

THE STRUCTURE AND MEASUREMENT OF SELF-CONSTRUALS: A CROSS-
CULTURAL STUDY OF THE SELF-CONSTRUAL SCALE

By

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To the Faculty of Washington State University

The members of the Committee appointed to examine the dissertation of
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Abstract

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The cultural dimension of individualism-collectivism (I-C), and how best to measure it, continues to be controversial in cross-cultural psychology. An important aspect of I-C at the individual level is self-construals. Markus and Kitayama (1991) distinguished independent and interdependent self-construals and Singelis (1994) adopted this two-dimensional representation of self-construals in developing the Self-Construal Scale (SCS). Although the SCS has been translated into many languages and widely administered across cultures, few researchers have systematically tested its psychometric properties or the generalizability of its structure across diverse cultures. The purpose of the present study was to examine the psychometric properties, dimensionality, and cross-cultural structural equivalence of SCS.

Archival data from six studies that used the 30-item version of the SCS was analyzed. Participants included college students from two individualistic countries, the United States and Australia, and four collectivistic countries, Mexico, Philippines, Malaysia, and Japan. Hypotheses were: 1) A hierarchical model, with multiple independent and interdependent facets, will provide the best structural representation of self-construals as measured by the SCS and will replicate fairly well across cultures, and 2) Gender differences in selected aspects of self-

construals will be identified. In particular, in all cultures, it was expected that females would endorse relational interdependence items or scales more than males, and that males would endorse assertiveness items or scales more than females. Structural analyses were conducted using Comprehensive Exploratory Factor Analysis (Hardin et al., 2004) and confirmatory factor analysis.

Hypothesis 1 was partially supported. The structure of self-construals, as measured by the SCS, was better represented by multiple specific factors than by broad independent and interdependent dimensions (i.e., a two-dimensional model). Also, the pattern of correlations among the specific factors was not consistent with distinct higher-order independent and interdependent dimensions. The psychometric properties (i.e., reliability, item-total correlations) of the SCS were marginal in most countries and the structure of the SCS did not replicate well across most cultures. Hypothesis 2 was rejected because gender differences for relational interdependence and assertiveness were not found. The results of the study have implications for both theory (e.g., the structure of self-construals) and measurement in cross-cultural research.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	iii
ABSTRACT	v
LIST OF TABLES	vi
CHAPTER	
1. INTRODUCTION	1
Cultural versus Individual Levels of Analysis	2
Independent and Interdependent Self-Construals	4
2. LITERATURE REVIEW	6
Alternative Structural Models	6
One-Dimensional Model: Individualism versus Collectivism	6
Two-Dimensional Models: The Distinctiveness and Correlates of Independent and Interdependent Self-Construals	8
A Three-Dimensional Model: Differentiating Relational and Collective Self-Construals	18
A Four-Dimensional Model: Differentiating Horizontal and Vertical Individualism and Collectivism	24
Models with More Refined Facets	26
General Summary and Critique	39
Overview of the Present Study	42
3. METHODOLOGY	44
Participants	44
Instrument	44
Data Analyses	45

4. RESULTS	49
Internal Consistency Reliability and Item-Total Correlations for Original Scales	49
Test of the Two Dimensional Model	53
Alternative Factor Models	53
Selection of Core Items within Each Country	60
Confirmatory Factor Analyses (CFAs)	61
Replication of Factor Structures across Cultures	69
Test of Higher-Order Model	70
Gender Differences	70
5. DISCUSSION	77
Summary of Results	77
Psychometric Properties	78
Structure of SCS and its Cross-Cultural Generalizability	79
Gender Differences	83
Theoretical and Applied Implications	84
Strengths and Limitations of the Study	86
Directions for Future Research	87
Conclusion	88
REFERENCES	89
APPENDIX	
A. CEFA FACTOR LABELS AND HIGHEST ITEM LOADINGS PER COUNTRY	96

LIST OF TABLES

1. Characteristics of Participants for Data Sets Analyzed	46
2. Self-Construal Item Means, Range, and Alpha Reliabilities	50
3. Mean and Range of Item-Total Correlations in Six Countries	52
4. CEFA Fit Indices for Alternative Factor Solutions in Each Country	55
5. Multiple-Sample CFA Fit Indices for Various Models in Each Country	63
6. Selected Factor Structure for Each Country based on CFA Results	67
7. Absolute Values of Correlations Between Independent and Interdependent Self-Construal Factors	71
8. Self-Construal Factors Showing Significant Gender Differences in Various Data Sets: Follow-up ANOVAS	74

Dedication

This dissertation is dedicated to my mother, Ramona Sanchez,
who showed me how to be a strong woman.

CHAPTER ONE

Introduction

In the last few decades, there has been increased interest in the examination of cultural differences in the self and other aspects of personality. It is difficult to conduct cross-cultural studies for a variety of reasons, in part because of the various ways that culture can be represented. Many cross-cultural researchers have operationalized culture by focusing on the cultural-level distinction between individualism and collectivism (Markus & Kitayama, 1991; Oyserman, Coon, & Kemmelmeier, 2002; Singelis, Triandis, Bhawuk, & Gelfand, 1995). At the individual level, the associated concepts of independent and interdependent self-construals have been emphasized. Individualism-collectivism constructs has been widely used as a theoretical framework for understanding cultural differences in cognition, emotion, motivation, and behavior (Markus & Kitayama, 1991). In addition, individualism and collectivism have been associated with a number of important psychological variables, including self-esteem, well-being, communication styles, social explanation processes, and social behavior (Oyserman et al., 2002). Thus, it is important to clarify the structure and content of the individualism-collectivism or self-construal domains and how best to measure these constructs.

The measurement of individualistic and collectivistic constructs has been very difficult, and while there are approximately 20 different methods, none has proven satisfactory (Kağıtçıbaşı, 1997; Oyserman et al., 2002). In particular, the Self-Construal Scale (SCS) has been widely used in cross-cultural studies. However, the results from some of these studies have been inconsistent. An evaluation of the reliability and validity of the scale can provide information on the suitability of the scale to assess the intended constructs of independent and interdependent self-construals. The primary goal of this study is to evaluate the reliability and

dimensionality of the SCS across cultures. Most researchers have relied on Singelis's (1994) dominant two-factor model in explaining independent and interdependent self-construals and have not examined alternate models. Other researchers, however, have argued that the theoretical structure of individualism-collectivism can be best explained with three or more components. Therefore, I plan to evaluate the factor structure of the original two-factor model and compare it to alternative models. Another purpose of the study is to evaluate the SCS in cultures that go beyond the United States and East Asian countries in which the instrument has been applied most frequently.

Cultural versus Individual Levels of Analysis

To begin with, it is important to distinguish between cultural and individual levels of analysis when conducting individualism-collectivism research. The manifestations of individualism and collectivism have been studied primarily at the cultural level of measurement. The concepts of individualism and collectivism have been identified as "cultural syndromes" that embody the values, beliefs, attitudes, and norms of a culture (Triandis, 1995). Following Hofstede's (1980) early work on cultural dimensions, individualism and collectivism were initially viewed as bipolar opposites by some researchers. This seemed to imply that individuals could only possess one of the two syndromes. However, according to Triandis (2001), it is incorrect to assume that individuals from collectivistic or individualistic cultures are characterized entirely by collectivistic and individualistic tendencies, respectively. Rather most individuals tend to sample from individualistic and collectivistic cognitive processes, depending on the circumstances.

Indeed, there are two levels of analysis for individualism-collectivism, the cultural and the individual level. In the culture-level approach, the unit of analysis is culture and the results

obtained are the characterizations of cultures, not of individuals. The cultural concept of individualism-collectivism has been widely used to explain differences in behavior between cultural groups (Derlega, Cukur, Kuang, & Forsyth, 2002). At the cultural level, independence and interdependence fall at opposite poles of the individualism-collectivism continuum (Singelis, Bond, Sharkey, & Lai, 1999). However, it is inappropriate to assume that a finding obtained at one level of analysis will hold true at the other, which is called the ecological fallacy. In contrast, in the individual-level approach, the individual is the unit of analysis. At the individual level, a number of studies have shown that individualism and collectivism are orthogonal and coexist, to varying degrees, within individuals (Singelis et al., 1999). A way to better understand individual differences is represented by the work of Markus and Kitayama (1991) on independent and interdependent self-construals.

At the cultural level, Hofstede's (1980) rankings of countries on individualism have been widely used to categorize cultures on the individualism-collectivism continuum. In turn, cultural level syndromes of individualism and collectivism are expected to influence self-construals at the individual level (Markus & Kitayama, 1991). For example, in individualistic cultures such as the United States and Canada, independent self-construals are expected to be more predominant and hence people are expected to place greater emphasis on individuation of the self (Markus & Kitayama, 1991; Singelis, 1994, Singelis et al., 1995). In contrast, in collectivistic cultures such as Japan and Mexico, interdependent self-construals are expected to be predominant and people are expected to be influenced by the cultural values of connectedness with others. Although past researchers have provided support for the categorization of cultures on a bipolar continuum of individualism versus collectivism (Hofstede, 1980; Oyserman et al., 2002), direct measurement can provide the researcher with appropriate information on the level of independence and

interdependence of the sample. Various measures have been developed to assess individualism and collectivism (or self-construals) at the individual level (Singelis, 1994; Singelis et al., 1995). The difference between independent and interdependent self-construals will be reviewed in the next section.

Independent and Interdependent Self-Construals

At the level of individuals, two-dimensional models of individualism-collectivism or self-construals have been dominant in the literature. Markus and Kitayama (1991) made a distinction between independent and interdependent aspects of the self. Self-construals refer to the individual's collection of thoughts and feelings regarding one's relationship to others and one's distinctiveness from others (Singelis, 1994). The independent concept of the self involves an individuation from others and a desire to discover the unique attributes of the individual. Therefore, for the independent self, behavior is organized around internal and unique attributes of the self. Social groups and others are still important for those whose self-construal is independent. However, the emphasis is on the affirmation of the internal attributes of both self and others. The core aspect of independent self-construal is the conception of the self as autonomous and independent. The focus is on the promotion of the individual's own goals. Furthermore, through the expression of thoughts and feelings the individual is able to develop a better sense of self-esteem (Singelis, 1994).

In contrast, for people with an interdependent self-construal, the emphasis is on maintaining interdependence or connectedness with others (Markus & Kitayama, 1991; Singelis, 1994). Connectedness with others involves seeing oneself as intertwined with social relationships. In addition, individuals' decisions and behaviors are influenced by social relationships, roles, and contexts. An individual with an interdependent self-concept will gain

meaning through connections with others and by building social relationships. Individuals with an interdependent self-construal possess internal attributes but they are expected to be more situation-specific and less likely to predict behavior. The individual's internal attributes become secondary to the connections with others. Self-esteem is gained through the development of harmonious connections and relationships with others. The interdependent self communicates indirectly and focuses on others' feelings and thoughts rather than those of the individual person. Markus and Kitayama (1994) indicated that the vital feature of interdependence is the heightened awareness of others and the nature of an individual's relation to others. For example, in Japan, interdependence is embedded within the culture. Although independence is important for daily social functioning, it remains less understood and elaborated. Thus, the self is described in relation to others rather than as an autonomous and differentiated being.

In summary, independent and interdependent self-construals have been widely studied and the SCS has been one of the main instruments used to assess these dimensions. However, the cross-cultural structural equivalence of the self-construal domain and the SCS measure has rarely been formally investigated. The proposed study will provide information about the dimensionality and reliability of the scale in six countries, the United States, Australia, Mexico, Philippines, Malaysia, and Japan. From a theoretical perspective, the study should provide a better understanding of the structural equivalence of self-construals across cultures. An increase in knowledge about the facets of self-construals may also provide information about the relationship between personality and culture. From an applied perspective, such information may be useful in improving the communication between individuals of different cultures and in cross-cultural counseling.

