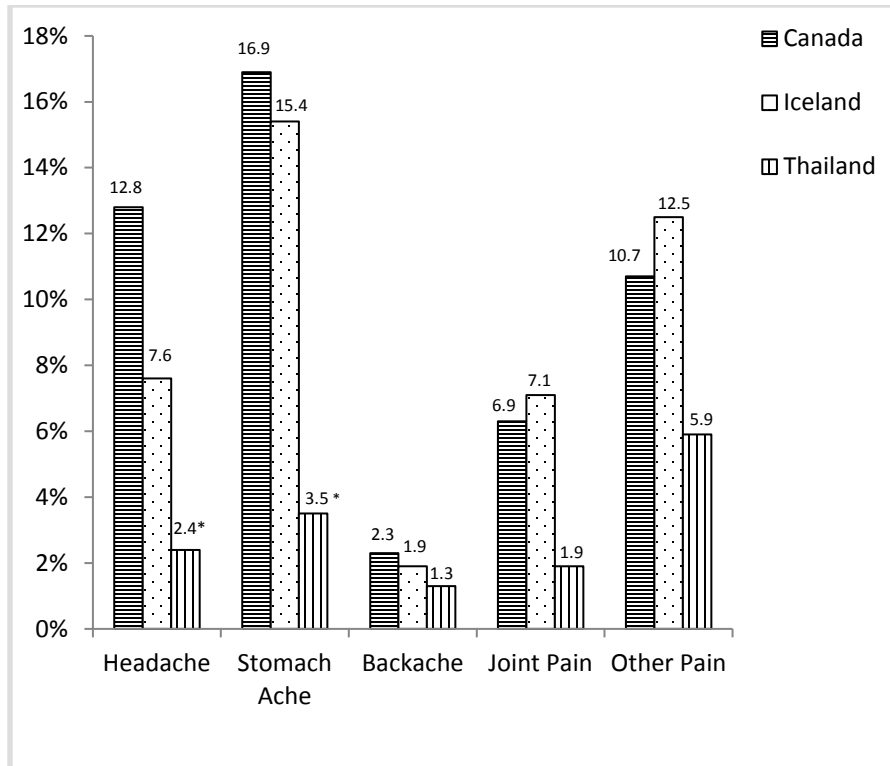


Figure 4 Percent caregiver reported weekly and more frequent child recurrent pain. * $p < .05$.

Figure 4 shows the prevalence of recurrent pains in the past 3 months, by the type of pain. Overall, stomach pain was the most common type of recurrent pain in Canada (16.9%) and Iceland (15.4%), whereas in Thailand, “other pain” (5.9%) was most frequently reported and included: “toothache,” “sore throat,” “eye pain,” “allergy,” “fever,” and “menstruation.” Furthermore, chi-square analysis indicated group differences for stomach ache ($\chi^2(2,523) = 17.670, p < .0001$), and headache ($\chi^2(2,520) = 13.458, p < .001$), and in both instances Thai caregivers reported significantly lower frequencies compared to those in the other countries (stomachache: Thailand vs. Canada ($p < .0001$); Thailand vs. Iceland ($p < .0001$); headache: Thailand vs. Canada ($p < .0001$), and; Thailand vs. Iceland ($p < .0001$)). The reason for this low rate of reported pain in the Thai sample might indicate that Thai children are overall

healthier, but it could also mean that Thai parents do not notice their children's health conditions as much as Canadian and Icelandic parents do.

Cross-Country Differences and Similarities (Hypotheses 1 to 3)

In this section, the testing of Hypotheses 1 to 3 were analyzed. Hypothesis 1 tested for differences on vertical individualism, horizontal individualism and collectivism between Canadian, Icelandic, and Thai caregivers. Hypothesis 2 tested for differences on the authoritative and the authoritarian-parenting style between the three groups. Finally, Hypothesis 3, tested for level differences on the solicitous and the discourage pain-related behaviors across the three samples. To test Hypotheses 1 to 3 the Kruskal-Wallis non-parametric test was used, followed by Mann-Whitney U pairwise comparisons. Additionally, to better understand the unique role country has in explaining the outcome (i.e., how much of the variance was accounted for in the outcome by country), country's effect size (η^2) was calculated and reported.

Cultural Value (Hypothesis 1)

Table 10 shows the results for the Hypothesis 1 testing the level differences on vertical individualism, horizontal individualism, and collectivism across the three countries. Based on previous reviews Canadians, especially, but Icelanders as well, were expected to score high on the horizontal individualism and vertical individualism indices, and Thais were expected to score high on collectivism.

Table 10 Cultural values: Variable median, mean, standard deviation, and country comparisons.

	Canada			Iceland			Thailand			Kruskal–Wallis <i>H</i>	η^2	Pairwise (z-score)		
	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>			<i>Can-Thai</i>	<i>Can-Ice</i>	<i>Thai-Ice</i>
Col	7.00	7.00	0.84	6.90	6.90	0.94	7.63	7.25	1.51	32.96***	.061	-4.46***	.91	-5.37***
HI	6.90	6.80	1.11	6.25	6.11	1.26	6.00	6.00	1.60	38.44***	.071	5.61***	5.09***	.54
VI	3.63	3.67	1.42	4.40	4.32	1.41	4.25	4.22	1.48	19.73***	.036	-3.42**	-4.16***	.73

Note. Col = collectivism, HI = horizontal individualism, VI = vertical individualism, *M* = Mean, *Md* = Median, *SD* = Standard Deviation, *H* = Test statistic for Kruskal–Wallis test, η^2 = eta-squared approximation for effect size, pairwise z-scores represent test statistics for Wilcoxon rank sum tests for pairwise comparisons of two countries. Because the Kruskal–Wallis and Wilcoxon rank sum tests compare the sums of ranked data (rather than directly comparing means or medians) the median differences as point estimates are not shown. * $p < .05$, ** $p < .01$, *** $p < .001$.

As expected, on the collectivism scale, Thais scored highest ($M = 7.25$, $SD = 1.51$), followed by Canadians ($M = 7.0$, $SD = .84$), and then Icelanders ($M = 6.90$, $SD = 0.94$). Further, Kruskal–Wallis *H* tests and pairwise comparisons showed significant country differences ($H(2) = 32.958$, $p = .0001$, $\eta^2 = .06$) between Thailand and the other two countries (see Table 10). Although statistically significant differences emerged, they were relatively small, especially between Thailand and Canada. The proportion of the variance of collectivism explained by country for the Canadian, Iceland, and Thai comparisons was 6%. Although this is small, it is still higher than previously reported for similar cultural measures (ranging from 1.5%-4.4%; Wright & van de Voorde, 2009).

On the horizontal individualism scale, Canadians scored highest ($M = 6.80$, $SD = 1.11$), followed by Icelanders ($M = 6.11$, $SD = 1.26$), and Thais ($M = 6.0$, $SD = 1.6$), respectively. Again, the Kruskal–Wallis *H* tests and pairwise comparisons showed country differences ($H(2) = 38.440$, $p = .0001$, $\eta^2 = .07$). In this case, Canada had higher levels of horizontal individualism than both Iceland and Thailand. These results were

somewhat unexpected, that is, Iceland was expected to score the highest of the three countries. Although statistically significant differences emerged, they were relatively small (7%), and do not point to any radical differences across the countries in horizontal individualism orientations.

On the vertical individualism scale, Icelandic caregivers scored highest ($M = 4.32$, $SD = 1.41$), followed by Thais ($M = 4.22$, $SD = 1.48$), and Canadians ($M = 3.67$, $SD = 1.42$). The results of the Kruskal–Wallis H tests and pairwise comparisons indicated country differences ($H(2) = 19.730$, $p = .0001$, $\eta^2 = .04$). Icelanders were significantly higher on vertical individualism compared to Canadians, but not compared to Thais. These results were unexpected, both for Thailand, and for Iceland. Although the overall country differences were not large (4%), Canadians were expected to score lower than Icelanders, as previous studies have shown that North Americans tend to be more vertically oriented compared to those in Scandinavian countries (Nelson & Shavitt, 2002).

Overall, the differences between countries on cultural value measures were small, but the values differences between the western and Thai samples were as expected for collectivism, and horizontal individualism, but not for vertical individualism. The relationship between the Canadian and Icelandic samples were somewhat surprising, but not large.

Parenting Styles (Hypothesis 2)

Table 11 shows the results for Hypothesis 2 testing for differences on the authoritative and the authoritarian-parenting styles across the three countries. Based on previous review, it was expected that Canadians and Icelanders would score highest on

authoritative-parenting style (with Canadian higher), and Thais would score highest on authoritarian-parenting style.

Table 11 Parenting styles: Variable median, mean, standard deviation, and country comparisons.

	Canada			Iceland			Thailand			Kruskal–Wallis		Pairwise (z-score)		
	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>H</i>	η^2	<i>Can-Thai</i>	<i>Can-Ice</i>	<i>Thai-Ice</i>
Authoritative	4.27	4.24	0.45	4.27	4.21	0.45	3.93	3.82	0.75	39.00***	.07	5.66***	.52	5.14***
Authoritarian	1.50	1.55	0.40	1.63	1.66	0.36	2.17	2.25	0.57	182.27***	.34	-12.89***	-2.93**	-9.98***

Note. *M* = Mean, *Md* = Median, *SD* = Standard Deviation, *H* = Test statistic for Kruskal–Wallis test, η^2 = eta-squared approximation for effect size, pairwise z-scores represent test statistics for Wilcoxon rank sum tests for pairwise comparisons of two countries. Because the Kruskal–Wallis and Wilcoxon rank sum tests compare the sums of ranked data (rather than directly comparing means or medians) the median differences as point estimates are not shown. * $p < .05$, ** $p < .01$, *** $p < .001$.

As expected, Canadians scored highest on authoritative parenting style ($M = 4.24$, $SD = .45$), followed by Icelanders ($M = 4.21$, $SD = .45$), and then Thais ($M = 3.93$, $SD = .75$). The results of the Kruskal–Wallis H tests and pairwise comparisons showed overall differences between countries ($H(2) = 39.001$, $p = .0001$, $\eta^2 = .07$). Here, Thailand was significantly different from Canada and Iceland, whereas the other two countries did not differ. The relative size showed that country explained 7% of the variance for authoritative-parenting style (see Table 11).

As expected, Thais scored highest on authoritarian-parenting style ($M = 2.25$, $SD = .57$), followed by Icelanders ($M = 1.66$, $SD = .36$), whereas Canadian caregivers scored lowest ($M = 1.55$, $SD = .40$). The results of the Kruskal–Wallis H tests and pairwise comparisons showed country differences ($H(2) = 182.271$, $p = .0001$, $\eta^2 = .34$) in which case statistical differences emerged across all the three countries. In this case the effect size for the overall country differences was high or 34%. This means, that country is a relatively good predictor of authoritarian-parenting style, especially between Thailand and Canada.

Pain-Related Caregiver Behaviors (Hypothesis 3)

Table 12 shows the results for Hypothesis 3, which tested for differences on the solicitousness and the discouraging pain-related caregiver behaviors across the three countries. Based on previous review, it was expected that Canadians and Icelanders would score highest on solicitousness (with Canadians higher than Icelanders) and that the Thais would score highest on discouraging behaviors.

Table 12 Pain-related caregiver behaviors: Variable median, mean, standard deviation, and country comparisons.

	Canada			Iceland			Thailand			Kruskal–Wallis <i>H</i>	η^2	Pairwise (z-score)		
	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>	<i>Md</i>	<i>M</i>	<i>SD</i>			Can-Thai	Can-Ice	Thai-Ice
Solicitousness	3.27	3.17	0.70	3.40	3.36	0.76	3.60	3.45	0.74	17.05***	.03	-4.04***	-2.74*	-1.32
Discouraging	1.40	1.54	0.50	1.90	1.90	0.62	2.10	2.20	0.68	100.96***	.19	-9.90***	-6.42***	-3.53**

Note. *M* = Mean, *Md* = Median, *SD* = Standard deviation, *H* = Test statistic for Kruskal–Wallis test, η^2 = eta-squared approximation for effect size, pairwise z-scores represent test statistics for Wilcoxon rank sum tests for pairwise comparisons of two countries. Because the Kruskal–Wallis and Wilcoxon rank sum tests compare the sums of ranked data (rather than directly comparing means or medians) the median differences as point estimates are not shown. * $p < .05$, ** $p < .01$, *** $p < .001$.

Unexpectedly, Thais scored highest on solicitousness ($M = 3.45$, $SD = .74$) and the Canadian scored lowest ($M = 3.17$, $SD = .70$). Results of the Kruskal–Wallis *H* tests showed overall country differences ($H(2) = 17.045$, $p = .0001$, $\eta^2 = .03$). Furthermore, the pairwise comparisons showed that Canadians were significantly lower on solicitous levels compared to Thais ($p < .001$) and Icelanders ($p < .05$). Although this outcome was unexpected, the differences between the groups were marginal and the effect size was small (3%). Thus, these results do not indicate a great difference between the three countries on solicitousness (see Table 12).

As expected, Thai caregivers scored highest on discouraging ($M = 2.20$, $SD = .68$), followed by Icelandic ($M = 1.90$, $SD = .62$), and Canadian ($M = 1.54$, $SD = .50$)

caregivers, respectively. The results of the Kruskal–Wallis H tests and pairwise comparisons showed overall country differences ($H(2) = 100.955, p = .0001, \eta^2 = .19$). In this case, significant differences emerged between all groups (Canada vs Thailand ($p < .001$); Canada vs Iceland ($p < .001$); Iceland vs Thailand ($p < .01$)). The effect size, or the variance explained by country on discouraging was 19%. Thus, country was a good predictor of discouraging caregiver behaviors.

To summarize, differences and similarities between the three countries emerged on the main sets of variables. Canada and Thailand differed on all study variables, but not always in the expected direction. Thai caregivers had the highest score on collectivist value, authoritarian-parenting style, and discouraging responses which was in line with the expectation. Canadians scored highest on authoritative-parenting style as expected. Canadians also scored higher on horizontal individualism compared to Thais as expected. However, there were unexpected differences between Canada and Iceland on the horizontal individualism, vertical individualism, and solicitousness scales. Generally, the hypothesis for collectivism was supported, the hypothesis for horizontal individualism was partially supported, the hypothesis for vertical individualism was rejected, the hypotheses for authoritative and authoritarian-parenting style were supported, the hypothesis for solicitousness was rejected, and the hypothesis for discouraging was supported.

Testing the Measurement Invariance of the Hypothesized Structural Model

Following common recommendations (Byrne, 2001) and the cross-cultural literature (Little, 1997; Vandenberg & Lance, 2000), measurement models were tested before the hypothesized structural models. This is because it is critical in cross-cultural comparative research to ensure that the instruments measure the same constructs in the

same way across all the groups (i.e., measurement invariance or equivalence) (Byrne & van de Vijver, 2010). These invariance assumptions were tested using confirmatory factor analysis which is a procedure of structural equation modeling. In this study, the invariance or comparability of the seven-factor measurement model was tested between the three cultural groups. The measurement model is the part of the model that relates the measured variables (or indicators) to their respective factors (or latent variables). Single-group confirmatory factor analysis was used to develop the measurement model and multi-group confirmatory factor analysis was used for the invariance testing.

Defining the Measurement Model

Figure 5 shows the measurement model. Latent factors are shown in circles, and measurement variables are shown in rectangles. Double-headed arrows indicate correlations. Single-headed arrows indicate factor loadings. Arrows from the factor to the measurement represent the presumed causal effect of the latent factor on the item parcels (defined below). Factor loadings are the estimates of these direct effects. The measurement model contained seven latent factors⁴ (horizontal individualism, vertical individualism, collectivism, authoritative-parenting style, authoritarian-parenting style, solicitous, and discourage behaviors), and their observed item-parcels. Each latent factor had three parcels. A total of 21 item parcels were used instead of the 91 individual items to reduce model complexity, due to the large number of items for the sample size. Each parcel had 2-5 items. For example, the horizontal individualism factor consisted of eight

⁴ The measurement model should mirror the same number of factors as in the structural model, thus, all seven factors were analysed together in this study, instead of doing seven separate analyses with one factor each (Byrne, 2001; Byrne & van de Vijver, 2010).

items divided into three parcels. In this case, Parcel 1 contained 3 items: “I am a unique person, separate from others,” “Being a unique individual is important to me,” and “I enjoy being unique and different from others.” Here the three items are added to create an average score for that parcel. The combination of items to a parcel by latent factor is provided in Appendix I. In this measurement model, cultural-value item parcels were measured on a 9-point scale (1 = strongly disagree to 9 = strongly agree), parenting style, and pain-related caregiver behavior item parcels were measured on a 5-point scale (1 = never to 5 = always).

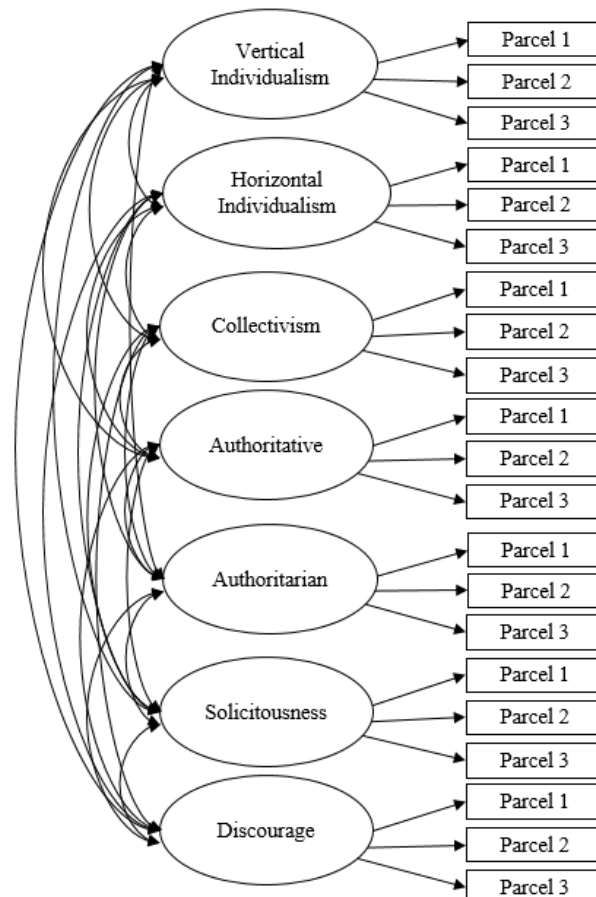


Figure 5 Hypothesized measurement model.

Note. Latent factors are shown in circles and measurement variables are shown in rectangles. Double-headed arrows indicate correlations. Single-headed arrows indicate factor loadings.

Single-group confirmatory factor analysis was carried out to define the measurement, where there were separate confirmatory factor analyses for the pooled data, the Canadian sample, the Icelandic sample, and the Thai sample. These models tested if item parcels loaded significantly on the constructs of interest, and if the theorized factor structure was a good fit for each of the data sets. In the initial measurement model, factors were allowed to covary, and item-parcel cross-loadings were constrained to zero. To make the model estimable, the model was constrained by setting the factor loadings to 1 for one of the parcels of a latent factor (i.e., fixing the loading of the first parcel to 1 for each factor). The confirmatory factor analysis of the single models for the pooled and individual countries appears in Appendix J; providing information on variables, standard error, Z -value, $P(>|z|)$, standardized loadings, unstandardized loadings, covariance, and goodness-of-fit indices.

When assessing the standardized factor loadings for the single-group confirmatory factor analysis for all four samples, the lowest factor loading was for vertical-individualism-Parcel 3 in Thailand (.30). This parcel includes two items: “Some people emphasize winning; I am not one of them” (Item 20), and “I enjoy working in situations involving competition” (Item 8). However, for vertical-individualism-Parcel 3, the standardized factor loadings were adequate on the vertical individualism factor for the Pooled (.50), Canadian (.70) and Icelandic (.60) samples. Thus, vertical individualism-Parcel 3 was kept in the final initial measurement model. Apart from vertical-individualism-Parcel 3, other measurements showed adequate factor loadings (i.e., $\geq .40$). This was true for the pooled (ranging from .50 to .90), Canadian (ranging from .50 to .90), Icelandic (ranging from .40 to .90), and Thai (ranging from .30 to .90) samples.

Table 13 shows the goodness-of-fit indices of the single-group confirmatory factor analysis for the pooled, Canadian, Icelandic, and Thai samples. Based on the absolute indices (root-mean-square error of approximation $< .60$, and standardized root mean square residual $< .08$; Hooper et al., 2008) all four samples fit the data well. That is, for the pooled data, the model fit was root-mean-square error of approximation = $.05$, standardized root mean square residual = $.05$. For the Canadian sample, the model fit was root-mean-square error of approximation = $.03$, standardized root mean square residual = $.05$. For the Icelandic sample, the model fit was root-mean-square error of approximation = $.05$, standardized root mean square residual = $.06$. For the Thai sample, the model fit was root-mean-square error of approximation = $.06$, standardized root mean square residual = $.06$. These results show that the proposed factor structure is adequate in each culture separately, and when pooled together into a single sample.

Table 13 Fit indices for single-group measurement models.

Model tested	χ^2	df	TLI	RMSEA	SRMR	CFI
Single model _{Canada}	198.892	168	.972	.032	.049	.977
Single model _{Iceland}	252.645	168	.928***	.052	.058	.942
Single model _{Thailand}	278.499	168	.917***	.060	.062	.933
Single model _{Pooled}	411.757	168	.926***	.052	.045	.941

Note. TLI = Tucker–Lewis Index, RMSEA = root-mean-square error of approximation, SRMR = standardized root-mean-square residual, CFI = comparative-fit index, $*p < .05$, $**p < .01$, $***p < .001$.

The standardized latent correlations among the factors in the single models for pooled and sub-samples are shown in Appendix J. Most factors moderately correlated with no correlation large enough ($> .85$) to indicate poor discriminant validity (T. A. Brown, 2014). In summary, the seven-factor single-group measurement model fit the data well in each dataset, suggesting it was appropriate to move on to the next step of analysis.

Invariance of the Measurement Model

Multigroup confirmatory factor analysis was used to test the cross-cultural invariance (i.e., equivalence) of the initial seven factor measurement model. In comparing structural factorial relations, cross culturally, two types of invariance testing are needed: (a) configural-invariance, testing whether item parcels can be assigned to the same seven latent constructs across the three countries, and; (b) metric-invariance, testing whether the item parcels are equally representative of their respective latent constructs across the three countries. This process involved using multigroup confirmatory factor analysis, in which case multigroup analysis implied fitting a model to several groups simultaneously and formulating between-group constraints to make model estimations more similar between groups. Here, country was treated as the grouping variable, and the configural-invariance model was a baseline model on which the metric-invariance model was tested. Metric-invariance testing involves comparing the metric model (constrained factor loadings) to the configural model (unconstrained) by country. The strength and magnitude of the factor-loadings is an indicator of factorial and measurement-item relationships.

Model comparisons test if the model fit changes between the baseline model and the model where parameters from all countries are constraining to be equal. Given that the two models differ only by the number of equality constraints, Cheung and Rensvold's (2002) Δ CFI (comparative fit index) rule was used for inference testing. This rule states that if comparative fit index values differ by $< .01$, this indicates a non-significant difference between the models, and thus the more parsimonious model (i.e., more constrained) is preferred.

Configural-invariance model.

In the configural-invariance model, latent factors were allowed to covary, and item-parcels' cross-loadings were constrained to zero. Confirmatory factor analysis of the configural model appears in Appendix K; providing information on variables estimate, standard error, Z-value, $P(>|z|)$, standardized loadings, unstandardized loadings, covariance, and goodness-of-fit indexes.

Table 14 shows the goodness-of-fit indices of the unconstrained configural-invariance model. Based on the comparative indices (comparative fit index above .90, and Tucker–Lewis Index above .90; Hooper et al., 2008), the configural-invariance model

Table 14 Fit indices for multigroup measurement models.

Model tested	χ^2	<i>df</i>	TLI	RMSEA	SRMR	CFI	Δ CFI
Configural-invariance model	727.700	505	.938**	.049	.056	.950	—
Metric-invariance model	789.658	532	.932**	.052	.065	.943	.005

Note. TLI = Tucker–Lewis Index, RMSEA = root-mean-square error of approximation, SRMR = standardized root-mean-square residual, CFI = comparative-fit index, * $p < .05$, ** $p < .01$, *** $p < .001$.

yielded adequate fit to the data: comparative fit index = .95; Tucker–Lewis Index = .93. Thus, the configural-invariance model could serve as an adequate baseline model, as it estimated the same factor structure across the three samples when factor loadings were allowed to freely vary. In other words, the caregivers in the three countries allocated similar meaning to the seven factors in the measurement model. Therefore, moving to testing metric invariance was appropriate.

Metric-invariance model.

To test the metric-invariance, factor loadings were constrained to equality across countries. Factor loading parameters were standardized coefficients, and inter-factor

correlations were allowed. However, item-parcel cross-loadings were constrained to zero (as in all prior models). Confirmatory factor analysis of the metric model appears in Appendix L; providing information on variables, standard error, Z-value, $P(>|z|)$, standardized loadings, unstandardized loadings, covariance, and goodness-of-fit indexes.

Figure 6 presents the factors of interest, their item-parcels, and standardized factor loadings by country and pooled sample. Based on the general recommended size of $\geq .40$ for standardized factor loadings (T. A. Brown, 2014), the factor loadings were of acceptable magnitude in all samples, ranging overall from .41 to .90.

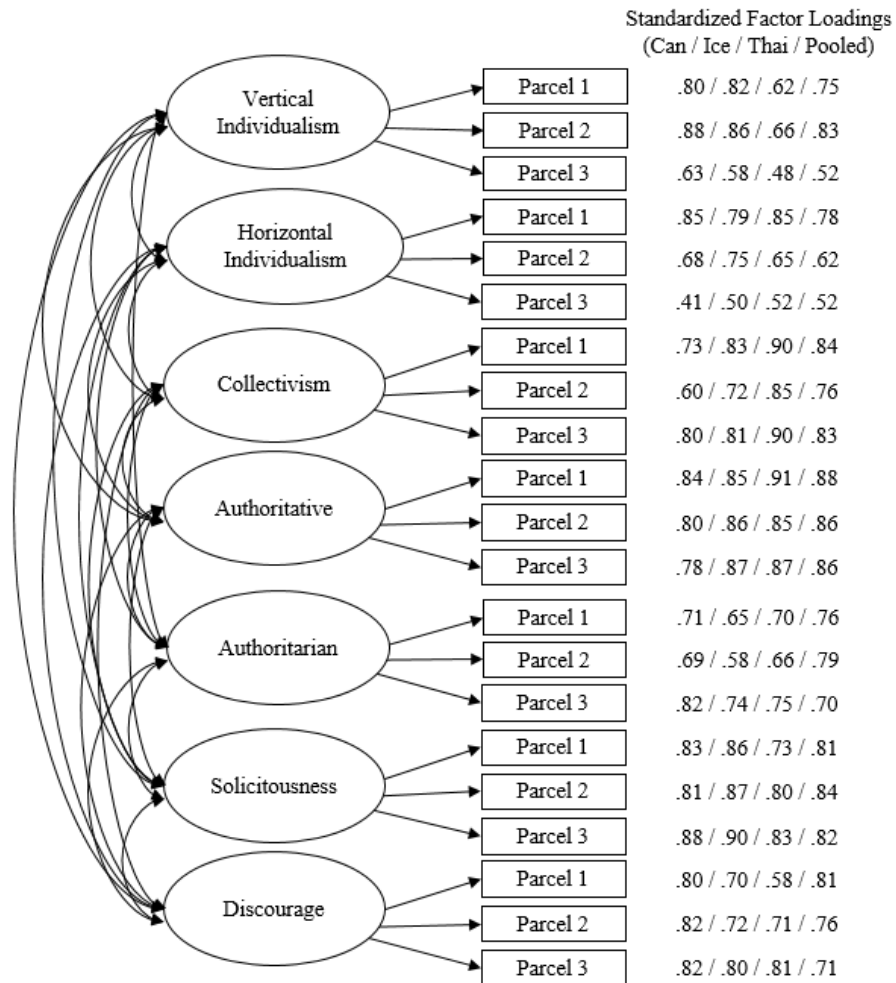


Figure 6 Final selected multigroup metric measurement model.
Note. Can=Canada, Ice=Iceland, Thai=Thailand. The pooled factor loadings are from a single-group model where all cultures are lumped into a single sample. The factor

loadings for individual cultures are from the metric-invariance model. Because variances differ across cultures, standardized coefficients will differ across cultures, despite the equality constraint (i.e., only the unstandardized coefficients will be equal across countries).

Table 14 shows the goodness-of-fit indices of the restricted metric-invariance model. In accordance with the comparative and absolute goodness of fit indices, the metric-invariance model showed adequate goodness-of-fit statistics: $\chi^2(532) = 789.658$, $p = .0001$, comparative fit index = .94, Tucker–Lewis Index = .93, root-mean-square error of approximation = .05, standardized root mean square residual = .07. Next, the comparative fit index of the two models was compared (configural-invariance model comparative fit index = .950; metric-invariance model comparative fit index = .943) showing only a .005 change. This indicated, based on Cheung and Rensvold’s (2002) rule of ΔCFI (comparative fit index) < .01, that the models fit equally well. Therefore, as the metric-invariance model was more parsimonious, it was preferred over the configural model.

Table 15 Standardized correlations among key constructs in the metric measurement model (split by sample).

Variables correlated together		Correlation coefficients		
Variable 1	Variable 2	Canada	Iceland	Thailand
VI	HI	.409***	.413***	.672***
VI	Collectivism	.097	.112	.308**
HI	Collectivism	.402**	.305**	.755***
Authoritative	Authoritarian	-.510**	-.531**	.302**
Solicitous	Discourage	-.208**	-.297**	.469***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. VI=vertical individualism, HI=horizontal individualism.

Table 15 presents the standardized correlation among key factors in the metric-measurement model split by country. Most factors moderately correlated, and no correlation was large enough (> .80–.85) to indicate poor discriminant validity (T. A. Brown, 2014). Overall, correlations between latent variables were similar across the three

samples. This was particularly true for the Canadian and Icelandic samples, whereas the Thai sample varied somewhat from the other two.

