The cultural shaping of alexithymia:

Chinese values, 'Western' values, and externally oriented thinking

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General Abstract

The cultural shaping of alexithymia: Chinese values, 'Western' values, and externally oriented thinking

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The fundamental role that cultural context plays in shaping our emotional lives has been demonstrated in a growing number of cultural psychology studies (e.g., Mesquita & Leu, 2007). Despite the direct implications that such research holds for the study of psychopathology, mainstream clinical research largely ignores cultural context. As a result, the danger arises of pathologizing emotion-related norms and values that differ from those found in the 'Western' contexts that have predominantly shaped the clinical literature. These issues are particularly well captured in the construct of alexithymia, which ties lower levels of attention to emotion with emotional processing deficits. Lacking recognition of the importance of cultural context, much alexithymia research risks confounding cultural variation in the importance given to emotional experience with emotional deficits. Countering this trend, the current research critically examines alexithymia from a cultural perspective. Two studies examined the proposal that one component of alexithymia – externally oriented thinking (EOT) – is promoted within certain cultural contexts, while two other components – difficulty identifying feelings (DIF) and difficulty describing feelings (DDF) – are not.

Study 1 tested the associations between cultural values and the components of alexithymia among Euro-Canadian and Chinese-Canadian students. As expected, 'Western' values negatively predicted EOT in both groups, while DIF and DDF were

unrelated to values. Furthermore, cultural values mediated the effect of group membership on levels of EOT. Study 2 extended this work to a Chinese clinical sample. Again, EOT was negatively predicted by 'Western' values, while DIF and DDF were not associated with values. The results of both studies support a model of alexithymia whereby cultural scripts that de-emphasize the importance of inner emotional experience drive levels of EOT in certain contexts, while in other cultural contexts EOT is more likely to be associated with emotional deficits. In turn, this work provides a non-pathological explanation for cultural variations in alexithymia, countering historical stereotypes regarding emotional restraint in Chinese contexts and offering a theory-driven reconceptualization of alexithymia.

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Table of Contents

List of Figures

List of Tables

Contributions of Authors

Jessica Dere led the study design and data collection for Study 1, and participated in the design of the larger project from which the data in Study 2 were drawn. Furthermore, Ms. Dere developed the research questions; designed, performed, and interpreted the statistical analyses; and wrote and edited all chapters included in the current thesis. Dr. Andrew Ryder was the principal investigator for the project from which the data in Study 2 were drawn, and provided commentary on the current manuscripts. Carl Falk collected a portion of the data included in Study 1, and provided statistical consultation and general commentary on the first manuscript. Drs. Qiuping Tang, Xiongzhao Zhu, and Shuqiao Yao and Ms. Lin Cai helped to plan the project from which the data in Study 2 were drawn, and conducted the data collection in China.

General Introduction

A growing body of cultural psychology research demonstrates the fundamental role that cultural context plays in shaping our emotional lives (see Mesquita & Leu, 2007, for a review). This work, along with equally important research in anthropology and cultural psychiatry, reveals significant cross-cultural variation in such phenomena as the types of emotions most associated with well-being (e.g., Kitayama, Mesquita, & Karasawa, 2006), the use of specific emotional facial cues (e.g., Yuki, Maddux, & Masuda, 2007), and the extent to which emotional expression versus emotional control is emphasized and valued (e.g., Mauss, Butler, Roberts, & Chu, 2010). Although these deep cultural variations in emotional processes have direct implications for the study of emotional distress and psychopathology, the role of cultural context is often ignored in mainstream clinical psychology and psychiatry research. This is problematic for a number of reasons, not least the danger of pathologizing cultural contexts where emotions play out quite differently than in the 'Western' contexts that have predominantly shaped the clinical literature. A construct where these issues become clearly apparent is that of alexithymia, which links lower levels of attention to emotional experience with emotional processing deficits. The majority of alexithymia research fails to recognize the role of cultural context both in the origins of the construct itself and in the meanings it may hold. As a result, such research risks confounding cultural variation in the importance placed on emotional experience with actual emotion deficits.

The current research proposes that cultural variation in levels of alexithymia is driven by values-based variation in the attention given to emotional experience, and not by cultural differences in emotional deficits. As with much of the literature on culture and emotion, this research focuses on groups of East Asian and Western European heritage; in this case, Chinese-Canadian and Euro-Canadian students and Chinese patients in Mainland China are examined. Building on a substantial literature demonstrating cultural differences in emotion variables, as well as beliefs about the self in relationship to others, Chinese and 'Western' contexts offer a valuable cultural comparison for examining the role of culture in psychological processes (Heine, 2001).

Although the current research is informed by an established literature on culture and emotion, it offers one of the first empirical studies of alexithymia that is rooted in and theoretically driven by a cultural perspective. In order to provide the conceptual and empirical backdrop for this research project, the following literature review will present a critical history of the alexithymia construct, a summary of measurement issues and selected recent empirical findings, a discussion of empirical and theoretical work on culture and alexithymia, and further summary of the culture and emotion literature.

The coining of a term

The term alexithymia was coined by Sifneos in the early 1970s (Sifneos, 1973; Sifneos, Apfel-Savitz, & Frankel, 1977), based on clinical observations of 'classical' psychosomatic patients at the Massachusetts General Hospital in Boston,

where he practiced as a psychiatrist. In one of his earliest writings on the topic, Sifneos (1973) explains his aim:

> … to investigate the prevalence among patients who suffer from various psychosomatic diseases, of a relative constriction in emotional functioning, poverty of fantasy life, and inability to find appropriate words to describe their emotions. For lack of a better term, I call these characteristics 'alexithymic'. (p. 255)

The word alexithymia stems from the Greek terms 'a' meaning lack, 'lexis' meaning word, and 'thymos' meaning emotion (Sifneos et al., 1977); therefore, the literal definition of alexithymia is 'a lack of words for emotion'. Building on this core feature, more comprehensive definitions of alexithymia generally refer to four key components: (1) difficulty identifying feelings, and distinguishing them from physical sensations of emotional arousal; (2) difficulty describing emotions to others; (3) reduced imaginal capacities, or low fantasy-proneness; and (4) an externally oriented thinking style, with an emphasis on external, concrete stimuli rather than inner emotions (Luminet et al., 2004; Taylor, 2000).

As the initial conceptualization of alexithymia was based on the clinical observations of Sifneos and his colleagues, a review of some of these early descriptions offers a logical starting point for reviewing the history of the construct. As the etymology of the term suggests, these authors were particularly struck by the apparent inability of many psychosomatic patients to find words to describe their emotions, which was linked to substantial difficulty in communicating with clinicians (Sifneos, 1973). Early discussions also emphasized the ways in which

those with alexithymic features – primarily psychosomatic patients – differed from the 'neurotic patients' seen in the same clinical settings, and this contrast helps to illustrate the original conceptualization of alexithymia. On the one hand, neurotic patients provided rich descriptions of their emotional lives and psychological struggles, displayed "appropriate" emotional responses, and were found to be "interesting" by clinicians (Sifneos et al., 1977, p. 49). Conversely, the psychosomatic patients interviewed by Sifneos and his colleagues provided 'endless' descriptions of physical symptoms, showed a lack of fantasies and dreams, focused on insignificant environmental details, and were described as boring.

The frequent use of value-laden and subjective terminology in these contrasting descriptions of neurotic (non-alexithymic) versus psychosomatic (alexithymic) patients is striking to the present-day reader. Terms such as 'inappropriate', 'trivial', and "frightfully dull" (Apfel & Sifneos, 1978, p. 182) feature prominently in the early discussions of alexithymic patients. Such depictions appear linked to the frustrations expressed by clinicians regarding interactions with these patients, and the challenges faced in treating this population. Although more recent descriptions of alexithymia tend not to include similarly pejorative terminology, it can be argued that it is difficult to fully break away from this legacy. Furthermore, negative connotations associated with alexithymia can become particularly concerning when conducting cross-cultural work, due to the dangers of pathologizing cultural difference. At the same time, these terms clearly illustrate the preferences and priorities of these clinician-scholars, and offer an early signal of the role of values in the conceptualization and study of alexithymia.

Similar descriptors can also be seen in a conceptual predecessor to the alexithymia construct, that of the 'infantile personality' proposed by Ruesch (1948). Ruesch was one of several psychiatrists and psychoanalysts writing in the late 1940s and early 1950s who remarked on emotion-related difficulties among psychosomatic patients, specifically difficulties verbalizing emotions, and whose work directly informed the conceptualization of alexithymia (Salminen, Saarijarvi, & Aarela, 1995; Taylor et al., 1997). The 'infantile personality' was presented as an explanation for a wide range of psychosomatic symptoms and conditions; Ruesch (1948) proposed that many psychosomatic patients displayed, "a rather primitive level of psychologic organization" (p. 134) due to arrested maturation and the continuation of an immature personality into adulthood. Clinical features of the 'infantile personality' included a lack of imagination, the use of physical action or somatic complaints as a means of self-expression, and a failure to make use of emotional cues (Ruesch, 1948; Taylor et al., 1997).

Among the observations that Ruesch (1948) cites as evidence for the immaturity of psychosomatic patients was the need for modification of common psychotherapeutic approaches in their treatment, approaches that were effective with neurotic patients. This contrast between psychosomatic and neurotic patients is similar to the comparisons made by Sifneos and colleagues. Furthermore, failure to respond to psychodynamic therapy remained an important theme in the early discussion and labeling of alexithymic traits.

Another important precursor to the alexithymia construct is the concept of *pensée opératoire*, proposed by the French psychoanalysts Marty and de M'Uzan in

1963, which refers to a cognitive style characterized by an absence of fantasy and a utilitarian focus (Taylor et al., 1997). Patients with this thinking style were said to present 'stimulus-bound' endless details in clinical encounters (Sifneos et al., 1977), which was seen to reflect their inability to provide descriptions of internal emotional experiences. These patients were also said to be concrete and present oriented (Lesser, 1981). This cognitive style echoed the descriptions of psychosomatic patients made a decade earlier by Ruesch and others, and is reflected in contemporary definitions of alexithymia in the externally oriented thinking component.

Psychodynamic roots

All of these authors were writing within the psychodynamic framework that was predominant during that historical period and in the North American and Western European contexts in which they were working. This point is directly relevant to our understanding of the socio-historical origins of alexithymia, and will also be pertinent to the social and cultural critiques of alexithymia discussed below. Even if not explicitly mentioned, the presence of psychodynamic theory is inescapable in early discussions of alexithymia, due not only to its prominence at the time, but also because of the strong association between this school of thought and the study of psychosomatic illness.

Psychodynamic theory provided the traditional explanations of psychosomatic symptoms and illness, and therefore informed popular notions of etiology and treatment of these problems. However, although the clinical observations on which alexithymia was based were informed by the psychodynamic

training of the observing clinicians, the model of psychosomatic illness suggested by this new construct was in fact novel. As Sifneos and colleagues (1977) note, the description of alexithymic traits did not fit within the psychodynamic orthodoxy of the day, as they featured an inability to discuss and describe emotion that differed from the popular proposed mechanisms of emotional repression and denial. Psychosomatic symptoms were traditionally thought to stem from the denial of emotions that arose from inner psychological conflicts. However, alexithymia patients appeared to have deficits at a more basic level of emotional processing. As Lumley and colleagues (2007) write, the classic psychodynamic defenses including denial and repression, "refer to active, defensive processes that reduce the experience or expression of emotion, whereas alexithymia is considered to be a deficit or deficiency rather than a defense" (p. 231). Alexithymia presented a deficit model for understanding psychosomatic symptoms that diverged from the psychodynamic conflict model (Taylor et al., 1997).

Although the concept of alexithymia challenged the traditional psychodynamic model of psychosomatic illness, its conceptualization was still heavily informed by a psychodynamic perspective. In particular, the construct was inherently tied to psychodynamic approaches to therapy, as the original descriptions of alexithymic patients consistently included mention of their tendency to bore therapists, their inability to provide appropriate emotional content for analysis, and the contra-indication of dynamic psychotherapy for this group (e.g., Sifneos, 1973). As stated by Kirmayer (1987): "The concept of alexithymia depends on a particular notion of the person, and of the relationship between language and

emotion, that is presented in distilled form in the practice of psychodynamic psychotherapy" (p. 127).

Prince (1987) provides an insightful discussion of the link between psychodynamic therapy and alexithymia based on the premise that, "the alexithymia concept emerged out of the frustrations of psychoanalysts in working with certain patients who were unable to enter into therapy in the proper manner" (p. 107). Based on this view, one can see alexithymia as both a value judgment on a particular group of challenging patients, and also a conceptual tool to help explain the failure of psychoanalysis (and psychoanalysts) to help these patients. Interestingly, Sifneos and his colleagues appeared to recognize that the alexithymia concept emanated directly from the observations of psychiatrists regarding a particularly frustrating group of patients. For example, Apfel and Sifneos (1978) write: "The concept is thus one based on description by the psychiatrist, and indeed is not something of which the patient (…) complains" (p. 180). Although this comment echoes those of critics such as Kirmayer and Prince, it is written as a matter of fact rather than as criticism.

Reflecting upon the direct influence of a specific approach to psychiatric illness and treatment on the development and definition of alexithymia, concerns begin to arise regarding the applicability of this construct across different socio-cultural contexts. As highlighted in the comments above, alexithymia emerged out of a particular type of interpersonal relationship between clinician and patient, leading Kirmayer (1987) to comment that, "…alexithymia is irreducibly social" (p. 125). Understandings of the clinical encounter, the therapeutic relationship, and what it means to be a 'good patient' vary across time and place, and are socially shaped.

Although the creators of the alexithymia construct did not particularly recognize this fact, calls by other authors to better examine the link between alexithymic traits and social factors appeared soon after the construct was introduced, as reviewed below.

Early proposals for the role of social factors

In one of the first pieces to argue for the examination of social factors in the study of alexithymia, Borens and colleagues (1977) present their central question in the article's title: *Is 'alexithymia' but a social phenomenon?* Based on their clinical observations at a psychosomatic hospital in Germany, these authors focus on the role of social class in the identification of alexithymic-like traits. They present preliminary findings from a comparison of psychosomatic patients from lower versus upper class backgrounds, and report that emotion-related difficulties and utilitarian thinking are almost exclusively found among the lower class group. This finding supports the authors' predictions, and fits with their contention that the alexithymia construct simply reflects a clinical bias against those of lower social class, who have difficulty conforming to the constraints of the psychiatric setting.

Citing the work of Borens and colleagues among others, Lesser (1981) discusses the importance of taking social factors into account when examining alexithymia and suggests that such factors might play an important role in the etiology of alexithymia. Further, he raises concerns over the lack of alexithymia research among diverse social and cultural groups. Kauhanen and colleagues (1993) also cite the earlier work examining social class, in a population-based study of alexithymia and social factors among a sample of over two thousand Finnish men.

These researchers found that education level was negatively correlated with alexithymia; income level and 'occupational prestige' were also negatively associated with alexithymia, even when controlling for education. These findings provide further evidence for the potential role of socio-economic factors in understanding variations in alexithymic traits, and also offered additional fodder for critics at the time who were suggesting that the alexithymia construct reflected the pathologization of social groups who did not meet the expectations of clinicians. Indeed, Kauhanen and colleagues (1993) pose the following question when discussing their findings: "…are alexithymic features, more characteristic of lower-class people, pathologized just because they do not coincide with the expressive style of highly educated, psychologically minded Western elites?" (p. 334)

At the same time, however, Kauhanen and colleagues (1993) acknowledge that social factors accounted for a small proportion of the overall variation in alexithymia scores in their data, and highlight the need for further research to better understand the various factors involved in alexithymia. Issues of measurement are also important to take into account when examining any early alexithymia research. Although Kauhanen and colleagues used the Toronto Alexithymia Scale, a relatively reliable measure that will be discussed in greater detail below, other studies that examined social factors used various measures of questionable validity. More broadly, many early conceptual critiques – including those that focused on social factors – were intertwined with concerns over the proper measurement of alexithymia (Lesser, 1981; Taylor & Bagby, 1988), or could not be tested due to a lack of valid measures. Indeed, early alexithymia research was plagued by the use of

poorly developed measures, and the introduction of improved measurement tools beginning in the mid-1980s played a key role in the conceptual refinement of the construct and the expansion of the literature.

Measurement problems and the advent of the Toronto Alexithymia Scale

The majority of alexithymia measures used in the early years of the literature failed to meet basic psychometric requirements of reliability and validity. The development of early measures was based on clinical observations and theoretical understandings of alexithymic traits, and generally did not involve attention to standard principles of scale construction (Taylor & Bagby, 1988). The earliest measurement tools included observer-rated measures, which were heavily reliant on the individual clinician's training, experience, and understanding of alexithymia. The first of these was the Beth Israel Hospital Questionnaire (BIQ), constructed by Sifneos (1973) as a means of assessing the characteristics he had been observing in his patients. When using the BIQ, the interviewer must answer 'yes' or 'no' to a series of questions assessing alexithymic traits; sample questions include: "Does the patient describe endless details rather than feelings?" and "Does the patient use appropriate words to describe emotion?" Although the BIQ shows good face validity, findings regarding its psychometric properties are mixed, particularly with regards to inter-rater reliability (Taylor et al., 1997). As a result, the BIQ is seldom used in contemporary alexithymia research (Lumley, Neely, & Burger, 2007).

Several other early alexithymia measures have also become rarities in the current literature. These include the MMPI Alexithymia Scale, the Schalling-Sifneos Personality Scale, and several projective tests (see Linden, Wen, & Paulhus, 1995;

Taylor et al., 1997). As with the BIQ, these measures suffered from inconsistent or poor reliability, along with other psychometric problems including a lack of adequate validity. As discussed by Taylor and colleagues (1997), the validity of a construct is intimately connected to the validity of the measures that claim to assess it. Clearly, problematic measurement posed a serious challenge to the field of alexithymia research in its early years, and to the viability of the construct itself. This led Taylor and colleagues to embark on the development of a self-report scale that would demonstrate good psychometric properties and help to validate the alexithymia construct, resulting in the Toronto Alexithymia Scale (TAS; Taylor, Ryan, & Bagby, 1985) and the subsequent Twenty-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994a, 1994b). The introduction of the TAS and the TAS-20 provided a major improvement in the measurement of alexithymia, and sparked a significant expansion in the research literature.