CHAPTER 2

Literature Review

In this chapter, I review literature on the structure and measurement of self-construals. Most of the literature has focused on a two-dimensional model because researchers have deferred to the model proposed by Markus and Kitayama (1991) and Singelis (1994) rather than examining the viability of alternate models. In my review, I address major models of one, two, three, and four dimensions, as well as models that have investigated more refined facets of self-construals or individualism and collectivism. To illustrate the importance of the self-construal construct, I also review research relating self-construals to other psychological variables, most of which have employed the two-dimensional model.

Alternative Structural Models

One-Dimensional Model: Individualism versus Collectivism

Hofstede (1980) conducted a large-scale multi-national study of work values of IBM employees. He factor analyzed answers to 14 work goal items using culture-level factor analysis. Hofstede computed country means for each item then factor analyzed the items using these country-level scores. He labeled the four factors he extracted from the data individualism, power distance, masculinity, and uncertainty avoidance. Hofstede regarded individualism as a unidimensional bipolar construct at the cultural level, with collectivism at the opposite pole. Therefore, countries were represented as being relatively individualistic versus collectivistic but not as a combination of the two. Triandis (1989) noted that a unidimensional bipolar representation of individualism-collectivism might be warranted at the cultural level or if researchers study a wide range of values.

Vandello and Cohen (1999) developed a state-level measure for the United States that conceptualized individualism-collectivism as a single bipolar dimension. The authors created an eight-item index to rank the states in relation to their tendencies toward individualism versus collectivism. Examples of the indices that the authors focused on were the divorce to marriage ratio, percentage of self-employed workers, and percentage of people living alone. The authors analyzed the data by standardizing the scores for each of the eight items and these item standard scores were summed to create the collectivism score for each state. Higher scores indicated more collectivism and the states with the highest scores were Hawaii, Louisiana, and South Carolina. The states with the lowest scores on collectivism were Nebraska, Oregon, and Montana. One unique advantage of this approach was its use of true state- or culture-level indicators, whereas most measurement approaches have involved aggregating individual-level responses to the cultural level.

Yamaguchi (1994) constructed an individual-level measure of collectivism for Japanese participants that is also based, at least implicitly, on a unidimensional bipolar conception of individualism-collectivism. Yamaguchi defined collectivist individuals as “those who weigh collective goals more heavily than private goals, especially when the two come into conflict” (p. 178). Yamaguchi’s Collectivism Scale consists of ten items that assess behavioral choices that favor group goals over personal goals in situations where both types of goals are in conflict. A sample item from the Collectivism Scale is “I sacrifice self-interest for my group” (p. 188). In the first study, the Collectivism Scale was administered to 609 undergraduate students (composed of six different samples) to analyze the reliability of the scale. Cronbach’s alpha for the six samples ranged from .77 to .88. The scale was re-administered after three months to 75 of the participants and the test-retest reliability was .71. Factor analyses were conducted to

evaluate the dimensionality of the scale and the author reported that the first factor explained 75% to 96% of the variance and scree plots indicated that the Collectivism Scale was best represented by a one-factor solution. Although one-dimensional models such as Yamaguchi's have the advantage of simplicity, most researchers have favored multi-dimensional models.

Two-Dimensional Models: The Distinctiveness and Correlates of Independent and Interdependent Self-Construals

The most widely used measure consistent with a two-dimensional model is Singelis' (1994) Self-Construal Scale (SCS). According to Singelis, prior to the development of this scale, most individualism-collectivism scales were based on a single bipolar dimension. Therefore, the goal for the development of the SCS was to ascertain that the two aspects of the self can coexist within an individual. Singelis (1994) based his two-dimensional model on the theoretical concepts of independence and interdependence presented by Markus and Kitayama (1991). The goal was to measure independent and interdependent self-construals at an individual level. Singelis borrowed items from existing measures and developed new items that related to the two components. The initial scale consisted of 24 items, 12 per subscale. The author later developed 30- and 31-item versions. An exploratory factor analysis provided support for the hypothesis that the SCS consisted of two factors. Alpha reliabilities of .70 and .74 were reported for the independent and interdependent factors, respectively. Overall, Singelis concluded that the SCS measured distinct independence and interdependence dimensions.

Singelis (1994) also conducted confirmatory factor analyses on data obtained from university students in Hawaii to provide additional support for the two-factor model. A comparison between the one- and two-factor models was conducted. The two-factor model was superior to the one-factor model based on various fit indices. Some of the fit indices were below

the cut-off criteria for good fit (RMR = .076, GFI = .853, and AGFI = .824), but were acceptable in comparison to the one-factor model. A second CFA with a different sample resulted in a non-significant correlation between independent and interdependent self-construals ($r = .16$). Similar results were obtained in the second CFA in that the two-factor model fit the data better than the one-factor model. Therefore, the author concluded that the factors were orthogonal and a two-factor structure was identified in the SCS. Lastly, Asian Americans reported higher scores on interdependence than Caucasian Americans, whereas Caucasian Americans had higher scores on independence. These results were consistent with the theoretical foundations of self-construals.

Theoretical considerations and the results obtained by Singelis (1994) have led researchers to believe that there are two aspects of self-construal. In the initial development of the SCS, the author only examined one- and two-factor models and ignored the possible existence of other factors. Some researchers who utilize the SCS do not examine alternative factor structures for the scale and assume that the two-factor model will fit the data well (Aaker & Schmitt, 2001; Kim, Kasser, & Lee, 2003). In addition, some of the studies that did use exploratory or confirmatory factor analyses only examined the two-factor model (e.g., Gudykunst, Matsumoto, Ting-Toomey, Nishida, Kim, and Heyman, 1996; Singelis & Brown, 1995). The two-dimensional model of self-construals has been related to a variety of psychological variables, including communication behaviors, self-esteem, and life satisfaction.

Self-construals and interpersonal communication or closeness. Singelis and Brown (1995) examined the relationship between culture and communication behavior. Participants were grouped in two categories, collectivist or individualist, based on their self-reported ethnic background. The participants who identified as Chinese, Filipino, Japanese or Korean were included in the collectivist group. Individuals who identified as Caucasian were included in the

individualist group. The 24-item version of the SCS was utilized to assess the two distinct components of self-construal. The authors conducted a principal components factor analysis with a promax rotation and the two-factor model was supported by the data. A two-factor confirmatory factor analysis differentiated between independent and interdependent items and all items had loadings greater than .35. In addition, there was a nonsignificant correlation between the two subscales ($r = -.04$). Alpha reliabilities for independent and interdependent self-construals were .69 and .73, respectively. Structural equation modeling was utilized to examine how cultural collectivism affects self-construals and how communication is subsequently affected by these processes. The authors reported that cultural collectivism significantly predicted self-construals. Independence had no significant relationship with the communication outcome variables. On the other hand, interdependence had a significant effect on meaning and attribution behaviors of communication. Overall, the data provided some support for the two-factor model, but the authors did not compare the fit of alternative models, and the goodness of fit indices reported for the two-factor CFA were below the satisfactory range.

Investigators have focused on the relationship between self-construals and communication styles. Gudykunst and colleagues (1996) examined the influence of cultural individualism-collectivism, self-construals, and values on communication styles with participants from the United States, Australia, Japan, and Korea. To measure self-construals, the authors used items from previously developed measures (e.g., Self-Construal Scale, Singelis, 1994; Collectivism Scale, Yamaguchi, 1994), plus additional items written by the authors. Ninety-four self-construal items were generated and respondents answered each item using a 7-point Likert scale. The items were standardized within each culture and submitted to a pancultural factor analysis using principal components analysis with varimax rotation. The analysis was restricted

to a two-factor model because of the theoretical framework of a two-dimensional model of self-construals. Only 29 of the items loaded at least .40 on one of the two factors. The first factor, interdependent self-construal, consisted of 14 items and accounted for 35% of the variance. A sample item for the first factor was “I consult with others before making important decisions.” Alpha reliabilities for interdependent self-construal ranged from .80 to .85 in the four samples. The second factor, independent self-construal, consisted of 15 items and accounted for 22.5% of the variance. A sample item for independent self-construal was “I prefer to be self-reliant rather than depend on others.” Alpha reliabilities for independent self-construal ranged from .73 to .83 in the four samples. Similar to other studies, the authors failed to examine alternative numbers of dimensions for the measure and assumed that self-construals are adequately represented by two factors. The authors found that (a) independent self-construals and individualistic values mediated the influence of cultural individualism-collectivism on the use of low-context communication, and (b) interdependent self-construals and collectivistic values mediated the influence of cultural individualism-collectivism on the use of high-context communication. The results suggested that individual level factors are better predictors of communication styles across cultures than cultural individualism-collectivism.

As a follow-up study, Hackman, Ellis, Johnson, and Staley (1999) sought to examine the cross-cultural measurement equivalence of the independent-interdependent self-construal scale developed by Gudykunst and colleagues (1996) and determine its influence on leadership communication style. The authors recruited undergraduate participants from the United States, an individualistic country; New Zealand, a country that is moderately individualistic and collectivistic; and Kyrgyzstan (a former Soviet republic), a collectivistic country. Multiple regression analyses showed that self-construals predicted leadership communication styles.

Interdependence was an important predictor of the Consideration subscale, which measures the extent to which a leader exhibits concern for the welfare of members of the group. In contrast, independence was the most important predictor of Initiation of Structure, which measures the extent to which a leader can initiate activity in the group. Confirmatory factor analysis was used to examine the measurement equivalence of the self-construal scale and to test a priori models of the construct. Results indicated that the two-factor model did not fit the data adequately. An attempt was made to refine the model by deleting items based on low factor loadings and by freeing error variances, but adequate fit was not obtained. The authors then decided to test each of the scales separately. The one-factor model for the independent scale, with factor loadings freely estimated in each culture, resulted in a good fit to the data, $\chi^2 = (38, N = 633) = 133.53, p < .01$; NNFI = .94, CFI = .96, GFI = .96. To obtain a good fit, three items were deleted and the error variances of six pairs of similar items were allowed to covary. The reliability of the scale for each of the three cultural groups was moderate to good ($\alpha = .77$ to $.89$). The fit of the freely-estimated one-factor model for the interdependent scale was excellent, $\chi^2 = (49, N = 617) = 151.53, p < .01$; NNFI = .93, CFI = .95, GFI = .96. The excellent fit for the model was obtained by deleting three items with low factor loadings and freeing the error covariances of five pairs of similar items. The alpha reliability estimates for the three groups ranged from $.77$ to $.86$. When the factor loadings were constrained to be equal across cultures, cross-cultural measurement equivalence was good for the independent self-construal scale, but not the interdependent self-construal scale. That is, the factor loadings were not invariant. The CFA modification indices indicated that the loadings for two items in the Kyrgyzstan sample differed from those of the other two cultures. Although the results were not conclusive for the measurement equivalence of the scales, the authors emphasized that the study demonstrated that the independent and

interdependent self-construal scales represent two separate dimensions. However, the conclusion is questionable because the CFA that included both independent and interdependent items failed to support a two-factor model.

Uskul, Hynie, and Lalonde (2004) examined cross-cultural differences in interpersonal closeness and whether such differences can be explained by self-construals. Uskul et al. utilized the 24-item version of the SCS in a sample of Canadian and Turkish university students. The authors indicated that three factors (two interdependent and one independent) were obtained in an exploratory factor analysis but opted to use the original two factors to allow for comparison of results to previous studies. They did not provide an interpretation of the third factor. Factor congruence coefficients were computed between the Turkish and Canadian two-factor solutions. The coefficients were .86 and .80 for the interdependent and independent factors, respectively. The coefficients suggest similarity but not close equivalence of the factors between the two samples. There was a slight but significant correlation between the independence and interdependence factors for the Turkish participants ($r = .19$), but not for the Euro-Canadian participants. Moderate alpha reliabilities (.62—.73) were obtained for the independent and interdependent scales. In accordance with theory, Turkish participants scored higher on interdependence than their European-Canadian counterparts. However, the expected mean difference for independent self-construal between the presumed individualistic culture (Euro-Canadians) and collectivistic culture (Turks) was not found. Consistent with their hypothesis, interdependent self-construal partially mediated the relationship between culture and actual closeness scores for family. The effect was not limited to only family members because the same effect was found for all relationships, except romantic relationships. Unexpectedly, interdependence also mediated the relationship between culture and ideal closeness scores for

family and acquaintances. Independent self-construal was hypothesized to mediate the relationship between culture and closeness of all relationships. However, culture did not predict independence, so independence was not tested as a mediator.