For example, for Canada and Iceland, authoritarian-parenting style and authoritative-parenting style factors negatively correlated, meaning caregivers whose parenting style was characterized as authoritative were less inclined to choose authoritarian-parenting style. However, for Thailand, a positive correlation emerged between the authoritative and authoritarian-parenting styles, meaning no clear distinction appeared between the authoritative and authoritarian-parenting styles in the Thai sample, compared to the other two samples. These results indicated that the relationship between the authoritative and authoritarian factors changed across samples. However, these differences do not indicate that the constructs of authoritative and authoritarian-parenting styles are different across countries. Authoritative-parenting style and authoritarian-parenting style factors are similar in all three samples, as shown by factor analysis, reliability analysis, and confirmatory factor analysis goodness-of-fit statistics.

In summary, confirmatory factor analysis results indicated that the instruments measuring the seven-factor measurement model are valid and showed cross-cultural metric-invariance between Canada, Iceland, and Thailand. This result proposes one can move to testing the structural model, which retains the constraints imposed by the metric-invariance model.

Testing the Hypothesized Structural Model (Hypotheses 4 to 7)

After obtaining an invariant measurement model which fits the empirical data, the next step was to proceed to test the goodness of fit of the structural model, and to examine the hypothesized relationships of the studied variable in the structural model

(i.e., the part of the model which shows the hypothesized relationships among the factors). The two main hypotheses for the structural model were: (a) the moderating role of cultural groups in associations between cultural values, parenting styles, and pain-related caregiver behavior (Hypotheses 4 and 5), and; (b) the mediation of parenting style in the relation between cultural values on pain-related caregiver behavior (Hypotheses 6 and 7).

Figure 7 shows the hypothesized structural model which consisted of seven factors (vertical individualism, horizontal individualism, collectivism, authoritative-parenting style, authoritarian-parenting style, solicitousness, and discouraging). The cultural values (vertical individualism, horizontal individualism, collectivism) are the predictors that transmit their effects through the mediators (authoritative and authoritarian-parenting styles). The cultural values are hypothesized to cause caregivers to choose a specific parenting style; lead to changes in caregiver pain-related behavior (solicitousness, or discouraging). In this way, parenting style can change caregiver behavior as a result of the influence of cultural values on it.

In Figure 7, the ovals indicate latent variables or factors, the double-headed arrows indicate covariances, and the single-headed arrows indicate paths (regression coefficients). Solid black lines indicate statistically significant effects ($p < .05$), but dotted grey lines indicate non-significant effects ($p > .05$). Numbers on paths represent unstandardized coefficients. Covariances were not constrained to equality, so three numbers (one per culture) are reported for covariances. According to Kline (2011), unstandardized regression coefficients, rather than standardized, are preferred when comparing results for the same predictors across different samples, because the analysis

is about the covariances, which is an “unstandardized statistic ... [with] no upper or lower bound” (p. 10). Unstandardized scores are expressed based on variables’ raw data unit. Thus, for a 1-raw-unit change on an independent variable, the dependent variable increases (decreases) by the number of its raw units corresponding to the B coefficient, after controlling for other variables. For example, the unstandardized path coefficient for the direct effect of collectivism on authoritative-parenting style is .18. That means that a 1-point increase on collectivism variable predicts a .18-point increase on the parenting style variable, controlling for other variables in the model.

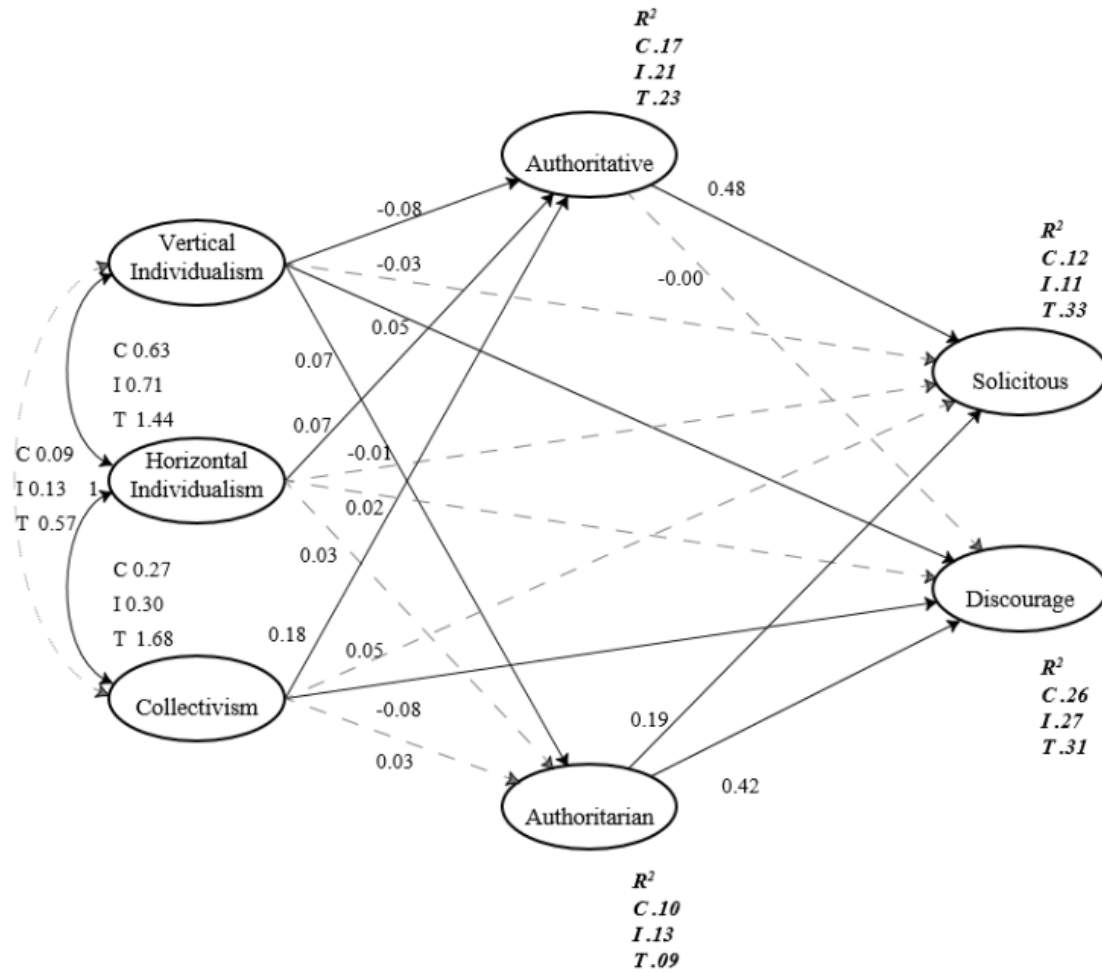


Figure 7 The final hypothesized structural model.
 Note: C=Canada, I=Iceland, T=Thailand. Ovals indicate latent variables. Double-headed arrows indicate covariances. Single-headed arrows indicate paths (regression coefficients). Solid black lines indicate statistically significant effects ($p < .05$). Dotted grey lines indicate nonsignificant effects ($p > .05$). Numbers on paths and covariances represent unstandardized coefficients. Though not shown, results are from a multigroup model where factor loadings and regression coefficients were constrained to equality across groups. Covariances were not constrained to equality, so three numbers (one per culture) are reported for covariances. Also, all endogenous variables were allowed to covary (though not shown in this model for clarity). R^2 values are percent variance values, and are located above endogenous variables. Because variances differ across cultures, the R^2 values differ across cultures, despite the equality constraint.

Cross-Culture Comparison of Model Structure (Hypotheses 4 and 5)

Multigroup structural equation modeling was used to test if the magnitude of the paths, depicted in Figures 7, differed across countries. Multigroup structural equation

modeling analysis involves fitting a structural model to several groups simultaneously. Here, researchers compare models between less restricted (factor loadings constrained to equality across groups, but paths and covariances are allowed to freely vary) and more restricted (constraining paths or covariances to equality across groups) models. In the context of this study, constraints were placed on the regression coefficients' parameters to be set to equality across the three countries. By comparing the model with paths freely estimated, to one where paths are constrained to equality across groups, potential differences in the magnitude of paths across countries can be assessed through a nested-model comparison.

Table 16 shows the 16 direct paths tested between the exogenous and endogenous factors. The paths represent standardized coefficients (β) for the subsamples of Canadian, Icelandic, and Thai caregivers. For the pooled samples, the path is unstandardized (β).

When the coefficients' estimates are compared across the three cultural groups, it shows that they are overall similar in both strength and direction. The freely estimated structural model, for the multigroup structural equation modeling, was a model with factor loadings constrained to equality across groups, with regression paths and covariances allowed to freely vary across groups. The nested model added constraints to the regression coefficients. Specifically, regression coefficients (paths) were set to equality across the three countries. The structural equation modeling analysis of the structural regression model appears in Appendix M; presenting information on variables, standard error, Z -value, $P(>|z|)$, standardized loadings, unstandardized loadings, regression coefficients, covariance, variance, and goodness-of-fit indexes.

Table 16 Direct unstandardized pathways for overall sample and direct standardized pathways for subsamples.

Exogenous --> Endogenous factors	Constrained model		Freely estimated model (freeing country parameters)		
	All countries		Canada	Iceland	Thai
	Coef	St. Err.	Coef	Coef	Coef
<i>Cultural values to parenting style</i>					
VI --> Authoritative	-0.075	0.020	-0.260	-0.248	-0.161
HI --> Authoritative	0.067	0.029	0.170	0.205	0.165
Collectivism--> Authoritative	0.182	0.043	0.292	0.354	0.390
VI --> Authoritarian	0.067	0.018	0.275	0.300	0.204
HI --> Authoritarian	0.019	0.020	0.058	0.080	0.067
Collectivism --> Authoritarian	0.025	0.024	0.048	0.066	0.077
<i>Parenting style to behavior</i>					
Authoritative--> Solicitous	0.476	0.068	0.348	0.320	0.483
Authoritarian-->Solicitous	0.189	0.086	0.117	0.094	0.135
Authoritative--> Discourage	-0.000	0.047	-0.001	-0.001	-0.001
Authoritarian--> Discourage	0.417	0.082	0.402	0.380	0.479
<i>Cultural values to behavior</i>					
VI -->Solicitous	-0.034	0.028	-0.086	-0.076	-0.074
HI -->Solicitous	-0.010	0.037	-0.019	-0.021	-0.026
Collectivism --> Solicitous	0.053	0.040	0.062	0.069	0.115
VI -->Discourage	0.047	0.018	0.188	0.194	0.166
HI -->Discourage	0.021	0.023	0.061	0.079	0.084
Collectivism --> Discourage	-0.077	0.026	-0.141	-0.185	-0.269

Note. VI = vertical individualism, HI = horizontal individualism.

The goodness-of-fit indices for the freely estimated structural model, and the structural model with paths (but not covariances) constrained to equality, appear in Table 17. The goodness-of-fit indices for the freely estimated structural model were estimated, and showed adequate fit: $\chi^2(532) = 789.658, p = .0001$, comparative fit index = .94, Tucker–Lewis Index = .93, root-mean-square error of approximation = .05, and standardized root mean square residual = .06. The goodness-of-fit indices for the constrained paths structural model were established, and showed adequate fit: $\chi^2(564) = 835.740, p = .0001$, comparative fit index = .94, Tucker–Lewis Index = .93, root-mean-square error of approximation = .05, and standardized root mean square residual = .08. In comparing the fit statistics for these two models, the outcomes were very similar. The change in comparative fit indices between the freely estimated and regression models was

ΔCFI (comparative fit index) $\Rightarrow .943 (\text{CFI}_{\text{free}}) - .940 (\text{CFI}_{\text{constrained}}) = .003$. Based on Cheung and Rensvold's (2002) rule (i.e., a change $< .01$ is non-significant), these results showed that the two models were not significantly different. Thus, the constrained paths structural model was preferred for parsimony. These results indicated that country did not change the relationships between the endogenous and exogenous variables in the model. Therefore, the moderation part of Hypotheses 4 and 5 was rejected.

Table 17 Fit indices for multigroup structural models.

Model tested	χ^2	df	TLI	RMSEA	SRMR	CFI	ΔCFI
Freely estimated structural model	789.658	532	.932***	.052	.065	.943	—
Constrained paths structural model	835.740	564	.932***	.051	.076	.940	.003

Note. TLI = Tucker–Lewis Index, RMSEA = root-mean-square error of approximation, SRMR = standardized root mean square residual, CFI = comparative fit index. * $p < .05$, ** $p < .01$, *** $p < .001$.

In summary, results showed that ecosocial context (country) does not moderate the association between variables in the structural model. Therefore, Hypothesis 4 and Hypothesis 5 is rejected. This meant that all future analysis would use a multigroup model, with factor loadings and regression paths constrained to equality across countries, not single-group structural equation modeling. These results were important for two main reasons. First, statistically, they indicated that any further analysis did not need a single-group analysis, but rather a multigroup analysis. Second, theoretically, these results implied that this pain-related caregiver behavior process may be universal rather than culture-specific.

Relation Between Cultural Values, Parenting Styles, and Pain-Related Caregiver Behaviors (Hypotheses 6 and 7)

In describing the direct (total 16) and indirect (total 12) pathways in Figure 7, the terms a, b, c and c' paths were used to align with the terminology for structural models

used in psychology (Baron & Kenny, 1986). Path a defines, for example, the effect of vertical individualism on authoritative style, while controlling for all other predictor variables (i.e., collectivism and horizontal individualism). Path b defines, for example, the effect of authoritative-parenting style on solicitous, while controlling for all other predictor and mediating variables in the model (i.e., collectivism, horizontal individualism, and authoritarian). Path c' refers, for example, to the direct effect of vertical individualism on solicitousness, after controlling for collectivism, horizontal individualism, authoritative, and authoritarian parenting. Path c defines, for example, total effect of vertical individualism on solicitousness, before authoritative and authoritarian-parenting styles are added into the model. However, other predictor variables are still controlled for when calculating these paths (i.e., collectivism and horizontal individualism). Finally, path a x b, shows, for example, the indirect effect of vertical individualism on solicitousness through the authoritative style, after controlling for all other predictor and mediating variables. In other words, it demonstrates that the total effect (path c) decreases when the mediating variable (i.e., authoritative parenting style) is added to the model.

Regarding a x b path, this path represents the indirect effect of the predictor on the outcome, through mediator variables. One of the study's main objectives was to examine these pathways, to understand the role played by cultural values in the model. In doing so, the structural equation modeling mediation analysis was used, where mediation indicated how or why an independent variable(s) affected the dependent variable(s) through a mediator(s). The aim of the mediation was to specify how the predictor variables (vertical individualism, horizontal individualism, and collectivist values)

affected outcome variables (solicitous and discouraging behavior) through mediators (authoritative- and authoritarian-parenting style). The mediation analysis was based on Preacher and Hayes's (2008) framework, where the total effect (Path c) does not need to be significant; the focus is on the size of the indirect effect, and mediation is only said to occur as long as the indirect effect is statistically significant. A bootstrapping method was used to assess statistical significance for indirect effects (MacKinnon et al., 2004), and to estimate effect-sizes and test hypotheses (due to nonnormality of the indirect effect; Preacher & Hayes, 2008). That is, one can conclude that an indirect (mediated) effect is statistically significant at alpha (α)=.05 if its 95% confidence interval does not encompass zero (Preacher & Hayes, 2008).

In the following sections the direct and indirect paths to solicitousness and discouraging pain-related caregiver behaviors will be approached and discussed separately. Before discussing these effects, the relationship between the two cultural elements, cultural values and parenting style, are reported.

Direct effects of cultural values on parenting styles.

Table 18 shows the relationship between cultural values and parenting style. Of the six direct effects tested between cultural values and parenting styles, four were significant. The two non-significant direct effects emerged from horizontal individualism to authoritarian-parenting style, and from collectivism to authoritarian-parenting style. In the following text the four significant direct effects of cultural values on parenting styles are described.

From vertical individualism to authoritative-parenting style. Examination of the path between vertical individualism and authoritative-parenting style revealed that the

unstandardized path coefficient for the direct effect from vertical individualism on authoritative-parenting style was $-.08$, while controlling for all other predictor variables (i.e., horizontal individualism, and collectivism). That means that a 1-point increase in vertical individualism predicted a $.08$ -point decrease in participants' use of authoritative-parenting styles, while controlling for all other predictor variables. That is, vertically individualistic participants were less likely to report high scores on the authoritative-parenting style. This was unexpected.

From horizontal individualism to authoritative-parenting style. Examination of the path between horizontal individualism and authoritative-parenting style revealed that the unstandardized path coefficient for the direct effect from horizontal individualism on discouraging was $.07$, while controlling for all other predictor variables (i.e., vertical individualism, and collectivism). That means that a 1-point increase in horizontal individualism predicted a $.07$ -point increase in participants' reports of authoritative parenting. That is, participants high on horizontal individualism were likely to report using an authoritative-parenting style. This was expected.

From collectivism to authoritative-parenting style. The unstandardized path coefficient between collectivism and authoritative-parenting style for the direct effect from collectivism was $.19$, while controlling for all other predictor variables (i.e., vertical individualism, and horizontal individualism). That meant that a 1-point increase in collectivism predicted a $.19$ -point increase in participants' report of authoritative parenting, after controlling for other predictors. That is, participants high in collectivism were likely to report using an authoritative-parenting style. This was unexpected.

From vertical individualism to authoritarian-parenting style. The unstandardized path coefficient between vertical individualism and authoritarian-parenting style for the direct effects was .07, while controlling for all other predictor variables (i.e., horizontal individualism, and collectivism). That meant that a 1-point increase in vertical individualism predicted a .07-point increase in participants' report of authoritarian parenting. That is, participants high on vertical individualism were likely to report using an authoritarian-parenting style. This was unexpected.

To summarize, except for horizontal individualism, the relationship between cultural values and parenting styles was contrary to what was expected. That is, vertical individualism was positively related to authoritarian-parenting style, not authoritative as expected. Further, collectivism was positively related to authoritative-parenting style, not authoritarian-parenting style, as expected.

Direct effects of parenting styles on *solicitousness*.

Table 18 shows the direct path between parenting style and solicitousness in the hypothesized model. The result showed that the unstandardized path coefficient for the direct effect of authoritative parenting on solicitousness was .48 ($p < .05$), while controlling for other predictor and mediating variables in the model (i.e., vertical individualism, horizontal individualism, collectivism, and authoritarian). That meant that a 1-point increase in authoritative-parenting style predicts a .48-point increase in solicitous caregiver behavior. That is, those participants who are authoritative in their parenting style tend to adopt a solicitous pain-related parent-caregiver behavior.

Table 18 Direct and indirect effect when solicitous is the outcome variable.

Predictor	Mediator	Outcome	<i>a</i> path	<i>b</i> path	<i>c'</i> path (direct effect)	<i>c</i> path (total effect)	95% CI <i>ab</i> (indirect effect)	P _M
VI	Authoritative	Solicitous	-0.075***	0.476***	-0.034	-0.072	[-0.062, -0.015]*	.51
VI	Authoritarian	Solicitous	0.067***	0.189*	-0.034	-0.020	[0.003, 0.036]*	.32
HI	Authoritative	Solicitous	0.067*	0.476***	-0.010	0.025	[0.008, 0.084]*	.78
HI	Authoritarian	Solicitous	0.019	0.189*	-0.010	-0.008	[-0.007, 0.018]	—
Collectivism	Authoritative	Solicitous	0.182***	0.476***	0.053	0.138	[0.039, 0.138]*	.61
Collectivism	Authoritarian	Solicitous	0.025	0.189*	0.053	0.060	[-0.004, 0.026]	—

Note. VI = vertical individualism, HI = horizontal individualism, C = collectivism, P_M = The effect size of the indirect effect was calculated by taking a ratio of the indirect effect to the direct effect, $ab/(ab+ c')$ (Preacher & Kelley, 2011). * $p < .05$, ** $p < .01$, *** $p < .001$.

In examining the direct effects of authoritarian parenting to solicitousness, the unstandardized path coefficient for the direct effect of authoritarian parenting on solicitousness was .19. This suggests that a 1-point increase in authoritarian-parenting style predicts a .19-point increase in solicitousness, while controlling for other predictor and mediating variables in the model. That means, contrary to our expectation, that parents who use an authoritarian-parenting style are also likely to use solicitousness.

In summary, as expected, authoritative-parenting style was positively related to solicitousness, but unexpectedly, authoritarian-parenting style was related to solicitousness as well.

Direct effects of cultural values on *solicitousness*.

Table 18 shows the direct effects of cultural values on solicitousness. When examining the direct path between (a) vertical individualism and solicitousness; (b) horizontal individualism and solicitousness, and; (c) collectivism and solicitousness a non-significant effect on solicitousness emerged, after controlling for the mediators.

These results are in accordance with expectations i.e., that cultural values do not have direct effects on pain-related caregiver behaviors.

Indirect effects of cultural values on *solicitousness* (Hypothesis 6).

Table 18 shows the six indirect paths to *solicitousness*. Of these, four specific significant mediations for the effect of cultural values on *solicitousness* through parenting styles, emerged. The first non-significant mediation effect emerged between horizontal individualism, authoritarian style, and *solicitousness*. The second non-significant mediation effect emerged between collectivism, authoritarian style, and *solicitousness*. In the following paragraphs four significant indirect effects on *solicitousness* are described.

Vertical individualism to solicitousness via authoritative-parenting style. Results showed that participants' score on vertical individualism had a significant negative indirect effect on their scores for *solicitousness* through their scores on authoritative-parenting style (95% CI [0.062, -0.015]). That is, increased vertical individualism led to a decrease in authoritative parenting, which in turn led to a decrease in *solicitousness*. The relationship between vertical individualism and authoritative-parenting style accounts for 51% of the negative relationship between vertical individualism and *solicitousness*. That is, about 51% of vertical individualism's negative effects on *solicitousness* was due to its negative relation with the authoritative-parenting style (which, in turn, positively related to *solicitousness*). These results were unexpected, and seemed to relate to the vertical part of the individualism scale, and the universality of *solicitousness*. Both issues are addressed in the discussion chapter.

Vertical individualism to solicitousness via authoritarian-parenting style. Results showed that participants' scores on vertical individualism had a significant positive

indirect effect on solicitousness through the authoritarian-parenting style (95% CI [0.003, 0.036]). That is, increase in vertical individualism led to an increase in authoritative parenting, which in turn led to an increase in solicitousness. The relationship between vertical individualism and authoritarian-parenting style accounts for 32% of the relationship between vertical individualism and solicitousness. Moreover, 32% of vertical individualism's positive effect on solicitousness was due to its positive effects on authoritarian-parenting style.

These seemingly contradictory results between the previous two interactions are likely rooted in the vertical orientation of the individualism scale and its emphasis on hierarchical environment, which is also a trait in authoritarian parenting but not in authoritative parenting. Furthermore, the positive effects of both parenting styles on solicitousness indicate that it is a universal caregiver behavior.

Horizontal individualism to solicitousness via authoritative-parenting style. As expected, results showed that participants' scores on horizontal individualism had a significant indirect effect on solicitousness through the authoritative-parenting style (95% CI [0.008, 0.084]). That is, horizontal individualism led to an increase in authoritative parenting, which in turn led to an increase in solicitousness. The relationship between horizontal individualism and authoritative-parenting style accounts for 78% of the relationship between horizontal individualism and solicitousness

Collectivism to solicitousness via authoritative-parenting style. Unexpectedly, collectivism also indirectly predicted solicitousness through authoritative parenting (95% CI [0.039, 0.138]), with the authoritative-parenting style accounting for 61% of the total effect of collectivism on solicitousness. The relationship between collectivism and

authoritative-parenting style accounts for 61% of the relationship between collectivism and solicitousness. It was not expected that collectivism would have a positive effect on either of these two variables.

Direct effects of parenting style on *discouraging*.

Table 19 shows the direct paths between parenting styles and discouraging. When examining the direct path between authoritative-parenting style and discouraging, a non-significant effect on solicitousness emerged.

Results showed that the unstandardized path coefficient for the direct effect from authoritarian-parenting style on discouraging behavior was .42. That meant that a 1-point increase in authoritarian-parenting style predicted a .42-point increase in discouraging. In other words, participants who have an authoritarian-parenting style are also more likely to use discouraging behaviors. As expected, positive association emerged between authoritarian-parenting style and discouraging, but not between authoritative and discouraging.

Table 19 Direct and indirect effect when discourage is the outcome variable.

Predictor	Mediator	Outcome	<i>a</i> path	<i>b</i> path	<i>c'</i> path (direct effect)	<i>c</i> path (total effect)	95% CI <i>ab</i> (indirect effect)	P _M
VI	Authoritative	Discourage	-0.075***	-0.000	0.047**	0.048	[-0.005, 0.010]	—
VI	Authoritarian	Discourage	0.067***	0.417***	0.047**	0.078***	[0.015, 0.055]*	.41
HI	Authoritative	Discourage	0.067*	-0.000	0.021	0.020	[-0.012, 0.005]	—
HI	Authoritarian	Discourage	0.019	0.417***	0.021	0.028	[-0.015, 0.027]	—
Collectivism	Authoritative	Discourage	0.182***	-0.000	-0.077**	-0.075	[-0.023, 0.013]	—
Collectivism	Authoritarian	Discourage	0.025	0.417***	-0.077**	-0.059	[-0.011, 0.038]	—

Note. VI = vertical individualism, HI = horizontal individualism, P_M = The effect size of the indirect effect was calculated by taking a ratio of the indirect effect to the direct effect, $ab/(ab + c')$ (Preacher & Kelley, 2011). * $p < .05$, ** $p < .01$, *** $p < .001$.

Direct effects of cultural values on *discouraging*.

Table 19 shows the direct paths between cultural values and discouraging. Of the three direct paths between cultural values and discouraging, two were significant. The non-significant path emerged between horizontal individualism and discouraging. The following text describes the two significant direct effects. The direct effects of cultural values on discouraging are unexpected.

From vertical individualism to discouraging. When examining the path between vertical individualism and discouraging, the unstandardized path coefficient was .05. That meant that a 1-point increase on vertical individualism predicted a .05-point increase in participants' report of discouraging behavior. That is, vertically individualistic participants were likely to report using discouraging behaviors.

From collectivism to discouraging. The unstandardized path coefficient for the direct effect from collectivism on discouraging behavior was -.08. That meant, that a 1-point increase in collectivism predicted a .08-point decrease in participants' reporting of discouraging behavior. That is, if participants were identified with collectivism, they were likely to report less frequent use of discouraging behaviors.

Indirect effects of cultural values on *discouraging* (Hypothesis 7).

Table 19 shows the six indirect paths to discouraging. Of these, one specific significant mediation for the effect of cultural values on discouraging through parenting styles, emerged. The five non-significant indirect effects of cultural values on discouraging emerged between: (a) vertical individualism to discouraging via authoritative-parenting style; (b) horizontal individualism to discouraging via authoritative-parenting style; (c) horizontal individualism to discouraging via

authoritarian-parenting style; (d) collectivism to discouraging via authoritative-parenting style, and; (e) collectivism to discouraging via authoritarian-parenting style.

Vertical individualism to discouraging via authoritarian-parenting style. Results showed that vertical individualism had a significant indirect effect on discouraging through the authoritarian-parenting style (95% CI [0.015, 0.055]). That is, vertical individualism led to an increase in authoritarian parenting, which resulted in an increase in discouraging behavior. The relationship between vertical individualism and authoritarian-parenting style accounts for 41% of the relationship between vertical individualism and discouraging. In other words, vertical individualism transmitted its effects on discouraging through the authoritarian-parenting style, but the authoritarian-parenting style accounted for 41% of the total effect of vertical individualism on discouraging.

Summary of Results

Results from the confirmatory factor analysis indicated that the model was valid with cross-cultural metric invariance across the three countries. Based on Keller's (2007) theory, the ecosocial context was expected to moderate the relationship between variables in the hypothesized structural model. Unexpectedly, no moderation effects arose by ecosocial context, suggesting that in pediatric pain, the cultural model of parenting may express a universal process.

Cultural values were not expected to show strong direct effects on pain-related caregiver responses. This was supported by the results. As expected, the effects of cultural values were mostly transmitted through parenting styles. Parenting styles were the strongest direct predictors of pain-related parent responses.

The two strongest mediation effects on solicitousness were transmitted from horizontal individualism through the authoritative-parenting style, and from collectivism through the authoritative-parenting style. Although collectivism was an unexpected predictor for solicitousness, collectivistic values do facilitate union and togetherness, both traits of authoritative parenting and solicitousness.

The only detected mediation effect on discouraging were transmitted from vertical individualism through the authoritarian-parenting style. Although the positive relationship between the authoritarian-parenting style and discouraging behavior were expected, the positive effect of vertical individualism was not.

CHAPTER 5: DISCUSSION

This thesis contributes to the pediatric-pain literature in three ways. First, by using the TRAPD team-translation model to ensure cross-cultural equivalence, and confirmatory factor-analysis procedures to test invariance of instruments measuring, the hypothesized cultural models of parenting across samples, it insured that the measures were as culturally equivalent as possible. Second, this thesis extends pediatric-pain research across cultural boundaries. Samples from different countries, with meaningful differences in key cultural factors (collectivistic and individualistic values), rather than within-country subsamples, were used to conceptualize and operationalize culture through a theoretical latent process model. This made it possible to confirm that cultural models of parenting influence caregiver behaviors (Keller, 2007; Keller & Kartner, 2013), and to identify why cultural parenting processes influence pain-related caregiver behaviors. Third, this thesis examined the different prevalence of cultural values, parenting styles, and pain-related caregiver behaviors in Canada, Iceland, and Thailand. This information provides a foundation for cross-cultural research that may help further our understanding of caregivers and their child in pain.

The primary aim of the thesis was to answer three main questions: (a) do caregivers in Canada, Iceland, and Thailand vary in their cultural values, parenting styles, and pain-related behaviors; (b) do cultural values and parenting styles affect pain-related parent behaviors differently, depending on their ecosocial context, and; (c) how do cultural values and parenting styles affect pain-related parent behavior. The process began by answering the first question, providing basic observations on what cultural values (Hypothesis 1), parenting styles (Hypothesis 2), and pain-related behaviors

(solicitous and discouraging; Hypothesis 3) caregivers from Canada, Iceland, and Thailand adopt.

The other two questions are more fundamental, in the sense that they may help explain differences, but more importantly provide information on how and why culture influences pain-related parent behaviors. That is, the moderation effects of ecosocial contexts (i.e., country) on the hypothesized cultural models of parenting (i.e., relation between cultural values, parenting styles, and pain-related parent responses; Hypotheses 4 and 5) were examined. An attempt was made to explain why the individualistic context (Canada and Iceland), and the collectivistic context (Thailand) did not promote separate mediating processes relating to different pain-related outcomes, as was expected. Instead, these cultural models of parenting seem to represent some universal processes. How cultural values and parenting styles (the basic units of cultural models) impact caregiver's behaviors regarding child pain, were examined (Hypotheses 6 and 7). Solicitousness was thought to be an inherent, not learned, response.