In developing their scale, this research group sought to improve on past attempts by employing established principles of scale construction and following a systematic procedure (Taylor et al., 1997). This process began with a conceptual review of the alexithymia literature, which provided a set of content domains for the assessment of alexithymia. The authors then constructed a pool of 41 items, some of which were based on items from earlier alexithymia measures. Following principles of scale construction, half of the items were positively keyed and half were negatively keyed, and a 5-point Likert scale was used. Factor and item analysis were conducted to select a group of 26 items that would become the TAS; the items clustered into four factors that fit with the alexithymia construct: (1) difficulty

identifying and distinguishing between feelings and bodily sensations; (2) difficulty describing feelings; (3) reduced daydreaming; and (4) externally oriented thinking. The reliability and validity of this new scale were then examined and supported in both clinical and non-clinical populations (Bagby et al., 1990; Taylor et al., 1985).

Although the development of the TAS, along with evidence of the measure's validity, provided support for the alexithymia construct itself, some measurement problems did emerge. In particular, the daydreaming factor did not correlate as expected with the other three factors, and the four factors at times showed different patterns of association with other relevant constructs (Taylor et al., 1997). Therefore, the measure's authors sought to revise the TAS. They constructed an additional set of items, providing a larger item pool with which to conduct factor and item analysis once again. This process initially led to a 23-item revised TAS (TAS-R; Taylor, Bagby, & Parker, 1992), and then to the TAS-20 (Bagby et al., 1994a, 1994b).

Since its introduction, the TAS-20 has become the most widely used and well-validated measure of alexithymia. In contrast to the TAS, the TAS-20 is made up of three factors or subscales: (1) difficulty identifying feelings (DIF); (2) difficulty describing feelings to others (DDF); and (3) externally oriented thinking (EOT). This three-factor structure has been supported by a number of studies (e.g., Bagby et al., 1994a; Parker et al., 1993), including cross-cultural studies (Taylor, Bagby, & Parker, 2003; Zhu et al., 2007). Notably, the TAS-20 does not contain items that directly assess daydreaming or other imaginal activity. These items were eliminated during the construction of the TAS-20 due to low item-total correlations and/or

high association with a measure of social desirability (Bagby et al., 1994a). The lack of a daydreaming or fantasy-related factor on the TAS-20 has been a focus of criticism by some authors (e.g., Borst & Vermond, 2001); however, Taylor and colleagues (2000) suggest that the EOT subscale captures some of this content. These authors point to findings of a significant negative correlation between the EOT subscale and a fantasy subscale from the NEO Personality Inventory (Bagby, Taylor, & Parker, 1994b) as support for this contention.

Support for the convergent validity of the TAS-20 and its subscales has been found in studies showing significant negative correlations with related constructs such as psychological mindedness, affective orientation, and openness to experience (e.g., Bagby et al., 1994b). However, the TAS-20 has also shown some arguably problematic results. For example, some studies suggest that items from the DIF and DDF subscales may constitute a single factor, with the items from EOT loading on a separate factor (e.g., Loas, Otmani, Verrier, Fremaux, & Marchand, 1996). Others have found weak to non-significant correlations between EOT and the other two subscales (e.g., Haviland, Hendryx, Shaw, & Henry, 1994). However, the authors of the TAS-20 contend that the strong association between the DIF and DDF subscales, and the weaker correlation between these subscales and EOT simple reflect the multi-faceted nature of alexithymia. They suggest that, "the three factors reflect separate, yet empirically related, facets of the alexithymia construct" (Taylor et al., 1997, p. 61).

An important limitation of the TAS-20, which has been particularly discussed in the context of cross-cultural research, is the consistently problematic reliability of

the EOT subscale. This subscale repeatedly demonstrates lower internal reliability as compared to the other two subscales and the overall TAS-20 score. In particular, the EOT shows poor reliability in samples where English is not the primary language (Taylor et al., 2003). As cultural researchers, this finding calls our attention to this subscale and the construct it is designed to measure. Indeed, our attention will increasingly focus on the EOT component of alexithymia as we move towards the specific outline of the current research project.

Despite some of the problematic findings presented above, the TAS-20 is widely viewed as a sound measure and has come to dominate the alexithymia research literature. This dominance is based on strong support for its overall validity and reliability, its ease of administration, and the advantages of using a common measure in order to compare findings across studies (Lumley et al., 2007). This consistent use of a common measure has surely contributed to the growth of the literature in recent decades (Taylor & Bagby, 2004), which now encompasses a wide array of research questions, methodologies, and populations.

An expanding research literature

Although still particularly popular in the area of psychosomatic medicine, contemporary alexithymia research includes a number of other diagnostic categories and a range of clinical populations. In contrast to the original conceptualization of alexithymia as a personality construct relatively specific to psychosomatic illness, research has demonstrated that this is not the case (Lumley et al., 2007). Alexithymia has been linked to a number of other disorders, including depression, panic disorder, eating disorders, and post-traumatic stress disorder

(Taylor, 2000). In other words, alexithymia is now broadly regarded as a general vulnerability or risk factor for a number of medical and psychiatric problems (Taylor, Bagby, & Luminet, 2000). As a result of the connection between alexithymia and this array of illnesses, there has recently been increased interest in the potential role of the construct as a predictor of treatment outcome (Taylor & Bagby, 2004). Although a small number of studies have been conducted to date, there are some promising findings. For example, Porcelli and colleagues (2003) found that alexithymia was a stronger predictor relative to depression in the prediction of treatment outcome among patients with functional gastrointestinal disorders.

Another important development in recent alexithymia research has been the growth in the number of studies directly examining the key theoretical assumption that alexithymia reflects deficits in the cognitive processing of emotion (Taylor & Bagby, 2004). Although it has long been held that such deficits underlie alexithymia, the combination of improved measurement tools and modern research methods has allowed researchers to more directly investigate this hypothesis. As such studies are primarily experimental as opposed to correlational, they not only help to advance our understanding of alexithymia, but also provide strong tests of the validity of the construct itself.

There is now a growing body of research demonstrating a link between high levels of alexithymia and emotional processing deficits. For example, people with higher levels of alexithymia have been found to be less accurate in identifying posed emotional facial expressions, and in matching emotional stimuli with emotional responses, as compared to people with low levels of alexithymia (e.g., Lane et al.,

1996; Parker, Taylor, & Bagby, 1993). More recent studies have found that high alexithymia individuals show deficits in the recognition of a range of pleasant and unpleasant emotions (Lane, Sechrest, Riedel, Shapiro, & Kaszniak, 2000), and that such individuals show a delay in responding to emotion words in a lexical decision task after being primed by related emotion situations (Suslow & Junghanns, 2002). This latter finding fits with the theory that emotional schemas are not well integrated among those with high levels of alexithymia (Suslow & Junghanns, 2002; Taylor & Bagby, 2004).

Although this research constitutes a valuable advancement in the field, an important limitation of many of these studies is that few researchers examine the individual alexithymia components in their analyses; this is the case for the majority of alexithymia research. Although alexithymia is viewed as a single construct, it is also understood as multi-faceted. Furthermore, as mentioned earlier, the externally oriented thinking component as assessed by the TAS-20 – the measure used in the majority of studies – often shows a relatively weak association with the two other components of alexithymia captured by this scale. Therefore, it would appear reasonable to expect that the alexithymia components may well show divergent associations with emotion processing deficits, as well as other variables. Indeed, in two exceptions among emotion processing studies, Parker and colleagues (2005) found that only the DDF subscale of the TAS-20 was associated with a decreased ability to detect negative emotions, while Luminet and colleagues (2006) found different effects of the TAS-20 subscales on emotion word recall tasks.

Differential effects of the TAS-20 subscales have also been found in other areas of the alexithymia literature. For example, researchers have found that the subscales show varied associations with autonomic reactivity (Pollatos et al., 2011) and depressed mood (Saarijärvi et al., 2001). In light of such findings, this more nuanced approach is likely to become an important trend in future alexithymia research, and is being explicitly promoted by several authors (e.g., Pollatos et al., 2011). This approach is also particularly relevant to a cultural examination of alexithymia that seeks to provide a better understanding of the potential role of cultural variables in shaping the individual components. As will be seen below, the possibility that the components of alexithymia are differentially related to cultural variables is central to the current research project.

Although many more studies and topics could be presented in a review of recent alexithymia research, a comprehensive review cannot be undertaken here. Rather, we will turn now to a discussion of empirical and theoretical work focused on culture and alexithymia, which is directly relevant to the current research project. This will be followed by a brief review of the culture and emotion literature introduced earlier in order to provide further background for the current research, which will then be outlined.

Culture and alexithymia: Selected empirical and theoretical work

The introduction of the TAS-20 not only sparked substantial expansion of the mainstream alexithymia research literature, but also contributed to the rapid dissemination of the construct to many different countries around the world. The TAS-20 has now been translated into over 18 languages, including Chinese, German,

Hindi, Korean, Portuguese, and Swedish (Taylor et al., 2003; Zhu et al., 2007). As discussed earlier, cross-cultural studies generally provide support for the factor structure and internal reliability of the measure, except for the poor reliability of the EOT subscale.

In spite of the translation of the TAS-20 into this diversity of languages, surprisingly little empirical work has been done to critically examine the alexithymia construct from a cultural perspective. The majority of studies focus on the psychometric properties of a newly translated scale and take the basic replication of these properties as a sign of cross-cultural validity, with little discussion of the conceptual issues that may arise when examining the alexithymia construct in diverse cultural settings. Writing in the early years of this literature, Lesser (1981) insightfully observed that alexithymia research being conducted in Japan at the time lacked any discussion or analysis of potential cultural considerations. Unfortunately, this comment could quite easily be extended and applied to the majority of cross-cultural alexithymia studies three decades later.

In contrast to the cross-cultural empirical literature, important conceptual critiques of the alexithymia construct have been made from a cultural perspective (e.g., Kirmayer, 1987; Lesser, 1981; Prince, 1987). Not surprisingly, these critiques echo some of the discussion presented earlier around the importance of social factors in alexithymia, in that they focus on the specific socio-historical context in which alexithymia emerged. For example, Lesser (1981) writes:

> The concept of alexithymia is derived from a psychodynamic perspective and is clearly influenced by Western philosophy and thought. Implicit in this

> perspective is a value judgment that verbal expression of emotions is healthy and mature; this does not necessarily conform to norms in other cultural settings. (pp. 537-538)

In the most developed critique, Kirmayer (1987) explores these ideas in greater detail. He discusses the critical importance of paying attention to 'local patterns' of emotional expression and the presentation of distress. Such patterns differ cross-culturally; for example, Kirmayer (1987) highlights the fact that the alexithymia construct ignores the role of group-level factors in psychological distress, which may be seen as central to explaining illness in certain cultural groups. He also discusses the fact that the value placed on emotional self-expression varies across cultural contexts, and is seen as less important than family or social harmony in Chinese contexts, for example (see also Potter, 1988). In contrast, the alexithymia construct implicitly holds self-expression as fundamental to psychological well-being, which Kirmayer (1987) points out is a Western-bound notion tied to Western ideals of a mature self. Finally, Kirmayer (1987) also remarks on the fact that the alexithymia construct can lead to the labeling of non-Western norms of emotional expression as deficits. This danger is linked to the earlier discussion regarding the traditional association between alexithymic traits and pejorative personality descriptors, and the danger of pathologizing cultural variations in emotional processes.

It is unfortunate that little empirical work has yet to be influenced by these important conceptual arguments. Nevertheless, it is worth briefly reviewing some empirical cross-cultural findings that are broadly relevant to the current project.

The handful of studies involving participants of Chinese descent are particularly relevant. Dion (1996) used the TAS-20 to compare levels of alexithymia among a culturally diverse sample of undergraduate students in Canada. He found that those who reported a Chinese dialect as their most proficient language showed higher scores on the TAS-20 and its three subscales as compared to native speakers of English and other European languages. Although the analyses consist of simple group comparisons, Dion's (1996) interpretation of his results is theoretically driven and conceptually interesting. He presents a 'sociocultural' explanation, focusing on cultural variations in somatic versus psychological modes of expressing emotional states in Chinese versus 'Western' contexts. Dion (1996) also proposes that cultural differences in alexithymia might be related to "different types of cognitive appraisals relating to emotion" (p. 536).

In a measurement-focused study, Zhu and colleagues (2007) validated a Chinese version of the TAS-20 in Mainland China. Using both a student sample and an outpatient sample, they found adequate psychometric properties for the measures, and overall support for the three-factor structure. These authors also compared the total alexithymia scores from their Chinese samples with similar English-speaking Canadian samples, and found that the Chinese reported slightly higher levels of alexithymia. These authors did not present results for the separate TAS-20 subscales.

Finally, in a study that directly influenced the current research, Ryder and colleagues (2008) examined alexithymia among Chinese and Euro-Canadian depressed outpatients and found that higher TAS-20 scores in the Chinese group

were explained by a group difference on the EOT subscale. The two groups did not differ on the DIF or DDF subscales. Ryder and colleagues (2008) suggest that EOT may be higher within Chinese cultural contexts due to the relative de-emphasis of individual emotional experience and expression, in favour of interpersonal relations and social harmony. Together, this finding and proposed explanation raise the critical possibility that the EOT component of alexithymia may vary across cultural contexts for reasons unrelated to emotional processing deficits. Seemingly high overall levels of alexithymia among certain groups may be driven by higher levels of EOT specifically, and these may be shaped by certain cultural variables. In light of concerns already raised regarding the pathologization of cultural differences in emotion norms, and keeping in mind the cultural critiques of the alexithymia construct discussed above, this theory-based proposal presents an empirical question that requires investigation. As outlined below, the current research project was designed to directly examine this proposal.

Prior to outlining the current studies, we will briefly review some key themes from the literature on culture and emotion that informed Ryder and colleagues' (2008) interpretation of their EOT finding. As suggested above, this literature also informed the current research project. Unlike cross-cultural alexithymia research, much of the work on the interplay between cultural context and emotional processes is well-developed and theoretically based.

Themes from the culture and emotion literature

An important aspect of the cultural psychology literature on emotion is the view that emotions have fundamental social functions in our everyday lives

(Mesquita & Leu, 2007). Emotions are seen as vital to helping us navigate our cultural milieu, as well as the social relationships that are central in this navigation. As a result, in order to be functional emotions must fit within a given cultural context. At the same time, however, patterns of emotion also make up culture; the two are mutually constitutive (Mesquita & Leu, 2007). This view fits with an overarching principle in cultural psychology, the notion that culture and mind 'make each other up' (Shweder, 1991). This view of emotions can help to inform cultural research on varied emotion-related processes, including alexithymia.

In addition to valuable conceptual discussions about the socio-cultural functions of emotions, the culture and emotion literature provides a large body of evidence demonstrating significant cultural variations in key aspects of emotion, including emotion-related appraisals, antecedents, and regulation (e.g., Mesquita & Frijda, 1992). This literature reveals the intimate connection between cultural context and emotional processes, beyond simple surface-level differences. The existence of cultural differences across multiple facets of emotions should be of direct interest to all researchers examining emotion-related variables, including alexithymia researchers. Unfortunately, as has been suggested above, this is often not the case.

Of particular relevance to the current research project are studies that examine cultural variations in norms regarding emotional expression, many of which employ the popular concepts of individualism versus collectivism, or independent versus interdependent self-construals, as a theoretical framework. Central to the research questions and hypotheses of most of these studies is the

general notion that individualist contexts (e.g., North American), and an independent self-construal, promote emotional expression as a means of validating and supporting one's autonomy and individuality; in contrast, collectivist contexts (e.g., Chinese), and an interdependent self, generally promote the control of emotional expression, in the interest of maintaining social harmony and avoiding the disruption of interpersonal relations (see Markus & Kitayama, 1991; Heine et al., 1999). Cross-cultural findings in line with these broad patterns have been found across numerous aspects of emotion, including emotion socialization, the use of emotion-related cues, and the importance placed on positive versus negative emotions (e.g., Eid & Diener, 2001; Mesquita, 2001;Yuki, Maddux, & Masuda, 2007).

Although brief, this review of the culture and emotion literature makes it clear that cultural context should be viewed as critical in the understanding of any emotion-related construct. The themes discussed also fit with the conceptual concerns raised by Kirmayer (1987) and others, regarding the bias towards a specific set of emotional expression norms contained within the alexithymia construct. The current research incorporates these themes in the study of alexithymia.

The current research

The above review highlights a number of issues relevant to the cultural study of alexithymia, each of which informed the current research project. The historical discussion draws our attention to the influence of a psychodynamic model of psychopathology and psychotherapy in the conceptualization of this construct, raising initial questions about potential problems in terms of cross-cultural

applicability. These questions are reinforced in the early calls for attention to social factors and in the cultural critiques of alexithymia, which highlight the fact that alexithymia researchers should take cultural differences in norms regarding emotional expression into account. Several empirical and conceptual observations draw our attention to the EOT component of alexithymia, which appears to stand apart from the deficit-based components of DIF and DDF. Finally, the finding that EOT may be relatively high in Chinese cultural contexts (Ryder et al., 2008), along with relevant findings from the culture and emotion literature regarding variations in the value placed on emotional experience and expression, suggest that EOT may be shaped by cultural context. Together, these threads lead us to a theoretical model of alexithymia whereby EOT is likely to vary by cultural context to a greater extent than DIF or DDF, reflecting the important role that cultural norms play in the extent to which people value inner emotional experience.

Two studies were conducted to examine the cultural model presented above. In Study 1, Euro-Canadian and Chinese-Canadian university students completed the TAS-20 along with three measures of cultural values. An initial goal of the study was to determine whether Ryder and colleagues' (2008) finding of higher EOT among their Chinese as compared to Euro-Canadian participants would replicate in these groups. Based on expectations that this finding would replicate, this study was designed to address two main research questions: (1) Is EOT particularly shaped by cultural values, in contrast to DIF and DDF?; and, (2) do cultural values help to explain higher levels of EOT among people of Chinese versus Euro-Canadian heritage? Employing a research paradigm known as 'unpacking culture' (e.g.,

Matsumoto & Yoo, 2006; Singelis, Bond, Sharkey, & Lai, 1999), both within- and between-group analyses were conducted to examine the association between cultural values and EOT. Such an approach helps to move beyond and clarify group differences, by examining specific underlying 'context variables' (Matsumoto & Yoo, 2006); in the current study, cultural values were examined as the underlying variables.

Within the psychological literature, cultural values are assessed in a number of different ways and with a variety of tools. In the current research, three measures were used that together capture a broad spectrum of values found to be relevant to people of Chinese and/or 'Western' cultural heritage. Of note, the items on all three measures are phrased as general values statements, and do not contain culture-specific references. Value domains and dimensions covered by these measures include personal autonomy, individual freedom, familial roles, sexual freedom, social obligations, child-rearing practices, and liberalism. The same set of measures was used in both Study 1 and 2, and further details are provided in later sections.