Self-construals, life satisfaction, and self-esteem. The two-dimensional model of self-construals has also been used to predict life satisfaction. For example, Kwan, Bond, and Singelis (1997) used a revised 31-item version of the SCS to examine the influence of self-construals and the “Big Five” factors of personality on life satisfaction. Confirmatory factor analysis was used to test the factor structure of the SCS and the authors found that the two-factor model fit the data well for both the American and Chinese samples. The constrained model for the two-factor SCS, which tested whether the two-factor model was equivalent across cultural groups, was comparable to the freely estimated model with no substantial loss in the fit between models. The authors reported the alpha reliabilities obtained originally by Singelis (1994), but did not provide the alpha reliabilities for the independent and interdependent subscales of the SCS. The authors showed that self-construals and the five factors of personality influenced life satisfaction across the two cultural groups. In addition, the authors reported that self-esteem and relationship harmony acted as mediating variables between self-construals and life satisfaction. For example, the effect of independent self-construal on life satisfaction was mediated by self-esteem, whereas the effect of the interdependent self-construal was mediated by relationship harmony. The authors also reported a significant mean difference between the two groups on independence and interdependence. The American sample scored higher on independent self-construal and the Chinese sample scored higher on interdependent self-construal. These results concurred with theory. As in other studies, Kwan et al. did not explore the existence of other dimensional models for the SCS.

The association between self-esteem and self-construals has been studied by many investigators, again using the two-dimensional model of self-construals. Singelis et al. (1999) examined the relationship between self-esteem, embarrassability, and self-construals in European American, Hawaii Asian American, and Hong Kong Chinese samples. In contrast to other studies, the authors used a pancultural factor analysis to test the factor structure of the SCS. According to the authors, the pancultural factor analysis consisted of four steps: 1) standardizing the item scores within participants as a way to remove response bias; 2) standardizing item scores within culture; 3) subjecting these doubly standardized item scores to a factor analysis with an oblique rotation; and 4) determining factor structures based on the scree plots and interpretability of the factors. The 25 items of the SCS yielded two factors, independence (13 items) and interdependence (12 items). The two factors accounted for 24.2% of the variance. No further information was given about the two-factor structure of the SCS. The alpha reliabilities for the independent and interdependent scales ranged from .58—.66 and .53—.64, respectively, for the three cultural groups. These reliabilities were lower than those obtained by Singelis (1994). The authors wanted to show that independent and interdependent self-construals are linked to the cultural dimensions of individualism-collectivism. The regression of independence and interdependence scores onto cultural collectivism resulted in a strong relation. For example, Collectivism was positively related to interdependence and negatively related to independence. In order to perform the regression analysis, each cultural group was assigned a dummy variable based on their level of collectivism. A hierarchical regression analysis revealed that embarrassability was negatively associated with independence and positively associated with interdependence. Self-esteem was not associated with either independent or interdependent self-construals within cultures and the results were not consistent with theory. However, an ANOVA

revealed significant cultural differences for self-esteem after accounting for the effects of self-construals. European Americans scored higher than the Hong Kong Chinese participants on self-esteem, which is consistent with theory.

Sato and Cameron (1999) focused on a more specific type of self-esteem, collective self-esteem. The authors examined the relationship between collective self-esteem and the two types of self-construals in samples of Japanese and Canadian students. As in many other studies, the authors did not examine the factor structure of the SCS. Alpha reliabilities for the Japanese participants were .75 and .67 for the interdependent and independent components of SCS, respectively. The alpha reliabilities for the Canadian participants were .70 and .71, respectively. Canadian students scored significantly higher than the Japanese students on interdependent self-construal. These results were inconsistent with theoretical expectations. The authors did not find a mean difference in independent self-construal between the two groups. In both cultural groups, independent self-construal was positively correlated with the public, private, and membership subscales of collective self-esteem, which measure perceptions of how others evaluate the respondent's group, the respondent's evaluation of his/her social groups, and the worth he or she feels from being a member of his or her social groups, respectively. In the Japanese sample, but not the Canadian sample, there was also a positive correlation between private collective self-esteem and interdependent self-construal. The results indicated that Japanese participants judged favorably groups that promote interdependence or independence. Thus, although the findings supported the importance of interdependence in a collectivistic culture, the results for independence did not support theoretical expectations.

An alternative two-dimensional measure. Other authors have preferred to develop their own self-construal scales. For example, Lu and Gilmour (2007) developed a new measure of

Independent and Interdependent self-construal based on the theoretical framework of Markus and Kitayama (1991). The authors reviewed previous literature on individualism-collectivism, idiocentrism-allocentrism, and independent-interdependent self-construals and synthesized the information into seven content facets for each scale. The seven facets for the independent self were: being independent, expressing oneself, realizing internal attributes, promoting one's own goals, being direct, separation from in-group, and self-reliance with hedonism. The seven facets of the interdependent self were belonging, occupying one's proper place, engaging in appropriate action, promoting others' goals, being indirect, family integration, and interdependence with sociability. The authors developed forty-two items, with three items for each of the fourteen facets. Delineation of the content facets prior to item development was a positive feature of this approach, which led to the development of comprehensive scales.

Chinese and British participants were recruited for the initial development of the scale. In an exploratory factor analysis, the authors imposed a two-factor solution based on their theoretical foundation. Thirty-four percent of the variance was explained by the first two factors. Convergent validity was demonstrated with other individualism and collectivism scales, including Triandis and Gelfand's (1998) Individualism-Collectivism Scale. A measure of social desirability did not correlate with scores on the independent or interdependent scales.

In a second study, Lu and Gilmour (2007) tested the cross-cultural stability of the new measure. The authors recruited students and community adults from Taiwan and the United Kingdom. As in the first study, a two-factor solution with varimax rotation was imposed in the EFA. The two largest factors explained 26% of the variance. Construct validity was tested by comparing the mean scores on independence and interdependence in the two cultures. As expected, the Chinese participants, scored higher on the interdependent scale than the British

participants. The British scored higher on the independent scale than the interdependent scale, but the Chinese scored higher than the British on independence. This last finding does not support the expectation that the Chinese are more collectivistic than the British. The correlations between the independent and interdependent scales for the Chinese and British sample were .26 and .28, respectively. The results support the findings from other studies that interdependent and independent self-construals are relatively independent and not bipolar opposites.

In summary, the above studies adopted or tested the theoretical two-dimensional structure of self-construals endorsed by Markus and Kitayama (1991) and Singelis (1994). The researchers did not explore other possible dimensions. Some of the results did not support the hypothesis that people from individualistic cultures are more independent and less interdependent than people in collectivistic cultures. In addition, in several studies the alpha reliability estimates for the independent and interdependent scales were marginal. The studies cited have not provided definitive support for a two-dimensional model. The relationships between independent and interdependent self-construals and other variables (e.g., self-esteem, communication) have been inconsistent and have not always conformed to theory. Thus, exploration of alternative models with additional dimensions, or the existence of factors within the independent and interdependent domains, is warranted.

A Three-Dimensional Model: Differentiating Relational and Collective Self-Construals

Some results with the two-dimensional model of independent and interdependent self-construals have been inconclusive. For example, cultural mean differences have not always conformed to theory. Also, many researchers have not examined the factor structure of the SCS. Studies in this section provide some support for a three-dimensional model of self-construals.

Cross, Bacon, and Morris (2000) contended that in collectivism-based interdependence, the individual's position in the group or situation dictates behavior. Therefore, knowing one's place, behaving according to one's role, and putting the needs of the group before one's own needs are central dictums that shape the self-construal. This type of group-oriented interdependence does not characterize Americans' relationship-centered notion of interdependence. Rather than in-groups, Americans are more likely to include individual relationships (i.e., spouse, mother) in their self-representations. Kashima et al. (1995) also contended that relational interdependence can account for gender differences because this type of self-construal was more prominent for women than for men and they attributed the collective self-construal to be more prominent among men. According to Cross et al., their goal was to develop a measure that directly conceptualized the relational-interdependent self-construal in terms of the degree to which individuals include close relationships in their self-concepts.

The initial items were developed by the authors based on the conceptualization of relational interdependence, and other items were developed by modifying items from measures that are conceptually related to relational interdependence. The authors included 11 items in the initial analysis of the relational interdependence scale. Eight different samples were used to assess the initial validity and reliability of the scale. Principal components analysis of the 11 items resulted in the emergence of one factor, with loadings ranging from .59 and .77. The authors reported alpha coefficients ranging from .85 to .90 for the eight samples, with a mean of .88. Test-retest reliability over a two-month period with three of the samples was .73. The relational-interdependent self-construal scale (RISC) correlated moderately with the Communal Orientation Scale and Singelis's Interdependent Self-Construal scale. The RISC was not related to the independent self-construal scale ($r = .08$).

The authors examined the association between the RISC and participants' perceptions of their social network and closest relationships as a way to distinguish the RISC from other measures of interdependence. The authors reported a positive relationship between participants' RISC scores and the number of people listed in their inner circle. This finding supported their hypothesis that individuals who score high on the RISC view a higher number of relationships as very important to them. The authors also hypothesized and found that women scored higher than men on the RISC.

Thus, Cross et al. (2000) indicated that individual differences in one's relations to others can be captured by a third factor or type of self-construal, relational interdependence. Relational-interdependent self-construal was described by the authors as "the tendency to think of oneself in terms of relationships with close others (p. 791). This third component focuses on a type of interdependence relevant to Western populations, especially the United States. The authors differentiated between collectivistic and the relational based forms of interdependent self-construal. In collectivism-based interdependence the in-group members influence behavior and the individual places the needs of the in-group before his or her own. In contrast, group membership or in-groups are less important to Americans and they focus more on individual relationships. In the United States, the groups are larger and they place less demands on the members.

Kashima (Kashima et al., 1995; Kashima, 2002) proposed a similar tripartite model of self that also included relational self-construal. The authors postulated that the self can be conceptualized in relation to at least three major entities: goals, individuals, and groups. The agentic self is the self in relation to a goal; the relational self is the self in relation to another person; and the collective self is the self in relation to a group of people. The theoretical

underpinnings of this tripartite model provided the basis for a new scale that measured the relational, individual, and collective self-aspects (Kashima & Hardie, 2000). Forty-two questions were utilized to capture an individual's cognition, affect, or behaviors. Exploratory factor analyses were conducted and each of the three factors yielded three or four facets. The facets of the relational factor were interpreted as loyalty, relatedness, and personal affiliation. The individual-self facets were interpreted as individuality, independence, and self-protection. The facets for the collective self were interpreted as collectivism, group involvement, acceptance of norms, and conformity. Furthermore, in relation to gender differences, the authors reported that 46.8% of women compared to 25.2% of men scored highest on relational interdependent self-construal.

Bresnahan, Chiu, and Levine (2004) also used a three-dimensional model comprised of independent, relational, and collective self-construals in their study of communal and exchange orientations in Taiwan and the United States. Communal orientation focuses on the needs of others, whereas exchange orientation emphasizes repayment for favors provided. According to the authors, the three types of self-construal co-exist in each individual and they are activated by different contexts. Collective-interdependence focuses on the individual's connections with his or her own group, whereas relational-interdependence refers to the personal connection between significant others and "the deeper involvement and commitment that such relationships entail" (p. 190).