In this chapter, the potential meaning of solicitousness and discouraging and how it relates to specific cultural model processes will be discussed. Furthermore, the link between group differences and group similarities are discussed. Finally, the limitations, strengths, future studies, possible implications, and conclusions from this study are addressed.

Cross-Country Comparisons: More Differences Than Similarities

Hypotheses 1 to 3 are discussed in the following subsections. By measuring individual representation of the variables in this study, information is generated enabling evaluation of how well the samples represent the expected culture-specific features (i.e.,

cultural values and parenting style) at the group level. Overall, the findings were consistent with prior work (e.g., Hermann et al., 2008; Liu & Guo, 2010; McCann et al., 2010). Of the three cultural groups studied, Canadian and Thai caregivers differed the most in cultural values, parenting styles, and pain-related parental behaviors. Except in the cases of authoritarian-parenting style and the discouragement of pain-related caregiver behavior, country did not emerge as a strong predictor of study variables.

Cultural Values

Hypothesis 1 stated that significant differences may exist between levels of horizontal/vertical individualism and collectivism in caregivers who live in an individualistic-dominant ecosocial context versus a collectivistic-dominant country. That is, caregivers living in an individualistic country were expected to value horizontal/vertical individualism more than caregivers living in collectivistic countries. Likewise, caregivers living in a predominantly collectivistic country were expected to value collectivistic values more than caregivers living in predominantly individualistic countries. Thus, hypothesis 1 was partly supported.

On collectivism, the results resembled what others have found (Hofstede, 1980, 2001; McCann et al., 2010; Suh et al., 1998), with Thais scoring significantly higher on collectivism than Canadians and Icelanders. Also, consistent with the literature (McCann et al., 2010), Canadians scored significantly higher on horizontal individualism when compared to Thais.

On vertical individualism, Thais scored significantly higher than Canadians. When compared with studies looking only at the individualism-collectivism dimension (e.g., Hofstede, 1980, 2001) our results are contradictory. However, when the vertical

dimension is added to the individualism dimension (i.e., vertical individualism scale), our results are consistent with the work of others. For example, Su and Hynie (2011) who studied Chinese and Canadian mothers of preschool children aged 2 to 6 years reported that mothers living in China scored significantly higher on vertical individualism compared to Chinese-Canadian mothers, who then again scored significantly higher compared to European Canadian mothers. Also, in Pornsakulvanich and Dumrongsiri's (2009) study on mobile-phone use, Thais scored higher on vertical individualism than Germans, but lower than individuals from the United States. Thai society is highly hierarchical (e.g., Boonmathya, 2003; Hofstede, 1980, 2001), while Canadian society is described as more egalitarian (Hofstede, 1980, 2001).

Thailand is modernizing (Boonmathya, 2003), and researchers suggest that when a society is transitioning to modernity, vertical individualistic traits (e.g., achievement) become especially prevalent, as vertical individualistic values motivate economic growth and prosperity (Inglehart & Baker, 2000; Kagitcibasi, 2007; Watchravesringkan, 2005). Another explanation why Thais scored so high on vertical individualism may be that the vertical component (i.e., hierarchy and status), rather than the individualism component (i.e., independence and uniqueness) of the vertical individualism, is driving the relationship. Similar suggestions have been made by others also examining the relation between cultural values (using the INDCOL scale) and parenting styles (Georgiou et al., 2013).

Unexpectedly, Icelanders scored similar to Thais on horizontal and vertical individualism. When compared to Canadians, Icelanders scored significantly lower on horizontal individualism, but significantly higher on vertical individualism. No current

studies have measured the horizontal–vertical individualism–collectivism values of Icelanders. However, based on the conventional notion that North Americans tend to be more vertically oriented societies, compared to Europeans, these results contradict the literature (Nelson & Shavitt, 2002; Triandis, 1995). It is unclear why Icelanders were different from Canadians, but similar to Thais on the vertical and horizontal individualistic indices. When the data was collected (i.e., April 2010), Iceland was recovering from a major economic decline following the 2008 major recession (Thoroddsen, 2009). This historical event may have led to a stronger emphasis on achievement and competitiveness, and more pressure for individuals to succeed economically in Icelandic society. The results on horizontal/vertical individualism and as well as collectivism, indicate that Canadian caregivers are more egalitarian and socially conscious compared to the Thai and Icelandic caregivers. This indicates that in a clinical context, Canadian caregivers, compared to Thais and Icelanders, may be less hierarchical in social interactions with others.

Caregivers in all three cultural groups scored highest on collectivistic values, and lowest on vertical individualism. This was unexpected as already noted. This pattern may be due to the fact that 80% of the samples were women. When compared to men, women tend to be more collectivistic and less individualistic (Shavitt et al., 2006). Future studies may benefit from having an equal representation of genders, and may provide a different pattern from the one seen in this study.

Parenting Styles

Hypothesis 2 states that significant differences would exist between the levels of authoritative versus authoritarian-parenting styles in caregivers living in individualistic

dominant countries versus those in collectivistic dominant country. That is, individualistic caregivers would be more likely to value authoritative-parenting styles than collectivistic caregivers. Likewise, collectivist caregivers would be more likely to value authoritarian-parenting style than individualistic caregivers. Hypothesis 2 was supported.

Consistent with the literature, Thai caregivers scored significantly lower on authoritative-parenting style compared to Canadians and Icelanders. Also, as expected, Thais scored significantly higher on authoritarian parenting than Canadians and Icelanders (Liu et al., 2005; Liu & Guo, 2010; P. Wu et al., 2002). Icelanders scored significantly lower on authoritarian parenting compared to Thais, but significantly higher compared to Canadians. While the absolute difference between Iceland and Canada was small, country explained 34% of the total variance of authoritarian-parenting style, which gives credibility to the findings. Also, in Iceland, neglectful⁵ (or uninvolved) parenting has been reported as a common style among parents (Adalbjarnardottir & Hafsteinsson, 2001; Blondal & Adalbjarnardottir, 2009). Furthermore, northern European parents, like Icelanders, have been described as being distant, placing high emphasize on child autonomy, and showing limited emotionality towards their children (Kagitcibasi, 2007; Nunes et al., 2014). These findings suggest that in a clinical setting, Thai and Icelandic caregivers can be expected to show higher authoritarian tendencies than Canadian caregivers.

⁵ “Neglectful parents are neither responsive nor demanding. They do not monitor or guide their children and do not support them or relate to them with warmth” (Adalbjarnardottir & Hafsteinsson, 2001, p. 403).

All three cultural groups scored higher on authoritative than authoritarian parenting style levels. This may relate to the fact that 80% of the samples were mothers, but studies show that women tended to be more authoritative than authoritarian, compared to fathers (Blissett & Haycraft, 2008; Zervides & Knowles, 2007). Another explanation may relate to how modernized the three samples are, but as societies modernize, they become more authoritative and less authoritarian in their parenting (Assadi et al., 2007; Inglehart & Baker, 2000).

Pain-Related Caregiver Behaviors

Hypothesis 3 stated that significant differences would exist between levels of solicitous and discouragement in caregivers, living in individualistic dominant countries versus collectivistic dominant countries. That is, individualistic caregivers would be more likely to value solicitous responses than collectivistic caregivers. Likewise, collectivistic caregivers would be more likely to value discouraging responses than individualistic caregivers. Hypothesis 3 was partly supported.

Based on qualitative pediatric-pain studies using samples from collectivistic countries (Forgeron et al., 2009; Jongudomkarn et al., 2006; Wiroonpanich & Strickland, 2004), and quantitative pediatric-pain studies using samples from individualistic countries (Harrison et al., 2014; Lisi, Campbell, Pillai Riddell, Garfield, & Greenberg, 2013; McMurtry et al., 2006; Vinall et al., 2011), Canadian and Icelandic caregivers were expected to score significantly higher on solicitous pain-related behavior, and significantly lower on discouraging pain-related behaviors, when compared to Thais. On solicitous pain-related responses, the present results were contradictory to these expectations. That is, Thais scored significantly higher on solicitousness compared to

Canadians, but not compared to Icelanders. It is important to consider that the absolute value mean difference was small and the effect size of country was very small for solicitousness ($\eta^2=.3$). Nonetheless, these results undoubtedly show that one cannot assume that caregivers from predominantly collectivistic countries are less solicitous in their response to child pain than parents from more individualistic countries.

On pain-related discouraging, results were consistent with predictions. Thais scored significantly higher on discouraging compared to Canadian and Icelandic parents. The effect size for discouraging was large ($\eta^2=.19$), indicating that country may be an adequate predictor for discouraging. Thus, in clinical settings one could expect Thais, when compared to caregivers from the other two countries, to show more discouraging behaviors regarding child pain.

Caregivers in all three cultures scored highest on solicitousness. A contributing factor may relate to the gender bias of the samples. In particular, pediatric pain researchers show that when making comparisons between mothers and fathers on their pain-related behaviors, mothers use solicitous pain-related behaviors more often than fathers (Evans et al., 2010; Huguet et al., 2008; Vervoort et al., 2011).

Structural Comparison of the Hypothesized Cultural Models of Parenting: Similarities Across Ecosocial Contexts (Countries)

In this section, Hypotheses 4 and 5 are discussed. Hypothesis 4 stated that caregivers living in a predominantly individualistic ecosocial context would have stronger associations between individualistic values, authoritative-parenting styles, and solicitous behaviors, when compared with caregivers living in a predominantly collectivistic ecosocial context. Hypothesis 4 was rejected.

Hypothesis 5 stated that caregivers living in a predominantly collectivistic ecosocial context would have stronger associations between collectivistic values, authoritarian-parenting style, and discouraging behaviors, when compared with caregivers living in predominantly individualistic ecosocial contexts. Hypothesis 5 was rejected.

According to ecosocial theories factors such as people's sociodemographic status (e.g., education levels) and their physical environment (e.g., urban/rural), create unique contexts for parenting and child development (Greenfield, 2009; Keller, 2007). These ecosocial factors are believed to moderate the relationship between cultural elements like cultural values and parenting styles that lead to different cultural models of parenting pathways. Thus, Canadian and Icelandic caregivers were expected to follow an individualistic–authoritative–solicitous parenting pathway, and Thai caregivers to follow a collectivistic–authoritarian–style discouraging pathway. However, after performing multigroup comparative structural equation modeling to assess whether the structural relations among cultural values, parenting styles, and pain-related caregiver behaviors would differ, the results unexpectedly showed no differences in the relationships between the study variables between the three ecosocial contexts. This ran counter to ecosocial theories (Greenfield, 2009; Keller, 2007; Rudy & Grusec, 2006).

The two different types of cultural models (i.e., the collectivistic-authoritarian vs. the individualistic-authoritative) are said to be most likely to occur when comparing ecosocial contexts that are extremely different (Greenfield, 2009). Therefore, one possible explanation for these unexpected results may be the type of samples selected for this study. They seem to be less different than was assumed. For example, all the

countries scored highest on collectivism, authoritative parenting, and solicitousness. Furthermore, although there were differences in average education levels between Thailand and the other two countries, only 28% of the Thai sample reported having less than basic education (i.e., only some high school education or lower). Thais were expected to have lower education levels compared to the other two samples, due to lower reported literacy rates and school-life expectancy (Central Intelligence Agency, 2016a,b,c). Therefore, one may question whether the study sites were sufficiently different to create expected results.

Another, and favored, explanation for the lack of cross-cultural differences in the relation between cultural values, parenting styles, and parent behavior, may be the cultural model process itself. Indeed, a consensus exists in the cross-cultural literature that some human features, including some parenting processes, are similar across all cultures (D. E. Brown, 1991; Fontaine, 2011). Commonality in parenting processes may be especially likely if that process involves child distress, rather than everyday activities (e.g., playing; M. H. Bornstein et al., 1991). Pediatric pain is a stressful experience for the child and the parent (Sieberg, Williams, & Simons, 2011), and the outcome is significant for the health and well-being of the developing child. Therefore, cross-cultural similarities may “indicate that, across cultural contexts, the socialization process may be determined, to a large extent, by the basic requirements in human development” (Liu et al., 2005, p. 494). That is, responses to one’s child’s pain may be universal and more innate than learned.

Furthermore, others have reported cross-cultural similarities in developmental and parenting processes across different countries (Chao, 2000; Rowe, Vazsonyi, & Flannery,

1994; Spera, 2006; Sy & Schulenberg, 2005; Vazsonyi & Belliston, 2006; Vazsonyi, Hibbert, & Blake Snider, 2003; Wissink, Dekovic, & Meijer, 2006). For example, Chao (2000) found a similar association between parenting styles, socialization goals, and parenting practices among immigrant Chinese and European American mothers. Sy and Schulenberg (2005) also reported similar structure in the degree to which parents' beliefs, expectations, and involvement practices among Asian American and European American parents predicted children's educational achievement. Vazsonyi and Belliston (2006) looked at anxiety and depression symptoms in adolescents, and their association with parenting processes (closeness, support, monitoring, communication, conflict, and peer approval), in parents from Hungary, the Netherlands, Switzerland, and the United States. Here, they reported great similarities across cultural contexts. Finally, Wissink et al. (2006) studied the association between parenting processes (parenting styles, quality of parent-teen relationships) and adolescent functioning, and found similarities between Dutch, Turkish, Moroccan, and Surinamese samples of parents and adolescents.

The parenting process found in this study may represent a fundamental developmental process that is universal and independent of ecosocial contexts (Vazsonyi & Belliston, 2006). Universal in the sense, that it is commonly found in individuals, independent of their ecosocial context, and rests on general principles rather than specific individual attributes (Corter & Fleming, 2002; Fontaine, 2011; Triandis, 1978). According to M. H. Bornstein (2012), universal parenting processes and behaviors can be explained by "inherent attributed of caregiving, historical convergences in parenting, or they could be by-product of information dissemination via forces of globalization or mass media or migration that present parents today with increasingly similar socialization

models, issues, and challenges” (p. 217). The possibility of universal processes is an important element to acknowledge in understanding how culture influences child pain through parental behaviors. If these cultural parenting processes are universal, they may provide dimensions that can be used to compare societies. Future studies will need to verify if universal culture models of parenting do indeed exist in all cultures.

Relationships Between Cultural Values, Parenting Styles, and Pain-Related Parent Behaviors

Hypotheses 6 and 7 are discussed in this section. Hypothesis 6 stated that individualism would have a positive mediating effect through authoritative-parenting style on solicitous behavior. Hypothesis 6 was partly supported. Hypothesis 7 stated that collectivism would have a positive mediating effect through authoritarian-parenting style on discouraging behavior. Hypothesis 7 was rejected.

Structural equation modeling showed that parenting styles mediated the effect of cultural values on pain-related parent behaviors. This outcome aligns with the hypothesized cultural models of parenting presented in this thesis (e.g., Keller, 2007). Results showed that caregivers’ cultural values and parenting styles affect the way (how) caregivers behave when their child is in pain. According to ecosocial parenting theories, cultural models of parenting, foster culturally appropriate parent behaviors, such that each cultural model pathway (i.e., cultural value and parenting style linking) involves different cultural interpretations of the same developmental task (i.e., pain socialization; Greenfield, 2002, 2009; Keller, 2007). This study suggests that cultural values and parenting styles lead to different messages of appropriate pain-related caregiver behavior.

That is, a cultural model of parenting pathway seems to instill a meaning and guidance as to what “appropriate” pain-related behavior caregiver should use.

In this study, five cultural models of parenting pathways emerged, not the two “pure” forms that were hypothesized (i.e., individualistic–authoritative–solicitousness vs. collectivistic–authoritarian–discouraging). Ecosocial theorists (Greenfield, 2009; Keller, 2007) expect cultural values and parenting styles to relate in specific ways when ecologies are “extremely” different. The ecologies used in this study may not have been extreme enough to support the two hypothesized forms of cultural models of parenting processes, or as suggested in the last section, these processes may represent universal processes within a child pain context.

In the following sections, the individual pathways, including how cultural models impact the meaning of pain-related behaviors are discussed. To fully understand the results of the theoretical model, it is important to first understand the pieces of the model that contribute to the overall findings. First, the relationships between cultural values and parenting styles are considered, which provide the basic structure for cultural models of parenting.

Caregiver Cultural Values and Parenting Styles

This study showed an association between the cultural values and the parenting styles caregivers adopted, thus supporting previous cultural models theories which propose that cultural values influence parenting ideology (e.g., Keller, 2007). Each individual relationship between cultural values (vertical individualism, horizontal individualism, and collectivism) and parenting styles (authoritative and authoritarian) will be described.

A positive relationship emerged between the caregivers' endorsement of horizontal individualism and their use of an authoritative-parenting style. Further, non-significant association was found between horizontal individualism and authoritarian-parenting style. These findings are consistent with previous research (Su & Hynie, 2011), and are also in accordance with the characteristics of horizontal individualism and authoritative-parenting style (Berns, 2013; Greenfield & Suzuki, 1998; Oyserman et al., 2002), which both emphasize egalitarian communications, and individuals' need for self-expression of emotions.

The relationships found between vertical individualism and the two parenting styles were unexpected. Based on the conventional literature looking at individualism-collectivism as unipolar construct, vertical individualism was expected to positively relate to the authoritative-parenting style, but negatively related to the authoritarian-parenting style (Rudy & Grusec, 2001). The results were, however, contradictory to this literature, as they showed that vertical individualism negatively related to the authoritative-parenting style, but positively related to the authoritarian-parenting style. Unfortunately, very few studies specifically consider vertical individualism and parenting styles. Some studies show no relationship between vertical individualism and authoritative-parenting style, or between vertical individualism and authoritarian-parenting style (Su & Hynie, 2011), whereas like our findings, others show a positive relationship between vertical individualism and authoritarian-parenting style (Georgiou et al., 2013), and between vertical individualism and general authoritarianism among multinational groups of students (Kemmelmeier et al., 2003).

Vertical individualism and authoritarian-parenting style may seem incompatible, although these constructs have some similar characteristics. For example, both facilitate hierarchical communication, power imbalance, and submission to authority (Chan et al., 2009; Georgiou et al., 2013; Kimmelmeier et al., 2003; P. B. Smith & Bond, 1999). Parents who are both individualist and authoritarian are also found to show low warmth, a less positive view of their child, and negative disciplinary cognition in their parenting (Rudy & Grusec, 2006). Given that vertically individualistic individuals tend to be self-centered (Triandis & Gelfand, 1998), and authoritarian parents tend to show low responsiveness to their child's needs (M. H. Bornstein & Zlotnik, 2008), it is reasonable to assume that these caregivers are more self-focused, than child-focused in their interactions with their children.

We found a positive relationship between collectivism and authoritative-parenting style, but a nonsignificant relationship between collectivism and authoritarian-parenting style. These results contradict some research findings (Rudy & Grusec, 2006; Yaman et al., 2010), but align with others (Pan, Gauvain, & Schwartz, 2013; Shuster, Li, & Shi, 2012; Su & Hynie, 2011). Collectivism and authoritative-parenting style seem to promote opposite behaviors, especially as collectivism tends to discourage emotional expression, but authoritative parenting encourages self-expression. However, when examined more closely, collectivistic values do not discourage all emotions; only those that are "self-focused" emotions, like anger. In fact, collectivism encourages "other-focused" emotions, like empathy. In addition, collectivism is about the subjugation of self to the needs of the group (i.e., family, extended family, social group). In this sense, it is compatible with the authoritative-parenting style. This finding links to the emphasis collectivism places on in-

group needs, relatedness, and group-harmony (Chao, 1994; Lau & Takeuchi, 2001; Pan et al., 2013; Shuster et al., 2012; Tamis-LeMonda et al., 2008).

Caregiver Parenting Style and Pain-Related Behaviors

In this subsection, the direct relationships between parenting styles and pain-related caregiver responses are discussed. Consistent with previous findings regarding authoritative-parenting style and solicitous pain-related behavior (Bush et al., 1986; Hermann et al., 2008), this study showed that authoritative-parenting style can positively predict caregiver solicitous in pain-related behavior. However, authoritarian-parenting style also predicted the caregiver's use of solicitousness, which is not reported in the pediatric-pain literature (Bush et al., 1986; Hermann et al., 2008). As discussed before, these results support the suggestion that solicitousness may be an inherent response for caregivers when their child is in pain.

Consistent with previous research regarding authoritarian-parenting style and caregiver discouraging pain-related behavior (Bush et al., 1986; Hermann et al., 2008), this study showed that authoritarian-parenting style can positively predict discouraging pain-related behavior. Also, these results are similar to cross-cultural parenting literature reports of a positive association between authoritarian-parenting style and emotional-discouraging maternal behaviors (Chan, 2012; Chan et al., 2009).

Caregiver Cultural Values and Pain-Related Behaviors: The Mediation of Parenting Styles

Cross-cultural theorists (Greenfield, 2009; Keller, 2007) and pediatric-pain researchers (Riddell et al., 2014), suggest that cultural elements assert their influences

indirectly through caregivers, providing caregivers with “pain schemas” for culturally appropriate behavior around child pain. Thus, one does not necessarily expect a direct relationship between cultural values and parental behaviors. Parallel to this notion, this thesis revealed no direct relationship between horizontal individualism and solicitous pain-related behavior, between vertical individualism and solicitous pain-related behavior, or between collectivism and solicitous pain-related behavior. Unexpectedly, a weak direct positive relationship did emerge between vertical individualism and discouraging pain-related behavior, and a weak direct negative association between collectivism and discouraging pain-related behavior.

Horizontal individualism and pain-related caregiver behaviors.

Parallel to the previously discussed theoretical premises, this thesis revealed only an indirect association between horizontal individualism and solicitous-pain-related-behavior through the influence of authoritative-parenting styles. Specifically, caregivers’ horizontal individualism positively related to caregivers’ use of an authoritative-parenting style, which, in turn, positively related to caregivers’ use of solicitousness when their child was in pain. These results are consistent with cross-cultural development studies showing that maternal individualism indirectly and positively related to maternal use of emotional-encouraging responses through authoritative parenting (Chan, 2012; Chan et al., 2009). These results, however, are inconsistent with O’Neill et al. (2016) who found a direct positive relation between caregivers self-reported cultural heritage, and caregivers’ emotional availability following infant immunization. As the individualism scores increased, caregiver emotional availability also increased. Differences in the study’s designs and samples used, as well as how culture was conceptualized and

operationalized, most likely contributed to these inconsistencies between the two studies. No direct or indirect relationship between horizontal individualism and discouraging was found.

The results suggested that within a pediatric pain context, caregivers who assign to horizontal individualism are likely to use an authoritative-parenting style. These cultural elements add a culture-specific meaning to the predicted solicitous behavior. Hence, one can expect that caregivers will express solicitousness through a warm emotional atmosphere, encouraging the child's uniqueness and need to self-express (i.e., "I try to make up for the pain by being more affectionate or taking more notice by kissing or touching him/her more often").

Vertical individualism and pain-related caregiver behavior.

Solicitousness.

The mediation analysis resulted in two unexpected significant indirect paths between vertical individualism and solicitous pain-related behavior. The first occurred through the influence of an authoritative-parenting style. Specifically, caregivers who oriented towards vertical individualism were less likely to use an authoritative-parenting style, which in turn, decreased the likelihood of them using solicitous pain-related behavior. The second, occurred through the influence of an authoritarian-parenting style. Specifically, caregivers who oriented to vertical individualism were more likely to adopt an authoritarian-parenting style, which in turn, related positively to caregivers' solicitous pain-related behavior. No cross-cultural developmental study using vertical individualism specifically was found. However, studies using only individualism (not the vertical dimension) have shown a positive association between maternal individualism and

emotional-encouraging maternal behaviors, through an authoritative-parenting style, not authoritarian as in this study (Chan, 2012; Chan et al., 2009).

This study suggests that in a pediatric-pain context, vertical individualism transmits best through an authoritarian-parenting style, and not through an authoritative-parenting style, as expected. Most importantly, solicitous pain-related behaviors do not necessarily have to be delivered in a warm responsive atmosphere. Indeed, adult studies suggested that spouses of chronic-pain patients can deliver solicitousness with hostility (Newton-John & Williams, 2006). This finding suggests that if a vertical individualistic mindset is cued in a pediatric-pain context, it is likely to interact with an authoritarian-parenting style, and together these cultural elements add a culture-specific meaning to the predicted solicitous behavior. One can expect that solicitousness is expressed in a more parent-focused, less child-focused atmosphere. Here the caregivers' own distress and worries about a child's pain can emerge (e.g., "I can't help showing that his/her condition worries me a lot"). Furthermore, the need for close monitoring, characteristic of both solicitousness and authoritarian-parenting style, may be expressed through controlling the situation and constantly monitoring how the child is feeling (i.e., "I keep track of how the pain evolves by often asking how he/she is feeling").

Discouraging.

A strong relationship emerged between vertical individualism, authoritarian-parenting style, and discouraging pain-related behavior. The positive and the direct relations between vertical individualism and discouraging were unexpected. However, authoritarian-parenting style was the strongest direct predictor of discouraging, as expected. No other cultural values predicted discouraging behavior, or positively related

with authoritarian-parenting style. Specifically, caregiver vertical individualism was positively related to caregivers' use of an authoritarian-parenting style which in turn, was positively related to caregivers' discouraging pain-related behavior.

According to Goubert et al. (2005) parental pain-related discouraging behavior may be aimed at reducing the parent's own distress, rather than the child's (Goubert et al., 2005). This possibility aligns with the suggestion that self-focusing and self-serving bias are characteristic for individuals that are high on vertical individualism (Chiao, 2015; Triandis & Gelfand, 1998). Another explanation for the results reported may relate to the self-reliance component of vertical individualism (Triandis & Gelfand, 1998), but researchers have pointed out that individualistic parents strongly value self-reliance and emotional independence (L. Johnson, Radesky, & Zuckerman, 2013; Triandis, 1989; S. Wang & Tamis-LeMonda, 2003). This notion aligns also with authoritarian parenting, which is generally described as demanding unrealistic maturity, and responsibility from the child (Bornstein & Zlotnik, 2008). Thus, discouraging behavior may therefore also be the parent's approach to teach the child self-reliance through self-soothing.

Importantly, results of vertical individualism, and authoritarian-parenting style results show that solicitousness and discouraging behaviors do not preclude one from the other, as was assumed. It is therefore possible, that in a clinical setting, caregivers who have vertical individualistic tendencies, will express themselves through an authoritarian-parenting style, and respond to their child pain using solicitous and discouraging pain-related behaviors.

Collectivism and pain-related caregiver behaviors.

Collectivism was expected to indirectly predict discouraging pain-related behavior through an authoritarian style. Also, a negative association between collectivism and solicitous pain-related behavior was expected. These expectations were based on qualitative pediatric-pain studies using noncomparative samples from collectivistic countries (Forgeron et al., 2009; Jongudomkarn et al., 2006; Wiroonpanich & Strickland, 2004).

The results, instead, showed a positive indirect association between collectivistic cultural values and solicitous pain-related behavior, that was mediated through the influence of an authoritative-parenting style. Specifically, caregivers' collectivism was related positively to his/her use of an authoritative-parenting style, which, in turn, was positively related to his/her solicitous pain-related behavior. Also, collectivism emerged as a negative predictor of discouraging pain-related behavior. That is, the more collectivistic caregivers were, the less likely they were to use discouraging pain-related behavior. These results are consistent with cross-cultural developmental studies (Chan, 2012; Chan et al., 2009) that reported a positive relation between collectivistic parenting beliefs, authoritative-parenting style, and maternal emotion-encouraging behaviors. Also, in examining qualitative studies, and associated interviews, from Thailand, these results indicate that parents also show their pained children much empathy. Indeed, Jongudomkarn et al. (2012) interviewed parents in Khon-Kean in regards to the pain their hospitalized children were experiencing. In this setting, parents expressed great concern and empathy for their child's pain and suffering. This empathy can be seen in a statement by a father of a 5-year-old son, who was quoted saying: "When I see my child in pain, it

seems like my heart—it wants to stop. I am also suffering. I want to be in pain instead of my child suffering” (p. 326).

Pain studies showed that when individuals face another person’s pain, their responses can be categorized as either other-oriented responses (e.g., empathy) or self-oriented responses (e.g., distress; Goubert et al., 2005). Interestingly, cross-cultural neuroscientists have linked individualism and collectivism with these other-oriented versus self-oriented responses to another person in pain. Showing that a collectivistic mindset increases activation of brain areas responsible for other-oriented responses to pain, like empathy, whereas an individualistic mindset does not activate these same brain areas (Chiao, 2015; C. Wang, Ma, & Han, 2014).

This suggests that when collectivism is cued in a pediatric-pain context, it interacts with an authoritative-parenting style. Together, these cultural elements add a culture-specific meaning to the predicted solicitous behavior. One can expect that solicitous pain-related behavior is expressed in other-focused atmosphere (i.e., empathy). Through a holistic approach, caregivers may try to help a child as an aspect of family obligation (i.e., “We take care of all his/her obligations and chores at home while he/she is in pain and discomfort”).

The Universal and Culture-Specific Characteristics of Solicitous Pain-Related Behavior

The developmental and parenting literature suggests that some universal behaviors exist (Corter & Fleming, 2002; Quinn, 2005). For example, adults’ baby talk seems to be triggered by the presence of a baby. This adult behavior appears in virtually all investigated cultures, assumed to exist without explicit learning (M. H. Bornstein,

2012; Keller, 2013). Likewise, pediatric-pain researchers described reassurance (one form of solicitousness) as being “instinctively” (Harrison et al., 2014, p. 6), “naturalistically” (Lisi et al., 2013, p. 1245), and “ingrained” (McMurtry et al., 2006, p. 560) ways parents help their children in acute-pain situations. Hence, based on current results, these assumptions are supported, suggesting that solicitousness may be triggered by the presence of a child in pain. The present findings support this notion because results showed that: (a) caregivers from all three countries scored higher on solicitousness than discouraging; (b) individualistic and collectivistic cultural values indirectly predicted solicitousness; (c) authoritative and authoritarian-parenting styles directly predicted solicitousness, and; (d) four of six indirect effects of cultural values on solicitousness were significant.