In Study 2, the questions examined in Study 1 were extended to a Chinese clinical sample. A new sample of depressed Chinese outpatients from the same province of China studied by Ryder and colleagues (2008) completed a translated version of the measures used in Study 1. As alexithymia is largely understood as a clinical construct, it was important to examine the proposed cultural model in a distressed sample. Furthermore, Study 2 allowed us to examine the association between EOT and cultural values in a Chinese (as opposed to Chinese-Canadian) sample and using Chinese language measures. Together, these two studies provide a

strong initial examination of the cultural model of alexithymia developed in the above discussion.

Study 1: Unpacking cultural differences in alexithymia: The role of cultural values among Euro-Canadian and Chinese-Canadian students

Jessica Dere, Carl F. Falk, & Andrew G. Ryder

Abstract

The current study provides a cultural examination of alexithymia, a multi-faceted personality construct that refers to a general deficit in the ability to identify and describe emotional states, and that has been linked to a number of psychiatric illnesses. Though this construct has been critiqued as heavily rooted in 'Western' norms of emotional expression, it has not received much empirical attention from a cultural perspective. Recently, Ryder et al. (2008) found that higher levels of alexithymia among Chinese versus Euro-Canadian outpatients were explained by group differences in one component of alexithymia, externally oriented thinking (EOT); they proposed that Chinese cultural contexts may encourage EOT due to a greater emphasis on social relationships and interpersonal harmony rather than inner emotional experience. The current study examined the hypothesis that EOT is more strongly shaped by cultural values than are two other components of alexithymia, difficulty identifying feelings (DIF) and difficulty describing feelings (DDF). Euro-Canadian (n=271) and Chinese-Canadian (n=237) undergraduates completed measures of alexithymia and cultural values. Chinese-Canadians showed higher levels of EOT than Euro-Canadians ($p < .001$). EOT, and not DIF or DDF, was predicted by Modernization and Euro-American values in both groups. Furthermore, cultural values mediated the effect of group membership on levels of EOT. These results suggest that cultural differences in alexithymia may be explained by culturally based variations in the importance placed on emotions, rather than

deficits in emotional processing. The study also raises questions about the measurement and meaning of EOT, particularly from a cross-cultural perspective.

Unpacking cultural differences in alexithymia: The role of cultural values among Euro-Canadian and Chinese-Canadian students

The related fields of cross-cultural and cultural psychology, cultural psychiatry, and medical anthropology have provided rich examples of the ways in which culture is intimately tied to the experience and expression of emotional distress (e.g., Chentsova-Dutton & Tsai, 2009; Kirmayer, 2001; Kleinman, 1982; Lee, Kleinman, & Kleinman, 2007; Ryder et al., 2008). Work in this area demonstrates the complex interplay between cultural context, norms, beliefs, and values on the one hand, and psychological processes, clinical symptoms, and syndromes on the other. Our understanding of cultural variations in the clinical presentation of emotional distress can often be informed by examining how culture shapes various emotional processes (Kirmayer, 2001). Working within this tradition, the current study examines alexithymia, a multi-faceted personality construct that refers to a general deficit in the ability to identify and describe emotional states (Taylor, 2000). Though this construct has been critiqued from a cultural perspective, these critiques have not been studied empirically.

Alexithymia offers an interesting focal point for the study of culture and emotion for several reasons. First, it is conceptualized as a dimensional construct (Parker, Keefer, Taylor, & Bagby, 2008), lying on a continuum from non-pathological to pathological, and therefore holds relevance for both clinical and non-clinical research. Second, the construct evokes a major recurrent theme in cross-cultural discussions of emotion – the relative lack of emotional expressiveness in certain groups as compared to others. Finally, alexithymia has been controversial within the

cultural literature, and has been the subject of theoretical critique (e.g., Dion, 1996; Kirmayer, 1987). These critiques suggest that alexithymia is strongly linked to 'Western' values regarding emotional experience and expression, and that the construct may lead to the unwarranted pathologization of individuals from other cultural contexts. Informed by such critiques, the current study seeks to 'unpack' cultural differences in alexithymia among Euro-Canadians and Chinese-Canadians. 'Unpacking' or 'unpackaging' culture refers to a paradigm whereby cultural differences are clarified by examining specific underlying "context variables" (Matsumoto & Yoo, 2006) that help to explain both within- and between-group variation (e.g., Singelis et al., 1999). In the current study, the underlying variable examined was cultural values, due to the position of values as a fundamental aspect of culture and in line with cultural critiques of alexithymia.

Alexithymia

The construct of alexithymia was first introduced in the 1970s by Nemiah, Freyberger, and Sifneos (1976, as cited in Luminet et al., 2004), and emerged from Sifneos' observations of patients suffering from 'classical' psychosomatic illnesses. Based on ancient Greek, the literal meaning of the term alexithymia is 'no words for feelings' (De Gucht & Heiser, 2003). Four main features define this construct: (1) difficulty identifying feelings, and distinguishing them from physical sensations of emotional arousal; (2) difficulty describing emotions to others; (3) reduced imaginal capacities, or low fantasy-proneness; and (4) an externally oriented thinking style, with an emphasis on external, concrete stimuli rather than inner emotions (Luminet et al., 2004; Taylor, 2000).

There has been a substantial expansion of the alexithymia research literature in the past 10 to 15 years. The topic remains particularly popular in the psychosomatic literature, as high levels of alexithymia have been associated with various psychosomatic illnesses (Lumley et al., 2007; Porcelli et al., 2003). The construct has also been linked to a number of other disorders, including depression, eating disorders, and post-traumatic stress disorder (Taylor, 2000). Increased support for the validity of the construct has come from emotional processing studies, which have produced results consistent with the theoretical proposition that alexithymia is characterized by deficits in the cognitive processing of emotion (Parker et al., 2008; Taylor, 2000). For example, people with higher levels of alexithymia, versus those with lower levels, are less accurate in identifying posed emotional facial expressions and in matching emotional stimuli with emotional responses (e.g., Lane et al., 1996; Parker et al., 1993).

Measurement of alexithymia: The TAS-20

Early alexithymia research was plagued by poor measurement, with initial measures characterized by both poor reliability and validity (Taylor, 2000). There has been substantial improvement in the measurement of this construct over the past two decades, with the development of new self-report, observational, and interview measures. Self-report measures are the most commonly used tool, and the most popular and well-validated self-report measure is the Twenty-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, et al., 1994; Bagby, Taylor, et al., 1994). As this measure has been used in the majority of recent research, including the

current study, the research findings reviewed here are limited to studies that have used the TAS-20 in assessing alexithymia.

The TAS-20 contains three subscales, corresponding to three of the key components of alexithymia: Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF), and Externally Oriented Thinking (EOT). Sample items from the DIF subscale include: "I am often confused about what emotion I am feeling" and "I don't know what's going on inside me". Sample items from the DDF subscale include: "It is difficult for me to find the right words for my feelings" and "People tell me to describe my feelings more". Finally, sample items from the EOT subscale, of particular interest for the current study, include: "I find examination of my feelings useful in solving personal problems" (reverse coded), "Being in touch with emotions is essential", "I prefer to analyze problems rather than just describe them" (reverse coded), and "I prefer talking to people about their daily activities rather than their feelings".

The reliability and validity of the TAS-20 have been supported across a number of samples, including student, community, and clinical samples (Bagby, Parker, et al., 1994; Bagby, Taylor, et al., 1994; Parker, Taylor, & Bagby, 2003). The measure has also been translated into over 18 languages, including Chinese, with general cross-cultural support for the three-factor structure (Taylor et al., 2003; Zhu et al., 2007). Furthermore, adequate to good internal reliability has been found for the total TAS-20, along with the DIF and DDF subscales, across cultural and linguistic groups. However, the EOT subscale repeatedly demonstrates poor internal reliability, particularly in samples where English is not the primary language

(Taylor et al., 2003). This consistent finding suggests the need for further study, particularly from a cultural perspective, of this subscale and the construct it is designed to measure.

Externally Oriented Thinking

While psychometric issues call our attention to the EOT subscale, further examination suggests that EOT may differ from DIF and DDF in several important ways. To begin with, EOT is conceptually distinct from the deficit-based components of 'difficulty identifying feelings and distinguishing them from physical sensations of emotional arousal' and 'difficulty describing feelings to others'. Indeed, EOT can be understood as an approach to thinking about emotions rather than an explicit emotional deficit or difficulty. High levels of EOT are conceptualized as being linked to the difficulties that characterize high levels of alexithymia, but are not themselves defined by an actual deficit. The notion that EOT stands out conceptually from the other two factors of the TAS-20 has been raised by other authors (e.g., Moriguchi et al., 2007), but has not been the topic of much empirical research.

In line with the notion that EOT does not necessarily reflect a difficulty or deficit, a review of recent studies suggests that EOT is in fact less associated with pathology than DIF and DDF. For example, EOT has repeatedly been found to show no significant association with negative affect, in contrast to DIF and DDF (Bailey & Henry, 2007). Joukamaa and colleagues (2008) found that total TAS-20, DIF, and DDF scores were significantly higher among a sample of mental health patients as compared to a sample of primary care patients, while EOT scores showed no group difference. Furthermore, the total score, DIF, and DDF showed significant

associations with measures of abuse and neglect among the primary care patients, while EOT did not. Similarly, a recent study on alexithymia and dissociation found that the total TAS-20 score, DIF, and DDF were each associated with measures of dissociation, while EOT was not (Grabe, Rainermann, Spitzer, Gänsicke, & Freyberger, 2000). Lastly, Saarijärvi and colleagues (2001) examined alexithymia and depression over a 1-year follow-up period, and found that DIF and DDF were associated with changes in mood over the follow-up period, while EOT was not. These varied findings suggest a pattern in which EOT is less associated with pathological variables than the other components of alexithymia, in line with its conceptualization as a way of thinking about the world, rather than a difficulty per se.

This set of theoretical and empirical observations regarding EOT are intriguing from a cultural perspective, particularly in light of the literature on culture and emotion. This is because a thinking style that places a relative emphasis on external stimuli rather than internal emotional experiences is likely to be strongly shaped by norms, values, preferences, and beliefs about the place of emotion in one's daily life. In other words, one might well expect EOT to be quite strongly shaped by culture, since cultural contexts can vary substantially in the importance placed on inner emotional life and the expression of emotions with others (e.g., Eid & Diener, 2001; Markus & Kitayama, 1991; Matsumoto, Yoo, & Fontaine, 2008). In addition, the inclusion of EOT within the alexithymia paradigm implies that an externally focused cognitive style is problematic and is linked to emotional deficits. However, this notion may well be culturally-bound, and rooted in

a 'Western' emphasis on individual emotional experience and expression (Kirmayer, 1987). Indeed, the general idea that alexithymia – or components of alexithymia – may demonstrate important cross-cultural variation, and that such variation may not be associated with actual emotional deficits, has been raised by a number of authors as an important critique of the alexithymia construct.

Cultural critique of alexithymia

A fundamental issue for authors critically examining alexithymia from a cultural perspective is that the construct emerged from clinical observations of a particular group of patients in North America and Western Europe, within a specific historical and sociocultural context (Fukunishi, Nakagawa, Nakamura, Kikuchi, & Takubo, 1997; Kirmayer, 1987). Indeed, Sifneos' early writings on alexithymia were based on his observations of a subset of psychosomatic patients who failed to respond to insight-oriented psychotherapy (Sifneos, 1967, as cited in Lumley et al., 2007). It is quite clear that the origins of alexithymia are strongly rooted in the psychodynamic framework and model of therapy, as well as a 'Western' ideal of a mature self (Kirmayer, 1987). As Kirmayer (1987) suggests, alexithymia can be linked to a "preoccupation with the verbal expression of emotion in psychotherapy" (p. 119). Such verbal expression is also implicitly held up as the most desirable form of expressing one's emotions, and therefore the construct of alexithymia fails to acknowledge cultural variations in idioms of distress, which can include greater emphasis on the body and on social context.

Cultural critiques of alexithymia have largely targeted the construct as a whole, though some have suggested the importance of separately examining the

individual components (e.g., Kirmayer & Robbins, 1993). We propose that a cultural perspective may be particularly relevant for EOT, since the emphasis or importance placed on emotional experiences is strongly related to cultural norms and values. In certain cultural contexts, high levels of EOT may well be linked to particular cultural variables, and not necessarily to actual deficits in emotional processing, suggesting a non-pathological understanding of cultural variation in levels of alexithymia.

Culture and alexithymia: Selected recent empirical findings

In addition to theoretical work, a handful of recent empirical studies have examined alexithymia from a cultural or cross-cultural perspective. In line with the groups in the current study, a brief review of findings among samples of Chinese and Western European descent will be presented here. Dion (1996) examined levels of alexithymia among a diverse sample of undergraduate students in Canada. He found that students who reported being most proficient in a Chinese dialect, assumed to be a proxy for ethnicity, scored higher on the total TAS-20, and the three subscales, as compared to native speakers of English and other European languages. Dion suggested a 'sociocultural' explanation of this finding, focusing on cultural differences in somatic versus psychological idioms of expressing emotional states, in Chinese versus 'Western' contexts. Dion (1996) also proposed that cultural differences in levels of alexithymia might stem from "different types of cognitive appraisals relating to emotion" (p. 536).

Zhu and colleagues (2007) validated a Chinese translation of the TAS-20 (TAS-20-C) in mainland China, among both a student sample and an outpatient sample, and found adequate psychometric properties for the measure, as well as

support for the three-factor structure. In addition, total alexithymia scores in the Chinese samples were slightly higher than scores in similar English-speaking Canadian samples. Unfortunately, these authors did not present separate results for the three TAS-20 subscales.

Finally, in a study of Euro-Canadian and Chinese depressed clinical outpatients, Ryder and colleagues (2008) found significantly higher levels of alexithymia in the Chinese patients. However, this group difference was explained by higher levels of EOT in the Chinese patients as compared to the Euro-Canadians, with no group difference on DIF or DDF. These authors proposed that higher levels of EOT within a Chinese context might be driven by greater cultural emphasis on interpersonal relationships, social harmony, and contextual factors, and relatively less emphasis on inner emotional experience (e.g., Markus & Kitayama, 1991; Heine, 2001).

The cultural explanation proposed by Ryder and colleagues (2008) fits with the general literature on culture and emotion, and with the substantial body of work on cultural variations in emotional processes between East Asian (most often Chinese and Japanese) and 'Western' populations. This literature has laid out a general set of cultural differences, whereby East Asian contexts are characterized by a relative emphasis on emotional restraint, the importance of attending to social cues, and the maintenance of harmonious social relations. In contrast, 'Western' contexts, exemplified by North America, are characterized by a greater emphasis on individual emotional experience and expression, personal autonomy, and the importance of individual happiness. Cultural variations in line with these broad

differences have been found in a variety of emotional processes, including emotion socialization, expressivity, the use of emotion-related cues, and the importance placed on positive versus negative emotions (e.g., Eid & Diener, 2001; Mesquita, 2001; Yuki et al., 2007). This general pattern of cultural differences, along with the findings of Ryder and colleagues (2008), helped to inform the research questions and hypotheses of the current research.

The current study

The current study examined the general hypothesis that the EOT component of alexithymia, as assessed by the TAS-20, is culturally shaped, among Euro-Canadian and Chinese-Canadian students. More specifically, we sought to address two main research questions: Do cultural values help to explain higher levels of EOT among people of Chinese versus Euro-Canadian heritage; and, is EOT particularly shaped by cultural values, in contrast to DIF and DDF? Based on our theoretical expectations, and the findings of Ryder and colleagues (2008), we formulated four hypotheses: (1) that Euro-Canadians would show lower levels of EOT as compared to Chinese-Canadians; (2) that of the three TAS-20 subscales, only EOT would be predicted by cultural values; (3) that EOT would be negatively predicted by modernization and Euro-American values, and positively predicted by Asian values; and (4) that cultural values would mediate the association between group membership and EOT.

Method

Participants

Participants were undergraduate students at two Canadian English-language universities situated in large urban centers. Participants completed an internet-

based survey consisting of self-report measures, which took approximately 90 minutes to complete; all participants completed the questionnaires in English. The majority of participants were enrolled in at least one undergraduate psychology course; all participants provided informed consent prior to completing the study and received course credit for their participation.

Euro-Canadian (n = 271) and Chinese-Canadian (n = 237) groups were selected from the larger diverse student sample, based on their responses to several demographic questions. Euro-Canadian participants self-identified themselves as belonging to the 'White' ethnoracial group, were born in Canada, and had at least one parent born in Canada. Chinese-Canadian participants self-identified themselves as belonging to the 'East Asian, South-East Asian, and Pacific Islander' ethnoracial group, were either themselves born in the People's Republic of China, Hong Kong, or Taiwan, or had at least one parent born in one of these locations. Furthermore, support for the classification of these two groups was obtained by examining participants' responses to an open-ended question that asked them to label their heritage culture. Over 70% of Euro-Canadian participants referred to Canadian, North American, or Western European cultural groups (e.g., British, Italian) in their response; over 95% of Chinese-Canadian participants referred to a Chinese cultural group (e.g., Chinese, Taiwanese) in their response.

The Euro-Canadian participants were 77.0% female and had a mean age of 22.1 years (SD = 4.5). The majority, 87.1%, had grown up in a large or small city. The Chinese-Canadian participants were 73.7% female and had a mean age of 21.0 years (SD = 3.5). The majority, 96.2%, had grown up in a large or small city. A minority of

the Chinese-Canadians, 27.4%, were born in Canada, while a majority, 77.1%, were Canadian citizens. Among the Chinese-Canadians born in Canada, 89.2% reported that both of their parents were born outside of Canada. Among the Chinese-Canadians born outside of Canada, the average length of time since their arrival in Canada was 9.3 years (SD = 5.70). With regards to language background, 85.7% of Chinese-Canadians reported a Chinese dialect as their mother tongue. All participants were required to demonstrate English language proficiency for entrance to the universities where the data were collected.

Measures

The survey completed by participants contained a variety of self-report measures regarding mental health, emotional processing, and cultural variables. Only the four measures relevant to the current study will be discussed here (see Appendix A). Alexithymia was assessed using the TAS-20. Cultural values were measured in two different ways: (1) a bipolar contrast of modernization versus traditionalism using the Modernization scale (MOD) of the Chinese Personality Assessment Inventory (CPAI; Cheung et al., 1996); and (2) a bidimensional approach to cultural values measurement using the European American Values Scale for Asian Americans-Revised (EAVS-AA-R; Hong, Kim, & Wolfe, 2005) and the Asian Values Scale-Revised (AVS-R; Kim & Hong, 2004) to measure Euro-American and Asian values, respectively.