Bresnahan et al. (2004) used the 11-item Relational Interdependent Self-Construal Scale (RISC) and the 29-item Self-Construal Scale to assess the three types of self-construal. Twenty-six items were deleted after conducting a CFA. The authors reported that the U.S. participants, as compared to Taiwanese participants, scored higher on independent and interdependent self-

construals, but not relational self-construal. Results for interdependent and relational self-construals for both groups were not consistent with theory. Overall, females exhibited significantly higher scores on relational self-construal and communal orientation. Thus, whereas independent and collective self-construals distinguished countries or cultures, relational interdependent self-construal distinguished different genders. In addition, scores on independent self-construal were related to both exchange and communal orientations, whereas relational interdependent self-construal was related only to communal orientation. The results for collective interdependent self-construal were not conclusive.

As a way to examine the tripartite model, Bresnahan, Levine, Shearman, Lee, Park, and Kiyomiya (2005) conducted a multimethod-multitrait validity study of self-construals in the United States, Japan, and Korea. The authors utilized the SCS, the Relational Interdependent Self-Construal Scale (RISC), and the Twenty Statements Test (TST) to examine the validity of various self-construal measures using different methods. The TST is a 20-item measure of self-concept in which individuals fill in the blanks to “Who I am” statements. The multimethod-multitrait approach generates four kinds of correlations, which provide support for reliability, convergent validity, predictive validity, and discriminant validity. In an evaluation of the SCS the authors examined corrected item-total correlations, which differed across the three samples. Furthermore, the two-factor model suggested by Singelis (1994) could not be supported using CFA. The authors decided to lower the interitem correlation cutoff to .25 or greater as a way to obtain acceptable reliability for all the samples. Alpha reliabilities for the independent and interdependent self-construal scales were low and ranged from .50 to .60 in the three samples and pan-culturally. The authors reported that the various self-construal scales lacked convergent, predictive, and discriminant validity because they did not correlate with the corresponding

responses on the TST or a measure of communication style. For example, the authors hypothesized that independent self-construal would correlate with independent responses on the TST, which would demonstrate convergent validity. However, this hypothesis was not supported. The scales that assessed self-construals correlated better with measures of communication directness than with other corresponding measures of self-construals. Again, the self-construal scales did not correlate with corresponding TST scores. The results from this study suggested that the three scales (independent, interdependent, and relational self-construals) are measuring distinct constructs but that the theoretical bases of the self-construal construct may need to be re-examined.

Grace and Cramer (2003) also used multiple methods to assess self-construals. The authors examined the congruence between TST responses and a quantitative measure of the self, the 24-item version of the Self-Construal Scale. The sample consisted of a heterogeneous sample of Canadian university students: 214 identified as European-Canadian and 103 as non-European Canadian. The authors conducted a principal-components factor analysis with varimax rotation on the Self-Construal Scale items. The authors examined the scree plot and the rotated component matrix and decided that three factors fit the data well. The three factors were labeled independent self-construal, interdependent self-construal, and power distance. Alpha reliabilities for the independent, interdependent, and power distance factors were .71, .72, and .68, respectively, which are comparable to those reported by Singelis (1994). The power distance factor was interpreted as the extent to which members of a society accept an unequal distribution of power within institutions and organizations. The power distance factor also resembled the vertical collectivism dimension identified by Singelis et al. (1995). Although Hofstede (1980) postulated that power distance and individualism are inversely correlated, the power distance

factor found in this study consisted of four independent and four interdependent items rather than just independent items. Grace and Cramer reported a significant relationship between allocentric (i.e. other-oriented) TST responses and interdependent self-construal, which is consistent with theory. However, they did not find a significant correlation between the percentage of idiocentric TST responses and independent self-construal, which limited the construct validity of one or both instruments.

In summary, the controversial findings with the two-dimensional model led researchers to examine the appropriateness of a three-dimensional model. More specifically, Cross et al. (2000) emphasized the importance of relationships in interactions with others and developed the concept of relational interdependence as a way to bring attention to the interdependent qualities found in predominantly individualistic cultures (e.g., United States). The tripartite model consisted of independent, collective, and relational self-construals. The introduction of relational interdependence as a possible third factor was important as it provided an explanation for the existence of interdependence in individualistic countries. A limitation of these studies was that the results did not always conform to theory, which left the possibility open for the exploration of alternative models of self-construals.

A Four-Dimensional Model: Differentiating Horizontal and Vertical Individualism and Collectivism

Singelis and colleagues (1995) postulated that both horizontal and vertical aspects of individualism and collectivism can be differentiated. Thus, the authors named four components: horizontal collectivism, vertical collectivism, vertical individualism, and horizontal individualism. In horizontal collectivism, individuals are part of an in-group in which members of the group are very similar to each other and equality is important. In contrast, in vertical

collectivism the individual is part of an in-group, but the members of the in-group can be different from one another, particularly in status level. People accept inequalities among each other and importance is placed on serving and sacrificing for in-group members. In horizontal individualism the self is autonomous, but the individual is somewhat equal in status with other group members. Finally, in vertical individualism the self is autonomous, but individuals see each other as distinct and inequality is expected.

Singelis and colleagues (1995) provided empirical evidence for the distinction between horizontal and vertical components of individualism-collectivism. The samples included undergraduate students from the University of Illinois at Champaign and the University of Hawaii at Manoa. Confirmatory factor analysis was used to test the dimensionality of the items. The authors reported that the four-factor model ($\chi^2/df = 1.96$, GFI = .79, AGFI = .75, RMR = .09) provided a better fit than the two-factor model ($\chi^2/df = 2.30$, GFI = .73, AGFI = .69, RMR = .09). Alpha reliabilities for the four scales ranged from .68 to .74. The authors reported that the four factors converged well with other measures. For example, horizontal individualism was positively related to SCS independence and negatively related to SCS interdependence.

Triandis and Gelfand (2001) provided evidence for the distinction between horizontal and vertical dimensions of individualism-collectivism in Korea, a collectivistic culture. Three-hundred twenty-six participants were recruited from the Chung-Ang University in South Korea. Twenty-seven items from the scale developed by Singelis and colleagues (1995) were used in this study. An EFA was conducted and four factors were extracted. The content of the factors supported the labels of vertical collectivism, horizontal collectivism, vertical individualism, and horizontal individualism. The authors also developed 36 scenarios that resembled everyday student life and each scenario had four options. Each option consisted of a statement that

corresponded to vertical collectivism, horizontal collectivism, vertical individualism, or horizontal individualism. The incorporation of the scenario-based method of measurement allowed the authors to examine multitrait-multimethod matrices. The two measures exhibited good convergent validity. For example, the correlation between the vertical individualism subscale and the scenario-based score for vertical individualism was .51.

In summary, the early work of Singelis and colleagues (1995) provided some evidence for the existence of the four-factor model with vertical and horizontal facets of individualism and collectivism in the United States. Triandis and Gelfand (2001) examined the existence of the four-factor model in a collectivistic country, South Korea. Both studies provided support for a four-factor model being a better fit than a two-dimensional model, but the authors did not explore the viability of other models. In addition, studies on the four-dimensional model have been limited and further research is needed to provide support for this model over alternate models of self-construal.

Models with More Refined Facets

Other authors have postulated more refined aspects or facets of individualism and/or collectivism (Hardin, Leong, & Bhagwat, 2004; Kwan, Bond, Boucher, Maslach, & Gan, 2002). For example, Kwan et al. postulated that in collectivistic cultures the construct of individualism is not captured well by a one-factor structure. Not only is the distinction between the self and others not the primary goal of collectivistic cultures (Markus & Kitayama, 1991), but individualism may actually manifest itself differently in collectivistic cultures. For those who adhere to a group-oriented approach, individuation of self can either lead to positive or negative consequences depending on the nature of the behavior and the situational context.

Content facets. Kwan and colleagues (2002) examined the process of individuation in a collectivist culture by collecting data at the Chinese University of Hong Kong. The Individuation Scale (Maslach, Stapp, & Santee, 1985), a 12-item, 5-point Likert-type measure, was utilized to assess “an individual’s willingness to individuate himself or herself publicly” (Kwan et al., p. 302). The authors hypothesized a two-factor structure of individuation because of culture-specific effects on individuation in a collectivistic culture. In the analysis of the individuation scale the authors conducted EFA and CFA on the individuation items and compared the one- and two-factor models. The comparison favored the two-factor model ($\Delta\chi^2[1] = 39.98, p < .01$). The first factor, which they labeled Seeking Attention, contained items about individuals who frequently confront others. The second factor, which they labeled Taking the Lead, contained items about the ability to be a leader. The alpha reliabilities for Seeking Attention and Taking the Lead subscales were .72 and .74, respectively.

In a second study, Kwan and colleagues (2002) tested the two-factor model of individuation in an individualistic culture, the United States. A CFA comparison of one- and two-factor models showed no significant differences in model fit ($\Delta\chi^2[1] = 2.05, p > .05$). The correlation between the two factors, Taking the Lead and Seeking Attention was high, $r(141) = .70, p < .001$. The correlation was much higher than in the first study with the Chinese sample, revealing a difference in the structure of individuation between the individualistic and the collectivistic culture. In the U.S. sample, the one-factor model was retained because the two types of individuation seemed to overlap and were therefore best represented by one factor.

In a similar study, Realo, Koido, Ceulemans, and Allik (2002) developed a new scale, the Individualism Scale, as a way to further examine individualism at the individual level. The authors distinguished three components of individualism: autonomy, self-responsibility, and

uniqueness. According to the authors, autonomy refers to an individual's ability to independently think, judge, and survive. A sample item for the autonomy component was "I am disturbed if anyone tries to intervene in my life" (p. 172). Self-responsibility corresponds to a person accepting responsibility for self and one's actions and a sample item is "I don't like situations where I have to be responsible for something important." Uniqueness emphasizes an individual's awareness of being "one of a kind" and different from others. A sample item from this component is "It is important to me to stand out from others." Cronbach alpha reliabilities for the autonomy, self-responsibility, and uniqueness scales were 0.79, 0.76, and 0.74, respectively. The three dimensions demonstrated good convergent and divergent validity with other measures of individualism and collectivism. Although the authors limited the data collection to one country, Estonia, the study supported the view that several facets of independent self-construals can be identified.

Investigators have given limited attention to possible alternative structures for the SCS. Hardin and colleagues (2004) investigated the two-factor structure of the SCS using EFA. However, they also sought to investigate if a factor solution of more than two factors provides a better fit to the data. Participants included two independent samples of self-identified Asian/Asian Americans and European American college students. Due to differences in acculturation and citizenship status, both ethnic groups were combined and then randomly split into two groups. Therefore, each group (n = 393) was composed of Asian, Asian American, and European American participants. Using Group 1 data, the authors conducted an EFA with oblique, quartimax rotation using the Comprehensive Exploratory Factor Analysis program. The one- and two-factor models were evaluated and the original two-factor structure was supported using the 30-item version of the SCS. To cross-validate the factor structure of the SCS, the

authors tested two models with CFA using Group 2 data. The two-factor model replicated results from the EFA. The difference between these results and those reported by Singelis (1994) was that three items (Items 3, 6, 30) loaded on both factors in the present study. In addition, 11 of the items had loadings less than .30 on either factor.

Hardin et al. (2004) examined the data for Groups 1 and 2 to explore the factor structure beyond the two-factor model. Ten-factor solutions were examined and evaluation of the scree plot suggested the retention of the two-factor structure. Nonetheless, the authors examined other factor solutions based on results from EFA and CFA. Based on the fit indices for various models, the authors decided that the four- and six-factor solutions provided a close fit to the data and were interpretable. In the six-factor solutions, the factors were labeled Autonomy/Assertiveness, Individualism, Behavioral Consistency, Primacy of Self, Esteem for Group, and Relational Interdependence. To test the six-factor structure, Group 2 data was submitted to a CFA to examine the structure of the six factors as the first-order factors and independent and interdependent self-construals as the two higher-order factors. The higher-order model provided an acceptable fit to the data but some of the fit indices indicated a marginal fit. Low to moderate alpha reliability estimates ranged from .52—.69 for the six factors. The authors combined Asian/Asian American participants in one group and European Americans in another group and ran CFA for each group separately and the results yielded comparable results.