Solicitousness may be an “ingrained” pain-related caregiver behavior, independent of ecosocial contexts. However, when solicitous behavior links with specific cultural values and parenting styles (i.e., cultural model of parenting pathway) affecting it, a “culture-specific” meaning of solicitousness seems to emerge. More specifically, it is possible that: (a) when horizontal individualism and an authoritative-parenting style facilitates solicitousness, it may occur in a child-centered atmosphere where the child is encouraged to express pain openly and freely, facilitating self-expression, individuality, and self-efficacy, which are all important characteristics of individualism; (b) when vertical individualism and an authoritarian-parenting style facilitate solicitousness, the atmosphere might be self-oriented and less child friendly (perhaps serving as a way for the parent to vent and express own personal distress concerning the child’s pain), and; (c) when collectivism and an authoritative-parenting style facilitate solicitousness, the

atmosphere is other-oriented. Parents show empathy and an understanding toward a child's needs and feel obliged to help the child with their duties. These are, of course, all speculations built on theory, but consistent with current results.

Differences in Variable Average Levels, but Similarity in Variables Associations, Across Canadian, Icelandic and Thai Caregivers

This thesis showed differences in the median levels of cultural values, parenting styles, and pain-related caregiver behaviors across Canada, Iceland, and Thailand. At the same time, however, the association between these variables was similar across these country groups. At first glance, this may seem perplexing.

Cohen (2007) said that “cultural differences are embedded within similarities, and cultural similarities are embedded within differences” (p. 225). Indeed, studies examining universal parenting processes across different cultural contexts showed that it is usual to find differences on the average levels of predictor and outcome variables, while also finding great similarities in the parenting process studies (i.e., how they are associated; (Chao, 2000; Rowe et al., 1994; Spera, 2006; Vazsonyi & Belliston, 2006; Vazsonyi et al., 2003). Thus, finding similarities in parenting processes across the three samples, would not preclude the differences found in the median levels of cultural values, parenting styles and pain-related parent behaviors (Vazsonyi et al., 2003). In fact, universal parenting processes can help explain group level differences across cultural groups, and vice versa (Rowe et al., 1994).

It is possible that the median-level differences in solicitousness and discouraging across the three groups are related to the individuals' different “accessibility” to cultural values and parenting styles. According to Triandis (2002), whether an individualistic or

collectivistic mindset is cued (e.g., in a pediatric-pain context), may depend, among others, on how “accessible” these mindsets are to the individual. For example, if individuals are in a predominantly collectivistic culture, they “access” collectivistic cognitive structures more easily than they access an individualistic cognitive structure (p. 147). In this study, results showed that horizontal-vertical individualism and collectivism do exist in all three countries. However, the prevalence of these specific cultural values varied across countries. For example, the prevalence of collectivism proved to be highest in Thailand, compared to the other two countries. Thus, it is reasonable to assume that in a pediatric-pain context, collectivism would be more accessible to Thais than to Canadians and Icelanders. For Thai caregivers dealing with a child in pain, a collectivistic mindset is therefore likely to be cued. Based on the results, collectivistic values affect solicitousness through an authoritative-parenting style. Based on the meaning of collectivism and authoritative-parenting style, solicitous behavior would first and foremost convey empathy toward a child.

Study Strengths

This study used a relatively large sample size ($n = 547$) that was above the expected minimum of 100 cases per group for multigroup modeling (Kline, 2005). Having adequate sample sizes, increases the power of the results, as we can expect sample estimates to be more accurate, increasing the probability of correctly concluding that there are significant differences (Tabachnick & Fidell, 2013). In this thesis, participants were sourced in their home countries; thus, inferences were not based on immigrant samples. This method decreases confounding factors associated with the complex process of an individual’s acculturation into a new society. It also avoids the

issue that those who emigrate may be distinct in their own cultures (e.g., may have relatively higher socioeconomic status required to emigrate, or they may be members of a minority group in their original culture).

Furthermore, culture was conceptualized around ecosocial theories of cultural models of parenting. Culture does not merely reside in group membership, but is a process of embodied values and parenting styles that regulate pain-related caregiver behaviors sharing a particular ecosocial context. In operationalizing culture, a latent approach was taken to address the complexity of measuring culture; that is, two numerical measurements (cultural values and parenting styles) and a categorical measure (country) were used. Through moderation and mediation analysis, this study increased understanding of how and why culture influences caregivers' pain-related behaviors.

In the past, health researchers have been criticized for settling on inadequate translation processes, limited to forward and backward translation, and not accounting for equivalence issues or reporting on their translation process (Perneger, Leplège, & Etter, 1999; Squires et al., 2013). Here, instrument translation was an integral part of the cross-cultural design. That is, the cultural context of participants using the instrument was considered, and steps taken to ensure the items used were relevant to all cultural samples. At the same time, to enable cross-cultural comparison and enhance the generalizability of the findings, the same measurements were used in all countries. Study concepts were not presumed to be present in a culture, or having the same meaning. Instead, the translation team took systematic steps to enhance and ensure cross-cultural comparability of concepts and instruments. Furthermore, through confirmatory factor analysis, the team ensured that the theoretical model tested had comparable measurement structure across

the three samples. Finally, by using structural equation modeling measurement error (e.g., extreme response styles or translation errors) was accounted for and limited the occurrence of Type I error (Jeon, 2015; Robert et al., 2006), and made it possible to test a complicated hypothesized theoretical model for the first time.

To summarize, the strength of this study was the use of a theoretical framework to conceptualize culture, the use of a multimethod, multidiscipline translational-team model for instrument translation, rigorous testing of the equivalence of the measurements, building the hypothesized model through confirmatory factor analysis, and finally, the use of structural equation modeling to test the actual model.

Study Limitations and Future Studies

Findings must be interpreted in the context of several limitations. At first, this study used a cross-sectional survey design, which provides only a glimpse of the population at a single time point. This limits the generalizability of the findings to the general population.

Second, a convenience sample was used; that is, the selection of individuals was not random. This makes it difficult to assess generalization of results to the general population. Sampling was also limited to one delineated geographical region in each of the three countries. Therefore, confounding effects cannot be ruled out. Although this study was well-designed and used sophisticated statistical methods, conclusions are limited to the particular sample, variables, and time frame presented by the design. Future studies should weigh the benefits and challenges of incorporating random samples into the design.

Third, another issue regarding generalizability of findings, is that most participants were women. Fathers may have shown some different processes, which may have affected the outcome of the study. As pointed out earlier, men tend to be more individualistic in their values, and authoritarian in their parenting styles; they also differ in their pain-related responses. In the pediatric-pain domain, parental gender has shown to be an important factor in explaining pain-related parent behaviors and child-pain outcomes (e.g., Vervoort et al., 2011). Thus, gender might have a moderating effect on this relationship, which is important to consider in future studies.

Fourth, the primary difficulty of cross-sectional survey design is identifying causal relationships. Although we do not suggest that the findings allow for causal inferences, the ability to theorize causal relationships improves when using structural equation modeling. Because structural equation modeling accounts for measurement error, it produces a more accurate portrayal of causal relationships between constructs (Jeon, 2015). Structural equation modeling allows one to test the causal relationships posited by theoretical models although the exact directional associations cannot be demonstrated (Iacobucci, 2001). Cross-sectional studies may not reveal the directional influences among variables, as effects may take time to manifest (MacCallum, & Austin, 2000). To improve on this issue, longitudinal studies are needed to assess the link between culture-parenting processes and pain-related parent behaviors across various child-developmental stages.

Fifth, this study was limited by the sole use of self-reported data gathered from the caregivers. In acute pediatric pain situations, parents of small children have been described as “poor reporters of their own behavior” (L. L. Cohen et al., 2000, p. 85).

However, studies of acute pain may not generalize to other pain contexts (L. L. Cohen et al., 2000). For example, in the Hermann et al. (2008) study, researchers used parents of 8-to-16-year-old children who were pain-free, or had abdominal pain. The authors reported that parents' self-reports of their own parenting behaviors did correspond to their actual responses during their child's cold-pressor task. Similarly, Levy, et al., (2006) studied mothers of 8-to-15-year-old children and found that mothers' self-reported protective responses to their child's abdominal pain complaints at home, predicted subsequent health service use for these symptoms. Although some research suggests that self-reports from parents of older children may be reliable, we did not use observational methods to verify that claim. Parents' self-reports may reflect parents' beliefs or attitudes more than their actions. Child-report and natural observational measures may provide a more accurate picture of parenting than parents' self-reports, but they were not feasible for the current study.

Sixth, the cultural model tested, focused only on parental outcomes, and did not include child outcomes. It is therefore important to add child outcome into the study model. For example, it would be interesting to find out whether a vertical individualism–authoritarian-solicitousness pathway, provides the same or different child pain outcome, compared to a collectivism-authoritative-solicitousness pathway, or a horizontal individualistic-authoritative-solicitousness pathway. Furthermore, it is unclear whether solicitousness and discouraging do result in the same negative child outcomes for Icelandic or Thai children, as has been reported in North American samples. That is, this study does not address the question of which pathways “work” from the child's perspective. This is especially important, because past studies, considering parenting

styles and child outcomes, have shown, that in Asian countries, an authoritarian-parenting style does not necessarily lead to the same negative child outcome, commonly reported when using North America and European samples. Future studies should include children's own pain reports or behaviors to further the development of the hypothesized cultural models of parenting.

Seventh, the latent constructs were measured through the INDCOL measure, the PSDQ-SF, and the IRPEDNA measurements and therefore the results are bound by the limitations of these questionnaires. INDCOL is one of two most widely used scales to measure individualism–collectivism (Cozma, 2011; Oyserman et al., 2002), but is not without its problems (Robert et al., 2006; Sivadas et al., 2008). Researchers have reported high correlation and overlapping factor loadings between the horizontal and vertical collectivism subscales (Oyserman et al., 2002; Schimmack, Oishi, & Diener, 2005; Sivadas et al., 2008). In this study, the two collectivistic subscales were problematic. The internal consistency of the vertical collectivism subscale was low (Canadian and Icelandic samples only), the correlation between the horizontal and vertical collectivism subscales was high (Thai sample only), and factor analysis showed the vertical collectivistic items loaded highly on the horizontal collectivism subscale (Thai sample only). These issues indicated a conceptual overlap among the vertical/horizontal collectivism subscales. Similar to others (Oyserman et al., 2002), this issue was addressed by combining the two collectivism subscales. This decision limited the possibility of making important distinctions that could help delineate cultural differences. Future studies should consider using other measurements for individualism and collectivism.

The PSDQ is one of three tools reported to have adequate psychometric characteristics for the assessment of discipline and nurturance for parents' school-aged children (Locke & Prinz, 2002). Although Robinson (1996) reported that the PSDQ is a multicultural stable construct, the present results showed the permissive scale to be problematic. Its items consistently loaded on other factors and it showed weak reliability. For these reasons, it was not included. This decision is consistent with others who have used this questionnaire and did not include the permissive scale in their studies (Kern & Jonyniene, 2012; Önder & Gülay, 2009; Porter et al., 2005; Yu & Gamble, 2008). This elimination of the permission scale limits the scope of our understanding around parenting styles and pain-related parent behaviors.

As anticipated, results from the multisample confirmatory factor analysis, indicated broad commonalities between the three samples in the overall structure of authoritative and authoritarian parenting. However, the correlation between the authoritative and authoritarian scales was positive for the Thai sample, but negative for the other two samples. This outcome indicated that for Thais, parenting styles are not mutually exclusive. Additional research is needed to understand the different uses of the two different styles. For instance, researchers may wish to determine if Thai caregivers use authoritative parenting more in health-related contexts (e.g., to enhance closeness), but authoritarian parenting in other contexts (e.g., enforcing the child's requirement to do homework). The literature generally suggests that individuals' parenting styles are a stable trait displayed over many different situations (Darling & Steinberg, 1993), but this notion has been challenged. For example, Coplan, Hastings, Lagacé-Séguin, and Moulton

(2002), stated that individuals' parenting styles are more fluid, and depend to some degree on the childrearing situation.

At the time, the IRPEDNA was the only available measure of pain-related parent behavior for health samples of children. IRPEDNA is not a widely-used scale; apart from its first publication, three studies emerged using it: one in Germany (Hermann et al., 2008), one in The Netherlands (Vervoort et al., 2011), and one in Venezuela (Esteve et al., 2014). The IRPEDNA version used in this study was translated from Spanish, but no information emerged on the translation process or whether equivalence testing was performed. However, no issues associated with IRPEDNA have been reported. In this study, results indicated the IRPEDNA to be a valid and reliable scale. The coping scale was not used because it correlated highly with solicitousness. Future researchers may want to broaden the range of pain-related parental responses studied, as the current study focused only on two possible outcomes. It would also be beneficial to use observational designs to capture actual pain-related caregiver's verbal and nonverbal behavior.

Eighth, the data-collection methods were different for the Thai sample (i.e., paper-and-pencil) compared to the Canadian and Icelandic samples (i.e., online), making the data susceptible to a method bias (Leung & van de Vijver, 2008). The feasibility and appropriateness of data-collection methods depend on the characteristics of individual cultures. Because the accessibility to computers and internet was limited at the Thai study site, the team used a paper-and-pencil format. Also, the matter of timing across study sites needs to be addressed. The team began collecting data in Canada; then a few months later in Iceland. A year passed until the data was gathered in Thailand. This may have caused bias associated with unforeseeable national or international events happening

during this one year (Survey Research Center, 2011). Future studies should factor extra time into their study design to allow for unexpected delays and variation in the operation of institutions, such as ethical boards across cultures. These factors threaten the internal validity of the study.

Finally, there is a dearth of information pertaining to culture, parenting, and pain-related parent behavior. This made it difficult to compare results of the present findings with other studies.

Study Implication

Health professionals and scientists are calling for research that accounts for culture in the context of children's pain, to provide a better cultural frame of reference in addressing current healthcare problems (American Psychological Association, 2003; Canadian Nurses Association, 2004; McGrath, 2008; Suhonen, Saarikoski, & Leino-Kilpi, 2009; van Aken, van Lieshout, Katz, & Heezen, 1989). This thesis adds to the knowledge regarding the relationship between culture and pediatric pain. Findings should be helpful for further theory development, given that specific cultural elements and processes were tested. This study provides information on what cultural elements (i.e., cultural values, parenting style, and country) influence pain-related parent behaviors, how these specific cultural elements affect pain-related parent behavior, and under what circumstances this occurs (i.e., independent of ecosocial context). This study creates the possibility for scientists to identify some universal practices as to how best to promote positive parenting and child development around pain.

The insight into cultural-parenting processes is essential for the development of interventions. Interventions need to be theory-driven and based on sound research to be

successful. Therefore, the knowledge regarding the link between cultural values, parenting styles, ecosocial context, and pain-related parent behavior do have implications for intervention policies, focused on culture, pediatric-pain prevention and parental education. By examining pain-related caregiver behavior in different cultures, researchers can inform about the expectations the society places on individuals to behave “normally.” This knowledge may help prevent and address ethnocentrism in clinical settings (Schultz et al., 2009). Again, it must be cautioned that the current research does not explore differences in the effectiveness of the different pathways.

Part of understanding cultural diversity is to bridge differences. To succeed, healthcare personnel need to be aware of these differences. For example, the findings challenge the general view that individuals, who are collectivistic, are more likely to be authoritarian. The opposite arose. Vertical individualistic individuals tend to use an authoritarian style, where using pain-related discouraging and solicitousness behaviors was not mutually exclusive. The findings also indicated that the invisible elements of culture (i.e., cultural values and parenting styles), rather than visible elements (i.e., country of residence), may provide more elaborative information when educating clinicians about culture and pain-related caregiver behaviors.

Conclusion

This study is innovative in its assessment of the relationship among parenting styles, cultural values, and pain-related caregiver behaviors. The main goal of the study was to understand what role culture plays in pain-related caregiver responses. Instead of explaining cultural effects on pain-related parent behavior using proxies like ethnicity or

race, a theoretical approach was taken which is rooted in the cross-cultural parenting and developmental literature.

In the past, studies have focused on *how* parents respond to a child's pain, rather than explaining *why* they do so (e.g., Caes, Vervoort, Eccleston, et al., 2012). Researchers demonstrated a need for more understanding in the area of child pain and parent behavior, especially in the limited area of sociocultural factors (Hermann et al., 2008; Kristjansdottir et al., 2012). Culture has received limited attention among pediatric-pain researchers (Kristjansdottir et al., 2012). Today, understanding how culture shapes parental behaviors is a necessary step toward successful pediatric health care (L. Johnson et al., 2013) and is imperative in developing future pediatric-pain interventions (Riddell et al., 2014).

Consistent with ecosocial theories around parenting (Greenfield, 2009; Keller, 2007), results indicated that parenting styles are a cultural element, and that together, cultural values and parenting styles create a process that impacts parental behaviors around child pain. In contrast with ecosocial-developmental theories (Greenfield, 2009; Keller, 2007), the cultural models of parenting studied in this thesis were not moderated by ecosocial context. Yet consistent with universal theories (M. H. Bornstein, 2012; Corter & Fleming, 2002; Quinn, 2005; Rowe et al., 1994), this developmental process may be universal in the sense that these behaviors are commonly found in individuals, independent of their ecosocial context, and in the sense that these processes rests on general principles, rather than the specific individual attributes studied in this thesis. Ultimately, all parents must help their children when they are in pain, independent of

where they live. The possibility of universal processes is an important element to acknowledge, yielding understanding of how culture influences child pain.

In summary, one can expect to find differences in the prevalence of cultural values, parenting styles, and pain-related caregiver behaviors across Canadian, Icelandic, and Thai caregivers. However, cultural values affect pain-related caregiver behaviors similarly across the three countries. This outcome suggests that culturally based interventions and policymaking need to separate between prevalence and effects of cultural elements. It is not recommended that country of origin be used to predict caregivers' pain-related parent behaviors. Instead, assessing cultural values and parenting styles of parents can add meaning to pain-related caregiver behavior, possibly helping caregivers understand why parents behave the way they do when their child is in pain.

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APPENDIX A: ENGLISH IRPEDNA QUESTIONNAIRE VERSION

Scale	Number	Item
C	2	I tell him/her that he/she can cope with the pain by saying things like “You’re strong” or “You can put up with this and much more.”
C	4	I try to talk rationally with him/her about the reason for his/her pain so that he/she does not feel so worried.
C	7	I tell him/her to relax and breathe deeply.
C	10	I try to take his/her mind off it by talking about things he/she likes (e.g., plans for the weekend).
C	15	I try to distract him/her so that he/she does not think about the pain.
C	17	I tell him/her to concentrate on something else (e.g., listen to music or watch the television) and not to think about the pain.
C	26	I use humour to make up for his/her discomfort.
C	28	I tell him/her not to worry and that it will soon go away.
C	30	I tell him/her to think that it will soon be all right.
C	32	I try to get him/her to think positively about the pain (e.g., it will soon go away).
C	33	I tell him/her not to be afraid.
C	35	I try to cheer him/her up.
D	1	I think that it can’t be that bad.
D	5	I wonder how it is possible that he/she always complains so much.
D	8	I don’t believe him/her.
D	9	I ignore him/her.
D	14	I don’t worry about it because I think that the suffering will make him/her stronger.
D	22	I tell him/her not to exaggerate, that it is not so bad.
D	25	I tell him/her not to complain so much.
D	27	I tell him/her that big boys/girls do not complain.
D	31	I tell him/her that he/she may be exaggerating.
D	34	I don’t take much notice because I think he/she is exaggerating a bit.
S	3	I stay at home so that I can take care of him/her as well as possible.
S	6	I accept that, in these circumstances, he/she cannot do homework.
S	11	I try to make the surroundings as relaxing as possible (e.g., minimum noise and little light).
S	12	I keep track of how the pain evolves (develops) by often asking how he/she is feeling.
S	13	I make him/her go to bed earlier.
S	16	I try to make up for the pain by being more affectionate or taking more notice (e.g., I kiss or touch him/her more often).
S	18	I tell his/her teacher how he/she is feeling so that he/she can take it into consideration at school.
S	19	I suggest that he/she stays at home or with a relative or someone else (e.g., babysitter) while the pain lasts.
S	20	We take care of all his/her obligations and chores at home while he/she is in pain and discomfort.
S	21	I can’t help showing that his/her condition worries me a lot.
S	23	I help him/her to do things (e.g., to get dressed, do his/her homework).
S	24	I do my best to spend as much time with him/her as possible.
S	29	I stop what I am doing so that I can do what he/she likes (e.g., play).
S	36	I stop my leisure activities so that I can be with him/her.
S	37	I get home as early as I can.

Note. C = coping; D = discourage; S = solicitous.

APPENDIX B: ENGLISH PSDQ-SF QUESTIONNAIRE VERSION

Scale	Number	Item
P1	1	I am responsive to my child's feelings or needs.
P1	7	I encourage my child to talk about (his)(her) troubles.
P1	12	I give comfort and understanding when my child is upset.
P1	14	I give praise when my child is good.
P1	27	I have warm and intimate times together with my child.
P1	5	I explain to my child how I feel about my child's good and bad behavior.
P1	11	I emphasize the reasons for rules.
P1	25	I give my child reasons why rules should be obeyed.
P1	29	I help my child to understand the impact of behavior by encouraging my child to talk about the consequences of own actions.
P1	31	I explain to my child the consequences of (his)(her) behavior.
P1	3	I take my child's desires into account before asking my child to do something.
P1	9	I encourage my child to freely express (himself) (herself) even when disagreeing with parents.
P1	18	I take into account my child's preferences in making plans for the family.
P1	21	I show respect for my child's opinions by encouraging my child to express them.
P1	22	I allow my child to give input into family rules.
P2	2	I use physical punishment as a way of disciplining my child.
P2	6	I spank when my child is disobedient (does not listen).
P2	19	I grab my child when being disobedient.
P2	32	I slap my child when the child misbehaves.
P2	13	I yell or shout when my child misbehaves.
P2	16	I explode in anger towards my child.
P2	23	I scold and criticize to make my child improve.
P2	30	I scold or criticize when my child's behavior doesn't meet my expectations.
P2	4	When my child asks why (he)(she) has to conform, I state because I said so, or I am your parent and I want you to.
P2	10	I punish by taking privileges away from my child with little if any explanation.
P2	26	I use threats as punishment with little or no justification.
P2	28	I punish by putting my child off somewhere alone with little if any explanation.
P3	8	I find it difficult to discipline my child.
P3	15	I give in to my child when the child causes a commotion (puts-up a fuss) about something.
P3	17	I threaten my child with punishment more often than actually giving it.
P3	20	I state punishments to my child and do not actually do them.
P3	24	I spoil my child.

Note. P1 = authoritative-parenting style; P2 = authoritarian-parenting style; P3 = permissive parenting style.

APPENDIX C: ENGLISH INDCOL QUESTIONNAIRE VERSION

Scale	Number	Item
VC	3	I usually sacrifice my self-interest for the benefit of my group (people who are important to you).
VC	17	Children should be taught to place duty before pleasure.
VC	21	It is important to me that I respect decisions made by my groups.
VC	23	Family members should stick together, no matter what sacrifices are required.
VC	25	Parents and children must stay together, as much as possible.
VC	27	It is my duty to take care of my family, even when I have to sacrifice what I want.
VC	30	I respect the majority's wishes in groups of which I am a member.
VC	32	It is important to consult close friends and get their ideas before making a decision.
HC	1	My happiness depends very much on the happiness of those around me.
HC	5	It is important for me to maintain harmony within my group (people who are important to you).
HC	7	I like sharing little things with my neighbors.
HC	9	The well-being of my co-workers (colleagues) is important to me.
HC	11	If a relative were in financial difficulty, I would help within my means.
HC	13	If a co-worker (colleague) gets a prize I would feel proud.
HC	15	To me, pleasure is spending time with others.
HC	19	I feel good when I cooperate with others.
VI	2	Winning is everything.
VI	4	It annoys me when other people perform better than I do.
VI	6	It is important to me that I do my job better than others.
VI	8	I enjoy working in situations involving competition.
VI	12	Competition is the law of nature.
VI	16	When another person does better than I do, I get tense and upset.
VI	18	Without competition it is not possible to have a good society.
VI	20	Some people emphasize winning; I am not one of them.
HI	10	I often do "my own thing".
HI	14	Being a unique individual is important to me.
HI	22	I would rather depend on myself than on others.
HI	24	I rely on myself most of the time; I rarely rely on others.
HI	26	My personal identity (e.g., 'I'm kind and helpful', 'I'm an architect'), independent from others, is very important to me.
HI	28	My personal identity (e.g., 'I'm kind', 'I'm an architect') is very important to me.
HI	29	I am a unique person, separate from others.
HI	31	I enjoy being unique and different from others.

Note. VC = vertical collectivism; HC = horizontal collectivism; VI = vertical individualism; HI = horizontal individualism.

APPENDIX D: MODIFICATION OF ORIGINAL ENGLISH OF IRPEDNA, PSDQ-SF,
AND INDCOL VERSIONS

For this study, the English-language IRPEDNA, PSDQ-SF and INDCOL questionnaires were pretested. The data was gained using qualitative interviews (n=2) and academic experts' reviews (n=5) from a total of 7 English speaking participants in Canada. Based on pretest data, some minor modifications were required.

Appendix D1: Modifications of the English IRPEDNA Version.

1. words in the introduction section were changed (“caregiver” for “carer”; “choose” for “circle”, and; “respond” for “behave”),
2. text describing each frequency number was deleted (0–4; e.g., “0 = Never: This means that you never do this”).
3. items were required to change their wording.
 - a. For items 4, 15, and 19, “pain” substituted “problem” (e.g., I try to distract him/her so that he/she does not think about the pain”).
 - b. For item 19 “babysitter” substituted “child minder” (i.e., “I suggest that he/she stays at home or with a relative or someone else (e.g., babysitter) while the pain lasts.”).
 - c. For item 18 replaced a phrase “I tell his/her teacher how he/she is feeling so that he/she can take it into consideration at school” with “I tell his/her teacher how he/she is feeling so that they are aware of the problem during school hours”.
 - d. For item 20, the original sentence “We take care of all his/her obligations and chores at home while he/she is feeling ill” was replaced with “We take

care of all his/her obligations and chores at home while he/she is in pain and discomfort.”

- e. In item 12 added the words “develops” and “feeling” to create “I keep track of how the pain evolves (develops) by often asking how he/she is feeling.”).
4. final questionnaire was slightly reformatted for online use. The empty boxes of the print format were replaced with numbered boxes. Because the Opinio Survey Software used in this study restricts the use of zero coding, the original frequency coding of 0 to 4 was replaced by a coding of 1 to 5.

Appendix D2: Modifications of the English PSDQ-SF Version

1. substituted the word “our” [child] with “my” [child] on all 32 items; in Item 6, I added the text “does not listen” and in Item 15 added “puts-up a fuss.”
2. For the instructions, substituted the text “Below is” for “The following questionnaire contains” and the text “choose the one” for “circle the number on the five-point scale”.
3. deleted the text describing what the numbers, 1, 2, 3, 4, and 5 indicated in words.
4. replaced the numbered answering boxes (1–5) with empty boxes, as that was the only option provided by the survey software used (Opinio).

Appendix D3: Modifications of the English INDCOL Version

1. textual changes for seven of the 32 items:

- a. for Items 3 and 5, I added the text “people who are important to you”;
 - b. for Items 9 and 13, I added the text “colleagues”;
 - c. for Item 16, I substituted the word “upset” for “aroused”;
 - d. for Items 26 and 28, I added the text “e.g., ‘I’m kind’, I’m an architect.”
2. to adjust the original paper-and-pencil version into an online one, minor formatting and text modifications were needed.

APPENDIX E. IRPEDNA FACTOR LOADINGS FOR POOLED SAMPLE AND
SUBSAMPLES

Table E1 Factor loadings IRPEDNA (Pooled).

Item	Construct	1	2	3
3	Sollicitous	0.651	0.032	-0.176
6	Sollicitous	0.471	-0.064	0.005
11	Sollicitous	0.351	-0.263	0.394
12	Sollicitous	0.615	-0.229	0.111
13	Sollicitous	0.498	0.063	0.026
16	Sollicitous	0.517	-0.018	0.272
18	Sollicitous	0.521	-0.108	0.204
19	Sollicitous	0.374	-0.101	0.096
20	Sollicitous	0.444	-0.044	0.121
21	Sollicitous	0.662	0.363	-0.298
23	Sollicitous	0.459	0.136	0.058
24	Sollicitous	0.766	0.065	-0.009
30	Sollicitous	0.686	-0.003	0.139
37	Sollicitous	0.777	0.042	-0.043
38	Sollicitous	0.835	-0.038	-0.145
1	Discourage	-0.228	0.238	0.250
5	Discourage	0.179	0.477	-0.074
8	Discourage	-0.085	0.631	0.033
9	Discourage	-0.238	0.619	0.034
14	Discourage	0.117	0.541	0.029
22	Discourage	0.107	0.687	0.112
25	Discourage	0.036	0.615	-0.110
26	Discourage	-0.049	0.700	-0.032
28	Discourage	0.315	0.650	-0.091
32	Discourage	0.000	0.703	0.026
35	Discourage	-0.316	0.572	0.134
2	Coping	-0.039	0.412	0.279
4	Coping	0.322	-0.141	0.355
7	Coping	0.112	-0.077	0.501
10	Coping	-0.014	-0.031	0.761
15	Coping	0.031	0.055	0.762
17	Coping	0.076	0.122	0.675
27	Coping	0.123	0.115	0.616
29	Coping	0.310	0.312	0.304
31	Coping	0.481	0.085	0.361
33	Coping	0.348	0.195	0.364
34	Coping	0.585	0.098	0.249
36	Coping	0.598	0.084	0.190

Table E2 Factor loadings IRPEDNA (Canada).