TAS-20. The TAS-20 (Bagby, Parker, & et al., 1994; Bagby, Taylor, & et al., 1994) consists of 20 items, answered on a 5-point Likert scale ranging from 'Completely disagree' to 'Completely agree'. A total score is computed across all

items, after recoding reversed items. Subscale scores are calculated by summing the scores on the items corresponding to each of the three subscales: DIF (7 items), DDF (5 items), and EOT (8 items).

MOD. The MOD scale of the CPAI (Cheung et al., 1996) is a 15-item measure that assesses respondents' endorsement of modern as opposed to traditional values and beliefs. Although the CPAI was originally developed as an indigenous Chinese measure of personality, cross-cultural research using the English version of the CPAI has found support for the measure's validity and relevance across cultural contexts, including in a Euro-American sample (Cheung, Cheung, Leung, Ward, & Leong, 2003). A single mean score is computed for the MOD scale, after recoding reversed items[1]; higher scores represent more liberal values and a rejection of traditional beliefs and customs, while lower scores represent greater endorsement of traditional values and practices (Cheung, Kwong, & Zhang, 2003).

EAVS-AA-R and AVS-R. Both the EAVS-AA-R (Hong et al., 2005) and the AVS-R (Kim & Hong, 2004) are 25-item measures of adherence to particular sets of cultural values. The EAVS-AA-R assesses European American or 'Western' values, such as individual achievement and personal autonomy. The AVS-R assesses values common in East and Southeast Asian cultural contexts, such as filial piety, conformity to norms, and collectivism. The items on both measures are phrased as general values statements, and do not include specific cultural references or terms. Respondents rate their level of agreement with each item using a 4-point scale ranging from 'Strongly disagree' to 'Strongly agree'. For both measures, a single mean score is computed after recoding reversed items.

Results

Measurement equivalence

When conducting cross-cultural research, it is critical to first examine whether scales have measurement equivalence in the cultural groups under consideration. To address this issue, we tested for uniform and non-uniform differential item functioning (DIF) across the two groups using ordinal logistic regression. These analyses were conducted separately for the total TAS-20, the three TAS-20 subscales, MOD, EAVS-AA-R, and AVS-R. Following Zumbo (1999), individual items serve as dependent variables and predictors are added in three steps: (1) total score; (2) total score + cultural group; (3) total score + cultural group + (total score * cultural group). A significant X^2 difference accompanied by a large change in the Nagelkerke pseudo-R^2 (i.e., ≥ .13) between steps one and two indicates uniform DIF, and between steps two and three indicates non-uniform DIF. No items on any of the scales showed uniform or non-uniform DIF (all Nagelkerke pseudo-R^2 ≤ .044). Therefore, no scale modifications were required before proceeding with our main analyses.

Scale reliability and inter-correlations

Cronbach's alpha coefficients of the measures are shown separately for the two groups in Table 1. Consistent with previous studies, the EOT subscale showed the lowest reliability of the TAS-20 subscales in both groups. In particular, the EOT subscale showed poor reliability in the Chinese-Canadian group. Examination of the item-level reliability statistics for the EOT subscale revealed that, for both groups, there were no items whose removal would increase the subscale's reliability.

Therefore, the standard eight items were retained. All three values measures showed moderate to adequate reliability.[2]

Both groups showed a similar pattern of correlations among the values measures. MOD was positively correlated with the EAVS-AA-R (*r*s = .58 and .53, in the Euro-Canadians and Chinese-Canadians, respectively) and negatively correlated with the AVS-R (*r*s = -.58 and -.55, in the Euro-Canadians and Chinese-Canadians, respectively). The AVS-R and EAVS-AA-R were negatively correlated in both groups (*r*s = -.47 and -.36, in the Euro-Canadians and Chinese-Canadians, respectively). All correlations were significant at the $p < .01$ level. These correlations fit with expectations and provide support for the construct validity of the values measures.

Group comparisons

Group differences on the TAS-20 and the values measures were examined using independent samples t-tests.[3] As shown in Table 2, the Chinese-Canadian group had significantly higher scores on the total TAS-20 than the Euro-Canadians. In support of Hypothesis 1, this group difference was driven by significantly higher EOT scores among the Chinese-Canadians as compared to the Euro-Canadians. There were no significant group differences on either the DIF or DDF subscales. These findings replicate the results of Ryder and colleagues (2008).

Table 2 also displays group comparisons for the three values measures. As expected, the Euro-Canadians reported significantly higher scores on MOD and the EAVS-AA-R, and significantly lower scores on the AVS-R, as compared to the Chinese-Canadians. These findings provide further support for the construct validity of the cultural values measures.

Regression analysis

To examine our hypotheses regarding the prediction of EOT, DIF, and DDF by cultural values, multiple linear regression analyses were conducted separately in each group. One set of analyses examined MOD, while a second set examined the EAVS-AA-R and AVS-R together. This approach allowed for internal replication of our findings regarding the link between values and alexithymia. For each regression analysis, one TAS-20 subscale was entered as the dependent variable, the other two subscales, age, and sex were entered as predictors in the first step of the regression, and the relevant values score(s) were entered in the second step. As three analyses were conducted in each group, one per TAS-20 subscale, Bonferroni adjusted alpha levels of .017 per test were used (.05/3). Results meeting this criteria are reported as significant at the $p < .05$ level; results not meeting this adjusted alpha level are reported as non-significant (see Appendix B for full regression tables).

In support of Hypothesis 2, EOT was predicted by cultural values in both groups. In the Euro-Canadian group, MOD significantly negatively predicted EOT, $\beta = -.25$, $p < .05$; the addition of MOD to the model resulted in a significant R^2_{ch} of .06, $F(1, 255) = 21.01$, $p < .05$. In the second regression model, the EAVS-AA-R also significantly negatively predicted EOT, $\beta = -.20$, $p < .05$, though the AVS-R did not account for unique variance in EOT, $\beta = .07$, *ns*. The addition of the EAVS-AA-R and AVS-R to the model resulted in a significant R^2_{ch} of .05, $F(2, 254) = 9.02$, $p < .05$. Similarly in the Chinese-Canadian group, MOD significantly negatively predicted EOT, $\beta = -.31$, $p < .05$; the addition of MOD to the model resulted in a significant R^2_{ch} of .09, $F(1, 227) = 27.76$, $p < .05$. In the second model, the EAVS-AA-R also negatively

predicted EOT, β = -.27, $p < .05$, while the AVS-R was not a significant predictor, β = .12, *ns*; the addition of the EAVS-AA-R and AVS-R to the model resulted in a significant R^2_{ch} of .10, $F(2, 226) = 14.70$, $p < .05$. Therefore, Hypothesis 3 was partially supported in both groups, with both MOD and the EAVS-AA-R significantly predicting EOT in the expected direction, but the AVS-R not acting as a significant predictor.

Also in line with Hypothesis 2, neither DIF nor DDF were significantly predicted by cultural values in either group. In the Euro-Canadians, MOD did not significantly predict DIF or DDF, βs = .05 and .03, *ns*, and neither did the EAVS-AA-R, βs = -.10 and .03, *ns*, or AVS-R, βs = -.12 and .09, *ns*. Similarly, in the Chinese-Canadians, MOD did not significantly predict DIF or DDF, βs = -.04 and -.01, *ns*, and neither did the EAVS-AA-R, βs = -.11 and -.07, *ns*, or AVS-R, βs = .02 and -.04, *ns*. The addition of cultural values did not result in a significant R^2_{ch} in any of the models predicting DIF or DDF, in either group. To help address the statistical problems associated with examining null hypotheses, statistical power calculations for multiple regression were conducted. When examining the prediction of DIF by cultural values, the current study had sufficient power (>.80) to detect a minimum R^2_{ch} of .025 and .027 in the MOD model and .031 and .033 in the EAVS-AA-R and AVS-R model, in the Euro-Canadians and Chinese-Canadians, respectively. When examining the prediction of DDF, the study had sufficient power to detect a minimum R^2_{ch} of .023 and .025 in the MOD model, and .028 and .031 in the EAVS-AA-R and AVS-R model, in the Euro-Canadians and Chinese-Canadians, respectively.

Though these calculations strengthen our interpretation of the DIF and DDF results, the possibility remains that there are real, albeit small, effects for these variables.

Mediation analysis

In order to examine our hypothesis that cultural values would mediate the effect of group membership on EOT, we conducted bootstrapping analyses using methods described by Preacher and Hayes (2008) and an SPSS macro created by these authors that allows for multiple mediators and covariates in a single model. Bootstrapping is a non-parametric approach to mediation analysis that better controls for Type I error and has higher power than traditional approaches; it is increasingly recognized as a preferred method for evaluating mediation effects (see Biesanz, Falk, & Savalei, 2010; Hayes, 2009; Preacher & Hayes, 2008). The results presented in the current study are based on 5000 resamples and percentile confidence intervals (Biesanz et al., 2010; Hayes, 2009). MOD was examined in a simple mediation model, while the EAVS-AA-R and AVS-R were examined together in a two-mediator model. For both analyses, EOT was entered as the dependent variable, group membership was entered as the independent variable (Euro-Canadian=0; Chinese-Canadian=1), and age and sex were entered as covariates.

The results with MOD showed that the total effect of group membership on EOT (total effect = 2.06, $p < .001$) was reduced when MOD was included in the model (direct effect of group membership: 1.24, $p < .001$). The total indirect effect of group membership on EOT through the mediator was significant (point estimate = 0.82, 95% Percentile confidence interval (PCI) [0.53, 1.13]), meaning that MOD was a significant mediator. These results suggest that MOD partially mediated the effect of

group membership on EOT, and provide support for Hypothesis 4. See Figure 1 for the full mediational model.

The results with the EAVS-AA-R and AVS-R also provide strong support for Hypothesis 4. The total effect of group membership on EOT (total effect = 2.06, p <.001) was reduced to non-significance when the two values measures were included in the model (direct effect of group membership = 0.61, ns). In addition, the total indirect effect of group membership on EOT through the two cultural values mediators was significant (point estimate = 1.45, 95% PCI [1.01, 1.92]). This suggests that the EAVS-AA-R and AVS-R fully mediated the effect of group membership on EOT, in support of Hypothesis 4. Bootstrapping also allows for the examination of the specific indirect effects of each proposed mediator (e.g., the effect of group membership on EOT through Euro-American values). Both the EAVS-AA-R (point estimate = 1.08, 95% PCI [0.70, 1.52]) and AVS-R (point estimate = 0.37, 95% PCI [0.06, 0.69]) were significant unique mediators. The contrast testing the two mediators was also significant (point estimate = -0.72, 95% PCI [-1.32, -0.16]), meaning that the indirect effect of the EAVS-AA-R was significantly larger than the indirect effect of the AVS-R. See Figure 2 for the full meditational model.

Discussion

The results of the current study provide generally strong support for our hypotheses. As predicted, the Chinese-Canadian group reported significantly higher levels of EOT than the Euro-Canadians, and there was no group difference on either DIF or DDF. These results replicate those of Ryder and colleagues (2008) in their study of Chinese and Euro-Canadian outpatients, and suggest that higher levels of

alexithymia among samples of Chinese heritage as compared to Western European heritage may be specifically driven by higher levels of EOT. However, Dion (1996) also studied students of Chinese and European heritage and found group differences on all three TAS-20 subscales, suggesting the need for further replication.

Our hypotheses regarding the role of cultural values in predicting EOT and in mediating the effect of group membership on levels of EOT were also largely supported. As expected, higher levels of Modernization predicted lower levels of EOT among both Euro-Canadians and Chinese-Canadians. These findings suggest that the endorsement of more modern or liberal values is linked to a relative emphasis on one's inner emotions. As the Modernization scale is understood as bipolar, these results also suggest that values and beliefs seen as traditional within a Chinese context promote a relative emphasis on external, concrete stimuli rather than on inner emotional experience. In line with the Modernization results, higher levels of Euro-American values also predicted lower levels of EOT in both groups. This suggests that Euro-American values foster greater emphasis on internal emotional stimuli, rather than external stimuli, consistent with the cross-cultural emotion literature briefly reviewed earlier. In contrast, Asian values as assessed by the AVS-R did not significantly predict EOT in either group. The lack of a significant association between Asian values and EOT was unexpected, and any interpretation must remain tentative. However, as discussed below in the context of the mediation results, it is possible that the values captured by the AVS-R are relatively unrelated to EOT due to the 'Western' origins of the alexithymia construct.

Neither DIF nor DDF were significantly predicted by cultural values in either group. These results support our proposal that EOT may be particularly shaped by cultural context, in contrast to the other main components of alexithymia. While the expected lack of association of DIF and DDF with cultural values represents an attempt to evaluate null hypotheses, the pattern of findings fits well with our theoretical model.

The results of our meditational analysis also provide strong support for our hypotheses. In a simple mediation model, Modernization was a significant mediator of the effect of group membership on EOT, suggesting that group differences in EOT are partially explained by differences in the relative level of modern versus traditional values in these two groups. In a two-mediator model, Euro-American and Asian values together fully mediated the effect of group membership on EOT, and each set of values also acted as an independent mediator of this effect. Though Asian values did not significantly predict EOT within either group, regression results were in the expected direction, allowing the effect to attain significance in the combined sample. These results suggest that the group difference in levels of EOT between the Euro-Canadians and Chinese-Canadians can be explained by differences in their average endorsement of Euro-American and Asian cultural values. Taken together, the results of both meditational models suggest that cultural values that differentiate Euro-American versus Chinese cultural contexts help to explain group differences in the relative importance placed on emotion-related stimuli.

Consistent with the regression results, Euro-American values had a significantly stronger mediating effect than Asian values in the two-mediator model.

The stronger association between Euro-American values and EOT was not predicted, and any potential explanations remain speculative. However, it is possible that this finding reflects the 'Western' roots of alexithymia, as discussed earlier. Since the construct can be understood as grounded in 'Western' norms regarding emotional expression and the place of emotions in daily life, perhaps it is not surprising that variations in Euro-American values would have a particularly strong bearing on levels of EOT. Further research is required to examine and clarify this issue.

The current findings offer several important implications for the study of alexithymia. First, our results highlight the importance of separately examining the individual components of this construct. Such an approach has been recommended as clinically valuable (Kirmayer & Robbins, 1993) and the current study demonstrates the value of studying the individual components from a cultural perspective. A more critical implication is that the inclusion of EOT in the total TAS-20 score may lead to a cultural bias in the measurement of alexithymia. Our results suggest that relatively high levels of EOT may be driven by factors unrelated to emotional processing deficits, such as cultural values. Therefore, the calculation of a total alexithymia score that contains a significant amount of EOT-related content is likely to overestimate the levels of alexithymia in certain groups, particularly those with lower levels of 'Western' values and higher levels of 'traditional' values. This suggests that researchers conducting cross-cultural examinations of alexithymia should be cautious in drawing conclusions from simple group comparisons, and be especially attuned to differences across the individual components.

Furthermore, the current findings may offer a non-pathological explanation for cultural differences in alexithymia. Group differences driven by variations in EOT may be based on cultural differences in the emphasis placed in emotional experiences, rather than actual emotional difficulties. High levels of EOT are likely to be driven by emotional processing deficits in certain contexts, such as those characterized by more 'Western' values, and therefore be clearly related to overall alexithymia. However, in cultural contexts with lower levels of 'Western' values and greater levels of 'traditional' values, high levels of EOT may instead be driven by cultural factors and be relatively unrelated to emotional deficits. This theoretically-driven proposal remains speculative at this point, and requires further empirical investigation.

Our results also illustrate the value of moving beyond simple cultural comparisons and examining specific variables that can help to explain group differences on psychological constructs. As mentioned earlier, such an approach has been referred to as 'unpacking' or 'unpackaging' culture (Matsumoto & Yoo, 2006; Singelis et al., 1999). Studies that reveal cultural differences have been helpful in throwing light on the problematic assumptions of universality that have long characterized the field of psychology. Methods that move beyond the discovery of group differences and towards an empirical understanding of such differences can make particularly important contributions by revealing specific mechanisms that underlie various psychological processes (Heine & Norenzayan, 2006; Matsumoto & Yoo, 2006).

There are several important limitations to the current study. Firstly, the EOT subscale showed poor reliability in both groups. Though this is consistent with previous studies, it remains somewhat problematic for interpreting results. In future studies extending the themes of the current research, it may well be valuable to include measures of other cognitive styles relevant to our discussion of EOT to help bolster these findings. Similarly, the use of cultural values measures with improved reliability would also be a valuable addition in future research, as would the inclusion of other cultural-level variables. To complement the use of broad cultural values measures in the current study, future variables of interest may include more narrow sets of values, such as values about emotional control (Mauss et al., 2010). The generalizability of the current findings is also limited by the use of a student sample. However, the current study provides an initial examination of a set of theory-driven hypotheses, which will be examined in clinical and community samples in future studies. Future research should also examine the extent to which our findings extend to other Chinese heritage samples, including those from Chinese majority societies. As our hypotheses were based on previous work with samples from China, we predict that our findings would extend to such groups. Finally, the use of self-report measures can introduce certain limitations, particularly in the assessment of alexithymia – a construct defined by a difficulty in reporting one's psychological experiences. Though this is a limitation shared by much alexithymia research, replication of the current findings using alternative assessment methods would be desirable. The authors of the TAS-20 have recently developed the Toronto Structured Interview for Alexithymia (TSIA; Bagby, Taylor, Parker, & Dickens,

2006), and a cultural examination of alexithymia using this tool would be a valuable addition to the literature.

The current study highlights the value of taking a cultural perspective in examining clinically relevant psychological constructs. Our findings hold implications both for researchers interested in the links between culture and emotional processes, as well as for mainstream alexithymia researchers. Furthermore, the model proposed here has implications for understanding cultural variations in the presentation of depressive symptoms among individuals of Chinese and North American heritage, a longstanding line of inquiry in the cultural psychiatry literature (e.g., Kleinman, 1982). Ryder and colleagues (2008) found that EOT partially mediated the relation between group membership and somatic symptom reporting among Chinese and Euro-Canadian outpatients. Future studies should examine the question of whether or not cultural values and EOT help to explain the relative emphasis on somatic versus psychological symptoms in these two cultural groups.