To examine the usefulness of the six-factor model, Hardin et al. (2004) conducted gender by ethnicity MANOVAs, one with the two original subscales and another with the six new factors as the dependent variables. The authors found that Asian Americans, as compared to European Americans, scored higher on the original interdependent scale and on the two new subscales of interdependence, Esteem for Group and Relational Interdependence. Effect sizes

were small, however. Asian Americans and European Americans did not differ on the original independence scale but did differ on the four new independent scales. Asian/Asian American participants scored higher on Individualism and Primacy of Self subscales, whereas European American participants scored higher on Autonomy/Assertiveness and Behavioral Consistency. The results from the MANOVA provided support for the value of differentiating subscales in the SCS. Replication of these results with cross-cultural samples would provide further support for the results reported by Hardin and colleagues.

Shulruf, Hattie, and Dixon (2007) also derived content facets of independent and interdependent self-construals. The authors developed a new measure of individualism-collectivism they hoped would address methodological problems with previous measures. The Auckland Individualism-Collectivism Scale (AICS) was based on the content facets for individualism and collectivism outlined by Oyserman et al. (2002). An initial list of 353 items was later reduced to 113 items by deleting redundant items. Three scholars familiar with the individualism-collectivism literature were given definitions of the facets outlined by Oyserman et al. and asked to assign each item to one of the facets. Four facets (context, goals, related, and group) were excluded from the final list because the items overlapped with items in other domains. The list was reduced to 66 items.

The 66-item measure was tested with 206 undergraduate students from New Zealand. The ethnic composition of the sample consisted of New Zealand European (25%), Maori (14%), Pacific (32%), Asian (16%), and other (10%). A maximum-likelihood factor analysis with oblimin rotation was conducted and six factors were extracted, twenty-one items that did not relate to any factor were dropped from further analyses. An additional 15 items were deleted following a reliability analysis. The six factors identified were labeled Advice, Harmony,

Closeness (collectivism factors), Competitiveness, Uniqueness, and Responsibility (individualism factors). The alpha reliabilities ranged from .62 to .77 for the six dimensions. Structural equation modeling was conducted to further examine the adequacy of the six-factor model. The model was specified with individualism and collectivism as two higher-order factors and the six factors as first-order factors. The Closeness factor did not load on the final model and was excluded. The resulting five-factor model fit the data adequately ($\chi^2/df = 1.94$, RMSEA = .069, CFI = .822, and AFGI = .821). Mean differences between the ethnic groups were reported. For example, Pakeha (a subgroup of New Zealand Europeans) and Maori scored high on Responsibility and Uniqueness and low on Competitiveness and Advice in comparison to the other ethnic groups. In addition, Pacific and Asian participants scored high on Competitiveness and Advice and low on Responsibility and Uniqueness in comparison to New Zealand Europeans, Maori, and others. The authors developed the AICS to address methodological issues of previous measures but some of the same problems were encountered (i.e., low alpha reliabilities).

Reference group facets. Hui's (1988) development of the Individualism-Collectivism (INDCOL) Scale focused on the multiple reference-group facets of the construct. Items were generated from information provided by cross-cultural researchers and those adapted from measures of social orientation and solidarity. Hui identified eight target groups (spouse, parents, kin, family, neighbors, friends, co-workers/classmates, and unknown persons/acquaintances) because of the expected influence reference groups have on the way people respond to individualism-collectivism measures. Specific items were developed to fit each of the target groups. Initially, 96 items were developed and Chinese and American university students provided pilot data for evaluation of the scale. The alpha reliability for the Family and

Acquaintance subscales were very low and they were excluded from further analyses. After further evaluation, the INDCOL scale was reduced to 63 items. The revised version of the scale and Crowne and Marlowe's social desirability scale were administered to Chinese and Americans students. A positive correlation was reported between social desirability and collectivism for the Chinese, which supported "the contention that the INDCOL scale measures something that is valued in the Chinese sample" (p. 27). Results that differentiated between individualist and collectivist on obligation-intention for close friends and acquaintances were also provided by the author. The results provided some validation for the INDCOL scale but the analyses did not focus on providing support for the existence of multiple facets within the construct.

Hui and Yee (1994) conducted a follow-up study to examine the validity and factor structure of the INDCOL scale (Hui, 1988). To examine the factor structure of the scale, the authors collected data from Chinese employees. In the initial confirmatory factor analysis the authors were not able to replicate the six factors originally identified by Hui (1988). The authors employed a principal components analysis to examine the factor structure of the scale and based on the eigenvalues they decided to extract five factors, which consisted of 33 items. The first factor was labeled Colleagues and Friends/Supportive Exchanges (CF) and consisted of items associated with a moderate level of intimacy and sharing interdependence with friends and co-workers. Parents/Consultation and Sharing (PA) was the label given to the second factor and it consisted of items about sharing personal information with parents and reluctance of sharing material goods with parents. The third factor consisted of items that distinguished individuals who were readily influenced by their kin or neighbors' attitudes from those who did not and it was labeled Kin and Neighbors/Susceptibility to Influence (KN). Parents and

Spouse/Distinctiveness of Personal Identity (PS) was the fourth factor and it consisted of items that referred to distancing of the individual from his/her nuclear family and emphasizing communal relationship within a marriage. The fifth factor was labeled Neighbor/Social Isolation (NE) and consisted of items that described the nonexistent relationship with neighbors. Alpha reliabilities for the five subscales ranged from .38 to .73, with all but one of the reliabilities below .70. The authors reported strong correlations between some of the subscales and decided to examine the existence of higher-order factors. A second-order factor analysis resulted in two factors. CF, PA, and PS loaded on the first factor and it was labeled Ingroup Solidarity. The second factor consisted of KN and NE and it was labeled Social Obligation. The alpha reliabilities for the two higher-order factors were .59 and .68, which were somewhat better than those of the five subscales. Further research is needed to validate the results reported by the authors and to replicate the factor structure of the INDCOL scale.

Matsumoto, Weissman, Preston, Brown, and Kupperbusch (1997) developed an individualism-collectivism measure that could be used with different social groups and that assessed both values and behaviors. The authors examined the existing literature on individualism-collectivism and selected items from measures that incorporated information about interpersonal interactions and described values related to relationships. A total of 25 items were identified after the authors eliminated items that could not be relevant to all relationship groups. Family, close friends, colleagues, and strangers were the four social groups selected to be included in the measure. To test the reliability of the Individualism-Collectivism Interpersonal Assessment Inventory (ICIAI), data was collected in the United States with participants from various ethnic backgrounds. The authors conducted principal-components factor analyses using the 25 items and separate analyses were conducted for the four social groups and rating domains

(i.e., behaviors and values). Results from the factor analyses did not yield consistent factor structures when extracting 3, 4, 5, or 6 factors. A multidimensional scaling procedure was used to analyze the data and in all of the analyses, no clear dimensions emerged from the data and the authors decided to obtain a total score by averaging across the 25 items. Alpha reliabilities ranged from .86 to .90. A comparison between the ICIAI and two other individualism-collectivism measures (Hui's INDCOL scale and Triandis' multimethod technique) was conducted to examine the validity of the measure. ICIAI scores did not correlate with scores from Triandis' measure, but positive correlations were reported with the INDCOL scores for spouse and kin. Some of the INDCOL scores correlated with ICIAI scores, which indicated more convergence than was obtained with Triandis' measure. In an effort to examine the cross-cultural validity of the ICIAI, the authors recruited participants from the United States, Japan, South Korea, and Russia. A four-factor ANOVA was used to analyze the data and it included country and gender as between-participants factors and rating domain and social group as the within-participants factors. The authors reported that Russians and South Koreans were more collectivistic toward family than the American sample, which was consistent with their hypothesis. However, the American sample presented as being more collectivistic towards family than their Japanese counterparts, which was not consistent with theory. For the friends and colleagues groups, Russians were more collectivistic than the other three groups. For the stranger group, Russians and Japanese were more collectivistic than the South Koreans and Americans. Participants from the four countries differed in how collectivistic or individualistic they were with their family, close friends, colleagues, and strangers. These results provide support for the view that people's collectivistic tendencies differ depending on the social group they are interacting with.

Rhee, Uleman, and Lee (1996) also examined the influence of reference groups, in this case kin, non-kin, and general others, on the structure of individualism and collectivism. Participants were from Korea and the United States, including European Americans and Asian Americans. Four different individualism-collectivism measures were used and the items for each measure were divided into kin, non-kin, and general others subscales. Five different models of individualism and collectivism were tested. The first model was the most parsimonious, a one-factor bipolar model of individualism versus collectivism. Model 2 tested a two-factor model with individualism and collectivism as the two latent variables. The third model tested a two-factor model with kin individualism/collectivism as one latent variable and non-kin/general others individualism/collectivism as the other factor. Model 4 consisted of four factors: kin collectivism, kin individualism, nonkin collectivism, and nonkin individualism. The fifth model tested three factors, kin individualism/collectivism, nonkin individualism/collectivism, and general others individualism/collectivism. The authors conducted pooled-sample confirmatory factor analyses to test the five models. Results for the first three models were poor. Models 4 and 5 fit the data well but Model 4 resulted in a better fit to the data, $\chi^2 = (71, N = 493) = 261.76$, $\chi^2/df = 3.69$; AGFI = .89, GFI = .93. The authors conducted within-group analysis using Model 4 (i.e., stacked model) for the three ethnic groups to examine if the latent variables were one- or two-dimensional and if the results varied by ingroup. Based on the results, the authors concluded that collectivism and individualism are best viewed as two-dimensional and that their relationship depends on the type of referent group (e.g., kin, non-kin). For example, high and primarily negative intercorrelations between collectivism and individualism toward kin indicated that the structures are one-dimensional for Koreans and European Americans. In contrast, a two-dimensional model seemed best for Asian Americans. One-way ANOVAs were conducted to

examine how the mean scores differed for the three groups. Koreans were found to be more collectivistic on six of the seven kin subscales. On the non-kin subscales, Koreans did not differ from European Americans. In addition, in terms of individualism, European Americans make a distinction between kin and nonkin. These results suggest that people from collectivistic cultures tend to make a clear distinction between ingroups and outgroups. Results from this study emphasized the importance of specific reference groups when measuring individualism and collectivism.

Freeman and Bordia (2001) also developed an Individualism-Collectivism scale that measured the facets of both individualism and collectivism in relation to the following reference groups: Family, Peers, Nation, and School. The final questionnaire contained 32 items, three to seven items for each subscale. Two items were dropped due to negative item intercorrelations. Participants consisted of 304 college students from the University of Queensland, Australia.

The authors examined six alternative structural models of Individualism and Collectivism (Freeman & Bordia, 2001). The first model represented the bipolar unidimensional model. The second model was a unipolar two-dimensional model. The third model consisted of four latent bipolar variables (e.g., Family Individualism-Collectivism). The fourth model included eight unipolar latent variables (e.g., School Individualism). The fifth model was a hierarchical model with a single, higher-order Individualism-Collectivism factor subsuming the four latent variables of the third model. The sixth model was a hierarchical model, with higher-order Individualism and Collectivism constructs subsuming the eight latent variables in the fourth model. The authors reported that Models 3 and 4 represented an improvement over the first two models, possibly due to the incorporation of the four specific reference groups. The authors selected the fifth model as the best and most parsimonious model ($\chi^2/df = 1.97$, RMSEA = .054, GFI = 0.86,

and AGFI = 0.84), even though the fit was slightly better for the fourth model ($\chi^2/df = 1.87$, RMSEA = .051, GFI = 0.88, and AGFI = 0.85). The findings of the study support the conceptual interpretation of individualism-collectivism as bipolar and distinguishable by specific reference groups. The authors did not report alpha reliabilities for the selected model which would have allowed further evaluation of the model.