Item	Construct	1	2	3
3	Sollicitous	0.674	-0.114	0.318
6	Sollicitous	0.621	-0.025	0.138
11	Sollicitous	0.419	-0.244	-0.291
12	Sollicitous	0.552	-0.272	-0.006
13	Sollicitous	0.394	-0.028	-0.043
16	Sollicitous	0.534	-0.023	-0.220
18	Sollicitous	0.571	-0.113	-0.199
19	Sollicitous	0.616	0.065	0.035
20	Sollicitous	0.593	0.017	-0.143
21	Sollicitous	0.624	0.212	0.236
23	Sollicitous	0.595	0.157	-0.111
24	Sollicitous	0.639	0.014	-0.116
30	Sollicitous	0.601	-0.046	-0.250
37	Sollicitous	0.693	-0.012	-0.092
38	Sollicitous	0.794	-0.085	0.153
1	Discourage	-0.169	0.439	-0.160
5	Discourage	0.005	0.705	0.137
8	Discourage	-0.020	0.671	-0.040
9	Discourage	-0.147	0.622	0.089
14	Discourage	0.149	0.352	-0.056
22	Discourage	0.012	0.712	-0.131
25	Discourage	0.045	0.685	0.063
26	Discourage	0.070	0.771	0.124
28	Discourage	0.145	0.678	0.098
32	Discourage	-0.051	0.764	-0.032
35	Discourage	-0.235	0.593	-0.098
2	Coping	-0.252	0.285	-0.393
4	Coping	0.210	-0.270	-0.487
7	Coping	-0.003	-0.003	-0.551
10	Coping	-0.109	-0.089	-0.775
15	Coping	0	-0.120	-0.729
17	Coping	0.040	0.023	-0.692
27	Coping	0.084	0.082	-0.566
29	Coping	0.257	0.244	-0.254
31	Coping	0.442	0.079	-0.375
33	Coping	0.105	0.154	-0.400
34	Coping	0.432	0.025	-0.406
36	Coping	0.459	-0.062	-0.455

Table E3 Factor loadings IRPEDNA (Iceland).

Item	Construct	1	2	3
3	Sollicitous	0.556	-0.102	-0.163
6	Sollicitous	0.677	0.132	0.103
11	Sollicitous	0.393	-0.253	-0.309
12	Sollicitous	0.527	-0.235	-0.152
13	Sollicitous	0.563	0.092	0.023
16	Sollicitous	0.380	-0.067	-0.358
18	Sollicitous	0.693	-0.074	-0.141
19	Sollicitous	0.819	-0.034	0.05
20	Sollicitous	0.758	0.024	0.022
21	Sollicitous	0.531	0.255	-0.061
23	Sollicitous	0.559	0.088	-0.212
24	Sollicitous	0.640	-0.135	-0.283
30	Sollicitous	0.532	-0.228	-0.403
37	Sollicitous	0.550	-0.075	-0.393
38	Sollicitous	0.535	-0.217	-0.299
1	Discourage	-0.339	0.367	-0.105
5	Discourage	0.164	0.246	0.028
8	Discourage	0.068	0.705	0.043
9	Discourage	-0.077	0.655	0.219
14	Discourage	-0.431	0.146	-0.176
22	Discourage	-0.184	0.637	-0.361
25	Discourage	-0.116	0.511	-0.094
26	Discourage	-0.024	0.608	-0.111
28	Discourage	0.008	0.480	-0.203
32	Discourage	-0.125	0.511	-0.170
35	Discourage	0.012	0.806	0.226
2	Coping	-0.401	0.348	-0.368
4	Coping	-0.102	-0.262	-0.586
7	Coping	-0.106	-0.045	-0.436
10	Coping	0.121	0.203	-0.567
15	Coping	0.057	0.161	-0.691
17	Coping	0.178	0.174	-0.545
27	Coping	0.151	0.186	-0.590
29	Coping	-0.024	0.216	-0.509
31	Coping	0.221	-0.012	-0.625
33	Coping	0.299	0.020	-0.572
34	Coping	0.115	-0.161	-0.676
36	Coping	0.121	0.171	-0.665

Table E4 Factor loadings IRPEDNA (Thailand).

Item	Construct	1	2	3
3	Sollicitous	0.665	0.134	0.142
6	Sollicitous	0.160	-0.104	-0.310
11	Sollicitous	0.328	-0.051	-0.317
12	Sollicitous	0.460	-0.311	-0.361
13	Sollicitous	0.421	-0.111	-0.220
16	Sollicitous	0.411	-0.152	-0.396
18	Sollicitous	0.474	0.103	-0.158
19	Sollicitous	0.062	0.124	-0.237
20	Sollicitous	0.222	0.055	-0.195
21	Sollicitous	0.673	0.017	0.082
23	Sollicitous	0.365	0.383	0.001
24	Sollicitous	0.699	0.016	-0.147
30	Sollicitous	0.379	-0.237	-0.427
37	Sollicitous	0.792	-0.053	0.043
38	Sollicitous	0.816	-0.124	-0.004
1	Discourage	0.266	0.130	-0.016
5	Discourage	0.366	0.049	-0.102
8	Discourage	0.073	0.680	0.034
9	Discourage	-0.099	0.680	-0.076
14	Discourage	-0.307	0.279	-0.623
22	Discourage	0.076	0.293	-0.405
25	Discourage	0.148	0.628	0.095
26	Discourage	-0.075	0.702	-0.104
28	Discourage	0.070	0.349	-0.421
32	Discourage	-0.001	0.565	-0.280
35	Discourage	-0.056	0.698	0.002
2	Coping	0.043	-0.026	-0.447
4	Coping	0.612	-0.055	-0.049
7	Coping	0.279	-0.270	-0.390
10	Coping	0.010	0.011	-0.637
15	Coping	-0.009	0.175	-0.705
17	Coping	0.084	0.274	-0.555
27	Coping	0.020	0.109	-0.658
29	Coping	0.066	-0.025	-0.727
31	Coping	0.080	-0.194	-0.790
33	Coping	0.015	-0.162	-0.801
34	Coping	0.405	-0.178	-0.529
36	Coping	0.778	-0.070	-0.079

APPENDIX F: PSDQ-SF FACTOR LOADINGS BY POOLED AND SUBSAMPLES

Table F1 Factor loadings PSDQ-SF (Pooled).

Item	Scale	1	2	3
1	Authoritative	0.532	-0.189	0.139
3	Authoritative	0.441	0.194	-0.048
5	Authoritative	0.690	0.113	0.032
7	Authoritative	0.677	-0.131	0.033
9	Authoritative	0.570	-0.067	0.022
11	Authoritative	0.681	-0.082	0.089
12	Authoritative	0.622	-0.253	0.046
14	Authoritative	0.628	0.278	-0.185
18	Authoritative	0.660	0.123	-0.066
21	Authoritative	0.757	-0.107	0.047
22	Authoritative	0.580	-0.075	-0.032
25	Authoritative	0.674	-0.025	0.022
27	Authoritative	0.599	0.136	-0.186
29	Authoritative	0.583	-0.081	0.059
31	Authoritative	0.666	-0.119	0.056
2	Authoritarian	-0.098	0.706	-0.142
4	Authoritarian	0.025	-0.234	0.514
6	Authoritarian	-0.088	0.735	-0.091
10	Authoritarian	-0.042	0.576	0.071
13	Authoritarian	0.006	0.111	0.598
16	Authoritarian	-0.098	0.113	0.553
19	Authoritarian	0.056	0.494	0.118
23	Authoritarian	0.061	0.711	0.07
26	Authoritarian	-0.050	0.610	0.265
28	Authoritarian	-0.151	0.330	0.302
30	Authoritarian	-0.005	0.147	0.478
32	Authoritarian	-0.166	0.764	-0.038
8	Permissive	0.045	0.285	0.284
15	Permissive	-0.091	0.160	0.508
17	Permissive	0.036	0.331	0.479
20	Permissive	0.067	0.585	0.134
24	Permissive	0.072	-0.064	0.543

Table F2 Factor loadings PSDQ-SF (Canada).

Item	Scale	1	2	3
1	Authoritative	0.405	0.06	0.073
3	Authoritative	0.418	-0.071	-0.064
5	Authoritative	0.605	0.119	0.132
7	Authoritative	0.603	-0.146	0.009
9	Authoritative	0.578	0.104	-0.065
11	Authoritative	0.530	-0.025	0.010
12	Authoritative	0.545	-0.182	0.068
14	Authoritative	0.645	-0.189	-0.120
18	Authoritative	0.496	-0.077	-0.049
21	Authoritative	0.705	-0.126	-0.051
22	Authoritative	0.492	-0.182	-0.079
25	Authoritative	0.613	0.087	0.006
27	Authoritative	0.539	0.064	0.102
29	Authoritative	0.630	-0.035	-0.014
31	Authoritative	0.644	0.044	0.024
2	Authoritarian	0.041	0.668	0.133
4	Authoritarian	-0.018	0.166	-0.368
6	Authoritarian	-0.044	0.656	-0.026
10	Authoritarian	-0.134	0.382	-0.219
13	Authoritarian	0.087	0.337	-0.406
16	Authoritarian	-0.144	0.495	-0.048
19	Authoritarian	0.044	0.618	-0.086
23	Authoritarian	0.019	0.658	-0.015
26	Authoritarian	-0.139	0.439	-0.337
28	Authoritarian	-0.164	0.550	-0.099
30	Authoritarian	-0.052	0.603	-0.037
32	Authoritarian	-0.152	0.647	0.007
8	Permissive	-0.151	-0.348	-0.640
15	Permissive	-0.071	0.004	-0.669
17	Permissive	0.084	0.135	-0.715
20	Permissive	0.004	-0.018	-0.708
24	Permissive	0.067	0.098	-0.493

Table F3 Factor loadings PSDQ-SF (Iceland).

Item	Scale	1	2	3
1	Authoritative	0.337	-0.124	-0.183
3	Authoritative	0.402	0.047	-0.008
5	Authoritative	0.726	0.201	-0.264
7	Authoritative	0.627	-0.003	-0.262
9	Authoritative	0.645	-0.101	-0.300
11	Authoritative	0.706	-0.028	0.242
12	Authoritative	0.604	-0.120	0.327
14	Authoritative	0.529	-0.003	0.292
18	Authoritative	0.635	0.011	0.118
21	Authoritative	0.817	-0.015	0.012
22	Authoritative	0.507	-0.068	0.008
25	Authoritative	0.742	-0.040	0.138
27	Authoritative	0.477	-0.205	0.259
29	Authoritative	0.697	0.079	-0.009
31	Authoritative	0.680	-0.055	0.039
2	Authoritarian	-0.241	0.260	0.348
4	Authoritarian	0.027	0.357	0.125
6	Authoritarian	-0.096	0.234	0.472
10	Authoritarian	-0.207	0.517	-0.354
13	Authoritarian	0.046	0.723	-0.050
16	Authoritarian	-0.075	0.583	-0.281
19	Authoritarian	-0.141	0.455	-0.039
23	Authoritarian	0.079	0.440	0.147
26	Authoritarian	-0.077	0.571	-0.279
28	Authoritarian	-0.100	0.430	-0.607
30	Authoritarian	0.172	0.541	0.070
32	Authoritarian	-0.327	0.096	-0.700
8	Permissive	-0.128	0.372	0.179
15	Permissive	0.000	0.482	-0.130
17	Permissive	-0.122	0.647	0.046
20	Permissive	-0.012	0.629	0.055
24	Permissive	-0.014	0.237	-0.011

Table F4 Factor loadings PSDQ-SF (Thailand).

Item	Scale	1	2	3
1	Authoritative	0.578	0.063	0.251
3	Authoritative	0.439	0.046	0.216
5	Authoritative	0.741	0.236	0.013
7	Authoritative	0.713	0.015	0.018
9	Authoritative	0.612	-0.079	0.026
11	Authoritative	0.689	0.275	0.028
12	Authoritative	0.61	0.027	0.061
14	Authoritative	0.648	0.086	0.199
18	Authoritative	0.697	0.014	0.213
21	Authoritative	0.722	0.013	0.289
22	Authoritative	0.579	-0.162	0.272
25	Authoritative	0.671	0.059	0.101
27	Authoritative	0.647	-0.079	0.178
29	Authoritative	0.501	0.205	0.007
31	Authoritative	0.654	0.172	-0.036
2	Authoritarian	0.000	0.402	0.087
4	Authoritarian	0.066	0.47	0.044
6	Authoritarian	0.052	0.63	-0.089
10	Authoritarian	0.272	0.157	0.197
13	Authoritarian	0.081	0.621	0.224
16	Authoritarian	0.023	0.657	0.197
19	Authoritarian	0.35	-0.103	0.548
23	Authoritarian	0.457	0.495	0.231
26	Authoritarian	0.156	0.467	0.529
28	Authoritarian	-0.042	0.295	0.419
30	Authoritarian	0.091	0.573	0.336
32	Authoritarian	0.002	0.71	0.036
8	Permissive	0.216	0.368	0.217
15	Permissive	-0.029	0.219	0.679
17	Permissive	0.207	0.504	0.417
20	Permissive	0.315	0.053	0.523
24	Permissive	0.132	0.222	0.714

APPENDIX G: INDIVIDUALISM-COLLECTIVISM FACTOR LOADINGS BY
 POOLED AND SUBSAMPLES

Table G1 Factor loadings INDCOL (Pooled).

Item Number		1	2	3	4
1	HC	0.370	0.158	0.026	-0.211
5	HC	0.621	0.022	-0.185	0.169
7	HC	0.574	0.067	0.162	-0.099
9	HC	0.696	-0.038	-0.131	0.228
11	HC	0.608	-0.144	0.005	-0.037
13	HC	0.715	-0.073	0.095	0.031
15	HC	0.658	-0.007	-0.147	0.160
19	HC	0.765	-0.017	-0.014	0.026
2	VI	-0.035	0.591	-0.049	-0.057
4	VI	-0.180	0.398	-0.495	0.182
6	VI	0.024	0.565	-0.263	-0.005
8	VI	0.128	0.662	-0.074	-0.005
12	VI	0.129	0.740	0.076	-0.024
16	VI	-0.366	0.417	-0.333	0.153
18	VI	0.099	0.771	0.055	0.039
20	VI	-0.227	0.321	0.103	0.296
10	HI	0.008	0.205	-0.342	-0.187
14	HI	0.374	0.167	-0.406	-0.100
22	HI	0.286	0.173	-0.077	-0.313
24	HI	-0.072	0.120	-0.487	-0.116
26	HI	0.065	0.036	-0.377	-0.690
28	HI	0.096	0.005	-0.370	-0.663
29	HI	0.023	-0.146	-0.796	-0.087
31	HI	0.184	-0.029	-0.728	0.007
3	VC	0.436	0.160	0.007	-0.119
17	VC	0.004	0.434	0.360	-0.380
21	VC	0.691	0.024	0.122	-0.172
23	VC	0.424	0.181	0.238	-0.317
25	VC	-0.167	-0.055	0.096	-0.789
27	VC	0.529	0.007	-0.001	-0.282
30	VC	0.551	0.069	-0.062	-0.212
32	VC	0.448	0.275	0.145	0.024

Note. HI = horizontal individuals, VI = vertical individualism, HC = horizontal collectivism, VC = vertical collectivism.

Table G2 Factor loadings INDCOL (Canada).

Item number		1	2	3	4
1	HC	0.274	0.158	0.450	-0.148
5	HC	0.336	0.062	0.331	-0.319
7	HC	0.451	0.015	-0.197	-0.062
9	HC	0.667	-0.070	0.08	-0.007
11	HC	0.465	-0.217	-0.018	-0.354
13	HC	0.577	-0.253	-0.164	-0.043
15	HC	0.596	0.101	0.016	0.072
19	HC	0.650	-0.216	-0.028	-0.184
2	VI	0.095	0.653	0.044	0.065
4	VI	-0.179	0.635	0.039	-0.164
6	VI	0.061	0.638	0.025	-0.087
8	VI	0.217	0.706	-0.144	0.06
12	VI	0.026	0.737	-0.208	-0.007
16	VI	-0.09	0.675	0.142	-0.037
18	VI	0.075	0.716	-0.017	-0.004
20	VI	-0.109	0.482	0.024	0.167
10	HI	-0.169	0.397	-0.325	-0.126
14	HI	0.406	0.228	-0.525	0.054
22	HI	-0.256	0.128	-0.248	-0.599
24	HI	-0.327	0.077	-0.225	-0.689
26	HI	0.212	0.094	-0.555	-0.168
28	HI	0.14	0.053	-0.592	-0.167
29	HI	0.09	0.063	-0.731	-0.045
31	HI	0.181	0.045	-0.727	-0.064
3	VC	0.158	0.174	0.419	-0.371
17	VC	-0.152	0.266	-0.082	-0.212
21	VC	0.638	-0.083	-0.251	0.056
23	VC	0.156	-0.060	0.063	-0.572
25	VC	0.177	0.022	0.036	-0.603
27	VC	0.126	-0.106	0.058	-0.659
30	VC	0.667	0.074	-0.124	-0.055
32	VC	0.412	0.171	0.146	-0.017

Note. HI = horizontal individuals, VI = vertical individualism, HC = horizontal collectivism, VC = vertical collectivism.

Table G3 Factor loadings INDCOL (Iceland).

Item number		1	2	3	4
15	HC	0.799	-0.002	-0.009	0.042
13	HC	0.785	-0.021	0.019	0.171
19	HC	0.756	0.1	0.056	0.143
9	HC	0.682	0.134	-0.007	0.17
7	HC	0.599	-0.052	-0.084	0.087
11	HC	0.411	-0.086	0.035	0.363
5	HC	0.212	0.093	0.101	0.624
1	HC	-0.077	0.062	-0.181	0.568
16	VI	-0.491	0.325	-0.24	-0.151
12	VI	0.175	0.785	0.032	0.037
18	VI	0.192	0.765	0.03	0.038
8	VI	0.269	0.749	-0.079	-0.182
6	VI	-0.116	0.683	-0.198	0.122
2	VI	-0.092	0.643	-0.071	0.015
20	VI	-0.204	0.582	0.282	0.063
4	VI	-0.309	0.439	-0.281	-0.04
26	HI	-0.186	0.064	-0.784	0.184
29	HI	0.007	0.047	-0.780	-0.138
28	HI	-0.132	0.108	-0.743	0.221
31	HI	0.111	-0.027	-0.730	-0.076
14	HI	0.332	0.264	-0.404	0.025
22	HI	0.356	-0.077	-0.366	0.233
24	HI	-0.176	0.033	-0.357	0.206
10	HI	0.203	-0.058	-0.320	-0.310
25	VC	-0.521	-0.048	-0.003	0.181
21	VC	0.503	-0.037	0.054	0.492
27	VC	0.182	-0.103	-0.006	0.645
23	VC	0.133	0.089	0.108	0.635
3	VC	0.009	-0.1	-0.088	0.597
30	VC	0.284	0.034	-0.187	0.588
32	VC	0.286	0.143	-0.03	0.319
17	VC	-0.068	0.19	-0.081	0.277

Note. HI = horizontal individuals, VI = vertical individualism, HC = horizontal collectivism, VC = vertical collectivism.

Table G4 Factor loadings INDCOL (Thailand).

Item number		1	2	3	4
15	HC	0.745	0.049	0.199	-0.084
7	HC	0.495	0.100	-0.385	0.272
1	HC	0.42	0.263	-0.207	0.127
13	HC	0.412	-0.007	-0.382	0.117
5	HC	0.358	0.089	-0.318	-0.156
19	HC	0.407	0.415	-0.194	0.274
9	HC	0.274	0.277	-0.147	0.177
11	HC	0.191	-0.040	-0.637	0.053
16	VI	-0.461	0.371	0.076	-0.285
18	VI	0.082	0.720	0.169	-0.018
8	VI	0.166	0.701	0.206	0.088
12	VI	0.065	0.602	-0.144	0.018
6	VI	-0.082	0.576	-0.095	-0.095
20	VI	0.019	-0.066	0.707	0.174
4	VI	-0.147	0.304	0.169	-0.496
2	VI	-0.004	0.355	-0.078	-0.393
26	HI	0.735	0.007	-0.075	-0.294
28	HI	0.683	-0.016	-0.105	-0.185
22	HI	0.670	0.082	0.061	0.039
10	HI	-0.035	0.617	-0.118	-0.086
24	HI	0.293	0.227	0.476	-0.447
14	HI	0.146	0.334	-0.470	-0.234
29	HI	0.184	-0.128	-0.108	-0.792
31	HI	-0.026	0.342	-0.287	-0.483
17	VC	0.734	-0.102	0.170	-0.058
27	VC	0.675	0.135	-0.132	0.099
25	VC	0.646	0.041	-0.204	0.093
30	VC	0.621	-0.098	-0.233	-0.198
3	VC	0.608	0.173	0.007	0.037
21	VC	0.565	0.150	-0.324	0.184
23	VC	0.555	0.206	-0.204	0.258
32	VC	0.343	0.325	-0.022	0.166

Note. HI = horizontal individuals, VI = vertical individualism, HC = horizontal collectivism, VC = vertical collectivism.

APPENDIX H: CODING SYSTEM USED BY ADJUDICATORS

Table H1 Code explanations.

Code	Adaptation type
1	Language driven adaptation: accommodation for differences in language structures (e.g., lexicon, grammar, gender specific sentences), and principles (e.g., directness).
2	Culture driven adaptation: accommodation for differences in cultural norms, customs and practices of communication (e.g., acceptability of emotional expression; the need to apologize for asking a question) and terminology characteristic (e.g., currency, temperature, weight, product names).
3	Concept driven adaptation: accommodations for differences in familiarity and sameness of concepts across cultures (e.g., changing the names of institutions or public figures).
4	Measurement adaptation: accommodations for differences in familiarity with stimulus (e.g., pain faces), and the formatting of stimuli (e.g., short/long Likert scales; language; if language is read/written e.g., from left to right or from right to left).

APPENDIX I: ITEM PARCELS IDENTIFIED

Table I1 Identify parcels.

Vertical Individualism 8 items		
Parcel1	CultureValues16_VI	When another person does better than I do, I get tense and upset.
	CultureValues12_VI	Competition is the law of nature.
	CultureValues6_VI	It is important to me that I do my job better than others.
Parcel2	CultureValues18_VI	Without competition it is not possible to have a good society.
	CultureValues2_VI	Winning is everything.
Parcel3	CultureValues4_VI	It annoys me when other people perform better than I do.
	CultureValues20_VI	Some people emphasize winning; I am not one of them.
	CultureValues8_VI	I enjoy working in situations involving competition.
Horizontal Individualism 8 Items		
Parcel 1	CultureValues26_HI	My personal identity (e.g., 'I'm kind and helpful', 'I'm an architect'), independent from others, is very important to me.
	CultureValues28_HI	My personal identity (e.g., 'I'm kind', 'I'm an architect') is very important to me.
	CultureValues10_HI	I often do "my own thing".
Parcel 2	CultureValues29_HI	I am a unique person, separate from others.
	CultureValues14_HI	Being a unique individual is important to me.
	CultureValues31_HI	I enjoy being unique and different from others.
Parcel3	CultureValues22_HI	I would rather depend on myself than on others.
	CultureValues24_HI	I rely on myself most of the time; I rarely rely on others.
Collectivism 16 items		
Parcel1	CultureValues32_VC	It is important to consult close friends and get their ideas before making a decision.
	CultureValues9_HC	The well-being of my co-workers (colleagues) is important to me.
	CultureValues19_HC	I feel good when I cooperate with others.
	CultureValues30_VC	I respect the majority's wishes in groups of which I am a member.
	CultureValues25_VC	Parents and children must stay together, as much as possible.
	CultureValues13_HC	If a co-worker (colleague) gets a prize I would feel proud.

Parcel2	CultureValues3_VC	I usually sacrifice my self-interest for the benefit of my group (people who are important to you).
	CultureValues5_HC	It is important for me to maintain harmony within my group (people who are important to you).
	CultureValues1_HC	My happiness depends very much on the happiness of those around me.
	CultureValues11_HC	If a relative were in financial difficulty, I would help within my means.
	CultureValues23_VC	Family members should stick together, no matter what sacrifices are required.
Parcel3	CultureValues15_HC	To me, pleasure is spending time with others.
	CultureValues21_VC	It is important to me that I respect decisions made by my groups.
	CultureValues7_HC	I like sharing little things with my neighbors.
	CultureValues27_VC	It is my duty to take care of my family, even when I have to sacrifice what I want.
	CultureValues17_VC	Children should be taught to place duty before pleasure.
<hr/> Authoritative 15 items <hr/>		
Parcel1	ParentingStyle14_Factor1	I give praise when my child is good.
	ParentingStyle11_Factor1	I emphasize the reasons for rules.
	ParentingStyle21_Factor1	I show respect for my child's opinions by encouraging my child to express them.
Parcel2	ParentingStyle1_Factor1	I am responsive to my child's feelings or needs.
	ParentingStyle27_Factor1	I have warm and intimate times together with my child.
	ParentingStyle29_Factor1	I help my child to understand the impact of behavior by encouraging my child to talk about the consequences of own actions.
	ParentingStyle18_Factor1	I take into account my child's preferences in making plans for the family.
	ParentingStyle25_Factor1	I give my child reasons why rules should be obeyed.
	ParentingStyle12_Factor1	I give comfort and understanding when my child is upset.
	ParentingStyle5_Factor1	I explain to my child how we feel about the child's good and bad behavior.
Parcel3	ParentingStyle3_Factor1	I take my child's desires into account before asking the child to do something.
	ParentingStyle7_Factor1	I encourage my child to talk about his/her troubles.
	ParentingStyle9_Factor1	I encourage my child to freely express (himself) (herself) even when disagreeing with parents.
	ParentingStyle31_Factor1	I explain the consequences of the child's behavior
	ParentingStyle322_Factor1	I allow my child to give input into family rules.

Authoritarian 12 items		
Parcel 1	ParentingStyle32_Factor2	I slap my child when the child misbehaves.
	ParentingStyle19_Factor2	I grab my child when being disobedient.
	ParentingStyle4_Factor2	When my child asks why (he)(she)has to conform, I state: because I said so, or I am your parent and I want you to
	ParentingStyle10_Factor2	I punish by taking privileges away from my child with little if any explanation.
Parcel2	ParentingStyle6_Factor2	I spank when my child is disobedient (does not listen).
	ParentingStyle2_Factor2	I use physical punishment as a way of disciplining my child.
	ParentingStyle23_Factor2	I scold and criticize to make my child improve.
	ParentingStyle30_Factor2	I scold or criticize when my child's behavior doesn't meet my expectations.
Parcel3	ParentingStyle28_Factor2	I punish by putting my child off somewhere alone with little if any explanation.
	ParentingStyle13_Factor2	I yell or shout when my child misbehaves.
	ParentingStyle16_Factor2	I explode in anger towards our child.
	ParentingStyle26_Factor2	I use threats as punishment with little or no justification.
Solicitousness 15 items		
Parcel1	ParentPainResponse13_S	I make him/her go to bed earlier.
	ParentPainResponse12_S	I keep track of how the pain evolves (develops) by often asking how he/she is feeling.
	ParentPainResponse11_S	I try to make the surroundings as relaxing as possible (e.g., minimum noise and little light).
	ParentPainResponse21_S	I can't help showing that his/her condition worries me a lot.
Parcel2	ParentPainResponse37_S	I get home as early as I can.
	ParentPainResponse24_S	I do my best to spend as much time with him/her as possible.
	ParentPainResponse29_S	I stop what I am doing so that I can do what he/she likes (e.g., play).
	ParentPainResponse3_S	I stay at home so that I can take care of him/her as well as possible
	ParentPainResponse23_S	I help him/her to do things (e.g., to get dressed, do his/her homework).
Parcel3	ParentPainResponse6_S	I accept that, in these circumstances, he/she cannot do homework.
	ParentPainResponse19_S	I suggest that he/she stays at home or with a relative or someone else (e.g., babysitter) while the pain lasts.
	ParentPainResponse20_S	We take care of all his/her obligations and chores at home while he/she is in pain and discomfort.
	ParentPainResponse16_S	I try to make up for the pain by being more affectionate or taking more notice (e.g., I kiss or touch him/her more often).
	ParentPainResponse18_S	I tell his/her teacher how he/she is feeling so that he/she can take it into consideration at school.
	ParentPainResponse36_S	I stop my leisure activities so that I can be with him/her.
Discourage 10 items		
Parcel1	ParentPainResponse9_D	I ignore him/her.
	ParentPainResponse34_D	I don't take much notice because I think he/she is exaggerating a bit.
	ParentPainResponse27_D	I tell him/her that big boys/girls do not complain.
	ParentPainResponse14_D	I don't worry about it because I think that the suffering will make him/her stronger.
Parcel2	ParentPainResponse5_D	I wonder how it is possible that he/she always complains so much.

	ParentPainResponse22_D	I tell him/her not to exaggerate, that it is not so bad.
	ParentPainResponse8_D	I don't believe him/her.
Parcel3	ParentPainResponse31_D	I tell him/her that he/she may be exaggerating.
	ParentPainResponse25_D	I tell him/her not to complain so much.
	ParentPainResponse1_D	I think that it can't be that bad.

Note. VI = vertical individualism; HI = horizontal individualism; VC = vertical collectivism; HC = horizontal collectivism.

APPENDIX J: SINGLE-GROUP CONFIRMATORY FACTOR ANALYSIS
MEASUREMENT MODEL FOR POOLED AND SUBSAMPLES

Table J1 Single-group confirmatory factor analysis measurement model (pooled).