Although the results of Study 1 provide strong support for our hypotheses regarding the cultural shaping of alexithymia, the study had several important limitations. In particular, the use of a student sample limits the generalizability of our findings. This is especially true given that alexithymia is largely discussed as a pathological construct and may well show different patterns in non-distressed versus distressed samples. Therefore, replication of the current findings in a clinical sample is critical. Furthermore, it remains to be seen whether the results from our Chinese-Canadian group would replicate in Mainland China. It is possible that our results are somehow particular to the multi-cultural Canadian context, or are influenced by a history of immigration. Extension of these results to a Chinese sample would therefore be valuable. Similarly, replication of the current findings using Chinese-language measures is also an important next step.

Study 2 was designed to address this set of limitations. A sample of both urban and rural Chinese outpatients completed the same set of questionnaires as used in Study 1. All participants were seeking mental health services and endorsed clinical levels of depressive symptoms. This sample is valuable in that it offers the opportunity to examine our central hypotheses regarding the association between alexithymia and cultural values in a distressed sample from Mainland China. The replication of the findings from the Chinese-Canadian student group in this Chinese sample would suggest that our cultural model of alexithymia may generalize across Chinese cultural contexts. Furthermore, participants in Study 2 completed Chinese-language measures, allowing us to examine whether our hypotheses are supported in both English-speaking and Chinese-speaking contexts.

Study 2: The cultural shaping of alexithymia: Values and externally oriented thinking in a Chinese clinical sample

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Abstract

Alexithymia is a multi-faceted personality construct characterized by difficulties in identifying and describing emotional states. Originally based on observations of American psychosomatic patients, the construct is now studied widely. However, few studies have critically examined alexithymia from a cultural perspective. Dere and colleagues (in press) recently found support for the hypothesis that one alexithymia component – externally oriented thinking (EOT) – is linked to cultural values, among Euro- and Chinese-Canadian students. The current study extends this work to a sample of Chinese depressed outpatients (n = 268). As expected, EOT was negatively predicted by Modernization and Euro-American values. Two other alexithymia components, difficulty identifying feelings and difficulty describing feelings, were unrelated to cultural values. These findings suggest that cultural variations in the importance placed on emotional experience must be taken into account in cross-cultural alexithymia research. Our findings also highlight the need for separate examination of the alexithymia components; failure to do so may well lead to the overestimation of alexithymia in groups where scores are driven by culturally-shaped EOT.

The cultural shaping of alexithymia: Values and externally oriented thinking in a Chinese clinical sample

The construct of alexithymia was introduced in the early 1970s, in an attempt to operationalize a set of clinical characteristics observed among psychosomatic patients. Interest in alexithymia has since expanded considerably, with the literature now encompassing a broad set of research questions and populations. This expansion has led to the application of the construct in cultural contexts that diverge significantly from that in which alexithymia was originally defined; when conducted uncritically, such applications at best carry the risk of misinterpreted results. The current study provides a cultural examination of alexithymia among Chinese outpatients that raises a more serious concern than simple misinterpretation. We propose that one alexithymia component – externally oriented thinking – can be culturally shaped, and, therefore, that its inclusion in the overarching alexithymia construct may lead to the pathologization of cultural differences in emotion norms.

Coined by Sifneos and his colleagues (Nemiah, Freyberger, & Sifneos, 1976; Sifneos, 1973), the literal meaning of alexithymia is 'a lack of words for emotion'. The concept originated in Sifneos' observations of psychosomatic patients in Boston, who presented particular challenges in the context of psychoanalytic therapy, the predominant therapeutic approach of the day (see Prince, 1987). Four main features define this construct: (1) difficulty identifying feelings, and distinguishing them from physical sensations of emotional arousal; (2) difficulty describing emotions to others; (3) reduced imaginal capacities; and (4) an externally oriented thinking

style, with an emphasis on external, concrete stimuli rather than inner emotions (Taylor, 2000).

The introduction of valid and reliable measures has been critical to the advancement of the alexithymia literature in recent decades. The most popular and well-validated measure is the Twenty-item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, et al., 1994). The TAS-20 contains three subscales: Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF), and Externally Oriented Thinking (EOT). The measure demonstrates good psychometric properties across a range of samples (e.g., Bagby, Taylor, et al., 1994; Parker et al., 2003). The measure has also been translated into multiple languages, with general cross-cultural support for the three-factor structure and for the reliability of the total score and the DIF and DDF subscales (Taylor et al., 2003). However, the EOT subscale consistently shows poor internal reliability, particularly in non-English speaking samples (Taylor et al., 2003).

Whereas a number of studies using the TAS-20 have focused on cross-cultural measurement issues (e.g., Zhu et al., 2007), few studies have addressed conceptual questions from a cultural perspective. Alexithymia has, however, been the target of culturally-based theoretical critiques from early on, with authors highlighting the construct's historical and cultural roots (e.g., Kirmayer, 1987; Prince, 1987). In particular, alexithymia has been linked to 'Western' norms that emphasize individual emotional experience and the verbal expression of emotion, with the suggestion that this construct would not carry the same meaning or relevance in contexts with different emotion norms (Kirmayer, 1987). We propose

that a cultural perspective is particularly pertinent to EOT, since this component concerns the importance placed on emotional experiences, which is strongly related to cultural values and which varies significantly across cultural contexts (e.g., Eid & Diener, 2001; Markus & Kitayama, 1991).

Our focus on EOT is based on several converging theoretical observations and empirical findings. First, there is the consistently poor reliability of the EOT subscale in non-English speaking samples. Although this is a psychometric problem, it also suggests potential conceptual problems cross-culturally. Second, EOT stands apart from DIF and DDF in that it is not defined as an emotional deficit but rather a thinking style that de-emphasizes emotion. Finally, Ryder and colleagues (2008) examined alexithymia among Euro-Canadian and Chinese depressed outpatients, and found that higher alexithymia levels among the Chinese were explained by higher levels of EOT; neither DIF nor DDF showed a group difference. These authors proposed that EOT may be promoted in a Chinese context due to greater cultural emphasis on social harmony, relationships, and contextual factors, with relatively less emphasis on individual emotional experience (e.g., Heine, 2001). This proposal fits with a substantial literature on cultural differences in emotional processes among those of Chinese versus Western European heritage (e.g., Mesquita & Leu, 2007), but requires empirical examination.

Building on this work, Dere and colleagues (in press) sought to test the general hypothesis that EOT would be particularly shaped by cultural variables, in contrast to DIF and DDF, among Euro-Canadian and Chinese-Canadian students. Three sets of cultural values were examined – modernization, Euro-American

values, and Asian values. Replicating Ryder and colleagues' (2008) finding, higher total TAS-20 scores among the Chinese-Canadians were explained by a group difference on EOT. As hypothesized, Dere and colleagues found that modernization and Euro-American values negatively predicted EOT in both groups, while values were unrelated to DIF or DDF. Furthermore, cultural values mediated the effect of group membership on levels of EOT, helping to 'unpack' the observed cultural difference.

The current study extends the work of Dere and colleagues (in press) to a sample of depressed Chinese outpatients. As alexithymia is primarily a clinical construct, it is important to examine our cultural predictions in a distressed sample. Furthermore, the current participants were recruited in the same region as the Chinese sample in Ryder and colleagues (2008), but cover a wider range of sociodemographics, providing a valuable sample in which to continue this line of research. Based on our theoretical expectations and previous findings, we examined the following hypotheses: (1) of the three TAS-20 subscales, only EOT would be predicted by cultural values; and (2) EOT would be negatively predicted by modernization and by Euro-American values. Although we would expect EOT to be positively predicted by Asian values on a theoretical basis, Dere and colleagues (in press) found that Asian values did not predict EOT; therefore, we did not formulate a specific hypothesis regarding Asian values.

Method

Sites

Data were collected at three sites in Hunan province, in south-central China, as part of a larger cross-national project examining cultural variations in depressive symptom presentation. The use of multiple sites allowed for the recruitment of both urban and rural Chinese outpatients, in contrast to the predominance of urban samples in previous studies. The first two sites were the Psychology Clinics at the Second Xiangya Hospital and the Third Xiangya Hospital, located in Changsha, the capital of Hunan; both are affiliated with Central South University. The third site was the Psychology Clinic at the Fourth Hospital of Huaihua; this hospital serves a rural catchment area several hours from Changsha by car. At all sites, clinical outpatients presenting for mental health services were approached to participate in the research project. Potential participants were immediately excluded if they had a history of psychosis, mania, or neurocognitive deficits. Eligible patients received information about the project, were informed that nonparticipation would not affect their care, and provided written informed consent. Ethical approval of the research was granted by Concordia University in Montréal, Canada and Central South University in Changsha, China.

Participants

A total of 308 outpatients participated in the project, which involved the completion of a structured clinical interview and a battery of self-report questionnaires. The interview was based on that used by Ryder and colleagues (2008), with the incorporation of updated questions based on the most recent version of the Chinese Classification of Mental Disorders (CCMD-3; Chinese Psychiatric Society, 2001). The interview included questions to assess depression

and neurasthenia – a disorder often characterized as Chinese-specific, which overlaps with depression and is characterized by persistent mental and physical fatigue. For the current study, participants were eliminated if: (a) they were younger than 18 or older than 65; (b) they were missing data on the self-report measures of interest; or (c) they did not endorse at least one of the core symptoms of depression or neurasthenia, as defined across the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM–IV*; American Psychiatric Association, 1994) and the CCMD-3 systems. These post hoc exclusion criteria resulted in the elimination of 2 participants due to age, 4 participants due to missing questionnaire data, and 34 participants based on the clinical symptoms criteria.

The final sample consisted of 110 men and 158 women with a mean age of 34.29 years (range = 18 to 64, SD = 11.88). Of the 268 participants, 152 were collected in Changsha (56.7%) and 116 were collected in Huaihua (43.3%). A minority of participants (32.8%) had grown up in an urban setting (i.e., a large or small city, or suburb of a large city), whereas a majority (67.5%) were currently living in an urban setting, reflecting the wave of rural-to-urban migration occurring in China. Among the participants, 14 (5.2%) had not completed elementary school, 17 (6.3%) had only completed elementary school, 93 (34.7%) had completed secondary school, 62 (23.1%) had completed some form of vocational training, 73 (27.2%) had completed an undergraduate degree, and 9 (3.4%) had completed a doctorate or professional degree.

Measures

Participants completed a series of self-report questionnaires assessing psychological distress, emotion regulation, and cultural variables. All measures were presented using the simplified Chinese character set. Only the four measures relevant to the current study will be discussed here. Alexithymia was assessed using the TAS-20. As in the student study by Dere and colleagues (in press), cultural values were assessed in two ways: (1) a bipolar contrast of modernization versus traditionalism using the Modernization scale (MOD) of the Chinese Personality Assessment Inventory (CPAI; Cheung et al., 1996); and (2) a bidimensional approach to cultural values measurement using the European American Values Scale for Asian Americans-Revised (EAVS-AA-R; Hong et al., 2005) and the Asian Values Scale-Revised (AVS-R; Kim & Hong, 2004) to measure Euro-American and Asian values, respectively.

TAS-20. The TAS-20 (Bagby, Parker, et al., 1994) is a 20-item measure of alexithymia with three subscales, as discussed earlier. A total score is computed across all items, after recoding reversed items. Subscale scores are calculated by summing the corresponding item scores for each subscale: DIF (7 items), DDF (5 items), and EOT (8 items). A previously validated Chinese version of the TAS-20 was used (Zhu et al., 2007).

MOD. The MOD scale of the CPAI (Cheung et al., 1996) is a 15-item measure of modern as opposed to traditional values and beliefs; it was constructed as part of the larger CPAI questionnaire, an indigenous Chinese measure of personality. A single mean score is computed for the MOD scale, after recoding reversed items; higher scores reflect endorsement of liberal values and a rejection of traditional

beliefs and practices, while lower scores reflect greater endorsement of traditional beliefs and practices (Cheung, Kwong, et al., 2003). The original Chinese version of the scale was used.

EAVS-AA-R and AVS-R. Both the EAVS-AA-R (Hong et al., 2005) and the AVS-R (Kim & Hong, 2004) are 25-item measures of adherence to particular sets of cultural values. The EAVS-AA-R assesses values commonly adhered to in European American or 'Western' cultural contexts, such as individual achievement and personal autonomy. The AVS-R assesses values common in East and Southeast Asian cultural contexts, such as filial piety and collectivism. The items on both measures are phrased as general values statements, and do not include specific cultural references. For both measures, a single mean score is computed after recoding reversed items. The Chinese versions of these measures were based on translations obtained from one of the measures' authors, B. S. K. Kim (personal communication, August 30, 2007), with minor modifications made for the local Chinese context.

Results

Data cleaning

For each measure, univariate outliers were identified and brought in to within +/- 3 standard deviations from the mean, based on the method proposed by Tabachnick and Fidell (2001).

Scale reliability

Table 3 displays Cronbach's alpha coefficients for all measures, along with descriptive statistics. The total TAS-20 and the DIF and DDF subscales all showed good internal consistency. As in previous studies, the EOT subscale showed the

lowest reliability of the TAS-20 subscales. However, the reliability was particularly poor in this sample. The item-level reliability statistics for this subscale revealed that there were no items whose removal would increase the subscale's internal consistency. Structural equation modeling was used to help address the poor reliability of this subscale, as presented below. The AVS-R and MOD showed good reliability, while the EAVS-AA-R showed low reliability. A reduced version of the EAVS-AA-R was computed, after dropping five items that displayed negative item-total correlations in the reliability analysis; this reduced measure showed improved reliability, with a Cronbach's alpha of 0.57. All subsequent analyses were conducted with both the original and reduced versions of the EAVS-AA-R, with a nearly identical pattern of results; results using the full original measure are reported here.

Regression analysis

To examine our hypotheses regarding the prediction of EOT, DIF, and DDF by cultural values, multiple linear regression analyses were conducted. Following Dere and colleagues (in press), one set of regression analyses examined MOD while a second set examined the EAVS-AA-R and AVS-R together. This approach allowed for internal replication of our results regarding the association between values and alexithymia. For each regression analysis, one TAS-20 subscale was entered as the dependent variable, age, sex, and current urban versus rural status were entered as predictors in the first step, the other two TAS-20 subscales were entered in the second step, and the relevant cultural values score(s) were entered in the third step (see Appendix C for full regression tables).

As hypothesized, EOT was predicted by cultural values. MOD significantly negatively predicted EOT, β = -0.23, $p < 0.01$; the addition of MOD to the model resulted in a significant R^2_{ch} of 0.04, $F(1, 261) = 11.12$, $p < 0.01$. In the second regression model, the EAVS-AA-R also significantly negatively predicted EOT, β = -0.26, $p < 0.001$, though the AVS-R did not account for unique variance in EOT, β = 0.03, *ns*. The addition of the EAVS-AA-R and AVS-R to the model resulted in a significant R^2_{ch} of 0.06, $F(2, 260) = 9.02$, $p < 0.001$. These findings support our hypotheses, and replicate the findings of Dere and colleagues (in press).

Also in line with our first hypothesis, neither DIF nor DDF were significantly predicted by cultural values. MOD did not significantly predict DIF or DDF, βs = -0.02 and 0.07, *ns*, and neither did the EAVS-AA-R, βs = -0.02 and -0.03, *ns*, or AVS-R, βs = 0.02 and -0.02, *ns*. The addition of cultural values did not result in a significant R^2_{ch} in any of the models predicting DIF or DDF. Once again, these results replicate the findings of Dere and colleagues (in press).

To help address the statistical concerns associated with examining null hypotheses, power calculations for multiple regression were conducted. When examining the prediction of DIF or DDF by cultural values, the current study had sufficient power (>.80) to detect a minimum R^2_{ch} of 0.013 in the MOD models and 0.016 in the EAVS-AA-R and AVS-R models. These calculations bolster our interpretation of the DIF and DDF results, though the possibility remains that there are real, albeit small, effects for these variables.

Structural equation modeling

In light of the very low reliability of the EOT subscale in the current sample, the planned multiple regression analyses were followed up with structural equation modeling (SEM). This technique provides the advantage of explicitly taking measurement error into account. We constructed two models, one to test the relation between MOD and EOT (Figure 3), and the other to test the relation between the EAVS-AA-R and AVS-R and EOT (Figure 4). The technique of parceling was used to create measured variables for the four constructs of interest – EOT, MOD, EAVS-AA-R, and AVS-R – allowing EOT and the cultural values to be specified as latent variables. As suggested in the literature (Little, Cunningham, & Shahar, 2002), three parcels were constructed for each latent variable; in each case, the items from the relevant measure were randomly selected without replacement to construct the parcels. SEM analyses were conducted using Mplus, version 5 (Muthén & Muthén, 2007), and maximum likelihood estimation. Five fit indices were employed to assess 'goodness-of-fit': model chi square (χ^2), chi square/degrees of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR). Overall fit for these indices was evaluated using the following criteria (Bryne, 1994; Hu & Bentler, 1999; Ullman, 1996): non-significant χ^2; ratio of χ^2/df adequate if < 5.0 and good if < 2.0; CFI adequate if > 0.90 and good if > 0.94; RMSEA adequate if < 0.10 and good if < 0.05; and SRMR adequate if < 0.08 and good if < 0.05.

The model testing the direct effect of Modernization on EOT showed good fit (χ^2 = 9.40, df = 8, p = 0.31; χ^2/df = 1.18; CFI = 1.0; RMSEA = 0.03, 90% CI from 0 to 0.08; SRMR = 0.03). All proposed pathways were significant, as shown in Figure 3.

The model testing the direct effect of Euro-American and Asian values on EOT showed acceptable fit ($\chi^2 = 50.32$, df = 24, $p = 0.001$; $\chi^2/df = 2.10$; CFI = 0.92; RMSEA = 0.06, 90% CI from 0.04 to 0.09; SRMR = 0.05). Similar to the regression results, Euro-American values negatively predicted EOT but the proposed pathway from Asian values to EOT was not significant ($\beta = -0.14$, *ns*). All remaining pathways were significant (see Figure 4). The results of both SEM models replicate those from the multiple regression analyses predicting EOT.

Discussion

The current results provide strong support for our hypotheses. As expected, EOT was negatively predicted by both Modernization and Euro-American values. Furthermore, neither DIF nor DDF were significantly predicted by values, in line with our proposal that EOT is particularly shaped by cultural context. While the expected non-significant association between cultural values and DIF and DDF represents an attempt to evaluate null hypotheses, the pattern of results fits well with our theoretical model. Our results also replicate those of Dere and colleagues (in press).