Chen and West (2008) also examined the influence of reference groups and content facets on the measurement of individualism and collectivism. The authors recruited participants from China and the United States because the two countries are considered to be representative of collectivistic and individualistic cultures, respectively. The authors focused on Independence, Competitiveness, and Uniqueness as three facets of Individualism. Three facets of Collectivism were Considering One's Decisions on Others, Sharing Positive Outcomes, and Sharing Negative Outcomes. Items for Individualism facets were selected or adapted from existing measures. The primary author developed items for the three facets of Collectivism. The three collectivism facets were measured in relation to the following referent groups: parents, friends, and general others. The three individualism facets were measured without respect to the three reference groups. Eighty items were initially developed and items were reduced to 40 based on item redundancy and the items relation to the facet. U.S. undergraduate and Chinese graduate students rated the 40 items for cultural appropriateness. Alpha reliabilities for the Individualism and Collectivism facets ranged from .67 to .90. In order to test measurement invariance, Cheng and West (2008) conducted multiple-group CFA with covariance and mean structures. The authors conducted separate analysis for each facet of Individualism and Collectivism. As previously mentioned, Collectivism facets were tested in relation to the three reference groups. The authors reported that the model for configural invariance fit the data adequately for the

Independence, Competitiveness, and Uniqueness facets. In addition, all three subcomponents of the Parent-Collectivism, Friend-Collectivism, and Other-Collectivism facets fit the data adequately, which indicated that factor loading invariance was met.

Another goal of the study was to examine the dimensionality of Individualism and Collectivism. The authors examined one- and three-factor models for both Individualism and Collectivism separately. In both the Chinese and American samples, the three-factor models fit the data significantly better than the one-factor models. The dimensionality of Collectivism was reported to be multidimensional when parents were included as the reference group but as the social distance increased from parents to general others, the model became more unidimensional. Multiple group CFA was conducted to test latent factor mean differences between Chinese and United States participants. As expected, cultural differences were found for the Uniqueness facet: U.S. participants perceived themselves as more unique than the Chinese participants. Chinese participants were more independent and competitive than their U.S. counterparts, which was contrary to the expected cultural difference. Furthermore, expected cultural differences were also reported for the parent and other Collectivism facets. For example, the Chinese participants were more likely to think their parents would be ashamed of their misconduct than did their American counterparts. Based on the results, Individualism and Collectivism can be considered different yet related constructs. The relationship between the two constructs changed as social distance increased. There was a positive association between Individualism and Collectivism when the relationship focused on the parents and the association became weaker as social distance moved toward distant others. In addition, gender differences were obtained for competitiveness, in which U.S. females were less competitive than all other groups and U.S.

males were less competitive than Chinese males and females. The results of the study again highlight the importance of reference groups in individualism-collectivism measurement.

In summary, according to Kağıtçıbaşı (1996), an individual can express both individualistic and collectivistic dimensions with different groups and situations and the above mentioned studies provide support for this statement. In addition, these studies also focused on the development of measures that better assessed individualism and collectivism through the selection of content facets that best represent the two constructs. The focus on reference groups and content facets resulted in an improvement in the alpha reliabilities of the measures and more refined conceptualizations of individualism-collectivism.

General Summary and Critique

The studies reviewed in this paper provide evidence for the multidimensionality of self-construals. Independent and interdependent self-construals represent broad domains and various subcomponents can be embedded within the two domains. Dissatisfaction with the two-factor model originally postulated by Markus and Kitayama (1991) and Singelis (1994) is increasing. In addition, the debate continues regarding the number and the nature of the dimensions of self-construal. Only a minority of studies (i.e., Chen & West, 2008; Freeman & Bordia, 2001; Shulruf et al., 2007; Singelis et al., 1995) have focused on exploring the dimensionality of Individualism-Collectivism measures. The multidimensionality of independent and interdependent self-construals has been proposed by various researchers (Cross et al., 2000; Hardin et al., 2004). For example, based on a thorough review of the literature, Oyserman et al. (2002) indicated that individualism can be broken down into seven facets, and collectivism into eight facets, which provides further support for the possible existence of several factors within both independent and interdependent self-construals. The dimensionality of the SCS and other

measures of self-construals or individualism-collectivism should be further studied with cross-cultural samples that go beyond the United States and East Asian countries as representatives of individualistic and collectivistic countries.

Cultural mean differences in self-construals between individualistic and collectivistic countries have been inconsistent, and only partially supportive of theory. Some studies have provided support for the theoretical underpinnings of individualism and collectivism, in that the authors reported results consistent with a two-factor model and cultural mean differences that conformed to expectations (Aaker & Schmitt, 2001; Kwan et al., 1997; Singelis, 1994). However, other studies have reported results inconsistent with theory (Leung, 2004; Sato & Cameron, 1999; Uskul et al., 2004). For example, several results that were inconsistent with theory were reported in the meta-analysis by Oyserman et al. (2002). The authors found that Latin American samples were more individualistic than American samples. In addition, Japanese were found to be a slightly less collectivistic than Americans, which was not expected. The authors reported no difference between samples from Korea and the United States on collectivism. These results provide some evidence that is inconsistent with Hofstede's (1980) rankings of countries on individualism and collectivism. Oyserman et al. speculated that these inconsistent results are due in part to difficulties in the assessment of individualism-collectivism.

Cross et al. (2000) reported that relational interdependence represents a type of group-oriented self-construal that is most appropriate for individuals from Western countries (e.g., United States and Australia). In addition, Kashima et al. (1995) stated that gender differences were most apparent for relational interdependence as this type of self-construal is more prominent in women than men, whereas collective self-construal is more common among men. It would be important to examine if gender differences in collectivistic cultures resemble those

found in the U.S. (Chen & West, 2008; Hardin et al., 2004). Further research is needed to examine gender differences in self-construals in the various subcomponents of self-construals.

In the existing literature, samples from the United States and Canada have been predominantly used as representatives of individualistic countries and East Asian samples have been used as representatives of collectivistic countries. Therefore, the majority of hypotheses have centered on comparisons between North American and East Asian countries. Further studies are needed to explore the inconsistent results reported by Oyserman et al. (2002), in which Latin/South American countries score higher on individualism than individuals from the United States. There is a need for researchers to expand samples and hypotheses to other countries in order to broaden their tests of cultural differences in self-construals.

Inconsistent and marginal alpha reliabilities have also been an issue with the self-construal scales. Singelis (1994) reported moderate Cronbach alphas (.70 to .74) in the initial development study for the SCS. However, some studies have reported low alpha reliabilities (Kwan et al., 1997; Sato & Cameron, 1999; Singelis et al., 1999). Oyserman et al. (2002) reported that about half of the available cross-national studies are based on measures with Cronbach reliabilities lower than .70, a conventional cutoff for acceptable reliability. Low to moderate alpha reliabilities indicate measurement problems. For example, Fiske (2002) stipulated the possible Western bias in the development of self-construal scales. The use of structured questionnaires has been criticized because they may be ill-suited to examine self-construals. In addition, some researchers have suggested that self-report measures may not be able to measure aspects of culture that are inaccessible to everyday awareness (Fiske, 2002).

Other potential measurement issues have been discussed with Likert-type scales. These include response styles (e.g., acquiescence) and reference group effects. Response styles can

confound results in cross-cultural research. For example, participants from East Asian cultures tend to avoid using extreme ends of Likert-type scales (Markus & Kitayama, 1991). In addition, the tendency to agree or disagree with statements regardless of the content (acquiescence) can also cause problems in cross-cultural research. Another potential problem with Likert scales is reference-group effects. Heine, Lehman, Peng, and Greenholtz (2002) indicated that participants rate their attributes in comparison to similar others when responding to Likert-type scales. Participants from different cultures will compare themselves to different reference groups, which can confound results of cross-cultural research. As a way to deal with these issues, some researchers have statistically controlled for response styles (Hofstede, 2001), while others have supported the use of alternative measurement methods. For example, Triandis and Gelfand (1998) utilized a scenario method, in which a short scenario is described and four alternative responses representing with horizontal and vertical aspects of individualism and collectivism are provided. Shulruf et al. (2007) argued that the use of frequency scales may reduce reference group effects because “frequency scales relate to the prevalence of behavior or thought, unlike agreement scales” (p. 387). Even though the use of scenario-based research has been minimal, results have been successful in minimizing response styles. Future research is needed to explore the various measurement issues with individualism-collectivism measures, especially with the SCS. Such research will remain important as long as the individualism-collectivism construct continues to dominate theory and research on cultural differences in cognition, affect, and behavior.

Overview of the Present Study

Augmenting existing research on self-construals, the present study will examine the dimensionality and cross-cultural structural equivalence of the Self-Construal Scale. In so doing,

I will test alternative structural models for the SCS using archival data from the United States, Australia, Mexico, Philippines, Japan, and Malaysia. I will also evaluate the psychometric properties of the original scales by examining alpha reliabilities and item-total correlations for the SCS in several cross-cultural data sets. Finally, I will investigate gender differences in those aspects of self-construal identified in the various cultural samples. Gender differences in self-construals have not been an important focus in the literature. However, Cross et al. (2000) argued that women average higher than men in relational interdependent aspects of self-construal. Even though significant differences were not reported, Hardin et al. (2004) found that men scored slightly higher than women in assertiveness aspects of self-construal. Therefore, the following hypotheses will be tested:

Hypothesis 1: A hierarchical model, with multiple independent and interdependent scales, will provide the best structural representation of self-construals as measured by the SCS and will replicate fairly well across cultures.

Hypothesis 2: Gender differences in selected aspects of self-construals will be identified. In particular, in all cultures, it is expected that females will endorse relational interdependence items or scale more than males, and that males will endorse assertiveness items or scale more than females.

CHAPTER THREE

Methodology

Participants

The archival data analyzed in this study included data collected in six previous studies, in which I was one of the researchers. Participants consisted of college students from two individualistic countries: the United States and Australia, and four collectivistic countries: Mexico, Philippines, Malaysia, and Japan. Hofstede (1980) ranked the United States 1st, Australia 2nd, Japan 22nd, Philippines 31st, Mexico 32nd, and Malaysia 36th along the individualism dimension (1 being highest and 50 lowest on individualism). Participants from the original studies were recruited in college classrooms and participant research pools and filled out the questionnaires during regular classes or on their own time. In some cases, they were provided with extra-credit or monetary compensation for their participation. Table 1 provides a summary of some of the participant characteristics from the six original studies and the reference citation for each study. In each study, students from a variety of college majors and year-levels were sampled.

Instrument

In the original studies, the participants completed a demographic sheet and a number of instruments. For this study, the focus is data from the Self-Construal Scale (SCS). The 30-item SCS (Singelis, 1994) was used to measure independent and interdependent self-construals and items were rated using a six-point agreement scale ranging from strongly disagree to strong agree. Singelis (1994) used a seven-point agreement scale which included a “don’t agree or disagree” option, but this response option was eliminated because some cultural groups may overuse this “neutral” category. Both scales consisted of 15 items. A sample independent item is

“I act the same way no matter who I am with.” A sample interdependent item is “It is important to me to respect decisions made by the group.” The SCS was administered in the participants’ native language. The backtranslation method (Brislin, 1986) was used to translate the English version of the SCS into all of the other languages used in this study. Reliability and validity information for the SCS was reviewed in Chapter 2.

Data Analyses

For each of the original cultural samples in Table 1, I computed alpha reliabilities and item-total correlations for the independent and interdependent scales in the total (combined-gender) sample to examine the psychometric properties of the existing scales across cultural samples. In subsequent analyses some of the smaller cultural samples were combined with another sample from the same culture to increase the sample sizes for factor analyses. Samples that were combined are annotated with the same superscript in Table 1. The final cultural samples ranged in size from 192 to 441.

To test Hypothesis 1, a CFA was conducted in each cultural sample to evaluate the fit of the original two-dimensional model. Multigroup CFA’s for the two-factor model were not conducted because this model did not provide an adequate fit in the separate cultural samples. The next step was to use the CEFA (Comprehensive Exploratory Factor Analysis) program to identify alternative models with more factors in each cultural sample. An advantage of the CEFA program is that goodness-of-fit indices are obtained, including χ^2/df , RMSEA (root mean square error of approximation), and the ECVI (expected cross-validation index). A ratio of 3:1 or less for χ^2/df indicates good fit. Values of the RMSEA of .05 or less indicate good fit. For the ECVI there is no specific range of acceptable values and the value is used primarily to compare alternative models.