	Estimate	Std.err	Z-value	<i>P</i> (> z)	Std.lv	Std.all
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.488	0.749
VI_Parcel2	0.956	0.095	10.120	0.000	1.423	0.829
VI_Parcel3	0.638	0.066	9.700	0.000	0.950	0.520
HI =~						
HI_Parcel1	1.000				1.281	0.778
HI_Parcel2	0.890	0.094	9.424	0.000	1.140	0.623
HI_Parcel3	0.731	0.086	8.544	0.000	0.936	0.521
C =~						
Clctvsm_Prc1	1.000				1.030	0.844
Clctvsm_Prc2	1.009	0.059	17.209	0.000	1.040	0.756
Clctvsm_Prc3	1.035	0.055	18.694	0.000	1.066	0.828
Authoritative =~						
Athrtrv_Prc1	1.000				0.545	0.884
Athrtrv_Prc2	1.033	0.049	20.972	0.000	0.564	0.858
Athrtrv_Prc3	1.068	0.048	22.104	0.000	0.582	0.856
Authoritarian =~						
Athrtrn_Prc1	1.000				0.468	0.763
Athrtrn_Prc2	1.223	0.102	12.033	0.000	0.572	0.785
Athrtrn_Prc3	0.900	0.073	12.326	0.000	0.421	0.699
Solicitous =~						
Solicts_Prc1	1.000				0.642	0.809
Solicts_Prc2	1.061	0.057	18.745	0.000	0.682	0.844
Solicts_Prc3	1.146	0.062	18.623	0.000	0.736	0.821
Discourage =~						
Discorg_Prc1	1.000				0.537	0.812
Discorg_Prc2	1.177	0.110	10.733	0.000	0.632	0.756
Discorg_Prc3	0.951	0.083	11.433	0.000	0.511	0.711
Covariances:						
VI ~						
HI	0.814	0.118	6.873	0.000	0.427	0.427
C	0.288	0.097	2.958	0.003	0.188	0.188
Authoritative	-0.033	0.041	-0.817	0.414	-0.041	-0.041
Authoritarian	0.258	0.053	4.902	0.000	0.370	0.370
Solicitous	0.032	0.051	0.634	0.526	0.034	0.034
Discourage	0.333	0.059	5.616	0.000	0.416	0.416
HI ~						
C	0.717	0.134	5.352	0.000	0.543	0.543
Authoritative	0.238	0.054	4.446	0.000	0.341	0.341
Authoritarian	0.093	0.040	2.312	0.021	0.155	0.155
Solicitous	0.087	0.049	1.786	0.074	0.106	0.106
Discourage	0.023	0.043	0.539	0.590	0.034	0.034
C ~						
Authoritative	0.216	0.052	4.182	0.000	0.384	0.384
Authoritarian	0.127	0.031	4.112	0.000	0.263	0.263
Solicitous	0.191	0.041	4.618	0.000	0.288	0.288
Discourage	-0.007	0.033	-0.197	0.844	-0.012	-0.012
Authoritative ~						
Authoritarian	-0.064	0.017	-3.820	0.000	-0.252	-0.252
Solicitous	0.122	0.020	6.122	0.000	0.349	0.349
Discourage	-0.078	0.018	-4.472	0.000	-0.268	-0.268
Authoritarian ~						
Solicitous	0.052	0.017	3.027	0.002	0.173	0.173

	Estimate	Std.err	Z-value	<i>P</i> (> z)	Std.lv	Std.all
Discourage	0.153	0.026	5.973	0.000	0.610	0.610
Solicitous ~						
Discourage	0.035	0.020	1.753	0.080	0.101	0.101
Intercepts:						
VI_Parcel1	4.366	0.085	51.192	0.000	4.366	2.197
VI_Parcel2	3.713	0.073	50.538	0.000	3.713	2.163
VI_Parcel3	4.079	0.078	52.015	0.000	4.079	2.234
HI_Parcel1	6.268	0.071	88.257	0.000	6.268	3.806
HI_Parcel2	6.297	0.079	79.782	0.000	6.297	3.442
HI_Parcel3	6.355	0.077	82.415	0.000	6.355	3.540
Clctvsm_Prc1	7.046	0.053	133.369	0.000	7.046	5.773
Clctvsm_Prc2	7.049	0.059	118.478	0.000	7.049	5.126
Clctvsm_Prc3	7.004	0.056	125.842	0.000	7.004	5.440
Athrtrtv_Prc1	4.254	0.026	160.802	0.000	4.254	6.895
Athrtrtv_Prc2	4.124	0.028	146.703	0.000	4.124	6.282
Athrtrtv_Prc3	3.892	0.029	133.486	0.000	3.892	5.718
Athrtrtn_Prc1	1.875	0.026	71.093	0.000	1.875	3.055
Athrtrtn_Prc2	1.899	0.031	60.839	0.000	1.899	2.604
Athrtrtn_Prc3	1.692	0.026	65.476	0.000	1.692	2.809
Solicts_Prc1	3.539	0.034	103.026	0.000	3.539	4.461
Solicts_Prc2	3.182	0.035	90.534	0.000	3.182	3.939
Solicts_Prc3	3.256	0.039	83.719	0.000	3.256	3.633
Discorg_Prc1	1.585	0.029	55.553	0.000	1.585	2.397
Discorg_Prc2	2.076	0.036	57.506	0.000	2.076	2.482
Discorg_Prc3	2.042	0.031	65.577	0.000	2.042	2.843
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	1.736	0.270			1.736	0.440
VI_Parcel2	0.920	0.184			0.920	0.312
VI_Parcel3	2.432	0.179			2.432	0.730
HI_Parcel1	1.072	0.153			1.072	0.395
HI_Parcel2	2.046	0.224			2.046	0.611
HI_Parcel3	2.347	0.212			2.347	0.728
Clctvsm_Prc1	0.428	0.052			0.428	0.287
Clctvsm_Prc2	0.810	0.083			0.810	0.428
Clctvsm_Prc3	0.521	0.055			0.521	0.314
Athrtrtv_Prc1	0.083	0.009			0.083	0.219
Athrtrtv_Prc2	0.113	0.013			0.113	0.263
Athrtrtv_Prc3	0.124	0.014			0.124	0.268
Athrtrtn_Prc1	0.158	0.017			0.158	0.419
Athrtrtn_Prc2	0.204	0.026			0.204	0.384
Athrtrtn_Prc3	0.186	0.017			0.186	0.511
Solicts_Prc1	0.217	0.024			0.217	0.345
Solicts_Prc2	0.188	0.021			0.188	0.288
Solicts_Prc3	0.261	0.028			0.261	0.325
Discorg_Prc1	0.149	0.023			0.149	0.341
Discorg_Prc2	0.300	0.038			0.300	0.429
Discorg_Prc3	0.255	0.023			0.255	0.494

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
VI	2.214	0.298			1.000	1.000
HI	1.640	0.223			1.000	1.000
C	1.062	0.152			1.000	1.000
Authoritative	0.297	0.035			1.000	1.000
Authoritarian	0.219	0.031			1.000	1.000
Sollicitous	0.412	0.040			1.000	1.000
Discourage	0.288	0.040			1.000	1.000

Table J2 Single-group confirmatory factor analysis measurement model (Canada).

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.552	0.846
VI_Parcel2	0.812	0.096	8.457	0.000	1.261	0.828
VI_Parcel3	0.748	0.084	8.893	0.000	1.161	0.675
HI =~						
HI_Parcel1	1.000				1.013	0.822
HI_Parcel2	0.970	0.185	5.237	0.000	0.983	0.695
HI_Parcel3	0.774	0.150	5.156	0.000	0.784	0.462
C =~						
Clctvsm_Prc1	1.000				0.721	0.781
Clctvsm_Prc2	0.934	0.135	6.942	0.000	0.674	0.579
Clctvsm_Prc3	0.944	0.187	5.036	0.000	0.681	0.774
Authoritative =~						
Athrttv_Prc1	1.000				0.372	0.816
Athrttv_Prc2	1.158	0.093	12.405	0.000	0.431	0.818
Athrttv_Prc3	1.191	0.120	9.934	0.000	0.443	0.790
Authoritarian =~						
Athrtrn_Prc1	1.000				0.350	0.722
Athrtrn_Prc2	0.912	0.116	7.887	0.000	0.319	0.687
Athrtrn_Prc3	1.130	0.150	7.536	0.000	0.395	0.816
Sollicitous =~						
Solicts_Prc1	1.000				0.583	0.824
Solicts_Prc2	1.077	0.099	10.927	0.000	0.627	0.800
Solicts_Prc3	1.302	0.119	10.909	0.000	0.759	0.884
Discourage =~						
Discorg_Prc1	1.000				0.297	0.729
Discorg_Prc2	2.051	0.292	7.014	0.000	0.609	0.876
Discorg_Prc3	1.855	0.249	7.460	0.000	0.551	0.821
Covariances:						
VI ~						
HI	0.635	0.174	3.649	0.000	0.404	0.404
C	0.062	0.113	0.546	0.585	0.055	0.055
Authoritative	-0.089	0.045	-1.968	0.049	-0.155	-0.155
Authoritarian	0.129	0.052	2.477	0.013	0.238	0.238
Sollicitous	-0.087	0.076	-1.138	0.255	-0.096	-0.096
Discourage	0.133	0.043	3.069	0.002	0.288	0.288
HI ~						
C	0.291	0.113	2.571	0.010	0.398	0.398
Authoritative	0.020	0.032	0.617	0.537	0.052	0.052
Authoritarian	0.067	0.036	1.875	0.061	0.190	0.190
Sollicitous	-0.010	0.054	-0.195	0.845	-0.018	-0.018
Discourage	0.051	0.027	1.886	0.059	0.171	0.171
C ~						
Authoritative	0.081	0.031	2.586	0.010	0.301	0.301
Authoritarian	0.044	0.029	1.557	0.120	0.176	0.176
Sollicitous	0.102	0.049	2.063	0.039	0.243	0.243
Discourage	-0.012	0.025	-0.493	0.622	-0.058	-0.058
Authoritative ~						
Authoritarian	-0.066	0.037	-1.781	0.075	-0.511	-0.511
Sollicitous	0.091	0.017	5.504	0.000	0.421	0.421
Discourage	-0.029	0.011	-2.756	0.006	-0.264	-0.264
Authoritarian ~						
Sollicitous	0.019	0.018	1.041	0.298	0.093	0.093

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discourage	0.038	0.011	3.507	0.000	0.362	0.362
Solicitous ~						
Discourage	-0.034	0.016	-2.094	0.036	-0.196	-0.196
Intercepts:						
VI_Parcel1	3.554	0.136	26.215	0.000	3.554	1.938
VI_Parcel2	3.301	0.113	29.317	0.000	3.301	2.167
VI_Parcel3	3.779	0.127	29.740	0.000	3.779	2.196
HI_Parcel1	6.744	0.091	73.800	0.000	6.744	5.472
HI_Parcel2	6.962	0.104	66.648	0.000	6.962	4.927
HI_Parcel3	6.614	0.126	52.393	0.000	6.614	3.900
Clctvsm_Prc1	7.227	0.070	103.740	0.000	7.227	7.826
Clctvsm_Prc2	7.057	0.087	81.345	0.000	7.057	6.067
Clctvsm_Prc3	6.634	0.066	101.008	0.000	6.634	7.542
Athrttv_Prc1	4.456	0.034	131.688	0.000	4.456	9.764
Athrttv_Prc2	4.279	0.039	109.785	0.000	4.279	8.116
Athrttv_Prc3	3.979	0.042	95.776	0.000	3.979	7.091
Athrtrn_Prc1	1.615	0.036	44.931	0.000	1.615	3.331
Athrtrn_Prc2	1.423	0.034	41.420	0.000	1.423	3.062
Athrtrn_Prc3	1.627	0.036	45.292	0.000	1.627	3.357
Solicts_Prc1	3.385	0.052	64.713	0.000	3.385	4.786
Solicts_Prc2	3.026	0.058	52.191	0.000	3.026	3.858
Solicts_Prc3	3.112	0.064	48.949	0.000	3.112	3.626
Discorg_Prc1	1.268	0.030	42.204	0.000	1.268	3.112
Discorg_Prc2	1.605	0.051	31.232	0.000	1.605	2.309
Discorg_Prc3	1.852	0.050	37.357	0.000	1.852	2.761
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	0.954	0.364			0.954	0.284
VI_Parcel2	0.731	0.159			0.731	0.315
VI_Parcel3	1.611	0.199			1.611	0.544
HI_Parcel1	0.493	0.187			0.493	0.324
HI_Parcel2	1.031	0.166			1.031	0.516
HI_Parcel3	2.261	0.365			2.261	0.786
Clctvsm_Prc1	0.333	0.095			0.333	0.390
Clctvsm_Prc2	0.899	0.160			0.899	0.665
Clctvsm_Prc3	0.310	0.086			0.310	0.401
Athrttv_Prc1	0.070	0.009			0.070	0.335
Athrttv_Prc2	0.092	0.017			0.092	0.332
Athrttv_Prc3	0.118	0.018			0.118	0.376
Athrtrn_Prc1	0.113	0.025			0.113	0.479
Athrtrn_Prc2	0.114	0.017			0.114	0.529
Athrtrn_Prc3	0.079	0.015			0.079	0.335
Solicts_Prc1	0.161	0.027			0.161	0.321
Solicts_Prc2	0.222	0.031			0.222	0.360
Solicts_Prc3	0.161	0.038			0.161	0.218
Discorg_Prc1	0.078	0.018			0.078	0.469
Discorg_Prc2	0.112	0.025			0.112	0.233
Discorg_Prc3	0.147	0.023			0.147	0.326

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
VI	2.409	0.384			1.000	1.000
HI	1.026	0.237			1.000	1.000
C	0.520	0.101			1.000	1.000
Authoritative	0.139	0.037			1.000	1.000
Authoritarian	0.122	0.051			1.000	1.000
Sollicitous	0.340	0.056			1.000	1.000
Discourage	0.088	0.028			1.000	1.000

Table J3 Single-group confirmatory factor analysis measurement model (Iceland).

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.289	0.788
VI_Parcel2	1.050	0.123	8.513	0.000	1.354	0.887
VI_Parcel3	0.883	0.101	8.728	0.000	1.139	0.624
HI =~						
HI_Parcel1	1.000				1.275	0.793
HI_Parcel2	0.939	0.159	5.914	0.000	1.197	0.782
HI_Parcel3	0.492	0.109	4.506	0.000	0.627	0.389
C =~						
Clctvsm_Prc1	1.000				0.762	0.796
Clctvsm_Prc2	1.125	0.152	7.394	0.000	0.857	0.719
Clctvsm_Prc3	1.247	0.160	7.791	0.000	0.950	0.850
Authoritative =~						
Athrttv_Prc1	1.000				0.409	0.851
Athrttv_Prc2	1.058	0.095	11.143	0.000	0.432	0.867
Athrttv_Prc3	1.045	0.152	6.885	0.000	0.427	0.852
Authoritarian =~						
Athrtrn_Prc1	1.000				0.349	0.726
Athrtrn_Prc2	0.549	0.218	2.514	0.012	0.191	0.432
Athrtrn_Prc3	1.064	0.152	6.992	0.000	0.371	0.769
Sollicitous =~						
Solicts_Prc1	1.000				0.596	0.840
Solicts_Prc2	1.203	0.089	13.530	0.000	0.717	0.885
Solicts_Prc3	1.374	0.104	13.212	0.000	0.819	0.903
Discourage =~						
Discorg_Prc1	1.000				0.356	0.725
Discorg_Prc2	1.332	0.196	6.811	0.000	0.474	0.679
Discorg_Prc3	1.508	0.242	6.223	0.000	0.536	0.810
Covariances:						
VI ~						
HI	0.673	0.182	3.705	0.000	0.410	0.410
C	0.108	0.136	0.799	0.425	0.110	0.110
Authoritative	-0.081	0.045	-1.799	0.072	-0.153	-0.153
Authoritarian	0.141	0.048	2.960	0.003	0.313	0.313
Sollicitous	-0.006	0.064	-0.095	0.924	-0.008	-0.008
Discourage	0.113	0.043	2.629	0.009	0.247	0.247
HI ~						
C	0.280	0.104	2.693	0.007	0.288	0.288
Authoritative	0.134	0.057	2.340	0.019	0.258	0.258
Authoritarian	0.051	0.046	1.097	0.273	0.115	0.115
Sollicitous	0.104	0.069	1.509	0.131	0.137	0.137
Discourage	0.081	0.043	1.896	0.058	0.179	0.179
C ~						
Authoritative	0.093	0.030	3.134	0.002	0.299	0.299
Authoritarian	0.016	0.020	0.794	0.427	0.061	0.061
Sollicitous	0.120	0.043	2.764	0.006	0.264	0.264
Discourage	-0.032	0.023	-1.362	0.173	-0.118	-0.118
Authoritative ~						
Authoritarian	-0.076	0.033	-2.325	0.020	-0.532	-0.532
Sollicitous	0.099	0.023	4.260	0.000	0.405	0.405
Discourage	-0.042	0.015	-2.860	0.004	-0.287	-0.287
Authoritarian ~						
Sollicitous	-0.016	0.018	-0.897	0.370	-0.078	-0.078

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discourage	0.058	0.014	4.144	0.000	0.471	0.471
Sollicitous ~						
Discourage	-0.065	0.023	-2.850	0.004	-0.305	-0.305
Intercepts:						
VI_Parcel1	4.833	0.122	39.756	0.000	4.833	2.952
VI_Parcel2	3.918	0.113	34.808	0.000	3.918	2.567
VI_Parcel3	4.356	0.135	32.235	0.000	4.356	2.387
HI_Parcel1	5.582	0.120	46.579	0.000	5.582	3.473
HI_Parcel2	6.516	0.116	56.247	0.000	6.516	4.255
HI_Parcel3	6.376	0.119	53.625	0.000	6.376	3.962
Clctvsm_Prc1	6.616	0.071	92.626	0.000	6.616	6.909
Clctvsm_Prc2	7.043	0.089	78.875	0.000	7.043	5.905
Clctvsm_Prc3	7.026	0.085	82.777	0.000	7.026	6.287
Athrtrtv_Prc1	4.318	0.035	122.184	0.000	4.318	8.995
Athrtrtv_Prc2	4.242	0.037	115.369	0.000	4.242	8.499
Athrtrtv_Prc3	4.060	0.037	109.593	0.000	4.060	8.107
Athrtrn_Prc1	1.740	0.036	48.771	0.000	1.740	3.618
Athrtrn_Prc2	1.730	0.033	52.744	0.000	1.730	3.907
Athrtrn_Prc3	1.526	0.036	42.238	0.000	1.526	3.159
Solicts_Prc1	3.426	0.054	63.316	0.000	3.426	4.828
Solicts_Prc2	3.177	0.062	51.634	0.000	3.177	3.921
Solicts_Prc3	3.489	0.069	50.549	0.000	3.489	3.847
Discorg_Prc1	1.487	0.036	40.994	0.000	1.487	3.031
Discorg_Prc2	2.176	0.053	41.339	0.000	2.176	3.116
Discorg_Prc3	2.141	0.049	43.359	0.000	2.141	3.233
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Sollicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	1.017	0.186			1.017	0.380
VI_Parcel2	0.496	0.178			0.496	0.213
VI_Parcel3	2.033	0.286			2.033	0.611
HI_Parcel1	0.959	0.249			0.959	0.371
HI_Parcel2	0.913	0.245			0.913	0.389
HI_Parcel3	2.197	0.255			2.197	0.848
Clctvsm_Prc1	0.337	0.071			0.337	0.367
Clctvsm_Prc2	0.687	0.106			0.687	0.483
Clctvsm_Prc3	0.346	0.086			0.346	0.277
Athrtrtv_Prc1	0.063	0.011			0.063	0.275
Athrtrtv_Prc2	0.062	0.012			0.062	0.249
Athrtrtv_Prc3	0.069	0.021			0.069	0.273
Athrtrn_Prc1	0.110	0.021			0.110	0.473
Athrtrn_Prc2	0.159	0.021			0.159	0.813
Athrtrn_Prc3	0.095	0.022			0.095	0.409
Solicts_Prc1	0.149	0.028			0.149	0.295
Solicts_Prc2	0.142	0.031			0.142	0.217
Solicts_Prc3	0.152	0.030			0.152	0.184
Discorg_Prc1	0.114	0.026			0.114	0.474
Discorg_Prc2	0.263	0.035			0.263	0.539
Discorg_Prc3	0.151	0.043			0.151	0.344

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
VI	1.663	0.300			1.000	1.000
HI	1.624	0.347			1.000	1.000
C	0.581	0.132			1.000	1.000
Authoritative	0.167	0.040			1.000	1.000
Authoritarian	0.122	0.043			1.000	1.000
Sollicitous	0.355	0.051			1.000	1.000
Discourage	0.126	0.029			1.000	1.000

Table J4 Single-group confirmatory factor analysis measurement model (Thailand).

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.467	0.669
VI_Parcel2	0.969	0.186	5.209	0.000	1.422	0.716
VI_Parcel3	0.373	0.144	2.596	0.009	0.548	0.292
HI =~						
HI_Parcel1	1.000				1.586	0.852
HI_Parcel2	0.818	0.118	6.957	0.000	1.297	0.618
HI_Parcel3	0.696	0.098	7.099	0.000	1.103	0.547
C =~						
Clctvsm_Prc1	1.000				1.389	0.895
Clctvsm_Prc2	1.053	0.074	14.198	0.000	1.462	0.855
Clctvsm_Prc3	1.060	0.063	16.720	0.000	1.471	0.897
Authoritative =~						
Athrttv_Prc1	1.000				0.707	0.920
Athrttv_Prc2	0.956	0.074	12.964	0.000	0.676	0.833
Athrttv_Prc3	1.042	0.064	16.307	0.000	0.736	0.864
Authoritarian =~						
Athrtrn_Prc1	1.000				0.403	0.623
Athrtrn_Prc2	1.345	0.213	6.321	0.000	0.542	0.762
Athrtrn_Prc3	1.357	0.229	5.915	0.000	0.547	0.747
Sollicitous =~						
Solicts_Prc1	1.000				0.695	0.794
Solicts_Prc2	0.890	0.089	10.055	0.000	0.618	0.783
Solicts_Prc3	1.050	0.099	10.561	0.000	0.729	0.817
Discourage =~						
Discorg_Prc1	1.000				0.603	0.759
Discorg_Prc2	0.916	0.142	6.431	0.000	0.552	0.639
Discorg_Prc3	1.030	0.115	8.919	0.000	0.621	0.794
Covariances:						
VI ~						
HI	1.562	0.351	4.455	0.000	0.671	0.671
C	0.648	0.256	2.532	0.011	0.318	0.318
Authoritative	0.239	0.120	1.984	0.047	0.230	0.230
Authoritarian	0.257	0.105	2.454	0.014	0.434	0.434
Sollicitous	0.106	0.109	0.968	0.333	0.104	0.104
Discourage	0.428	0.128	3.357	0.001	0.484	0.484
HI ~						
C	1.668	0.375	4.443	0.000	0.757	0.757
Authoritative	0.528	0.136	3.886	0.000	0.471	0.471
Authoritarian	0.280	0.081	3.441	0.001	0.437	0.437
Sollicitous	0.328	0.119	2.757	0.006	0.298	0.298
Discourage	0.166	0.106	1.568	0.117	0.174	0.174
C ~						
Authoritative	0.567	0.143	3.971	0.000	0.578	0.578
Authoritarian	0.147	0.079	1.849	0.064	0.262	0.262
Sollicitous	0.301	0.119	2.529	0.011	0.312	0.312
Discourage	-0.050	0.081	-0.611	0.541	-0.059	-0.059
Authoritative ~						
Authoritarian	0.087	0.033	2.603	0.009	0.306	0.306
Sollicitous	0.237	0.053	4.444	0.000	0.483	0.483
Discourage	-0.015	0.041	-0.364	0.716	-0.035	-0.035
Authoritarian ~						
Sollicitous	0.064	0.032	1.979	0.048	0.229	0.229

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discourage	0.122	0.044	2.777	0.005	0.501	0.501
Solicitous ~						
Discourage	0.180	0.049	3.699	0.000	0.430	0.430
Intercepts:						
VI_Parcel1	4.724	0.164	28.789	0.000	4.724	2.153
VI_Parcel2	3.926	0.148	26.506	0.000	3.926	1.976
VI_Parcel3	4.102	0.141	29.168	0.000	4.102	2.184
HI_Parcel1	6.436	0.139	46.267	0.000	6.436	3.458
HI_Parcel2	5.401	0.157	34.425	0.000	5.401	2.575
HI_Parcel3	6.067	0.151	40.118	0.000	6.067	3.008
Clctvsm_Prc1	7.307	0.116	62.761	0.000	7.307	4.711
Clctvsm_Prc2	7.042	0.128	54.810	0.000	7.042	4.117
Clctvsm_Prc3	7.360	0.122	60.180	0.000	7.360	4.489
Athrttv_Prc1	3.985	0.057	69.513	0.000	3.985	5.187
Athrttv_Prc2	3.846	0.061	63.404	0.000	3.846	4.743
Athrttv_Prc3	3.635	0.064	57.156	0.000	3.635	4.267
Athrtrn_Prc1	2.275	0.049	46.743	0.000	2.275	3.513
Athrtrn_Prc2	2.553	0.053	48.103	0.000	2.553	3.585
Athrtrn_Prc3	1.927	0.055	35.275	0.000	1.927	2.631
Solicts_Prc1	3.808	0.066	57.946	0.000	3.808	4.355
Solicts_Prc2	3.362	0.060	56.275	0.000	3.362	4.256
Solicts_Prc3	3.202	0.067	47.990	0.000	3.202	3.588
Discorg_Prc1	2.015	0.060	33.577	0.000	2.015	2.537
Discorg_Prc2	2.463	0.065	37.666	0.000	2.463	2.849
Discorg_Prc3	2.120	0.060	35.593	0.000	2.120	2.713
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	2.661	0.540			2.661	0.553
VI_Parcel2	1.926	0.430			1.926	0.488
VI_Parcel3	3.228	0.368			3.228	0.915
HI_Parcel1	0.948	0.244			0.948	0.274
HI_Parcel2	2.718	0.415			2.718	0.618
HI_Parcel3	2.852	0.431			2.852	0.701
Clctvsm_Prc1	0.477	0.100			0.477	0.198
Clctvsm_Prc2	0.788	0.146			0.788	0.269
Clctvsm_Prc3	0.523	0.108			0.523	0.195
Athrttv_Prc1	0.091	0.022			0.091	0.154
Athrttv_Prc2	0.201	0.033			0.201	0.305
Athrttv_Prc3	0.184	0.031			0.184	0.253
Athrtrn_Prc1	0.257	0.034			0.257	0.612
Athrtrn_Prc2	0.213	0.039			0.213	0.420
Athrtrn_Prc3	0.237	0.039			0.237	0.441
Solicts_Prc1	0.282	0.057			0.282	0.369
Solicts_Prc2	0.241	0.039			0.241	0.387
Solicts_Prc3	0.264	0.050			0.264	0.332
Discorg_Prc1	0.267	0.048			0.267	0.424
Discorg_Prc2	0.443	0.064			0.443	0.592
Discorg_Prc3	0.225	0.043			0.225	0.369

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
VI	2.153	0.595			1.000	1.000
HI	2.515	0.445			1.000	1.000
C	1.928	0.422			1.000	1.000
Authoritative	0.499	0.071			1.000	1.000
Authoritarian	0.163	0.048			1.000	1.000
Sollicitous	0.482	0.100			1.000	1.000
Discourage	0.363	0.079			1.000	1.000

APPENDIX K: MULTIGROUP CONFIRMATORY FACTOR ANALYSIS
CONFIGURAL INVARIANCE MODEL

Table K1 Configural invariance model.