A particular strength of this study is the sample. Depressed outpatients are a pertinent group for this research, in light of the frequently examined link between alexithymia and depression (e.g., Saarijärvi et al., 2001). Furthermore, Dere and colleagues (in press) highlighted the need to replicate their findings in a Chinese sample; the current study also provides replication using Chinese language measures. Finally, it is noteworthy that our sample includes both urban and rural outpatients, likely capturing a wider range of cultural values, educational

experiences, and socioeconomic status than the majority of previously studied Chinese clinical samples. This range of sociodemographics is particularly valuable in cultural research, enhancing the generalizability of our findings.

Our results hold important implications both for alexithymia research and for the cross-cultural study of emotion and emotional distress. In line with other recent work, our findings highlight the need to examine the components of alexithymia separately. Several authors have called for such an approach (e.g., Pollatos et al., 2011) in light of differential effects of the TAS-20 subscales on variables including autonomic reactivity (Pollatos et al., 2011), emotion word recall (Luminet, Vermeulen, Demaret, Taylor, & Bagby, 2006), and depressed mood (Saarijärvi et al., 2001). Unfortunately, many studies do not examine the individual components. Based on the current research, failure to do so may well lead to the overestimation of alexithymia in groups where TAS-20 scores are driven by culturally shaped EOT.

The current findings, along with those of Dere and colleagues (in press), also point towards a model of alexithymia in which DIF and DDF are seen as the central deficits, and EOT as a thinking style whose association with such deficits depends on cultural context. In contexts where emotional experience is strongly valued, high levels of EOT are more likely to be problematic and associated with DIF and DDF; EOT may be relatively less related to DIF and DDF in contexts where high levels of EOT are driven by cultural factors that de-emphasize emotions. Although this theoretical model requires direct empirical examination, Coffey and colleagues (2003) provide findings that may support our proposal. These authors conducted a

factor analysis with the subscales of the TAS-20 and measures of emotional intelligence and mood awareness. They found two overarching factors, which they termed 'attention to emotions' and 'clarity of emotions'. EOT loaded more strongly on the attention factor, which the authors framed as a personality dimension, whereas DIF and DDF loaded on the clarity factor, which was framed as an aptitude. Based on our model, we would expect to find cultural differences in the emphasis placed on emotions (attention), but not in emotion-related deficits (clarity).

The finding that EOT is related to cultural values also holds potential implications for the study of cultural variations in the presentation of emotional distress, particularly among Chinese and 'Western' samples. Ryder and colleagues (2008) found that EOT partially mediated the relation between group membership and somatic symptom reporting among Chinese and Euro-Canadian outpatients, helping to partly explain the higher levels of somatic symptoms in the Chinese group. It seems logical that cultural differences in the importance placed on emotional experience would be associated with differences in the experience and reporting of psychiatric symptoms. Future research should seek to further examine the links between cultural values, EOT, and symptom presentation.

Our study has several important limitations. Most critical is the low reliability of the EOT subscale, which simultaneously suggests the need for closer examination of this construct while making it difficult to test conceptual research questions. The use of parceling and SEM analyses helped to address this problem to a certain extent, by directly accounting for measurement error. However, parceling remains controversial within the SEM literature (e.g., Little et al., 2002). Future

studies should include multiple measures related to EOT and additional cultural variables, both to extend the current research and to construct an SEM model that does not require parceling. Furthermore, the current study lacks a Euro-Canadian sample that would allow for replication of the cross-cultural analyses conducted by Ryder and colleagues (2008) and Dere and colleagues (in press); future studies would benefit from the inclusion of such a comparison group. Finally, it is worth noting that the current participants were seeking psychiatric services, which may differentiate them in important ways from other distressed Chinese groups, such as those who primarily use traditional medicine.

The current study demonstrates the value of examining clinical constructs from a cultural perspective. Given the particular socio-cultural roots of the alexithymia construct, it is perhaps especially important to critically examine this topic in a range of cultural contexts, in the interest of advancing the literature and preventing the misinterpretation of cross-cultural results. While our hypotheses and findings are framed within cross-cultural theory and research, it is hoped that this work can inform a more nuanced understanding of alexithymia more generally.

General Discussion

The current research examined the proposition that the EOT component of alexithymia is promoted in certain cultural contexts, while the deficit-based components of DIF and DDF are not. In turn, this work contends that cultural differences in alexithymia are best understood as reflecting cultural variations in the importance placed on emotion rather than group differences in emotional deficits. The results of both studies presented here provide strong support for this theory-based proposal, and hold several important implications for the study of alexithymia. In offering a culturally-informed re-conceptualization of alexithymia, this research also helps to counter historical stereotypes regarding deficits in emotional expression among Chinese populations. The current results also hold important clinical implications, specifically linked to our understanding of emotional distress in Chinese contexts and relevant to issues of clinical presentation and therapeutic intervention. The following discussion will elaborate on these points, and also suggest important avenues for future research.

A cultural model of alexithymia

What do the current research findings mean for the study of alexithymia? At the very least, they strongly suggest that the individual subscales of the TAS-20 (and other measures of alexithymia) should be separately examined. Regardless of the specific focus of a given study, this approach will allow both researchers and readers to observe divergent patterns across the three components; the glossing over of differences among the components will therefore be prevented. As discussed earlier, this approach has also been promoted among alexithymia researchers who

are not conducting cross-cultural work (e.g., Pollatos et al., 2011). Such authors have commented on the fact that a better understanding of the link between individual alexithymia components and related variables provides a more complete and accurate picture of the role of alexithymic traits in mental and physical health. The current research simply heightens the importance of this approach, by proposing that failure to examine the separate components may result in the erroneous and pathologizing conclusion that greater levels of emotional deficits are found in certain cultural contexts as opposed to others.

At a more profound level, the current research suggests the need for a conceptual revision of the alexithymia construct. An early observer of the alexithymia literature, Lesser (1981) emphasized conceptual refinement and precise operationalization as pre-requisites for the effective application of the alexithymia construct in clinical research. Although the alexithymia literature has seen considerable progress in the past few decades, further refinement remains valuable in advancing the field as well as guarding against flawed interpretations, particularly in the context of cross-cultural work. As suggested earlier, few cross-cultural alexithymia studies have had much to say regarding the conceptualization of the construct. The current research project sought to counter this trend, and provides some initial – and potentially controversial – ideas regarding a re-conceptualization of alexithymia.

The cultural model of alexithymia that emerges with these theory-based predictions and is supported by the current findings has at its premise that EOT will be encouraged in cultural contexts that de-emphasize emotions, while DIF and DDF

are much less likely to be culturally promoted. An extension of this central idea is the proposal that DIF and DDF are the core deficits of alexithymia, in line with the most basic definition of alexithymia as 'a lack of words for emotion'. It seems likely that pathological difficulties in identifying and labeling one's own emotional experiences and in describing these emotions to others would be problematic in many different cultural contexts. Here, an important distinction is made between being *able* to identify and describe emotions and electing to do so. DIF and DDF are seen to reflect emotional capabilities (or a lack thereof), in line with Coffey and colleagues (2003) who found that these two subscales of the TAS-20 loaded on a factor reflecting emotional aptitude. As already discussed, cultural contexts vary significantly in the norms regarding when and to what extent emotions are labeled and shared; however, the current work proposes that such variation is not related to actual emotional capabilities.

An additional aspect of this model, which stems from the features listed above, is that the association between EOT and DIF/DDF should vary across cultural contexts. In contexts that highly value individual emotional experience and expression (i.e., 'Western' contexts), high levels of EOT are likely to be quite problematic and more tightly associated with alexithymic deficits. The three TAS-20 subscales are therefore more likely to hang together. In contrast, in contexts that favour emotional restraint and de-emphasize the importance of emotional experience (i.e., Chinese and other East Asian contexts), high levels of EOT are more likely to be culturally shaped and promoted, and therefore less associated with the emotional deficits captured by DIF and DDF.

This expected variation in the association between EOT and DIF/DDF across contexts might help to explain the inconsistent inter-correlations between the EOT subscale and the other two subscales that have been found since the introduction of the TAS-20. For some people, EOT will be directly associated with profound difficulties in identifying and labeling emotional arousal. For others, EOT will largely reflect a value-based emphasis on non-emotional stimuli. These differences are likely to be influenced by various factors, reflecting both individual differences and cultural variation. At the cultural level, the meaning of EOT is likely shaped by and integrated into 'cultural scripts' (Ryder, Ban, & Chentsova-Dutton, 2011) regarding emotions and their expression, and the extent to which personal emotional experience is seen as valuable in social relationships (Potter, 1988). These scripts shape the way and extent to which internal emotional experience is attended to, is amplified or moderated, and is shared with others. By examining the role of such scripts – and their cross-cultural variation – we can more accurately interpret the meaning of high EOT across different contexts and recognize that this meaning is likely to vary. This perspective can also help us to better understand what low levels of EOT may mean in different cultural contexts, including the possibility that low EOT may be problematic in Chinese contexts by running counter to normative emotional scripts.

Although the current research project offers initial support for this cultural model of alexithymia, further work is required to examine several of the proposed features, which currently remain theoretical. Future studies should examine the strength of association between EOT and DIF/DDF across different cultural

contexts. Ideally, these studies should include measures to assess both cultural variables and emotional processing deficits. This would allow for a direct examination of the proposed associations between these various factors, and the hypothesis that these associations will vary across cultural contexts.

Counteracting historical stereotypes

The proposed cultural model is also particularly valuable in that it provides a non-pathological explanation of group differences in alexithymia, at least among groups of Chinese and Western European heritage. This is particularly relevant when conducting emotion and mental health research in a Chinese context. Unfortunately, this area remains tied to lingering stereotypes regarding the 'inscrutable Chinese' (e.g., Ye, 2004) and a legacy of pathologizing explanations for somatic presentations of emotional distress in Chinese contexts that diverge from 'Western' expectations (Ryder & Chentsova-Dutton, 2012).

By proposing a model whereby culture shapes the non-deficit component of alexithymia, with the expectation that emotional abilities will not differ cross-culturally, this work departs from older hierarchical theories of culture and emotion (e.g., Leff, 1980). Holding 'Western' norms as the explicit or implicit baseline to which other groups were compared, these older theories tended to link restrained emotional expression with a lack of linguistic or psychological sophistication. For example, Leff (1980) suggested that the Chinese language lacked a nuanced emotional vocabulary, in contrast to English, and that this helped to explain the relative de-emphasis on emotional expression in Chinese contexts. This theory has since been clearly refuted, but it remains the case that work in this area can serve

the important function of counteracting potentially damaging ideas that confound attention to emotion with emotional ability.

'Chinese somatization' and clinical implications

Pathologizing explanations have also been offered for the finding that individuals of Chinese heritage tend to emphasize somatic symptoms in the presentation of emotional distress, in contrast to the psychological emphasis found among those of Western European heritage. This cultural difference, sometimes referred to as 'Chinese somatization', is an important topic in the field of cultural psychopathology and has received theoretical and empirical attention for several decades (e.g., Kleinman, 1982; Ryder et al., 2008). Theoretical explanations have included psychoanalytically grounded notions of somatization as a defense mechanism, involving the avoidance of 'real' psychological troubles. As this type of presentation is seen as immature, cultural contexts in which greater levels of somatization are found are in turn depicted as less psychologically sophisticated (see Ryder & Chentsova-Dutton, 2012).

More recent work in this area has moved away from psychoanalytic definitions of somatization and hierarchical notions of cultural differences. However, few studies have empirically examined potential explanatory variables to help explain this cultural difference in symptom presentation. In one exception, Ryder and colleagues (2008) found that EOT partially mediated the relationship between cultural group and somatic symptoms in their study of Chinese and Euro-Canadian depressed outpatients. This finding suggests that cultural differences in the importance placed on inner emotional experience are associated with

differences in the experience and presentation of psychiatric symptoms. That study did not include measures of cultural values, and future research should seek to integrate the current model of alexithymia with an examination of symptom presentation.

The current findings also hold implications for clinical assessment and treatment. If cultural values help shape the attention paid to inner emotional experience, as suggested by this and other research, it is critical for clinicians to ask about and try to understand such values during any clinical encounter. We must be attuned to both cultural- and individual-level differences in the ways in which emotions are valued, discussed, and used as relevant cues of well-being and distress. This suggests a need to recognize the role of cultural scripts in shaping the clinical relationship, the presentation of emotions, and the importance placed on internal versus external factors (e.g., personal feelings of guilt versus strained familial relationships). Although the current research project does not directly address such clinical issues, future studies can hopefully draw from the current findings to examine and clarify these and other clinically relevant questions.

Limitations and future directions

Although the current research offers a valuable advance in the cultural study of alexithymia, and holds several important implications as discussed above, it remains an initial step in what is expected to become a larger program of research. The current studies have several important limitations, which offer clear objectives for future research. Firstly, due to the cross-sectional and correlational design of both studies, the ability to draw any causal conclusions is limited. The directionality

of the association between cultural values and EOT is assumed based on the idea that values represent a higher-order variable that shape all aspects of the way in which we interact with the world. However, the use of research designs that could directly address the issue of causality would be very valuable. For example, a longitudinal design examining the influence of acculturative processes in the association between cultural values and EOT among an immigrant sample might be informative. Alternatively, experimental designs that use priming techniques to manipulate the salience of different cultural frameworks (e.g., individualism versus collectivism, cultural values) prior to eliciting responses to other tasks would also be very valuable (e.g., Oyserman & Lee, 2008).

Another limitation of the current studies is the use of self-report measures. Although such measures are the most popular assessment technique in alexithymia research (Lumley et al., 2007), this does not negate the fact that reliance on self-report is particularly problematic when asking respondents to report on difficulties that they may not recognize as such. Future research should seek to incorporate additional assessment tools; in particular, the use of interview methods would be quite informative. Recently, the authors of the TAS-20 have introduced the Toronto Structured Interview for Alexithymia (TSIA; Bagby et al., 2006), which may prove to be a valuable tool in further advancing the field. Cross-cultural work using the TSIA and seeking to replicate the current findings would be especially valuable in advancing the cultural model of alexithymia being proposed.

The current research is also limited in its consideration of potential sex or gender effects; specific hypotheses were not formulated regarding such potential

effects, due to the lack of previous empirical or theoretical work examining the intersection of sex or gender, alexithymia, and cultural values. However, sex was included as a covariate in regression and mediation analyses. Among the regression analyses predicting EOT, the only model in which sex remained a significant predictor in the final step was the one examining MOD among the Euro-Canadian students. Sex was also a significant covariate in the MOD mediation model in Study 1. However, in keeping with recent meta-analytic results regarding sex differences in alexithymia (Levant, Hall, Williams, & Hasan, 2009), the magnitude of these effects was relatively small. Sex was not a significant predictor of EOT in Study 2. Although the current findings suggest that sex effects are unlikely to be large, future research would nevertheless benefit from more substantive examinations of the interplay between cultural context, sex or gender, and the components of alexithymia.

It will also be valuable to extend the current research to other East Asian contexts such as Japanese and Korean. It will be important to examine whether the current findings are particular to Chinese contexts or apply more broadly to East Asian contexts, which are seen to share a number of relevant cultural values. Ongoing refinement of the current model would also benefit from the examination of how cultural values shape alexithymia in other 'non-Western' contexts that hold varied norms regarding the importance of emotional experience and expression. The pursuit of further cross-cultural alexithymia work that is modeled on the current research can help to build a rich body of cultural research that more fully responds to the concerns raised by early critics (e.g., Kirmayer, 1987). More broadly,

such work can contribute to the project of refining the alexithymia construct that has been ongoing since its introduction.

Finally, the current research sought to highlight the value of 'unpacking culture', of focusing on explanations of cultural variation rather than simple group differences. Future studies should continue in this vein, drawing from the theory-driven work on culture and emotion that has been conducted within the field of cultural psychology. Furthermore, in light of the clinical issues that are directly tied to alexithymia research, future studies should draw on the methodological and conceptual discussions that are part of the developing field of cultural-clinical psychology (Ryder et al., 2011).

As laid out by Ryder and colleagues (2011), cultural-clinical psychology takes seriously the integration of each of its constituent parts, with the contention that a new field emerges at their intersection (see also Ryder & Chentsova-Dutton, 2012). This emerging field also integrates developments in the related areas of cultural psychiatry and cultural neuroscience, to propose a framework whereby culture, mind, and brain are each mutually constituted. The authors refer to this 'culture-mind-brain' as a single 'dynamic multilevel system', with each part influencing and shaping the others (Ryder et al., 2011).

The culture-mind-brain concept offers a valuable tool with which to further the cultural study of alexithymia, in that it takes each component as vital but none as primary. Using this framework, we can seek to integrate findings from the growing body of neurobiological research on emotion processing deficits in alexithymia (e.g., Larsen et al., 2003), with work that emphasizes the contextualized nature of

emotions and the role of cultural norms and values. Incorporating neurobiological work may help us to directly examine the contention that DIF and DDF represent deficits that would be problematic across cultural contexts, and would draw on recent advances in our knowledge of the neural underpinnings of emotion. At the same time, interpreting neurobiological work with a cultural lens would help to guard against universalistic assumptions and maintain the importance of the brain in context. In turn, the cultural study of alexithymia has the potential to become a paradigmatic example of efforts to advance the field of cultural-clinical psychology.

Tables

Table 1

Reliability of TAS-20 total scale and subscales, MOD, EAVS-AA-R, and AVS-R by group

	Euro-Canadian		Chinese-Canadian	
	α	Inter-item *r*	α	Inter-item *r*
TAS-20	.85	.22	.83	.19
DIF subscale	.83	.41	.84	.43
DDF subscale	.77	.41	.70	.32
EOT subscale	.67	.20	.56	.14
MOD	.67	.13	.71	.14
EAVS-AA-R	.73	.10	.67	.08
AVS-R	.75	.11	.69	.08

Note. TAS-20 = Twenty-item Toronto Alexithymia Scale. DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization scale. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised.

Table 2

Group comparisons on TAS-20 total scale and subscales, MOD, EAVS-AA-R, and AVS-R

	Euro-Canadian			Chinese-Canadian			Comparison		
	n	M	SD	*n*	M	SD	*t′*	df	d
TAS-20	271	45.39	10.48	237	48.89	9.67	-3.92***	504.54	-0.35
DIF subscale	271	15.02	5.15	237	15.89	4.91	-1.96	502.15	-0.17
DDF subscale	271	12.45	3.92	237	12.90	3.54	-1.38	505.48	-0.12
EOT subscale	271	17.92	4.19	237	20.10	3.93	-6.03***	503.51	-0.54
MOD	271	1.99	0.32	237	1.79	0.31	6.79***	499.85	0.64
EAVS-AA-R	271	1.99	0.27	237	1.76	0.24	10.19***	505.92	0.90
AVS-R	271	1.25	0.26	237	1.44	0.22	-9.08***	505.13	-0.79

Note. TAS-20 = Twenty-item Toronto Alexithymia Scale. DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization scale. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *t′*=Welch's t. d = Cohen's d. *** $p < .001$.