Table 1

Characteristics of Participants for Data Sets Analyzed

Data set	Cultures	Sample sizes	Males	Females	Mean age	Reference
1	United States	249	99	150	20.9	Church et al. (2003)
	Mexico	268	73	195	20.4	
2	United States	342	136	206	20.6	Church et al. (2006)
	Australia ^a	197	89	109	19.6	
	Mexico	400	108	292	21.5	
	Philippines	351	100	263	18.6	
	Malaysia	251	110	141	21.1	
	Japan	192	99	93	19.8	
3	United States ^d	178	62	116	20.2	del Prado et al. (2007)
	Australia ^a	112	25	87	22.2	
	Mexico ^c	157	33	124	20.1	
	Philippines ^b	138	53	85	18.4	
4	United States ^e	144	58	86	20.4	Miramontes et al. (2007)
	Australia ^f	200	87	112	23.7	
	Mexico ^g	180	39	140	19.9	
	Philippines ^h	154	90	64	18.7	
5	United States ^e	267	98	169	19.9	Miramontes et al. (2007)
	Australia ^f	143	15	128	22.8	
	Mexico ^g	254	52	197	20.0	
	Philippines ^h	224	84	140	18.4	
6	United States ^d	263	78	185	22.6	Church et al. (2006)
	Mexico ^c	141	66	75	21.0	
	Philippines ^b	174	65	109	18.6	

Note: Cultural samples to be combined for factor analyses are annotated with the same superscript in the column headed Cultures.

In the CEFA, the responses to the 30 items of the SCS were analyzed using maximum likelihood (ML) extraction with oblique, quartimax rotations, the method used by Hardin et al. (2004). Oblique rotations allow the anticipated content facets to be correlated, which is consistent with the hypothesized hierarchical structure. Based on the CEFA results, it was difficult to select a model that best represented most of the cultures. In an effort to improve the interpretability and simple structure of the factor solutions, core items were selected. The core items were selected as relatively pure markers of the various factors or facets identified in the CEFA analyses. Items with low or dual loadings were eliminated in the selection of core items.

Next, CFA was used to compare the fit of the original two-factor model within each cultural sample with the best first-order model(s) derived using the CEFA method in the respective cultural samples. For those cultures in which there were multiple samples, CFA was used to examine the replicability of selected factor models across samples. In addition, if the selected CEFA models appeared comparable across some national samples, multigroup CFA's were conducted to test the cross-cultural structural equivalence of the most promising models identified in the separate-culture CEFA solutions. Thus, factor models were compared both across data sets for the same culture (e.g., U.S. in Data Sets 1 vs. 2) and across cultures within data sets (e.g, U.S. vs. Mexico in Data Set 2).

The hypothesized higher-order model with independent and interdependent self-construal as second-order latent factors each defined by more specific content facets was also examined. Because of problems encountered estimating the higher-order models (i.e., with 2nd order latent constructs), I instead examined the patterns of correlations between the first-order constructs as estimated in the CFA analyses to determine whether they were consistent with higher-order independent and interdependent dimensions.

To test Hypothesis 2, scale scores (and alpha reliabilities) were computed for each of the factors obtained for each culture from the examination of the structure of the SCS. In each cultural sample, MANOVA was conducted to test for gender differences in the derived scales. Replication of gender differences was examined and summarized both across cultures (e.g., U.S. vs. Mexico) and for the same culture across data sets.

CHAPTER FOUR

Results

The primary purpose of the present study was to examine the dimensionality and cross-cultural structural equivalence of the Self-Construal Scale, the most widely used measure of self-construals or individualism-collectivism at the individual level. In addition, I examined selected psychometric properties of the instrument to determine the quality of the items and the internal consistency of the overall instrument. Alpha reliabilities for the 30-item Self-Construal Scale were computed for each data set and I inspected the item-total correlations. In order to test Hypothesis 1, CFA was conducted to examine the two-factor SCS model. To evaluate alternative models, CEFA and CFA were used and the best model was selected for each culture. To test Hypothesis 2, which addressed gender differences, scale scores for the selected factor model in each country were computed. A MANOVA was then computed for each data set, with gender as the independent variable and the scale scores as the dependent variables. MANOVAs were also computed with gender as the independent variable and scores on the original independent and interdependent self-construal scales as the dependent variables.

Internal Consistency Reliability and Item-Total Correlations for Original Scales

Table 2 shows descriptive statistics, including the alpha reliabilities for the original independent and interdependent self-construal scales in all data sets. Overall, the alpha reliabilities across all data sets were in the marginal (i.e., $< .70$) to acceptable (i.e., $> .70$) range. Alpha reliabilities for independent and interdependent self-construals, respectively, ranged from .61 to .78 and .61 to .75 in the United States, from .72 to .80 and .71 to .80 in Australia, from .63 to .71 and .66 to .75 in Mexico, from .66 to .77 and .64 to .74 in the Philippines, and from .60 to .73 for both independent and interdependent self-construals in Malaysia and Japan. The

Table 2

Self-Construal Item Means, Range, and Alpha Reliabilities

Data Set	Country	Mean and Range		Alpha Reliabilities	
		Independent Self-Construal	Interdependent Self-Construal	Independent Self-Construal	Interdependent Self-Construal
1	United States	4.31(3.49-5.16)	4.12 (3.12-5.18)	.77	.74
	Mexico	4.66 (3.28-5.38)	3.77 (2.40-5.30)	.70	.75
2	United States	4.30(3.46-5.05)	4.12 (2.85-5.13)	.78	.75
	Australia	4.18 (3.14-5.21)	4.12 (3.02-5.01)	.72	.71
	Mexico	4.64 (3.24-5.27)	3.70 (2.82-5.24)	.70	.73
	Philippines	4.16 (3.27-4.98)	4.29 (3.37-5.15)	.72	.74
	Malaysia	4.15 (3.22-5.16)	4.16 (3.21-5.00)	.60	.63
	Japan	3.82 (2.82-5.05)	3.94 (3.17-4.63)	.67	.73
3	United States	4.36 (3.38-5.23)	4.20 (3.04-5.36)	.74	.69
	Australia	4.28 (3.24-5.24)	4.04 (2.79-5.04)	.80	.80
	Mexico	4.85 (3.32-5.58)	3.89 (2.36-5.66)	.65	.68
	Philippines	4.32 (3.43-4.97)	4.44 (3.53-5.26)	.77	.71
4	United States	4.31 (3.38-5.25)	4.19 (2.85-5.23)	.78	.73
	Australia	4.25 (3.23-5.22)	4.03 (2.90-4.91)	.77	.73
	Mexico	4.85 (3.38-5.49)	3.84 (2.38-5.46)	.71	.69
	Philippines	4.07 (2.99-5.10)	4.36 (3.30-5.23)	.64	.64
5	United States	4.33 (3.71-5.14)	4.08 (2.98-5.07)	.61	.61
	Australia	4.28 (3.22-5.33)	4.02 (2.70-5.13)	.70	.75
	Mexico	4.80 (3.27-5.46)	3.65 (2.08-5.40)	.67	.70
	Philippines	4.33 (3.23-5.09)	4.34 (3.26-5.24)	.66	.69
6	United States	4.28 (3.33-5.21)	4.25 (3.13-5.21)	.78	.69
	Mexico	4.77 (3.24-5.44)	3.95 (2.46-5.29)	.63	.66
	Philippines	4.32 (3.56-4.95)	4.43 (3.62-5.20)	.72	.71

Australian alpha reliabilities were consistently among the higher values and were higher than those reported by Singelis (1994) in European American and Asian American samples from the United States. Alpha estimates for the other countries were comparable to, or lower than, those reported by Singelis.

To evaluate the quality and cross-cultural functioning of specific items, item-total correlations were examined. Item-total correlations tell us how well the individual items correlate with other items in the scale and thus measure the same construct. Table 3 provides the mean and range of the item-total correlations for each item for the six countries. The mean item-total correlations for items 3, 4, 6, 12, 15, 19, 22, 24, and 29 were lower than .30 in at least three of the six countries. Almost one-third of the items had modest (i.e., < .30) item-total correlations in at least half of the countries. For example, Item 24 (I try to do what is best for me, regardless of how that might affect others) was the most consistently weak item. For the Malaysian results, the majority of the item-total correlations were below .30, which means that many independent items were not correlating highly with other independent items and interdependent items were not correlating highly with other interdependent items. Item-total correlations below .30 occurred more often in the translated (i.e., non-English) versions of the instrument, so it is possible that translation inequivalence contributes to the lower item-total correlations, despite careful backtranslation. An alternative possibility is that the SCS items function less well overall, or are interpreted differently, in collectivistic countries (i.e., Mexico, Philippines, Malaysia, and Japan) than in individualistic countries (i.e., United States, Australia). Finally, it should be acknowledged that Singelis viewed both independent and interdependent self-construals as comprising a diversity of behaviors, so that high internal consistency may not be possible in broad measures of each construct.

Table 3

Mean and Range of Item-Total Correlations in Six Countries

<u>SCS</u> <u>Item</u>	<u>US</u>		<u>Australia</u>		<u>Mexico</u>		<u>Philippines</u>		<u>Malaysia</u>	<u>Japan</u>
	M	Range	M	Range	M	Range	M	Range	M	M
1	.47	.41-.52	.39	.25-.54	.35	.28-.44	.38	.31-.44	.26	.28
2	.36	.20-.48	.40	.35-.45	.23	.14-.37	.31	.18-.39	.30	.26
3	.27	.15-.37	.30	.28-.32	.29	.21-.40	.27	.17-.38	.11	.16
4	.35	.30-.39	.39	.31-.49	.21	.00-.32	.35	.27-.41	.18	.19
5	.38	.27-.46	.42	.32-.49	.29	.22-.36	.29	.21-.37	.14	.34
6	.24	.14-.30	.24	.12-.33	.18	.14-.20	.32	.26-.37	.21	.27
7	.46	.33-.58	.35	.29-.40	.36	.23-.44	.32	.21-.43	.19	.33
8	.35	.27-.39	.43	.33-.54	.40	.34-.43	.43	.39-.51	.33	.48
9	.32	.23-.50	.33	.29-.36	.30	.21-.33	.31	.21-.40	.27	.27
10	.37	.31-.45	.28	.24-.34	.32	.18-.43	.28	.17-.36	.37	.31
11	.34	.25-.42	.32	.24-.39	.30	.27-.33	.31	.18-.42	.35	.21
12	.28	.23-.34	.33	.28-.37	.33	.20-.43	.11	-.06-.22	.17	.40
13	.42	.37-.48	.46	.42-.52	.38	.28-.45	.28	.09-.39	.31	.33
14	.36	.27-.42	.32	.22-.45	.27	.11-.32	.41	.37-.50	.36	.45
15	.34	.21-.42	.25	.13-.32	.31	.20-.45	.27	.23-.29	.00	.15
16	.24	.15-.30	.35	.24-.47	.35	.28-.39	.32	.24-.40	.31	.18
17	.34	.22-.39	.35	.30-.39	.29	.25-.36	.33	.21-.49	.19	.40
18	.37	.26-.45	.39	.28-.56	.23	.05-.32	.38	.30-.47	.33	.37
19	.32	.22-.46	.28	.23-.36	.26	.19-.34	.23	.12-.31	.29	.20
20	.34	.31-.40	.42	.34-.46	.32	.18-.41	.33	.23-.44	.29	.35
21	.36	.29-.46	.39	.33-.44	.32	.22-.41	.36	.34-.42	.33	.31
22	.34	.28-.42	.29	.19-.40	.36	.32-.47	.38	.20-.51	.17	.05
23	.34	.16-.48	.44	.28-.64	.40	.32-.47	.26	.07-.35	.30	.37
24	.21	-.06-.28	.24	.15-.29	.15	.09-.24	.19	.03-.28	.07	.16
25	.37	.31-.46	.34	.27-.49	.36	.25-.41	.35	.28-.40	.17	.27
26	.41	.36-.45	.47	.38-.52	.36	.21-.47	.43	.37-.50	.36	.52
27	.46	.40-.49	.43	.33-.54	.34	.24-.40	.34	.27-.49	.22	.44
28	.39	.12-.56	.48	.44-.53	.38	.33-.47	.39	.29-.55	.27	.52
29	.34	.23-.43	.37	.32-.45	.26	.03-.45	.27	.20-.33	.27	.26
30	.30	.20-.43	.32	.20-.49	.33	.19-.47	.24	.17-.34	.13	.39

Note. The means and ranges of the item-total correlations were computed across the samples for each country shown in Table 1. Only 1 sample was available for Japan and Malaysia.