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Group 1 [3]: THAILAND						
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.467	0.669
VI_Parcel2	0.969	0.186	5.209	0.000	1.422	0.716
VI_Parcel3	0.373	0.144	2.596	0.009	0.548	0.292
HI =~						
HI_Parcel1	1.000				1.586	0.852
HI_Parcel2	0.818	0.118	6.957	0.000	1.297	0.618
HI_Parcel3	0.696	0.098	7.098	0.000	1.103	0.547
C =~						
Cllctvsm_Prc1	1.000				1.389	0.895
Cllctvsm_Prc2	1.053	0.074	14.198	0.000	1.462	0.855
Cllctvsm_Prc3	1.060	0.063	16.720	0.000	1.471	0.897
Authoritative =~						
Athrtrtv_Prc1	1.000				0.707	0.920
Athrtrtv_Prc2	0.956	0.074	12.964	0.000	0.676	0.833
Athrtrtv_Prc3	1.042	0.064	16.307	0.000	0.736	0.864
Authoritarian =~						
Athrtrtn_Prc1	1.000				0.403	0.623
Athrtrtn_Prc2	1.345	0.213	6.321	0.000	0.542	0.762
Athrtrtn_Prc3	1.357	0.229	5.915	0.000	0.547	0.747
Solicitous =~						
Solicts_Prc1	1.000				0.695	0.794
Solicts_Prc2	0.890	0.089	10.055	0.000	0.618	0.783
Solicts_Prc3	1.050	0.099	10.561	0.000	0.729	0.817
Discourage =~						
Discorg_Prc1	1.000				0.603	0.759
Discorg_Prc2	0.916	0.142	6.431	0.000	0.552	0.639
Discorg_Prc3	1.030	0.115	8.919	0.000	0.621	0.794
Covariances:						
VI ~						
HI	1.562	0.351	4.455	0.000	0.671	0.671
C	0.648	0.256	2.532	0.011	0.318	0.318
Authoritative	0.239	0.120	1.984	0.047	0.230	0.230
Authoritarian	0.257	0.105	2.454	0.014	0.434	0.434
Solicitous	0.106	0.109	0.968	0.333	0.104	0.104
Discourage	0.428	0.128	3.357	0.001	0.484	0.484
HI ~						
C	1.668	0.375	4.443	0.000	0.757	0.757
Authoritative	0.528	0.136	3.886	0.000	0.471	0.471
Authoritarian	0.280	0.081	3.441	0.001	0.437	0.437
Solicitous	0.328	0.119	2.757	0.006	0.298	0.298
Discourage	0.166	0.106	1.568	0.117	0.174	0.174
C ~						
Authoritative	0.567	0.143	3.971	0.000	0.578	0.578
Authoritarian	0.147	0.079	1.849	0.064	0.262	0.262
Solicitous	0.301	0.119	2.529	0.011	0.312	0.312
Discourage	-0.050	0.081	-0.611	0.541	-0.059	-0.059
Authoritative ~						
Authoritarian	0.087	0.033	2.603	0.009	0.306	0.306
Solicitous	0.237	0.053	4.444	0.000	0.483	0.483
Discourage	-0.015	0.041	-0.364	0.716	-0.035	-0.035
Authoritarian ~						

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Sollicitous	0.064	0.032	1.979	0.048	0.229	0.229
Discourage	0.122	0.044	2.777	0.005	0.501	0.501
Sollicitous ~ Discourage	0.180	0.049	3.699	0.000	0.430	0.430
Intercepts:						
VI_Parcel1	4.724	0.164	28.789	0.000	4.724	2.153
VI_Parcel2	3.926	0.148	26.506	0.000	3.926	1.976
VI_Parcel3	4.102	0.141	29.168	0.000	4.102	2.184
HI_Parcel1	6.436	0.139	46.267	0.000	6.436	3.458
HI_Parcel2	5.401	0.157	34.425	0.000	5.401	2.575
HI_Parcel3	6.067	0.151	40.118	0.000	6.067	3.008
Clctvsm_Prc1	7.307	0.116	62.761	0.000	7.307	4.711
Clctvsm_Prc2	7.042	0.128	54.810	0.000	7.042	4.117
Clctvsm_Prc3	7.360	0.122	60.180	0.000	7.360	4.489
Athrttv_Prc1	3.985	0.057	69.513	0.000	3.985	5.187
Athrttv_Prc2	3.846	0.061	63.404	0.000	3.846	4.743
Athrttv_Prc3	3.635	0.064	57.156	0.000	3.635	4.267
Athrtrn_Prc1	2.275	0.049	46.743	0.000	2.275	3.513
Athrtrn_Prc2	2.553	0.053	48.103	0.000	2.553	3.585
Athrtrn_Prc3	1.927	0.055	35.275	0.000	1.927	2.631
Solicts_Prc1	3.808	0.066	57.946	0.000	3.808	4.355
Solicts_Prc2	3.362	0.060	56.275	0.000	3.362	4.256
Solicts_Prc3	3.202	0.067	47.990	0.000	3.202	3.588
Discorg_Prc1	2.015	0.060	33.577	0.000	2.015	2.537
Discorg_Prc2	2.463	0.065	37.666	0.000	2.463	2.849
Discorg_Prc3	2.120	0.060	35.593	0.000	2.120	2.713
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Sollicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	2.661	0.540			2.661	0.553
VI_Parcel2	1.926	0.430			1.926	0.488
VI_Parcel3	3.228	0.368			3.228	0.915
HI_Parcel1	0.948	0.244			0.948	0.274
HI_Parcel2	2.718	0.415			2.718	0.618
HI_Parcel3	2.852	0.431			2.852	0.701
Clctvsm_Prc1	0.477	0.100			0.477	0.198
Clctvsm_Prc2	0.788	0.146			0.788	0.269
Clctvsm_Prc3	0.523	0.108			0.523	0.195
Athrttv_Prc1	0.091	0.022			0.091	0.154
Athrttv_Prc2	0.201	0.033			0.201	0.305
Athrttv_Prc3	0.184	0.031			0.184	0.253
Athrtrn_Prc1	0.257	0.034			0.257	0.612
Athrtrn_Prc2	0.213	0.039			0.213	0.420
Athrtrn_Prc3	0.237	0.039			0.237	0.441
Solicts_Prc1	0.282	0.057			0.282	0.369
Solicts_Prc2	0.241	0.039			0.241	0.387
Solicts_Prc3	0.264	0.050			0.264	0.332
Discorg_Prc1	0.267	0.048			0.267	0.424
Discorg_Prc2	0.443	0.064			0.443	0.592

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discorg_Prc13	0.225	0.043			0.225	0.369
VI	2.153	0.595			1.000	1.000
HI	2.515	0.445			1.000	1.000
C	1.928	0.422			1.000	1.000
Authoritative	0.499	0.071			1.000	1.000
Authoritarian	0.163	0.048			1.000	1.000
Solicitous	0.482	0.100			1.000	1.000
Discourage	0.363	0.079			1.000	1.000

Group 2 [1]: CANADA

Latent variables:

VI =~						
VI_Parc1	1.000				1.552	0.846
VI_Parc2	0.812	0.096	8.457	0.000	1.261	0.828
VI_Parc3	0.748	0.084	8.893	0.000	1.161	0.675
HI =~						
HI_Parc1	1.000				1.013	0.822
HI_Parc2	0.970	0.185	5.237	0.000	0.983	0.695
HI_Parc3	0.774	0.150	5.156	0.000	0.784	0.462
C =~						
Clctvsm_Prc1	1.000				0.721	0.781
Clctvsm_Prc2	0.934	0.135	6.941	0.000	0.674	0.579
Clctvsm_Prc3	0.944	0.187	5.036	0.000	0.681	0.774
Authoritative =~						
Athrttv_Prc1	1.000				0.372	0.816
Athrttv_Prc2	1.158	0.093	12.405	0.000	0.431	0.818
Athrttv_Prc3	1.191	0.120	9.934	0.000	0.443	0.790
Authoritarian =~						
Athrtn_Prc1	1.000				0.350	0.722
Athrtn_Prc2	0.912	0.116	7.887	0.000	0.319	0.687
Athrtn_Prc3	1.130	0.150	7.536	0.000	0.395	0.816
Solicitous =~						
Solicts_Prc1	1.000				0.583	0.824
Solicts_Prc2	1.077	0.099	10.927	0.000	0.627	0.800
Solicts_Prc3	1.302	0.119	10.909	0.000	0.759	0.884
Discourage =~						
Discorg_Prc1	1.000				0.297	0.729
Discorg_Prc2	2.051	0.292	7.014	0.000	0.609	0.876
Discorg_Prc3	1.855	0.249	7.460	0.000	0.551	0.821
Covariances:						
VI ~						
HI	0.635	0.174	3.649	0.000	0.404	0.404
C	0.062	0.113	0.546	0.585	0.055	0.055
Authoritative	-0.089	0.045	-1.968	0.049	-0.155	-0.155
Authoritarian	0.129	0.052	2.477	0.013	0.238	0.238
Solicitous	-0.087	0.076	-1.138	0.255	-0.096	-0.096
Discourage	0.133	0.043	3.069	0.002	0.288	0.288
HI ~						
C	0.291	0.113	2.571	0.010	0.398	0.398
Authoritative	0.020	0.032	0.617	0.537	0.052	0.052
Authoritarian	0.067	0.036	1.875	0.061	0.190	0.190
Solicitous	-0.010	0.054	-0.195	0.845	-0.018	-0.018
Discourage	0.051	0.027	1.886	0.059	0.171	0.171
C ~						
Authoritative	0.081	0.031	2.585	0.010	0.301	0.301

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Authoritarian	0.044	0.029	1.557	0.120	0.176	0.176
Solicitous	0.102	0.049	2.063	0.039	0.243	0.243
Discourage	-0.012	0.025	-0.493	0.622	-0.058	-0.058
Authoritative ~						
Authoritarian	-0.066	0.037	-1.781	0.075	-0.511	-0.511
Solicitous	0.091	0.017	5.504	0.000	0.421	0.421
Discourage	-0.029	0.011	-2.756	0.006	-0.264	-0.264
Authoritarian ~						
Solicitous	0.019	0.018	1.041	0.298	0.093	0.093
Discourage	0.038	0.011	3.507	0.000	0.362	0.362
Solicitous ~						
Discourage	-0.034	0.016	-2.094	0.036	-0.196	-0.196
Intercepts:						
VI_Parcel1	3.554	0.136	26.214	0.000	3.554	1.938
VI_Parcel2	3.301	0.113	29.317	0.000	3.301	2.167
VI_Parcel3	3.779	0.127	29.740	0.000	3.779	2.196
HI_Parcel1	6.744	0.091	73.800	0.000	6.744	5.472
HI_Parcel2	6.962	0.104	66.648	0.000	6.962	4.927
HI_Parcel3	6.614	0.126	52.393	0.000	6.614	3.900
Cllctvsm_Prc1	7.227	0.070	103.740	0.000	7.227	7.826
Cllctvsm_Prc2	7.057	0.087	81.345	0.000	7.057	6.067
Cllctvsm_Prc3	6.634	0.066	101.008	0.000	6.634	7.542
Athrtrtv_Prc1	4.456	0.034	131.688	0.000	4.456	9.764
Athrtrtv_Prc2	4.279	0.039	109.785	0.000	4.279	8.116
Athrtrtv_Prc3	3.979	0.042	95.776	0.000	3.979	7.091
Athrtrn_Prc1	1.615	0.036	44.931	0.000	1.615	3.331
Athrtrn_Prc2	1.423	0.034	41.420	0.000	1.423	3.062
Athrtrn_Prc3	1.627	0.036	45.292	0.000	1.627	3.357
Solicts_Prc1	3.385	0.052	64.713	0.000	3.385	4.786
Solicts_Prc2	3.026	0.058	52.191	0.000	3.026	3.858
Solicts_Prc3	3.112	0.064	48.949	0.000	3.112	3.626
Discorg_Prc1	1.268	0.030	42.204	0.000	1.268	3.112
Discorg_Prc2	1.605	0.051	31.232	0.000	1.605	2.309
Discorg_Prc3	1.852	0.050	37.357	0.000	1.852	2.761
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	0.954	0.364			0.954	0.284
VI_Parcel2	0.731	0.159			0.731	0.315
VI_Parcel3	1.611	0.199			1.611	0.544
HI_Parcel1	0.493	0.187			0.493	0.324
HI_Parcel2	1.031	0.166			1.031	0.516
HI_Parcel3	2.261	0.365			2.261	0.786
Cllctvsm_Prc1	0.333	0.095			0.333	0.390
Cllctvsm_Prc2	0.899	0.160			0.899	0.665
Cllctvsm_Prc3	0.310	0.086			0.310	0.401
Athrtrtv_Prc1	0.070	0.009			0.070	0.335
Athrtrtv_Prc2	0.092	0.017			0.092	0.332
Athrtrtv_Prc3	0.118	0.018			0.118	0.376

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Athrtrn_Prc1	0.113	0.025			0.113	0.479
Athrtrn_Prc2	0.114	0.017			0.114	0.529
Athrtrn_Prc3	0.079	0.015			0.079	0.335
Solicts_Prc1	0.161	0.027			0.161	0.321
Solicts_Prc2	0.222	0.031			0.222	0.360
Solicts_Prc3	0.161	0.038			0.161	0.218
Discorg_Prc1	0.078	0.018			0.078	0.469
Discorg_Prc2	0.112	0.025			0.112	0.233
Discorg_Prc3	0.147	0.023			0.147	0.326
VI	2.409	0.384			1.000	1.000
HI	1.026	0.237			1.000	1.000
C	0.520	0.101			1.000	1.000
Authoritative	0.139	0.037			1.000	1.000
Authoritarian	0.122	0.051			1.000	1.000
Sollicitous	0.340	0.056			1.000	1.000
Discourage	0.088	0.028			1.000	1.000

Group 3 [2]: ICELAND

Latent variables:

VI =~						
VI_Parcel1	1.000				1.289	0.788
VI_Parcel2	1.050	0.123	8.513	0.000	1.354	0.887
VI_Parcel3	0.883	0.101	8.728	0.000	1.139	0.624
HI =~						
HI_Parcel1	1.000				1.275	0.793
HI_Parcel2	0.939	0.159	5.914	0.000	1.197	0.782
HI_Parcel3	0.492	0.109	4.506	0.000	0.627	0.389
C =~						
Cllctvsm_Prc1	1.000				0.762	0.796
Cllctvsm_Prc2	1.125	0.152	7.394	0.000	0.857	0.719
Cllctvsm_Prc3	1.247	0.160	7.791	0.000	0.950	0.850
Authoritative =~						
Athrtrtv_Prc1	1.000				0.409	0.851
Athrtrtv_Prc2	1.058	0.095	11.143	0.000	0.432	0.867
Athrtrtv_Prc3	1.045	0.152	6.885	0.000	0.427	0.852
Authoritarian =~						
Athrtrn_Prc1	1.000				0.349	0.726
Athrtrn_Prc2	0.549	0.218	2.514	0.012	0.191	0.432
Athrtrn_Prc3	1.064	0.152	6.992	0.000	0.371	0.769
Sollicitous =~						
Solicts_Prc1	1.000				0.596	0.840
Solicts_Prc2	1.203	0.089	13.530	0.000	0.717	0.885
Solicts_Prc3	1.374	0.104	13.212	0.000	0.819	0.903
Discourage =~						
Discorg_Prc1	1.000				0.356	0.725
Discorg_Prc2	1.332	0.196	6.811	0.000	0.474	0.679
Discorg_Prc3	1.508	0.242	6.223	0.000	0.536	0.810

Covariances:

VI ~						
HI	0.673	0.182	3.705	0.000	0.410	0.410
C	0.108	0.136	0.798	0.425	0.110	0.110
Authoritative	-0.081	0.045	-1.799	0.072	-0.153	-0.153
Authoritarian	0.141	0.048	2.960	0.003	0.313	0.313
Sollicitous	-0.006	0.064	-0.095	0.924	-0.008	-0.008
Discourage	0.113	0.043	2.629	0.009	0.247	0.247

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
HI ~						
C	0.280	0.104	2.693	0.007	0.288	0.288
Authoritative	0.134	0.057	2.340	0.019	0.258	0.258
Authoritarian	0.051	0.046	1.097	0.273	0.115	0.115
Solicitous	0.104	0.069	1.509	0.131	0.137	0.137
Discourage	0.081	0.043	1.896	0.058	0.179	0.179
C ~						
Authoritative	0.093	0.030	3.134	0.002	0.299	0.299
Authoritarian	0.016	0.020	0.794	0.427	0.061	0.061
Solicitous	0.120	0.043	2.764	0.006	0.264	0.264
Discourage	-0.032	0.023	-1.362	0.173	-0.118	-0.118
Authoritative ~						
Authoritarian	-0.076	0.033	-2.325	0.020	-0.532	-0.532
Solicitous	0.099	0.023	4.260	0.000	0.405	0.405
Discourage	-0.042	0.015	-2.860	0.004	-0.287	-0.287
Authoritarian ~						
Solicitous	-0.016	0.018	-0.897	0.370	-0.078	-0.078
Discourage	0.058	0.014	4.144	0.000	0.471	0.471
Solicitous ~						
Discourage	-0.065	0.023	-2.850	0.004	-0.305	-0.305
Intercepts:						
VI_Parcel1	4.833	0.122	39.756	0.000	4.833	2.952
VI_Parcel2	3.918	0.113	34.808	0.000	3.918	2.567
VI_Parcel3	4.356	0.135	32.235	0.000	4.356	2.387
HI_Parcel1	5.582	0.120	46.579	0.000	5.582	3.473
HI_Parcel2	6.516	0.116	56.247	0.000	6.516	4.255
HI_Parcel3	6.376	0.119	53.625	0.000	6.376	3.962
Clctvsm_Prc1	6.616	0.071	92.626	0.000	6.616	6.908
Clctvsm_Prc2	7.043	0.089	78.875	0.000	7.043	5.905
Clctvsm_Prc3	7.026	0.085	82.777	0.000	7.026	6.287
Athrttv_Prc1	4.318	0.035	122.184	0.000	4.318	8.995
Athrttv_Prc2	4.242	0.037	115.369	0.000	4.242	8.499
Athrttv_Prc3	4.060	0.037	109.593	0.000	4.060	8.107
Athrtrn_Prc1	1.740	0.036	48.771	0.000	1.740	3.618
Athrtrn_Prc2	1.730	0.033	52.744	0.000	1.730	3.907
Athrtrn_Prc3	1.526	0.036	42.238	0.000	1.526	3.159
Solicts_Prc1	3.426	0.054	63.316	0.000	3.426	4.828
Solicts_Prc2	3.177	0.062	51.634	0.000	3.177	3.921
Solicts_Prc3	3.489	0.069	50.549	0.000	3.489	3.847
Discorg_Prc1	1.487	0.036	40.994	0.000	1.487	3.031
Discorg_Prc2	2.176	0.053	41.339	0.000	2.176	3.116
Discorg_Prc3	2.141	0.049	43.359	0.000	2.141	3.233
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	1.017	0.186			1.017	0.380
VI_Parcel2	0.496	0.178			0.496	0.213
VI_Parcel3	2.033	0.286			2.033	0.611
HI_Parcel1	0.959	0.249			0.959	0.371

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
HI_Parcel2	0.913	0.245			0.913	0.389
HI_Parcel3	2.197	0.255			2.197	0.848
Cllectvsm_Prc1	0.337	0.071			0.337	0.367
Cllectvsm_Prc2	0.687	0.106			0.687	0.483
Cllectvsm_Prc3	0.346	0.086			0.346	0.277
Athrttv_Prc11	0.063	0.011			0.063	0.275
Athrttv_Prc12	0.062	0.012			0.062	0.249
Athrttv_Prc13	0.069	0.021			0.069	0.273
Athrtrn_Prc11	0.110	0.021			0.110	0.473
Athrtrn_Prc12	0.159	0.021			0.159	0.813
Athrtrn_Prc13	0.095	0.022			0.095	0.409
Solicts_Prc11	0.149	0.028			0.149	0.295
Solicts_Prc12	0.142	0.031			0.142	0.217
Solicts_Prc13	0.152	0.030			0.152	0.184
Discorg_Prc11	0.114	0.026			0.114	0.474
Discorg_Prc12	0.263	0.035			0.263	0.539
Discorg_Prc13	0.151	0.043			0.151	0.344
VI	1.663	0.300			1.000	1.000
HI	1.624	0.347			1.000	1.000
C	0.581	0.132			1.000	1.000
Authoritative	0.167	0.040			1.000	1.000
Authoritarian	0.122	0.043			1.000	1.000
Solicitous	0.355	0.051			1.000	1.000
Discourage	0.126	0.029			1.000	1.000

APPENDIX L: MULTI-GROUP CONFIRMATORY FACTOR ANALYSIS METRIC
INVARIANCE MODEL

Table L1 Metric invariance model.

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Group 1 [3]: THAILAND						
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.340	0.624
VI_Parcel2	0.945	0.081	11.601	0.000	1.266	0.659
VI_Parcel3	0.733	0.066	11.176	0.000	0.982	0.482
HI =~						
HI_Parcel1	1.000				1.567	0.846
HI_Parcel2	0.894	0.083	10.709	0.000	1.400	0.649
HI_Parcel3	0.650	0.073	8.932	0.000	1.018	0.515
C =~						
Cllctvsm_Prc1	1.000				1.376	0.892
Cllctvsm_Prc2	1.053	0.064	16.449	0.000	1.448	0.852
Cllctvsm_Prc3	1.084	0.063	17.150	0.000	1.492	0.901
Authoritative =~						
Athrtrtv_Prc1	1.000				0.685	0.908
Athrtrtv_Prc2	1.038	0.050	20.670	0.000	0.712	0.851
Athrtrtv_Prc3	1.077	0.065	16.614	0.000	0.738	0.867
Authoritarian =~						
Athrtrtn_Prc1	1.000				0.473	0.696
Athrtrtn_Prc2	0.933	0.121	7.684	0.000	0.442	0.657
Athrtrtn_Prc3	1.173	0.108	10.880	0.000	0.555	0.751
Solicitous =~						
Solicts_Prc1	1.000				0.598	0.727
Solicts_Prc2	1.088	0.058	18.610	0.000	0.650	0.804
Solicts_Prc3	1.270	0.067	19.064	0.000	0.759	0.831
Discourage =~						
Discorg_Prc1	1.000				0.414	0.575
Discorg_Prc2	1.558	0.156	9.966	0.000	0.644	0.708
Discorg_Prc3	1.568	0.146	10.717	0.000	0.648	0.809
Covariances:						
VI ~						
HI	1.411	0.265	5.326	0.000	0.672	0.672
C	0.569	0.214	2.652	0.008	0.308	0.308
Authoritative	0.207	0.090	2.297	0.022	0.226	0.226
Authoritarian	0.274	0.086	3.204	0.001	0.432	0.432
Solicitous	0.083	0.082	1.013	0.311	0.104	0.104
Discourage	0.274	0.077	3.538	0.000	0.494	0.494
HI ~						
C	1.628	0.353	4.606	0.000	0.755	0.755
Authoritative	0.504	0.130	3.867	0.000	0.469	0.469
Authoritarian	0.322	0.081	3.962	0.000	0.434	0.434
Solicitous	0.278	0.101	2.756	0.006	0.297	0.297
Discourage	0.092	0.071	1.298	0.194	0.142	0.142
C ~						
Authoritative	0.543	0.135	4.019	0.000	0.576	0.576
Authoritarian	0.166	0.083	2.013	0.044	0.255	0.255
Solicitous	0.255	0.100	2.563	0.010	0.310	0.310
Discourage	-0.048	0.056	-0.867	0.386	-0.085	-0.085
Authoritative ~						
Authoritarian	0.098	0.035	2.798	0.005	0.302	0.302
Solicitous	0.199	0.045	4.465	0.000	0.486	0.486
Discourage	-0.008	0.028	-0.274	0.784	-0.027	-0.027
Authoritarian ~						

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Sollicitous	0.064	0.032	1.993	0.046	0.225	0.225
Discourage	0.098	0.031	3.194	0.001	0.500	0.500
Sollicitous ~ Discourage	0.116	0.031	3.699	0.000	0.469	0.469
Intercepts:						
VI_Parcel1	4.723	0.164	28.778	0.000	4.723	2.198
VI_Parcel2	3.926	0.148	26.506	0.000	3.926	2.042
VI_Parcel3	4.110	0.141	29.105	0.000	4.110	2.017
HI_Parcel1	6.435	0.139	46.241	0.000	6.435	3.475
HI_Parcel2	5.402	0.157	34.421	0.000	5.402	2.504
HI_Parcel3	6.067	0.151	40.138	0.000	6.067	3.072
Cllectvsm_Prc1	7.307	0.116	62.787	0.000	7.307	4.739
Cllectvsm_Prc2	7.043	0.128	54.808	0.000	7.043	4.144
Cllectvsm_Prc3	7.360	0.122	60.173	0.000	7.360	4.448
Athrttv_Prc1	3.985	0.057	69.492	0.000	3.985	5.281
Athrttv_Prc2	3.847	0.061	63.435	0.000	3.847	4.598
Athrttv_Prc3	3.635	0.064	57.126	0.000	3.635	4.269
Athrtrn_Prc1	2.276	0.049	46.754	0.000	2.276	3.350
Athrtrn_Prc2	2.553	0.053	48.103	0.000	2.553	3.796
Athrtrn_Prc3	1.927	0.055	35.266	0.000	1.927	2.607
Solicts_Prc1	3.808	0.066	57.959	0.000	3.808	4.634
Solicts_Prc2	3.361	0.060	56.260	0.000	3.361	4.153
Solicts_Prc3	3.202	0.067	47.860	0.000	3.202	3.505
Discorg_Prc1	2.016	0.060	33.596	0.000	2.016	2.800
Discorg_Prc2	2.461	0.065	37.612	0.000	2.461	2.704
Discorg_Prc3	2.117	0.060	35.511	0.000	2.117	2.641
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Sollicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	2.822	0.430			2.822	0.611
VI_Parcel2	2.093	0.372			2.093	0.566
VI_Parcel3	3.188	0.386			3.188	0.768
HI_Parcel1	0.975	0.222			0.975	0.284
HI_Parcel2	2.695	0.402			2.695	0.579
HI_Parcel3	2.865	0.420			2.865	0.735
Cllectvsm_Prc1	0.484	0.096			0.484	0.204
Cllectvsm_Prc2	0.790	0.145			0.790	0.274
Cllectvsm_Prc3	0.513	0.104			0.513	0.187
Athrttv_Prc1	0.100	0.021			0.100	0.175
Athrttv_Prc2	0.194	0.031			0.194	0.277
Athrttv_Prc3	0.180	0.029			0.180	0.249
Athrtrn_Prc1	0.238	0.034			0.238	0.515
Athrtrn_Prc2	0.257	0.036			0.257	0.569
Athrtrn_Prc3	0.238	0.041			0.238	0.436
Solicts_Prc1	0.318	0.049			0.318	0.471
Solicts_Prc2	0.232	0.037			0.232	0.354
Solicts_Prc3	0.258	0.046			0.258	0.309
Discorg_Prc1	0.347	0.045			0.347	0.670
Discorg_Prc2	0.413	0.061			0.413	0.499

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discorg_Prc13	0.222	0.042			0.222	0.346
VI	1.796	0.390			1.000	1.000
HI	2.454	0.409			1.000	1.000
C	1.893	0.410			1.000	1.000
Authoritative	0.469	0.065			1.000	1.000
Authoritarian	0.224	0.045			1.000	1.000
Solicitous	0.357	0.064			1.000	1.000
Discourage	0.171	0.042			1.000	1.000

Group 2 [1]: CANADA

Latent variables:

VI =~						
VI_Parc1	1.000				1.443	0.801
VI_Parc2	0.945	0.081	11.601	0.000	1.363	0.876
VI_Parc3	0.733	0.066	11.176	0.000	1.057	0.630
HI =~						
HI_Parc1	1.000				1.062	0.854
HI_Parc2	0.894	0.083	10.709	0.000	0.949	0.675
HI_Parc3	0.650	0.073	8.932	0.000	0.690	0.414
C =~						
Clctvsm_Prc1	1.000				0.659	0.731
Clctvsm_Prc2	1.053	0.064	16.449	0.000	0.693	0.589
Clctvsm_Prc3	1.084	0.063	17.150	0.000	0.714	0.804
Authoritative =~						
Athrtv_Prc1	1.000				0.397	0.842
Athrtv_Prc2	1.038	0.050	20.670	0.000	0.412	0.798
Athrtv_Prc3	1.077	0.065	16.614	0.000	0.427	0.775
Authoritarian =~						
Athrtn_Prc1	1.000				0.342	0.710
Athrtn_Prc2	0.933	0.121	7.684	0.000	0.319	0.687
Athrtn_Prc3	1.173	0.108	10.880	0.000	0.401	0.822
Solicitous =~						
Solicts_Prc1	1.000				0.587	0.829
Solicts_Prc2	1.088	0.058	18.610	0.000	0.639	0.808
Solicts_Prc3	1.270	0.067	19.064	0.000	0.746	0.876
Discourage =~						
Discorg_Prc1	1.000				0.348	0.793
Discorg_Prc2	1.558	0.156	9.966	0.000	0.542	0.820
Discorg_Prc3	1.568	0.146	10.717	0.000	0.545	0.819

Covariances:

VI ~						
HI	0.627	0.144	4.351	0.000	0.409	0.409
C	0.092	0.086	1.067	0.286	0.097	0.097
Authoritative	-0.096	0.043	-2.213	0.027	-0.167	-0.167
Authoritarian	0.122	0.046	2.629	0.009	0.248	0.248
Solicitous	-0.085	0.070	-1.204	0.229	-0.100	-0.100
Discourage	0.147	0.045	3.238	0.001	0.292	0.292
HI ~						
C	0.281	0.103	2.723	0.006	0.402	0.402
Authoritative	0.017	0.037	0.473	0.636	0.041	0.041
Authoritarian	0.067	0.036	1.840	0.066	0.185	0.185
Solicitous	-0.009	0.055	-0.166	0.868	-0.015	-0.015
Discourage	0.054	0.033	1.630	0.103	0.146	0.146
C ~						
Authoritative	0.074	0.027	2.798	0.005	0.284	0.284

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Authoritarian	0.042	0.025	1.694	0.090	0.185	0.185
Solicitous	0.089	0.038	2.348	0.019	0.230	0.230
Discourage	-0.011	0.026	-0.426	0.670	-0.049	-0.049
Authoritative ~						
Authoritarian	-0.069	0.036	-1.911	0.056	-0.510	-0.510
Solicitous	0.097	0.017	5.670	0.000	0.414	0.414
Discourage	-0.038	0.012	-3.146	0.002	-0.273	-0.273
Authoritarian ~						
Solicitous	0.019	0.018	1.078	0.281	0.095	0.095
Discourage	0.044	0.011	4.075	0.000	0.366	0.366
Solicitous ~						
Discourage	-0.042	0.017	-2.450	0.014	-0.208	-0.208
Intercepts:						
VI_Parcel1	3.554	0.136	26.215	0.000	3.554	1.972
VI_Parcel2	3.301	0.113	29.317	0.000	3.301	2.121
VI_Parcel3	3.775	0.127	29.668	0.000	3.775	2.249
HI_Parcel1	6.744	0.091	73.812	0.000	6.744	5.425
HI_Parcel2	6.962	0.104	66.648	0.000	6.962	4.951
HI_Parcel3	6.614	0.126	52.401	0.000	6.614	3.967
Cllctvsm_Prc1	7.229	0.070	103.992	0.000	7.229	8.026
Cllctvsm_Prc2	7.058	0.087	81.274	0.000	7.058	5.999
Cllctvsm_Prc3	6.634	0.066	100.947	0.000	6.634	7.471
Athrtrtv_Prc1	4.456	0.034	131.763	0.000	4.456	9.455
Athrtrtv_Prc2	4.279	0.039	109.785	0.000	4.279	8.290
Athrtrtv_Prc3	3.979	0.042	95.785	0.000	3.979	7.219
Athrtrn_Prc1	1.615	0.036	44.946	0.000	1.615	3.358
Athrtrn_Prc2	1.423	0.034	41.420	0.000	1.423	3.066
Athrtrn_Prc3	1.627	0.036	45.301	0.000	1.627	3.336
Solicts_Prc1	3.385	0.052	64.715	0.000	3.385	4.775
Solicts_Prc2	3.026	0.058	52.191	0.000	3.026	3.824
Solicts_Prc3	3.112	0.064	48.960	0.000	3.112	3.653
Discorg_Prc1	1.267	0.030	42.153	0.000	1.267	2.889
Discorg_Prc2	1.605	0.051	31.232	0.000	1.605	2.427
Discorg_Prc3	1.852	0.050	37.357	0.000	1.852	2.783
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	1.166	0.365			1.166	0.359
VI_Parcel2	0.565	0.148			0.565	0.233
VI_Parcel3	1.699	0.207			1.699	0.603
HI_Parcel1	0.418	0.152			0.418	0.270
HI_Parcel2	1.077	0.132			1.077	0.545
HI_Parcel3	2.303	0.342			2.303	0.829
Cllctvsm_Prc1	0.378	0.069			0.378	0.465
Cllctvsm_Prc2	0.904	0.141			0.904	0.653
Cllctvsm_Prc3	0.279	0.054			0.279	0.354
Athrtrtv_Prc1	0.065	0.009			0.065	0.291
Athrtrtv_Prc2	0.097	0.016			0.097	0.363
Athrtrtv_Prc3	0.121	0.017			0.121	0.399