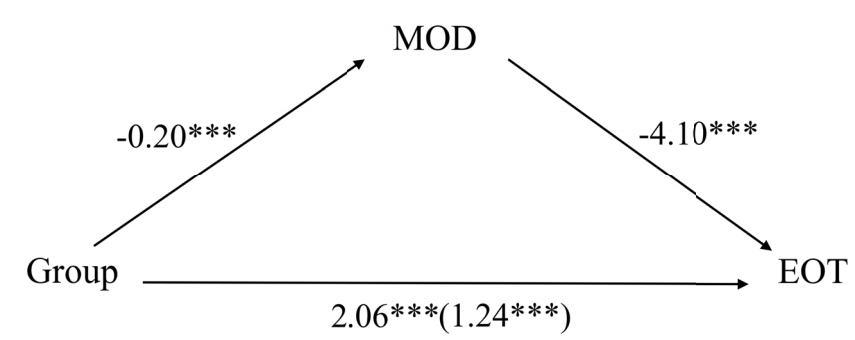
Table 3

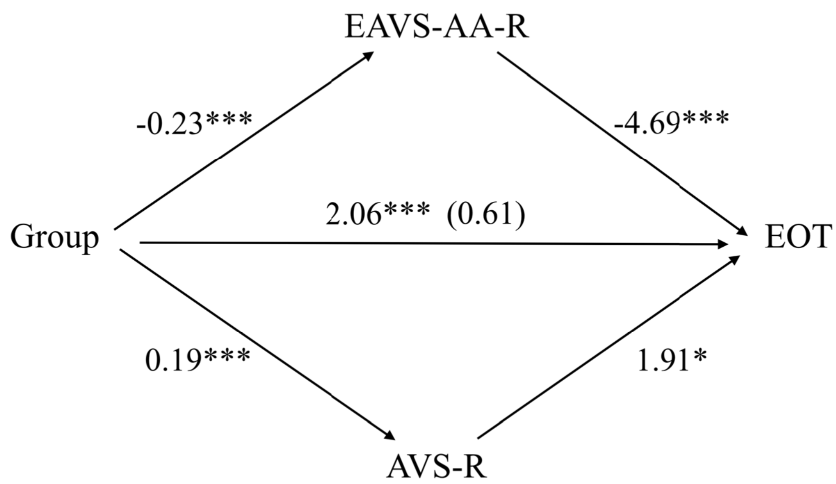
Scale reliability and descriptive statistics

	α	Inter-item *r*	M	SD
TAS-20	0.80	0.15	54.97	11.01
DIF	0.84	0.42	19.07	6.25
DDF	0.70	0.32	14.08	4.29
EOT	0.27	0.05	21.81	3.56
MOD	0.78	0.19	9.40	3.39
EAVS-AA-R	0.41	0.03	1.58	0.19
AVS-R	0.73	0.10	1.77	0.27

Note. TAS-20 = Twenty-item Toronto Alexithymia Scale. DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization scale. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised.

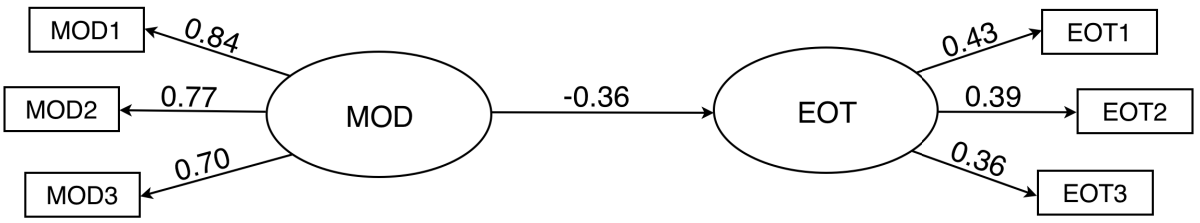
Figures

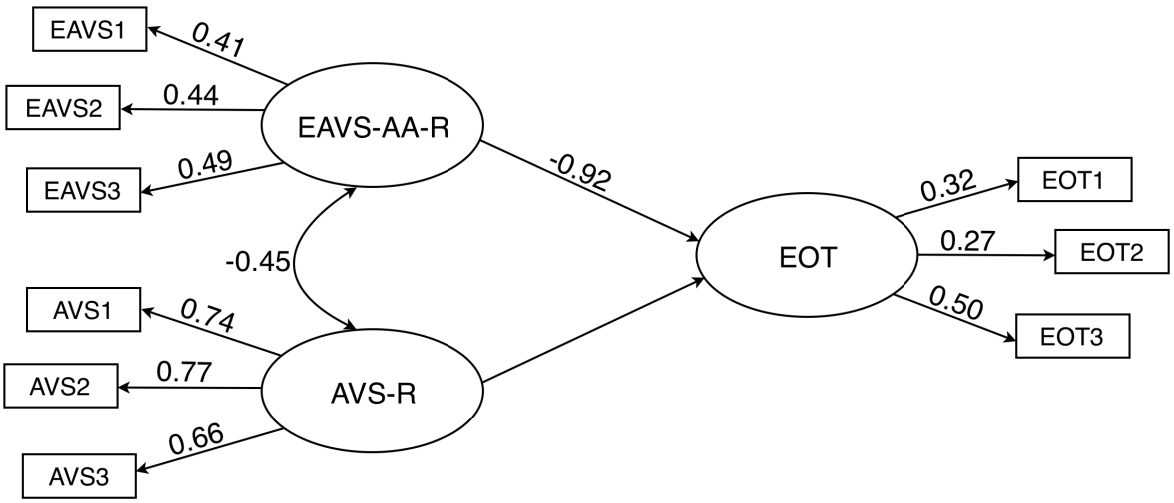

MOD
-0.20***
-4.10***
Group
EOT
2.06***(1.24***)


EAVS-AA-R
-0.23***
-4.69***
2.06*** (0.61)
Group
EOT
0.19***
1.91*
AVS-R

[illegible]

[illegible]


MOD1
MOD2
MOD3
0.84
0.77
0.70
MOD
-0.36
EOT
0.43
0.39
0.36
EOT1
EOT2
EOT3


EAVS1
0.41
EAVS2
0.44
EAVS-AA-R
EAVS3
0.49
-0.92
0.32
EOT1
0.27
EOT2
EOT
-0.45
AVS1
0.74
0.50
EOT3
AVS2
0.77
AVS-R
0.66
AVS3

Endnotes

[1] While CPAI scales generally use a true/false response format, the current study used a 4-point Likert scale ranging from 'Strongly disagree' to 'Strongly agree', in order to facilitate multivariate analyses used in additional studies.

[2] Alternative estimate of reliability analyses using structural equation modeling techniques (e.g., Raykov, 1997) were conducted, but did not consistently result in appreciable changes in estimates of reliability. The details of these analyses are available upon request from the first author.

[3] Given the unequal group sizes, Welch's *t* test (i.e., *t'*) was used in place of the regular t test, to account for potential differences in variance; one consequence of this test is a reduction in degrees of freedom, which are no longer restricted to whole numbers.

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Appendix A.

Self-report questionnaires

TAS-20

Please answer the following questions, using the scale provided:
1 = Completely disagree
2 = Disagree
3 = Neutral
4 = Agree
5 = Completely agree

1.	I am often confused about what emotion I am feeling.	1 – 2 – 3 – 4 – 5
2.	It is difficult for me to find the right words for my feelings.	1 – 2 – 3 – 4 – 5
3.	I have physical sensations that even doctors don't understand.	1 – 2 – 3 – 4 – 5
4.	I am able to describe my feelings easily.	1 – 2 – 3 – 4 – 5
5.	I prefer to analyze problems rather than just describe them.	1 – 2 – 3 – 4 – 5
6.	When I am upset, I don't know if I am sad, frightened, or angry.	1 – 2 – 3 – 4 – 5
7.	I am often puzzled by sensations in my body.	1 – 2 – 3 – 4 – 5
8.	I prefer to just let things happen rather than to understand why they turned out that way.	1 – 2 – 3 – 4 – 5
9.	I have feelings that I can't quite identify.	1 – 2 – 3 – 4 – 5
10.	Being in touch with emotions is essential.	1 – 2 – 3 – 4 – 5
11.	I find it hard to describe how I feel about people.	1 – 2 – 3 – 4 – 5
12.	People tell me to describe my feelings more.	1 – 2 – 3 – 4 – 5
13.	I don't know what's going on inside me.	1 – 2 – 3 – 4 – 5
14.	I often don't know why I am angry.	1 – 2 – 3 – 4 – 5
15.	I prefer talking to people about their daily activities rather than their feelings.	1 – 2 – 3 – 4 – 5
16.	I prefer to watch "light" entertainment shows rather than psychological dramas.	1 – 2 – 3 – 4 – 5
17.	It is difficult for me to reveal my innermost feelings, even to close friends.	1 – 2 – 3 – 4 – 5
18.	I can feel close to someone, even in moments of silence.	1 – 2 – 3 – 4 – 5
19.	I find examination of my feelings useful in solving personal problems.	1 – 2 – 3 – 4 – 5
20.	Looking for hidden meanings in movies or plays distracts from their enjoyment.	1 – 2 – 3 – 4 – 5

MOD

Please read the following statements and choose the best answer.
0 = Strongly disagree
1 = Disagree
2 = Agree
3 = Strongly agree

1.	Ancestral sacrifices, weddings, funerals, etc. should be conducted in keeping with their traditional forms and etiquette, i.e., without any arbitrary changes.	0 - 1 - 2 - 3
2.	To avoid mistakes in life, the best thing to do is to listen to what the elders (older, more experienced people) say.	0 - 1 - 2 - 3
3.	Kids that deserve the most praise are those who obey the rules just as adults do.	0 - 1 - 2 - 3
4.	If teachers or superiors make a mistake, it is acceptable for students or inferiors to contradict them.	0 - 1 - 2 - 3
5.	Parents should not interfere with their children's freedom to choose a profession.	0 - 1 - 2 - 3
6.	If a dispute cannot be resolved, an elder (a higher status, respected person) should be invited to act as an arbitrator to uphold justice.	0 - 1 - 2 - 3
7.	Students need to be completely devoted to learning, and should not get distracted by what is happening in society.	0 - 1 - 2 - 3
8.	There is no stigma about marrying a divorced person.	0 - 1 - 2 - 3
9.	Children do not have to follow their parents' wishes when choosing a partner for marriage.	0 - 1 - 2 - 3
10.	A woman's chastity is more important than her life.	0 - 1 - 2 - 3

11.	The belief that "you can count on your children to be a safety net for your old age" is outdated.	0 - 1 - 2 - 3
12.	Education is a sacred profession, and therefore teachers should not mind too much about their pay.	0 - 1 - 2 - 3
13.	Eccentric clothes and hairstyles should be strictly banned so as to preserve traditional simplicity.	0 - 1 - 2 - 3
14.	It is impossible even for the most decent people to be entirely without evil thoughts.	0 - 1 - 2 - 3
15.	If the content of some TV programs or movies does not conform to our culture, they should be eliminated with no exceptions.	0 - 1 - 2 - 3

EAVS-AA-R

Please answer the following questions, using the scale provided below to indicate the extent to which you agree with the value expressed in each statement.
0 = Strongly Disagree
1 = Disagree
2 = Agree
3 = Strongly Agree

1.	I think it is fine for an unmarried woman to have a child.	0 - 1 - 2 - 3
2.	Sometimes, it is necessary for the government to stifle individual development.	0 - 1 - 2 - 3
3.	You can do anything you put your mind to.	0 - 1 - 2 - 3
4.	Single women should not have children and raise them alone.	0 - 1 - 2 - 3
5.	I prefer not to take on responsibility unless I must.	0 - 1 - 2 - 3
6.	I do not like to serve as a model for others.	0 - 1 - 2 - 3
7.	It is OK if work interferes with the rest of my life.	0 - 1 - 2 - 3
8.	It is OK to allow others to restrict one's sexual freedom.	0 - 1 - 2 - 3
9.	No one is entitled to complete sexual freedom without restriction.	0 - 1 - 2 - 3
10.	A woman should not have a child unless she is in a long-term relationship.	0 - 1 - 2 - 3
11.	I follow my supervisor's instructions even when I do not agree with them.	0 - 1 - 2 - 3
12.	The world would be a better place if each individual could maximize his or her development.	0 - 1 - 2 - 3
13.	Partners do not need to have similar values in order to have a successful marriage.	0 - 1 - 2 - 3
14.	I cannot approve of abortion just because the mother's health is at risk.	0 - 1 - 2 - 3

15.	It is OK for a woman to have a child without being in a permanent relationship.	0 - 1 - 2 - 3
16.	Friends are very important.	0 - 1 - 2 - 3
17.	Faithfulness is very important for a successful marriage.	0 - 1 - 2 - 3
18.	Monetary compensation is not very important for a job.	0 - 1 - 2 - 3
19.	A student does not always need to follow the teacher's instructions.	0 - 1 - 2 - 3
20.	Luck determines the course of one's life.	0 - 1 - 2 - 3
21.	Cheating on one's partner doesn't make a marriage unsuccessful.	0 - 1 - 2 - 3
22.	Greater emphasis on individual development is not a good thing.	0 - 1 - 2 - 3
23.	I have always enjoyed serving as a model for others.	0 - 1 - 2 - 3
24.	Being humble is better than expressing feelings of pride.	0 - 1 - 2 - 3
25.	I have always enjoyed serving as a model for others.	0 - 1 - 2 - 3

AVS-R

Please answer the following questions, using the scale provided below to indicate the extent to which you agree with the value expressed in each statement.
0 = Strongly Disagree
1 = Disagree
2 = Agree
3 = Strongly Agree

1.	One should not deviate from familial and social norms.	0 - 1 - 2 - 3
2.	Children should not place their parents in retirement homes.	0 - 1 - 2 - 3
3.	One need not focus all energies on one's studies.	0 - 1 - 2 - 3
4.	One should be discouraged from talking about one's accomplishments.	0 - 1 - 2 - 3
5.	Younger persons should be able to confront their elders.	0 - 1 - 2 - 3
6.	When one receives a gift, one should reciprocate with a gift of equal or greater value.	0 - 1 - 2 - 3
7.	One need not achieve academically in order to make one's parents proud.	0 - 1 - 2 - 3
8.	One need not minimize or depreciate one's own achievements.	0 - 1 - 2 - 3
9.	One should consider the needs of others before considering one's own needs.	0 - 1 - 2 - 3
10.	Educational and career achievements need not be one's top priority.	0 - 1 - 2 - 3
11.	One should think about one's group before oneself.	0 - 1 - 2 - 3
12.	One should be able to question a person in an authority position.	0 - 1 - 2 - 3
13.	Modesty is an important quality for a person.	0 - 1 - 2 - 3
14.	One's achievements should be viewed as family's achievements.	0 - 1 - 2 - 3
15.	One should avoid bringing displeasure to one's ancestors.	0 - 1 - 2 - 3

16.	One should have sufficient inner resources to resolve emotional problems.	0 - 1 - 2 - 3
17.	The worst thing one can do is to bring disgrace to one's family reputation.	0 - 1 - 2 - 3
18.	One need not remain reserved and tranquil.	0 - 1 - 2 - 3
19.	One should be humble and modest.	0 - 1 - 2 - 3
20.	Family's reputation is not the primary social concern.	0 - 1 - 2 - 3
21.	One need not be able to resolve psychological problems on one's own.	0 - 1 - 2 - 3
22.	Occupational failure does not bring shame to the family.	0 - 1 - 2 - 3
23.	One need not follow the role expectations (gender, family hierarchy) of one's family.	0 - 1 - 2 - 3
24.	One should not make waves.	0 - 1 - 2 - 3
25.	One need not control one's expression of emotions.	0 - 1 - 2 - 3

Appendix B.

Study 1 regression tables

Table B.1

Prediction of Difficulty Identifying Feelings by Age, Sex, Difficulty Describing Feelings, Externally Oriented Thinking, and Modernization among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.373)						
Age	-0.012	0.057	-0.010	-0.075	-0.013	-0.010
Sex	1.431	0.609	0.118	0.121	0.145	0.116
DDF	0.743	0.071	0.575*	0.599	0.548	0.518
EOT	0.059	0.067	0.049	0.278	0.055	0.044
Step 2 (model R^2 = 0.375)						
Age	-0.014	0.057	-0.012	-0.075	-0.016	-0.012
Sex	1.425	0.609	0.117	0.121	0.145	0.116
DDF	0.738	0.071	0.571*	0.599	0.544	0.513
EOT	0.076	0.069	0.064	0.278	0.069	0.055
MOD	0.742	0.820	0.047	0.006	0.057	0.045

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *p < .05, Bonferroni corrected.

Table B.2

Prediction of Difficulty Identifying Feelings by Age, Sex, Difficulty Describing Feelings, Externally Oriented Thinking, and Modernization among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.405$)						
Age	0.028	0.074	0.020	-0.047	0.025	0.019
Sex	-1.090	0.579	-0.097	-0.164	-0.124	-0.096
DDF	0.825	0.076	0.598*	0.625	0.582	0.553
EOT	0.076	0.069	0.061	0.276	0.072	0.056
Step 2 (model $R^2 = 0.407$)						
Age	0.023	0.074	0.016	-0.047	0.020	0.016
Sex	-1.142	0.584	-0.102	-0.164	-0.129	-0.100
DDF	0.822	0.076	0.595*	0.625	0.581	0.550
EOT	0.056	0.073	0.045	0.276	0.051	0.039
MOD	-0.677	0.865	-0.043	-0.146	-0.052	-0.040

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *$p < .05$, Bonferroni corrected.

Table B.3

Prediction of Difficulty Describing Feelings by Age, Sex, Difficulty Identifying Feelings, Externally Oriented Thinking, and Modernization among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.432)						
Age	-0.024	0.042	-0.028	-0.104	-0.037	-0.028
Sex	-0.064	0.454	-0.007	0.018	-0.009	-0.007
DIF	0.404	0.039	0.522*	0.599	0.548	0.493
EOT	0.255	0.047	0.274*	0.424	0.323	0.257
Step 2 (model R^2 = 0.432)						
Age	-0.026	0.042	-0.029	-0.104	-0.038	-0.029
Sex	-0.064	0.454	-0.007	0.018	-0.009	-0.007
DIF	0.402	0.039	0.519*	0.599	0.544	0.489
EOT	0.262	0.049	0.282*	0.424	0.320	0.255
MOD	0.336	0.606	0.027	-0.051	0.035	0.026

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *p < .05, Bonferroni corrected.

Table B.4

Prediction of Difficulty Describing Feelings by Age, Sex, Difficulty Identifying Feelings, Externally Oriented Thinking, and Modernization among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.435$)						
Age	-0.133	0.051	-0.130*	-0.132	-0.168	-0.128
Sex	0.145	0.412	0.018	-0.097	0.023	0.018
DIF	0.411	0.038	0.568*	0.625	0.582	0.538
EOT	0.177	0.047	0.196*	0.333	0.240	0.186
Step 2 (model $R^2 = 0.435$)						
Age	-0.134	0.052	-0.131*	-0.132	-0.169	-0.129
Sex	0.135	0.416	0.017	-0.097	0.021	0.016
DIF	0.411	0.038	0.567*	0.625	0.581	0.536
EOT	0.173	0.051	0.192*	0.333	0.222	0.171
MOD	-0.128	0.613	-0.011	-0.150	-0.014	-0.010

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *$p < .05$, Bonferroni corrected.

Table B.5

Prediction of Externally Oriented Thinking by Age, Sex, Difficulty Identifying Feelings, Difficulty Describing Feelings, and Modernization among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.211)						
Age	-0.082	0.053	-0.087	-0.133	-0.097	-0.086
Sex	-1.536	0.568	-0.152*	-0.139	-0.167	-0.150
DIF	0.052	0.058	0.062	0.278	0.055	0.049
DDF	0.410	0.075	0.381*	0.424	0.323	0.303
Step 2 (model R^2 = 0.271)						
Age	-0.066	0.051	-0.070	-0.133	-0.081	-0.069
Sex	-1.414	0.547	-0.140*	-0.139	-0.160	-0.138
DIF	0.062	0.056	0.074	0.278	0.069	0.059
DDF	0.390	0.072	0.363*	0.424	0.320	0.288
MOD	-3.259	0.711	-0.246*	-0.277	-0.276	-0.245

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings.

MOD = Modernization. *p < .05, Bonferroni corrected.

Table B.6

Prediction of Externally Oriented Thinking by Age, Sex, Difficulty Identifying Feelings, Difficulty Describing Feelings, and Modernization among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.156$)						
Age	0.194	0.070	0.172*	0.132	0.182	0.170
Sex	-0.783	0.557	-0.087	-0.136	-0.093	-0.086
DIF	0.069	0.063	0.086	0.276	0.072	0.067
DDF	0.325	0.087	0.293*	0.333	0.240	0.227
Step 2 (model $R^2 = 0.248$)						
Age	0.144	0.067	0.127	0.132	0.142	0.125
Sex	-1.017	0.528	-0.113	-0.136	-0.127	-0.111
DIF	0.046	0.060	0.058	0.276	0.051	0.044
DDF	0.284	0.083	0.256*	0.333	0.222	0.197
MOD	-3.900	0.740	-0.312*	-0.368	-0.330	-0.303

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. MOD = Modernization. *$p < .05$, Bonferroni corrected.

Table B.7

Prediction of Difficulty Identifying Feelings by Age, Sex, Difficulty Describing Feelings, Externally Oriented Thinking, Euro-American values and Asian values among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.373$)						
Age	-0.012	0.057	-0.010	-0.075	-0.013	-0.010
Sex	1.431	0.609	0.118	0.121	0.145	0.116
DDF	0.743	0.071	0.575*	0.599	0.548	0.518
EOT	0.059	0.067	0.049	0.278	0.055	0.044
Step 2 (model $R^2 = 0.386$)						
Age	-0.026	0.057	-0.023	-0.075	-0.028	-0.022
Sex	1.513	0.614	0.125*	0.121	0.153	0.121
DDF	0.746	0.071	0.577*	0.599	0.552	0.519
EOT	0.052	0.069	0.043	0.278	0.047	0.037
EAVS-AA-R	-1.863	1.077	-0.100	-0.131	-0.108	-0.085
AVS-R	-2.308	1.090	-0.119	0.014	-0.132	-0.104

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *$p < .05$, Bonferroni corrected.

Table B.8

Prediction of Difficulty Identifying Feelings by Age, Sex, Difficulty Describing Feelings, Externally Oriented Thinking, Euro-American values and Asian values among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.405$)						
Age	0.028	0.074	0.020	-0.047	0.025	0.019
Sex	-1.090	0.579	-0.097	-0.164	-0.124	-0.096
DDF	0.825	0.076	0.598*	0.625	0.582	0.553
EOT	0.076	0.069	0.061	0.276	0.072	0.056
Step 2 (model $R^2 = 0.407$)						
Age	0.017	0.074	0.012	-0.047	0.015	0.012
Sex	-1.001	0.580	-0.089	-0.164	-0.114	-0.088
DDF	0.797	0.077	0.577*	0.625	0.566	0.525
EOT	0.024	0.073	0.019	0.276	0.022	0.017
EAVS-AA-R	-2.321	1.211	-0.114	-0.306	-0.126	-0.097
AVS-R	0.354	1.253	0.016	0.107	0.019	0.014

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *$p < .05$, Bonferroni corrected.

Table B.9

Prediction of Difficulty Describing Feelings by Age, Sex, Difficulty Identifying Feelings, Externally Oriented Thinking, Euro-American values and Asian values among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.432$)						
Age	-0.024	0.042	-0.028	-0.104	-0.037	-0.028
Sex	-0.064	0.454	-0.007	0.018	-0.009	-0.007
DIF	0.404	0.039	0.522*	0.599	0.548	0.493
EOT	0.255	0.047	0.274*	0.424	0.323	0.257
Step 2 (model $R^2 = 0.438$)						
Age	-0.015	0.042	-0.017	-0.104	-0.022	-0.017
Sex	-0.056	0.461	-0.006	0.018	-0.008	-0.006
DIF	0.409	0.039	0.528*	0.599	0.552	0.497
EOT	0.244	0.049	0.263*	0.424	0.301	0.237
EAVS-AA-R	0.467	0.802	0.033	-0.167	0.037	0.027
AVS-R	1.391	0.810	0.093	0.149	0.107	0.081

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *$p < .05$, Bonferroni corrected.

Table B.10

Prediction of Difficulty Describing Feelings by Age, Sex, Difficulty Identifying Feelings, Externally Oriented Thinking, Euro-American values and Asian values among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.435)						
Age	-0.133	0.051	-0.130*	-0.132	-0.168	-0.128
Sex	0.145	0.412	0.018	-0.097	0.023	0.018
DIF	0.411	0.038	0.568*	0.625	0.582	0.538
EOT	0.177	0.047	0.196*	0.333	0.240	0.186
Step 2 (model R^2 = 0.439)						
Age	-0.130	0.052	-0.128*	-0.132	-0.164	-0.125
Sex	0.192	0.415	0.024	-0.097	0.031	0.023
DIF	0.403	0.039	0.556*	0.625	0.566	0.515
EOT	0.163	0.051	0.181*	0.333	0.209	0.160
EAVS-AA-R	-1.002	0.865	-0.068	-0.287	-0.077	-0.058
AVS-R	-0.565	0.890	-0.035	0.075	-0.042	-0.032

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *p < .05, Bonferroni corrected.

Table B.11

Prediction of Externally Oriented Thinking by Age, Sex, Difficulty Identifying Feelings, Difficulty Describing Feelings, Euro-American values and Asian values among Euro-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.211)						
Age	-0.082	0.053	-0.087	-0.133	-0.097	-0.086
Sex	-1.536	0.568	-0.152*	-0.139	-0.167	-0.150
DIF	0.052	0.058	0.062	0.278	0.055	0.049
DDF	0.410	0.075	0.381*	0.424	0.323	0.303
Step 2 (model R^2 = 0.264)						
Age	-0.065	0.052	-0.068	-0.133	-0.078	-0.067
Sex	-1.033	0.564	-0.102	-0.139	-0.114	-0.099
DIF	0.043	0.057	0.052	0.278	0.047	0.041
DDF	0.371	0.074	0.345*	0.424	0.301	0.271
EAVS-AA-R	-3.116	0.970	-0.201*	-0.321	-0.198	-0.173
AVS-R	1.049	1.002	0.065	0.232	0.066	0.056

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *p < .05, Bonferroni corrected.

Table B.12

Prediction of Externally Oriented Thinking by Age, Sex, Difficulty Identifying Feelings, Difficulty Describing Feelings, Euro-American values and Asian values among Chinese-Canadians

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.156)						
Age	0.194	0.070	0.172*	0.132	0.182	0.170
Sex	-0.783	0.557	-0.087	-0.136	-0.093	-0.086
DIF	0.069	0.063	0.086	0.276	0.072	0.067
DDF	0.325	0.087	0.293*	0.333	0.240	0.227
Step 2 (model R^2 = 0.253)						
Age	0.139	0.067	0.123	0.132	0.137	0.120
Sex	-0.605	0.529	-0.067	-0.136	-0.076	-0.066
DIF	0.020	0.060	0.025	0.276	0.022	0.019
DDF	0.268	0.083	0.241*	0.333	0.209	0.185
EAVS-AA-R	-4.374	1.072	-0.267*	-0.406	-0.262	-0.235
AVS-R	2.230	1.130	0.123	0.260	0.130	0.113

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *p < .05, Bonferroni corrected.

Appendix C.

Study 2 regression tables

Table C.1

Prediction of Difficulty Identifying Feelings by age, sex, urban versus rural status, Difficulty Describing Feelings, Externally Oriented Thinking, and Modernization

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.053)						
Age	-0.102	0.033	-0.193*	-0.212	-0.188	-0.186
Sex	-0.961	0.762	-0.076	-0.085	-0.077	-0.076
Urban vs. rural	-0.716	0.828	-0.054	-0.102	-0.053	-0.052
Step 2 (model R^2 = 0.563)						
Age	-0.039	0.023	-0.075	-0.212	-0.107	-0.071
Sex	0.393	0.526	0.031	-0.085	0.046	0.030
Urban vs. rural	0.124	0.567	0.009	-0.102	0.014	0.009
DDF	1.061	0.062	0.728*	0.744	0.724	0.694
EOT	0.099	0.073	0.056	0.155	0.084	0.055
Step 3 (model R^2 = 0.563)						
Age	-0.044	0.024	-0.083	-0.212	-0.110	-0.073
Sex	0.384	0.527	0.030	-0.085	0.045	0.030
Urban vs. rural	0.043	0.593	0.003	-0.102	0.004	0.003
DDF	1.064	0.063	0.730*	0.744	0.724	0.693
EOT	0.092	0.074	0.052	0.155	0.076	0.050
MOD	-0.042	0.090	-0.023	0.119	-0.029	-0.019

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *p < .05, Bonferroni corrected.

Table C.2

Prediction of Difficulty Describing Feelings by age, sex, urban versus rural status, Difficulty Identifying Feelings, Externally Oriented Thinking, and Modernization

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.067)						
Age	-0.060	0.022	-0.166*	-0.197	-0.163	-0.159
Sex	-1.293	0.519	-0.149*	-0.155	-0.152	-0.148
Urban vs. rural	-0.808	0.564	-0.088	-0.126	-0.088	-0.085
Step 2 (model R^2 = 0.567)						
Age	-0.010	0.016	-0.028	-0.197	-0.040	-0.026
Sex	-0.826	0.356	-0.095	-0.155	-0.142	-0.094
Urban vs. rural	-0.461	0.386	-0.050	-0.126	-0.074	-0.048
DIF	0.494	0.029	0.720*	0.744	0.724	0.690
EOT	0.040	0.050	0.033	0.139	0.049	0.032
Step 3 (model R^2 = 0.571)						
Age	-0.002	0.017	-0.005	-0.197	-0.006	-0.004
Sex	-0.802	0.356	-0.092	-0.155	-0.138	-0.091
Urban vs. rural	-0.294	0.403	-0.032	-0.126	-0.045	-0.030
DIF	0.492	0.029	0.717*	0.744	0.724	0.687
EOT	0.054	0.051	0.045	0.139	0.065	0.043
MOD	0.085	0.061	0.068	0.164	0.087	0.057

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. MOD = Modernization. *p < .05, Bonferroni corrected.

Table C.3

Prediction of Externally Oriented Thinking by age, sex, urban versus rural status, Difficulty Identifying Feelings, Difficulty Describing Feelings, and Modernization

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.003)						
Age	0.012	0.019	0.041	0.049	0.040	0.040
Sex	0.184	0.445	0.025	0.027	0.025	0.025
Urban vs. rural	0.172	0.484	0.023	0.033	0.022	0.022
Step 2 (model R^2 = 0.036)						
Age	0.023	0.019	0.077	0.049	0.074	0.073
Sex	0.331	0.445	0.046	0.027	0.046	0.045
Urban vs. rural	0.272	0.480	0.036	0.033	0.035	0.034
DIF	0.071	0.052	0.124	0.155	0.084	0.082
DDF	0.061	0.076	0.073	0.139	0.049	0.048
Step 3 (model R^2 = 0.075)						
Age	-0.001	0.020	-0.004	0.049	-0.004	-0.004
Sex	0.268	0.437	0.037	0.027	0.038	0.037
Urban vs. rural	-0.203	0.492	-0.027	0.033	-0.026	-0.025
DIF	0.063	0.051	0.111	0.155	0.076	0.073
DDF	0.080	0.075	0.096	0.139	0.065	0.063
MOD	-0.243	0.073	-0.231*	-0.193	-0.202	-0.198

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. MOD = Modernization. *p < .05, Bonferroni corrected.

Table C.4

Prediction of Difficulty Identifying Feelings by age, sex, urban versus rural status, Difficulty Describing Feelings, Externally Oriented Thinking, Euro-American values and Asian values

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.053$)						
Age	-0.102	0.033	-0.193*	-0.212	-0.188	-0.186
Sex	-0.961	0.762	-0.076	-0.085	-0.077	-0.076
Urban vs. rural	-0.716	0.828	-0.054	-0.102	-0.053	-0.052
Step 2 (model $R^2 = 0.563$)						
Age	-0.039	0.023	-0.075	-0.212	-0.107	-0.071
Sex	0.393	0.526	0.031	-0.085	0.046	0.030
Urban vs. rural	0.124	0.567	0.009	-0.102	0.014	0.009
DDF	1.061	0.062	0.728*	0.744	0.724	0.694
EOT	0.099	0.073	0.056	0.155	0.084	0.055
Step 3 (model $R^2 = 0.563$)						
Age	-0.044	0.024	-0.084	-0.212	-0.113	-0.075
Sex	0.382	0.528	0.030	-0.085	0.045	0.030
Urban vs. rural	0.063	0.578	0.005	-0.102	0.007	0.004
DDF	1.058	0.063	0.726*	0.744	0.722	0.689
EOT	0.089	0.076	0.050	0.155	0.073	0.048
EAVS-AA-R	-0.631	1.478	-0.019	-0.058	-0.026	-0.017
AVS-R	0.376	1.034	0.016	-0.049	0.023	0.015

Note: DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *$p < .05$, Bonferroni corrected.

Table C.5

Prediction of Difficulty Describing Feelings by age, sex, urban versus rural status, Difficulty Identifying Feelings, Externally Oriented Thinking, Euro-American values and Asian values

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model R^2 = 0.067)						
Age	-0.060	0.022	-0.166*	-0.197	-0.163	-0.159
Sex	-1.293	0.519	-0.149*	-0.155	-0.152	-0.148
Urban vs. rural	-0.808	0.564	-0.088	-0.126	-0.088	-0.085
Step 2 (model R^2 = 0.567)						
Age	-0.010	0.016	-0.028	-0.197	-0.040	-0.026
Sex	-0.826	0.356	-0.095	-0.155	-0.142	-0.094
Urban vs. rural	-0.461	0.386	-0.050	-0.126	-0.074	-0.048
DIF	0.494	0.029	0.720*	0.744	0.724	0.690
EOT	0.040	0.050	0.033	0.139	0.049	0.032
Step 3 (model R^2 = 0.568)						
Age	-0.011	0.017	-0.030	-0.197	-0.041	-0.027
Sex	-0.819	0.357	-0.094	-0.155	-0.141	-0.093
Urban vs. rural	-0.479	0.393	-0.052	-0.126	-0.075	-0.050
DIF	0.492	0.029	0.718*	0.744	0.722	0.685
EOT	0.031	0.052	0.026	0.139	0.038	0.025
EAVS-AA-R	-0.755	1.007	-0.034	-0.058	-0.046	-0.031
AVS-R	-0.323	0.705	-0.020	-0.069	-0.028	-0.019

Note: DIF = Difficulty Identifying Feelings. EOT = Externally Oriented Thinking. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *p < .05, Bonferroni corrected.

Table C.6

Prediction of Externally Oriented Thinking by age, sex, urban versus rural status, Difficulty Identifying Feelings, Difficulty Describing Feelings, Euro-American values and Asian values

				Correlations		
Predictors	B	SE B	ß	Zero Order	Partial	Part
Step 1 (model $R^2 = 0.003$)						
Age	0.012	0.019	0.041	0.049	0.040	0.040
Sex	0.184	0.445	0.025	0.027	0.025	0.025
Urban vs. rural	0.172	0.484	0.023	0.033	0.022	0.022
Step 2 (model $R^2 = 0.036$)						
Age	0.023	0.019	0.077	0.049	0.074	0.073
Sex	0.331	0.445	0.046	0.027	0.046	0.045
Urban vs. rural	0.272	0.480	0.036	0.033	0.035	0.034
DIF	0.071	0.052	0.124	0.155	0.084	0.082
DDF	0.061	0.076	0.073	0.139	0.049	0.048
Step 3 (model $R^2 = 0.097$)						
Age	0.001	0.020	0.002	0.049	0.002	0.002
Sex	0.289	0.433	0.040	0.027	0.041	0.039
Urban vs. rural	-0.035	0.473	-0.005	0.033	-0.005	-0.004
DIF	0.059	0.051	0.104	0.155	0.073	0.069
DDF	0.045	0.074	0.054	0.139	0.038	0.036
EAVS-AA-R	-4.725	1.175	-0.255*	-0.272	-0.242	-0.237
AVS-R	0.406	0.847	0.031	0.090	0.030	0.028

Note: DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EAVS-AA-R = European American Values Scale for Asian Americans-Revised. AVS-R = Asian Values Scale-Revised. *$p < .05$, Bonferroni corrected.