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Athrtrn_Prc1	0.115	0.024			0.115	0.495
Athrtrn_Prc2	0.114	0.017			0.114	0.529
Athrtrn_Prc3	0.077	0.016			0.077	0.325
Solicts_Prc1	0.158	0.024			0.158	0.314
Solicts_Prc2	0.218	0.029			0.218	0.348
Solicts_Prc3	0.169	0.032			0.169	0.233
Discorg_Prc1	0.071	0.018			0.071	0.371
Discorg_Prc2	0.143	0.026			0.143	0.328
Discorg_Prc3	0.146	0.023			0.146	0.329
VI	2.081	0.336			1.000	1.000
HI	1.127	0.212			1.000	1.000
C	0.434	0.078			1.000	1.000
Authoritative	0.157	0.035			1.000	1.000
Authoritarian	0.117	0.044			1.000	1.000
Sollicitous	0.345	0.044			1.000	1.000
Discourage	0.121	0.028			1.000	1.000
GROUP 3 [2]: ICELAND						
Latent variables:						
VI =~						
VI_Parc1	1.000				1.384	0.822
VI_Parc2	0.945	0.081	11.601	0.000	1.308	0.864
VI_Parc3	0.733	0.066	11.176	0.000	1.015	0.575
HI =~						
HI_Parc1	1.000				1.257	0.788
HI_Parc2	0.894	0.083	10.709	0.000	1.123	0.746
HI_Parc3	0.650	0.073	8.932	0.000	0.817	0.488
C =~						
Cllctvsm_Prc1	1.000				0.813	0.830
Cllctvsm_Prc2	1.053	0.064	16.449	0.000	0.855	0.716
Cllctvsm_Prc3	1.084	0.063	17.150	0.000	0.881	0.810
Authoritative =~						
Athrtrtv_Prc1	1.000				0.407	0.848
Athrtrtv_Prc2	1.038	0.050	20.670	0.000	0.423	0.857
Athrtrtv_Prc3	1.077	0.065	16.614	0.000	0.438	0.865
Authoritarian =~						
Athrtrn_Prc1	1.000				0.299	0.645
Athrtrn_Prc2	0.933	0.121	7.684	0.000	0.279	0.582
Athrtrn_Prc3	1.173	0.108	10.880	0.000	0.350	0.738
Sollicitous =~						
Solicts_Prc1	1.000				0.635	0.861
Solicts_Prc2	1.088	0.058	18.610	0.000	0.691	0.873
Solicts_Prc3	1.270	0.067	19.064	0.000	0.807	0.897
Discourage =~						
Discorg_Prc1	1.000				0.335	0.697
Discorg_Prc2	1.558	0.156	9.966	0.000	0.522	0.722
Discorg_Prc3	1.568	0.146	10.717	0.000	0.526	0.802
Covariances:						
VI ~						
HI	0.718	0.178	4.035	0.000	0.413	0.413
C	0.126	0.153	0.828	0.408	0.112	0.112
Authoritative	-0.088	0.046	-1.897	0.058	-0.156	-0.156
Authoritarian	0.145	0.045	3.243	0.001	0.350	0.350
Sollicitous	-0.008	0.074	-0.114	0.909	-0.010	-0.010
Discourage	0.114	0.040	2.819	0.005	0.246	0.246

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
HI ~						
C	0.311	0.103	3.011	0.003	0.305	0.305
Authoritative	0.135	0.055	2.459	0.014	0.264	0.264
Authoritarian	0.056	0.038	1.472	0.141	0.150	0.150
Solicitous	0.113	0.074	1.535	0.125	0.142	0.142
Discourage	0.072	0.040	1.788	0.074	0.171	0.171
C ~						
Authoritative	0.099	0.029	3.411	0.001	0.300	0.300
Authoritarian	0.016	0.019	0.843	0.399	0.066	0.066
Solicitous	0.144	0.044	3.268	0.001	0.279	0.279
Discourage	-0.031	0.021	-1.529	0.126	-0.115	-0.115
Authoritative ~						
Authoritarian	-0.065	0.023	-2.803	0.005	-0.531	-0.531
Solicitous	0.105	0.023	4.469	0.000	0.406	0.406
Discourage	-0.039	0.012	-3.268	0.001	-0.282	-0.282
Authoritarian ~						
Solicitous	-0.019	0.017	-1.115	0.265	-0.098	-0.098
Discourage	0.049	0.011	4.452	0.000	0.485	0.485
Solicitous ~						
Discourage	-0.063	0.021	-2.975	0.003	-0.297	-0.297
Intercepts:						
VI_Parcel1	4.833	0.122	39.772	0.000	4.833	2.871
VI_Parcel2	3.918	0.113	34.824	0.000	3.918	2.590
VI_Parcel3	4.355	0.135	32.214	0.000	4.355	2.468
HI_Parcel1	5.584	0.119	46.769	0.000	5.584	3.501
HI_Parcel2	6.515	0.116	56.381	0.000	6.515	4.326
HI_Parcel3	6.376	0.119	53.636	0.000	6.376	3.809
Clctvsm_Prc1	6.615	0.072	92.403	0.000	6.615	6.754
Clctvsm_Prc2	7.042	0.089	78.735	0.000	7.042	5.891
Clctvsm_Prc3	7.028	0.085	83.116	0.000	7.028	6.463
Athrttv_Prc1	4.317	0.035	121.963	0.000	4.317	8.998
Athrttv_Prc2	4.242	0.037	115.170	0.000	4.242	8.601
Athrttv_Prc3	4.060	0.037	109.619	0.000	4.060	8.006
Athrtrn_Prc1	1.740	0.036	48.754	0.000	1.740	3.763
Athrtrn_Prc2	1.730	0.033	52.717	0.000	1.730	3.617
Athrtrn_Prc3	1.526	0.036	42.221	0.000	1.526	3.216
Solicts_Prc1	3.428	0.054	63.298	0.000	3.428	4.645
Solicts_Prc2	3.175	0.062	51.494	0.000	3.175	4.010
Solicts_Prc3	3.489	0.069	50.582	0.000	3.489	3.879
Discorg_Prc1	1.487	0.036	40.798	0.000	1.487	3.092
Discorg_Prc2	2.175	0.053	41.329	0.000	2.175	3.009
Discorg_Prc3	2.141	0.049	43.321	0.000	2.141	3.269
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	0.917	0.173			0.917	0.324
VI_Parcel2	0.579	0.159			0.579	0.253
VI_Parcel3	2.084	0.267			2.084	0.669
HI_Parcel1	0.964	0.183			0.964	0.379

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
HI_Parcel2	1.006	0.187			1.006	0.444
HI_Parcel3	2.134	0.253			2.134	0.762
Cllectvsm_Prc1	0.299	0.059			0.299	0.312
Cllectvsm_Prc2	0.697	0.100			0.697	0.488
Cllectvsm_Prc3	0.406	0.071			0.406	0.344
Athrttv_Prc11	0.065	0.010			0.065	0.280
Athrttv_Prc12	0.065	0.011			0.065	0.265
Athrttv_Prc13	0.065	0.017			0.065	0.253
Athrtrn_Prc11	0.125	0.019			0.125	0.583
Athrtrn_Prc12	0.151	0.022			0.151	0.661
Athrtrn_Prc13	0.102	0.021			0.102	0.455
Solicts_Prc11	0.141	0.028			0.141	0.259
Solicts_Prc12	0.149	0.028			0.149	0.238
Solicts_Prc13	0.158	0.029			0.158	0.195
Discorg_Prc11	0.119	0.022			0.119	0.514
Discorg_Prc12	0.250	0.033			0.250	0.478
Discorg_Prc13	0.153	0.031			0.153	0.356
VI	1.916	0.265			1.000	1.000
HI	1.580	0.267			1.000	1.000
C	0.660	0.161			1.000	1.000
Authoritative	0.166	0.029			1.000	1.000
Authoritarian	0.089	0.027			1.000	1.000
Sollicitous	0.404	0.047			1.000	1.000
Discourage	0.112	0.021			1.000	1.000

APPENDIX M: MULTIGROUP STRUCTURAL EQUATION MODELING
CONSTRAINED REGRESSION STRUCTURAL MODEL

Table M1 Multigroup structural equation modeling model.

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Group 1 [3]:						
Latent variables:						
VI =~						
VI_Parcel1	1.000				1.390	0.642
VI_Parcel2	0.957	0.085	11.214	0.000	1.330	0.690
VI_Parcel3	0.727	0.064	11.351	0.000	1.010	0.491
HI =~						
HI_Parcel1	1.000				1.598	0.860
HI_Parcel2	0.878	0.078	11.195	0.000	1.404	0.645
HI_Parcel3	0.637	0.071	9.022	0.000	1.017	0.513
C =~						
Cllctvsm_Prc1	1.000				1.386	0.895
Cllctvsm_Prc2	1.046	0.061	17.108	0.000	1.450	0.850
Cllctvsm_Prc3	1.080	0.062	17.508	0.000	1.497	0.904
Authoritative =~						
Athrtrtv_Prc1	1.000				0.648	0.894
Athrtrtv_Prc2	1.038	0.050	20.628	0.000	0.672	0.841
Athrtrtv_Prc3	1.077	0.064	16.751	0.000	0.698	0.853
Authoritarian =~						
Athrtrtn_Prc1	1.000				0.455	0.684
Athrtrtn_Prc2	0.923	0.116	7.934	0.000	0.420	0.635
Athrtrtn_Prc3	1.161	0.102	11.424	0.000	0.528	0.735
Solicitous =~						
Solicts_Prc1	1.000				0.638	0.749
Solicts_Prc2	1.091	0.059	18.553	0.000	0.696	0.824
Solicts_Prc3	1.268	0.066	19.105	0.000	0.809	0.845
Discourage =~						
Discorg_Prc1	1.000				0.396	0.556
Discorg_Prc2	1.567	0.154	10.166	0.000	0.621	0.695
Discorg_Prc3	1.578	0.144	10.999	0.000	0.626	0.802
Regressions:						
Authoritative ~						
VI	-0.075	0.020	-3.663	0.000	-0.161	-0.161
HI	0.067	0.029	2.344	0.019	0.165	0.165
C	0.182	0.043	4.285	0.000	0.390	0.390
Authoritarian ~						
VI	0.067	0.018	3.659	0.000	0.204	0.204
HI	0.019	0.020	0.954	0.340	0.067	0.067
C	0.025	0.024	1.046	0.295	0.077	0.077
Solicitous ~						
Authoritative	0.476	0.068	7.008	0.000	0.483	0.483
Authoritarian	0.189	0.086	2.190	0.029	0.135	0.135
VI	-0.034	0.028	-1.228	0.219	-0.074	-0.074
HI	-0.010	0.037	-0.279	0.781	-0.026	-0.026
C	0.053	0.040	1.336	0.182	0.115	0.115
Discourage ~						
Authoritarian	0.417	0.082	5.108	0.000	0.479	0.479
Authoritative	-0.000	0.047	-0.010	0.992	-0.001	-0.001
VI	0.047	0.018	2.565	0.010	0.166	0.166
HI	0.021	0.023	0.898	0.369	0.084	0.084
C	-0.077	0.026	-2.905	0.004	-0.269	-0.269
Covariances:						
VI ~						
HI	1.439	0.278	5.171	0.000	0.648	0.648

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
C	0.567	0.222	2.554	0.011	0.294	0.294
HI ~						
C	1.683	0.355	4.742	0.000	0.760	0.760
Authoritative ~						
Authoritarian	0.050	0.025	2.036	0.042	0.203	0.203
Sollicitous ~						
Discourage	0.113	0.025	4.515	0.000	0.659	0.659
Intercepts:						
VI_Parcel1	4.723	0.164	28.791	0.000	4.723	2.181
VI_Parcel2	3.926	0.148	26.506	0.000	3.926	2.036
VI_Parcel3	4.110	0.141	29.105	0.000	4.110	1.997
HI_Parcel1	6.437	0.139	46.299	0.000	6.437	3.466
HI_Parcel2	5.402	0.157	34.432	0.000	5.402	2.481
HI_Parcel3	6.067	0.151	40.144	0.000	6.067	3.060
Clctvsm_Prc1	7.307	0.116	62.768	0.000	7.307	4.715
Clctvsm_Prc2	7.043	0.129	54.777	0.000	7.043	4.130
Clctvsm_Prc3	7.360	0.122	60.182	0.000	7.360	4.442
Athrttv_Prc1	3.985	0.057	69.517	0.000	3.985	5.502
Athrttv_Prc2	3.847	0.061	63.415	0.000	3.847	4.810
Athrttv_Prc3	3.634	0.064	57.098	0.000	3.634	4.446
Athrtrn_Prc1	2.276	0.049	46.750	0.000	2.276	3.420
Athrtrn_Prc2	2.553	0.053	48.103	0.000	2.553	3.858
Athrtrn_Prc3	1.928	0.055	35.277	0.000	1.928	2.682
Solicts_Prc1	3.807	0.066	57.945	0.000	3.807	4.474
Solicts_Prc2	3.360	0.060	56.230	0.000	3.360	3.978
Solicts_Prc3	3.200	0.067	47.818	0.000	3.200	3.342
Discorg_Prc1	2.015	0.060	33.583	0.000	2.015	2.824
Discorg_Prc2	2.460	0.065	37.648	0.000	2.460	2.750
Discorg_Prc3	2.116	0.060	35.521	0.000	2.116	2.712
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Sollicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	2.758	0.422			2.758	0.588
VI_Parcel2	1.949	0.358			1.949	0.524
VI_Parcel3	3.216	0.397			3.216	0.759
HI_Parcel1	0.896	0.223			0.896	0.260
HI_Parcel2	2.770	0.396			2.770	0.584
HI_Parcel3	2.897	0.425			2.897	0.737
Clctvsm_Prc1	0.480	0.095			0.480	0.200
Clctvsm_Prc2	0.806	0.144			0.806	0.277
Clctvsm_Prc3	0.504	0.102			0.504	0.184
Athrttv_Prc1	0.105	0.021			0.105	0.200
Athrttv_Prc2	0.188	0.030			0.188	0.293
Athrttv_Prc3	0.182	0.030			0.182	0.272
Athrtrn_Prc1	0.236	0.034			0.236	0.532
Athrtrn_Prc2	0.261	0.036			0.261	0.597
Athrtrn_Prc3	0.237	0.042			0.237	0.459
Solicts_Prc1	0.317	0.049			0.317	0.438
Solicts_Prc2	0.229	0.037			0.229	0.321

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Solicts_Prc13	0.263	0.046			0.263	0.286
Discorg_Prc11	0.352	0.045			0.352	0.691
Discorg_Prc12	0.414	0.060			0.414	0.518
Discorg_Prc13	0.217	0.042			0.217	0.357
VI	1.931	0.384			1.000	1.000
HI	2.553	0.411			1.000	1.000
C	1.922	0.409			1.000	1.000
Authoritative	0.323	0.045			0.769	0.769
Authoritarian	0.189	0.040			0.913	0.913
Sollicitous	0.271	0.058			0.667	0.667
Discourage	0.109	0.026			0.691	0.691
Group 2 [1]:						
Latent variables:						
VI =~						
VI_Prc11	1.000				1.428	0.793
VI_Prc12	0.957	0.085	11.214	0.000	1.367	0.880
VI_Prc13	0.727	0.064	11.351	0.000	1.039	0.621
HI =~						
HI_Prc11	1.000				1.051	0.847
HI_Prc12	0.878	0.078	11.195	0.000	0.924	0.663
HI_Prc13	0.637	0.071	9.022	0.000	0.669	0.404
C =~						
Clctvsm_Prc1	1.000				0.661	0.735
Clctvsm_Prc2	1.046	0.061	17.108	0.000	0.692	0.590
Clctvsm_Prc3	1.080	0.062	17.508	0.000	0.714	0.802
Authoritative =~						
Athrttv_Prc11	1.000				0.413	0.857
Athrttv_Prc12	1.038	0.050	20.628	0.000	0.429	0.808
Athrttv_Prc13	1.077	0.064	16.751	0.000	0.445	0.788
Authoritarian =~						
Athrtrn_Prc11	1.000				0.347	0.720
Athrtrn_Prc12	0.923	0.116	7.934	0.000	0.321	0.690
Athrtrn_Prc13	1.161	0.102	11.424	0.000	0.403	0.818
Sollicitous =~						
Solicts_Prc11	1.000				0.564	0.816
Solicts_Prc12	1.091	0.059	18.553	0.000	0.615	0.800
Solicts_Prc13	1.268	0.066	19.105	0.000	0.715	0.865
Discourage =~						
Discorg_Prc11	1.000				0.360	0.802
Discorg_Prc12	1.567	0.154	10.166	0.000	0.564	0.831
Discorg_Prc13	1.578	0.144	10.999	0.000	0.568	0.830
Regressions: (a, b, c' paths)						
Authoritative ~						
VI	-0.075	0.020	-3.663	0.000	-0.260	-0.260
HI	0.067	0.029	2.344	0.019	0.170	0.170
C	0.182	0.043	4.285	0.000	0.292	0.292
Authoritarian ~						
VI	0.067	0.018	3.659	0.000	0.275	0.275
HI	0.019	0.020	0.954	0.340	0.058	0.058
C	0.025	0.024	1.046	0.295	0.048	0.048
Sollicitous ~						
Authoritative	0.476	0.068	7.008	0.000	0.348	0.348
Authoritarian	0.189	0.086	2.190	0.029	0.117	0.117
VI	-0.034	0.028	-1.228	0.219	-0.086	-0.086

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
HI	-0.010	0.037	-0.279	0.781	-0.019	-0.019
C	0.053	0.040	1.336	0.182	0.062	0.062
Discourage ~						
Authoritarian	0.417	0.082	5.108	0.000	0.402	0.402
Authoritative	-0.000	0.047	-0.010	0.992	-0.001	-0.001
VI	0.047	0.018	2.565	0.010	0.188	0.188
HI	0.021	0.023	0.898	0.369	0.061	0.061
C	-0.077	0.026	-2.905	0.004	-0.141	-0.141
Covariances:						
VI ~						
HI	0.627	0.142	4.422	0.000	0.417	0.417
C	0.093	0.086	1.082	0.279	0.099	0.099
HI ~						
C	0.271	0.098	2.755	0.006	0.389	0.389
Authoritative ~						
Authoritarian	-0.068	0.038	-1.809	0.071	-0.548	-0.548
Solicitous ~						
Discourage	-0.034	0.015	-2.227	0.026	-0.211	-0.211
Intercepts:						
VI_Parcel1	3.554	0.136	26.215	0.000	3.554	1.974
VI_Parcel2	3.301	0.113	29.317	0.000	3.301	2.125
VI_Parcel3	3.775	0.127	29.663	0.000	3.775	2.259
HI_Parcel1	6.744	0.091	73.867	0.000	6.744	5.432
HI_Parcel2	6.962	0.104	66.648	0.000	6.962	4.999
HI_Parcel3	6.613	0.126	52.379	0.000	6.613	3.986
Cllctvsm_Prc1	7.228	0.069	104.644	0.000	7.228	8.039
Cllctvsm_Prc2	7.057	0.087	81.279	0.000	7.057	6.019
Cllctvsm_Prc3	6.634	0.066	101.165	0.000	6.634	7.446
Athrttv_Prc1	4.456	0.034	131.752	0.000	4.456	9.246
Athrttv_Prc2	4.279	0.039	109.785	0.000	4.279	8.071
Athrttv_Prc3	3.978	0.042	95.803	0.000	3.978	7.048
Athrtrn_Prc1	1.615	0.036	44.970	0.000	1.615	3.347
Athrtrn_Prc2	1.423	0.034	41.420	0.000	1.423	3.063
Athrtrn_Prc3	1.627	0.036	45.334	0.000	1.627	3.304
Solicts_Prc1	3.385	0.052	64.708	0.000	3.385	4.900
Solicts_Prc2	3.026	0.058	52.191	0.000	3.026	3.938
Solicts_Prc3	3.112	0.064	48.985	0.000	3.112	3.765
Discorg_Prc1	1.267	0.030	42.167	0.000	1.267	2.825
Discorg_Prc2	1.605	0.051	31.232	0.000	1.605	2.366
Discorg_Prc3	1.852	0.050	37.357	0.000	1.852	2.708
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	1.202	0.379			1.202	0.371
VI_Parcel2	0.544	0.151			0.544	0.225
VI_Parcel3	1.714	0.211			1.714	0.614
HI_Parcel1	0.436	0.152			0.436	0.283
HI_Parcel2	1.086	0.128			1.086	0.560
HI_Parcel3	2.304	0.336			2.304	0.837

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Clctvsm_Prc1	0.371	0.069			0.371	0.459
Clctvsm_Prc2	0.896	0.140			0.896	0.652
Clctvsm_Prc3	0.284	0.057			0.284	0.357
Athrttv_Prc1	0.062	0.009			0.062	0.266
Athrttv_Prc2	0.097	0.016			0.097	0.347
Athrttv_Prc3	0.121	0.017			0.121	0.380
Athrtrn_Prc1	0.112	0.025			0.112	0.482
Athrtrn_Prc2	0.113	0.018			0.113	0.524
Athrtrn_Prc3	0.080	0.017			0.080	0.330
Solicts_Prc1	0.160	0.024			0.160	0.334
Solicts_Prc2	0.213	0.029			0.213	0.360
Solicts_Prc3	0.172	0.033			0.172	0.252
Discorg_Prc1	0.072	0.018			0.072	0.357
Discorg_Prc2	0.142	0.025			0.142	0.309
Discorg_Prc3	0.145	0.022			0.145	0.310
VI	2.040	0.334			1.000	1.000
HI	1.105	0.220			1.000	1.000
C	0.437	0.073			1.000	1.000
Authoritative	0.142	0.041			0.832	0.832
Authoritarian	0.109	0.041			0.901	0.901
Sollicitous	0.279	0.038			0.878	0.878
Discourage	0.095	0.022			0.737	0.737

Group 3 [2]:

Latent variables:

VI =~						
VI_Parc1	1.000				1.372	0.818
VI_Parc2	0.957	0.085	11.214	0.000	1.314	0.868
VI_Parc3	0.727	0.064	11.351	0.000	0.998	0.568
HI =~						
HI_Parc1	1.000				1.274	0.801
HI_Parc2	0.878	0.078	11.195	0.000	1.119	0.741
HI_Parc3	0.637	0.071	9.022	0.000	0.811	0.485
C =~						
Clctvsm_Prc1	1.000				0.807	0.828
Clctvsm_Prc2	1.046	0.061	17.108	0.000	0.844	0.708
Clctvsm_Prc3	1.080	0.062	17.508	0.000	0.871	0.805
Authoritative =~						
Athrttv_Prc1	1.000				0.415	0.853
Athrttv_Prc2	1.038	0.050	20.628	0.000	0.430	0.861
Athrttv_Prc3	1.077	0.064	16.751	0.000	0.446	0.870
Authoritarian =~						
Athrtrn_Prc1	1.000				0.306	0.657
Athrtrn_Prc2	0.923	0.116	7.934	0.000	0.282	0.588
Athrtrn_Prc3	1.161	0.102	11.424	0.000	0.355	0.746
Sollicitous =~						
Solicts_Prc1	1.000				0.616	0.853
Solicts_Prc2	1.091	0.059	18.553	0.000	0.672	0.868
Solicts_Prc3	1.268	0.066	19.105	0.000	0.781	0.892
Discourage =~						
Discorg_Prc1	1.000				0.335	0.698
Discorg_Prc2	1.567	0.154	10.166	0.000	0.526	0.725
Discorg_Prc3	1.578	0.144	10.999	0.000	0.529	0.803

Regressions:

Authoritative ~

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
VI	-0.075	0.020	-3.663	0.000	-0.248	-0.248
HI	0.067	0.029	2.344	0.019	0.205	0.205
C	0.182	0.043	4.285	0.000	0.354	0.354
Authoritarian ~						
VI	0.067	0.018	3.659	0.000	0.300	0.300
HI	0.019	0.020	0.954	0.340	0.080	0.080
C	0.025	0.024	1.046	0.295	0.066	0.066
Sollicitous ~						
Authoritative	0.476	0.068	7.008	0.000	0.320	0.320
Authoritarian	0.189	0.086	2.190	0.029	0.094	0.094
VI	-0.034	0.028	-1.228	0.219	-0.076	-0.076
HI	-0.010	0.037	-0.279	0.781	-0.021	-0.021
C	0.053	0.040	1.336	0.182	0.069	0.069
Discourage ~						
Authoritarian	0.417	0.082	5.108	0.000	0.380	0.380
Authoritative	-0.000	0.047	-0.010	0.992	-0.001	-0.001
VI	0.047	0.018	2.565	0.010	0.194	0.194
HI	0.021	0.023	0.898	0.369	0.079	0.079
C	-0.077	0.026	-2.905	0.004	-0.185	-0.185
Covariances:						
VI ~~						
HI	0.706	0.180	3.913	0.000	0.404	0.404
C	0.127	0.144	0.878	0.380	0.114	0.114
HI ~~						
C	0.302	0.105	2.863	0.004	0.294	0.294
Authoritative ~~						
Authoritarian	-0.061	0.020	-3.084	0.002	-0.576	-0.576
Sollicitous ~~						
Discourage	-0.046	0.018	-2.570	0.010	-0.277	-0.277
Intercepts:						
VI_Parcel1	4.832	0.122	39.757	0.000	4.832	2.881
VI_Parcel2	3.917	0.113	34.766	0.000	3.917	2.586
VI_Parcel3	4.354	0.135	32.181	0.000	4.354	2.477
HI_Parcel1	5.586	0.119	46.872	0.000	5.586	3.513
HI_Parcel2	6.517	0.115	56.431	0.000	6.517	4.318
HI_Parcel3	6.375	0.119	53.613	0.000	6.375	3.808
Clctvsm_Prc1	6.614	0.072	92.292	0.000	6.614	6.789
Clctvsm_Prc2	7.040	0.089	78.720	0.000	7.040	5.905
Clctvsm_Prc3	7.026	0.085	82.793	0.000	7.026	6.495
Athrtrtv_Prc1	4.317	0.035	121.991	0.000	4.317	8.882
Athrtrtv_Prc2	4.242	0.037	115.156	0.000	4.242	8.487
Athrtrtv_Prc3	4.060	0.037	109.671	0.000	4.060	7.910
Athrtrn_Prc1	1.740	0.036	48.791	0.000	1.740	3.737
Athrtrn_Prc2	1.730	0.033	52.733	0.000	1.730	3.600
Athrtrn_Prc3	1.526	0.036	42.391	0.000	1.526	3.202
Solicts_Prc1	3.427	0.054	63.115	0.000	3.427	4.744
Solicts_Prc2	3.174	0.062	51.359	0.000	3.174	4.097
Solicts_Prc3	3.487	0.069	50.431	0.000	3.487	3.979
Discorg_Prc1	1.487	0.036	40.816	0.000	1.487	3.093
Discorg_Prc2	2.175	0.053	41.372	0.000	2.175	3.000
Discorg_Prc3	2.141	0.049	43.304	0.000	2.141	3.249
VI	0.000				0.000	0.000
HI	0.000				0.000	0.000
C	0.000				0.000	0.000

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Authoritative	0.000				0.000	0.000
Authoritarian	0.000				0.000	0.000
Solicitous	0.000				0.000	0.000
Discourage	0.000				0.000	0.000
Variances:						
VI_Parcel1	0.930	0.176			0.930	0.330
VI_Parcel2	0.567	0.163			0.567	0.247
VI_Parcel3	2.095	0.266			2.095	0.678
HI_Parcel1	0.906	0.182			0.906	0.358
HI_Parcel2	1.026	0.190			1.026	0.450
HI_Parcel3	2.145	0.253			2.145	0.765
Cllctvsm_Prc1	0.299	0.057			0.299	0.315
Cllctvsm_Prc2	0.710	0.100			0.710	0.499
Cllctvsm_Prc3	0.411	0.071			0.411	0.352
Athrtrtv_Prc1	0.064	0.010			0.064	0.272
Athrtrtv_Prc2	0.065	0.011			0.065	0.259
Athrtrtv_Prc3	0.064	0.017			0.064	0.244
Athrtrn_Prc1	0.123	0.019			0.123	0.569
Athrtrn_Prc2	0.151	0.022			0.151	0.655
Athrtrn_Prc3	0.101	0.020			0.101	0.444
Solicts_Prc1	0.142	0.028			0.142	0.273
Solicts_Prc2	0.148	0.028			0.148	0.247
Solicts_Prc3	0.157	0.028			0.157	0.205
Discorg_Prc1	0.119	0.022			0.119	0.513
Discorg_Prc2	0.250	0.033			0.250	0.475
Discorg_Prc3	0.154	0.031			0.154	0.354
VI	1.884	0.268			1.000	1.000
HI	1.623	0.267			1.000	1.000
C	0.651	0.156			1.000	1.000
Authoritative	0.136	0.024			0.789	0.789
Authoritarian	0.082	0.023			0.872	0.872
Solicitous	0.338	0.040			0.891	0.891
Discourage	0.083	0.015			0.735	0.735
R-Square Group 1 [3]:		R-Square Group 2 [1]:		R-Square Group 3 [2]:		
VI_Parcel1	0.412	VI_Parcel1	0.629	VI_Parcel1	0.670	
VI_Parcel2	0.476	VI_Parcel2	0.775	VI_Parcel2	0.753	
VI_Parcel3	0.241	VI_Parcel3	0.386	VI_Parcel3	0.322	
HI_Parcel1	0.740	HI_Parcel1	0.717	HI_Parcel1	0.642	
HI_Parcel2	0.416	HI_Parcel2	0.440	HI_Parcel2	0.550	
HI_Parcel3	0.263	HI_Parcel3	0.163	HI_Parcel3	0.235	
Collectivism_Parcel1	0.800	Collectivism_Parcel1	0.541	Collectivism_Parcel1	0.685	
Collectivism_Parcel2	0.723	Collectivism_Parcel2	0.348	Collectivism_Parcel2	0.501	
Collectivism_Parcel3	0.816	Collectivism_Parcel3	0.643	Collectivism_Parcel3	0.648	
Authoritative_Parcel1	0.800	Authoritative_Parcel1	0.734	Authoritative_Parcel1	0.728	
Authoritative_Parcel2	0.707	Authoritative_Parcel2	0.653	Authoritative_Parcel2	0.741	
Authoritative_Parcel3	0.728	Authoritative_Parcel3	0.620	Authoritative_Parcel3	0.756	
Authoritarian_Parcel1	0.468	Authoritarian_Parcel1	0.518	Authoritarian_Parcel1	0.431	
Authoritarian_Parcel2	0.403	Authoritarian_Parcel2	0.476	Authoritarian_Parcel2	0.345	
Authoritarian_Parcel3	0.541	Authoritarian_Parcel3	0.670	Authoritarian_Parcel3	0.556	
Solicitous_Parcel1	0.562	Solicitous_Parcel1	0.666	Solicitous_Parcel1	0.727	
Solicitous_Parcel2	0.679	Solicitous_Parcel2	0.640	Solicitous_Parcel2	0.753	
Solicitous_Parcel3	0.714	Solicitous_Parcel3	0.748	Solicitous_Parcel3	0.795	
Discourage_Parcel1	0.309	Discourage_Parcel1	0.643	Discourage_Parcel1	0.487	
Discourage_Parcel2	0.482	Discourage_Parcel2	0.691	Discourage_Parcel2	0.525	

	Estimate	Std.err	Z-value	$P(> z)$	Std.lv	Std.all
Discourage_Parcel3	0.643	Discourage_Parcel3	0.690		Discourage_Parcel3	0.646
Authoritative	0.231	Authoritative	0.168		Authoritative	0.211
Authoritarian	0.087	Authoritarian	0.099		Authoritarian	0.128
Sollicitous	0.333	Sollicitous	0.122		Sollicitous	0.109
Discourage	0.309	Discourage	0.263		Discourage	0.265