Test of the Two Dimensional Model

In Hypothesis 1, I predicted that a hierarchical model, with multiple independent and interdependent scales, will provide the best structural representation of self-construals as measured by the SCS and will replicate well across cultures. To test Hypothesis 1, I first tested the fit of the two-factor model in all data sets. CFA was performed for each individual data set at the item-level to test the two-factor model with all original 30 items. To simplify the presentation of results, the average values of the fit indices across samples within each country are reported here. The average values of the fit indices across four U.S. data sets were: $\chi^2/df = 2.92$, GFI = .79, CFI = .56, and RMSEA = .08. The average values of the fit indices across the two Australian data sets were similar to those of the U.S. data sets: $\chi^2/df = 2.80$, GFI = .79, CFI = .56, and RMSEA = .08. The average values of the fit indices across the four Mexican data sets were: $\chi^2/df = 3.30$, GFI = .77, CFI = .46, and RMSEA = .08. The average values of the fit indices across the three Philippine data sets were similar to those for the Mexican data sets with a slightly higher average for the GFI and CFI indices: $\chi^2/df = 2.92$, GFI = .80, CFI = .53, and RMSEA = .08. The fit indices for the single Japanese data set were: $\chi^2/df = 2.37$, GFI = .72, CFI = .49, and RMSEA = .09. The fit indices for the single Malaysian data set were: $\chi^2/df = 2.56$, GFI = .78, CFI = .39, and RMSEA = .08. Overall, the two-factor model provided a poor fit to the data in all six countries. The two-factor model does not seem to represent or fully explain the complexity of attitudes and behaviors associated with independent and interdependent self-construals. Thus, an examination of alternative models is warranted.

Alternative Factor Models

Since the two-factor model did not provide an adequate fit to the data in any country, alternate models were investigated. Each data set was submitted to a maximum likelihood EFA

with oblique, quartimax rotations using the CEFA program, thus replicating the method used by Hardin et al. (2004). Factor solutions of two to six factors were considered based on the results reported by Hardin et al. Refer to Table 4 for a summary of the fit indices obtained with these analyses for each data set in each country. Although the fit indices for successive numbers of factors were not definitive regarding the optimal number of factors, solutions of four or more factors provided good fits to the data based on the values of the χ^2/df and RMSEA fit indices. In these cases, the χ^2/df indices were generally close to 2 and the RMSEA indices were .05 or less. These fit indices, along with the interpretability of the factors, were used to select the appropriate or best solution to retain for each country.

Initially, the hope was to attain a universal model that best represented the structure of the SCS instrument in all six countries. After inspection of the factor structures, however, it became apparent that finding a unique factor structure for each country might be a better aim for this study as results differed for each country. Indeed, the interpretability of the 4, 5, and 6 factor structures differed by country. Appendix A shows the factor labels and a summary of the highest item loadings in each culture for selected factor solutions. The factor structures listed in Appendix A include those that (a) provided acceptable model fits based on the CEFA fit indices and (b) were reasonably interpretable. Note that even if the same number of factors was identified in different data sets from the same country, the labels and items between data sets might differ. Where possible, I retained labels used by Hardin et al., even if the composition of the factor (i.e., high loading items) departed slightly from their factors. Some items had high loadings on more than one factor.

Table 4

CEFA Fit Indices for Alternative Factor Solutions in Each Country

Number of Factors	χ^2 (df)	χ^2/df	RMSEA (90% CI)	ECVI (90% CI)
United States				
Data Set 1 (N = 238)				
2	845.34 (376)	2.25	.07 (.07; .08)	4.32 (3.98; 4.69)
3	684.18 (348)	1.97	.06 (.06; .07)	3.87 (3.58; 4.20)
4	548.46 (321)	1.71	.06 (.05; .06)	3.53 (3.27; 3.82)
5	455.76 (295)	1.54	.05 (.04; .06)	3.36 (3.13; 3.62)
6	371.65 (270)	1.38	.04 (.03; .05)	3.21 (3.02; 3.44)
Data Set 2 (N = 317)				
2	1002.45 (376)	2.67	.07 (.07; .08)	3.74 (3.45; 4.05)
3	766.28 (348)	2.20	.06 (.06; .07)	3.17 (2.92; 3.43)
4	639.97 (321)	1.99	.06 (.05; .06)	2.94 (2.72; 3.18)
5	530.86 (295)	1.80	.05 (.04; .06)	2.76 (2.56; 2.97)
6	427.77 (270)	1.58	.04 (.04; .05)	2.59 (2.42; 2.78)
Data Set 3 (N = 306)				
2	1043.02 (376)	2.77	.07 (.06; .07)	2.92 (2.70; 3.16)
3	855.45 (348)	2.46	.06 (.05; .06)	2.61 (2.41; 2.82)
4	685.61 (321)	2.14	.05 (.05; .06)	2.33 (2.16; 2.52)
5	585.51 (295)	1.98	.05 (.04; .05)	2.21 (2.06; 2.39)
6	504.73 (270)	1.87	.05 (.04; .05)	2.14 (2.00; 2.30)
Data Set 4 (N = 346)				
2	840.15 (376)	2.23	.06 (.05; .07)	2.95 (2.72; 3.21)
3	653.79 (348)	1.89	.05 (.04; .06)	2.57 (2.38; 2.79)
4	527.53 (321)	1.64	.04 (.04; .05)	2.36 (2.19; 2.56)
5	441.73 (295)	1.50	.04 (.03; .05)	2.27 (2.11; 2.44)
6	367.50 (270)	1.36	.03 (.02; .04)	2.20 (2.06; 2.35)

Table 4 continued.

Number of Factors	χ^2 (df)	χ^2/df	RMSEA (90% CI)	ECVI (90% CI)
Australia				
Data Set 1 (N = 300)				
2	926.42 (376)	2.46	.07 (.06; .08)	3.69 (3.41; 4.01)
3	691.78 (348)	1.99	.06 (.05; .06)	3.10 (2.86; 3.36)
4	575.88 (321)	1.79	.05 (.05; .06)	2.89 (2.68; 3.13)
5	500.98 (295)	1.70	.05 (.04; .06)	2.81 (2.62; 3.03)
6	419.79 (270)	1.55	.04 (.04; .05)	2.71 (2.54; 2.91)
Data Set 2 (N = 328)				
2	1023.86 (376)	2.72	.07 (.07; .08)	3.68 (3.40; 3.98)
3	836.89 (348)	2.40	.07 (.06; .07)	3.28 (3.03; 3.55)
4	674.83 (321)	2.10	.06 (.05; .06)	2.94 (2.73; 3.19)
5	558.30 (295)	1.89	.05 (.05; .06)	2.75 (2.56; 2.96)
6	450.16 (270)	1.67	.05 (.04; .05)	2.57 (2.40; 2.76)
Mexico				
Data Set 1 (N = 268)				
2	796.53 (376)	2.12	.07 (.06; .07)	3.71 (3.41; 4.03)
3	627.70 (348)	1.80	.06 (.06; .06)	3.28 (3.03; 3.56)
4	494.51 (321)	1.54	.05 (.04; .05)	2.98 (2.76; 3.22)
5	415.09 (295)	1.41	.04 (.03; .05)	2.87 (2.68; 3.09)
6	348.20 (270)	1.29	.03 (.02; .04)	2.81 (2.64; 3.01)
Data Set 2 (N = 390)				
2	1013.72 (376)	2.70	.07 (.06; .07)	3.06 (2.83; 3.32)
3	818.76 (348)	2.35	.06 (.05; .06)	2.71 (2.50; 2.93)
4	649.61 (321)	2.02	.05 (.05; .06)	2.41 (2.23; 2.61)
5	537.35 (295)	1.82	.05 (.04; .05)	2.26 (2.10; 2.43)
6	459.24 (270)	1.70	.04 (.04; .05)	2.18 (2.04; 2.35)

Table 4 continued

Number of Factors	χ^2 (df)	χ^2/df	RMSEA (90% CI)	ECVI (90% CI)
Data Set 3 (N = 275)				
2	831.24 (376)	2.21	.07 (.06; .07)	3.68 (3.39; 4.00)
3	667.74 (348)	1.92	.06 (.05; .07)	3.29 (3.04; 3.57)
4	544.36 (321)	1.70	.05 (.04; .06)	3.04 (2.82; 3.29)
5	463.72 (295)	1.57	.05 (.04; .05)	2.93 (2.73; 3.16)
6	402.79 (270)	1.49	.04 (.03; .05)	2.89 (2.71; 3.11)
Data Set 4 (N = 426)				
2	922.05 (376)	2.45	.06 (.05; .06)	2.59 (2.39; 2.81)
3	742.14 (348)	2.13	.05 (.05; .06)	2.30 (2.12; 2.49)
4	626.62 (321)	1.95	.05 (.04; .05)	2.15 (2.00; 2.33)
5	508.31 (295)	1.72	.04 (.04; .05)	2.00 (1.86; 2.15)
6	415.22 (270)	1.54	.04 (.03; .04)	1.90 (1.77; 2.03)
Philippines				
Data Set 1 (N = 356)				
2	885.26 (376)	2.35	.06 (.06; .07)	3.00 (2.76; 3.25)
3	671.67 (348)	1.93	.05 (.05; .06)	2.55 (2.34; 2.77)
4	516.94 (321)	1.61	.04 (.04; .05)	2.27 (2.10; 2.45)
5	446.09 (295)	1.51	.04 (.03; .05)	2.21 (2.07; 2.39)
6	377.87 (270)	1.40	.03 (.03; .04)	2.16 (2.03; 2.32)
Data Set 2 (N = 306)				
2	836.97 (376)	2.23	.06 (.06; .07)	3.33 (3.07; 3.62)
3	681.82 (348)	1.96	.06 (.05; .06)	3.00 (2.77; 3.26)
4	564.52 (321)	1.76	.05 (.04; .06)	2.80 (2.59; 3.03)
5	458.54 (295)	1.55	.04 (.04; .05)	2.62 (2.41; 2.82)
6	394.77 (270)	1.46	.04 (.03; .05)	2.57 (2.41; 2.76)
Data Set 3 (N = 369)				
2	1037.13 (376)	2.76	.07 (.06; .07)	3.30 (3.05; 3.57)
3	819.95 (348)	2.36	.06 (.06; .07)	2.86 (2.65; 3.10)
4	656.23 (321)	2.04	.05 (.05; .06)	2.57 (2.38; 2.78)
5	546.71 (295)	1.85	.05 (.04; .05)	2.41 (2.24; 2.60)
6	454.99 (270)	1.69	.04 (.04; .05)	2.30 (2.15; 2.47)

Table 4 continued

Number of Factors	χ^2 (df)	χ^2/df	RMSEA (90% CI)	ECVI (90% CI)
Malaysia				
Data Set 1 (N = 246)				
2	709.62 (376)	1.89	.06 (.05; .07)	3.62 (3.33; 3.95)
3	592.30 (348)	1.70	.05 (.05; .06)	3.37 (3.11; 3.66)
4	516.58 (321)	1.61	.05 (.04; .06)	3.28 (3.05; 3.55)
5	443.17 (295)	1.50	.05 (.04; .05)	3.20 (2.98; 3.44)
6	370.00 (270)	1.37	.04 (.03; .05)	3.10 (2.91; 3.32)
Japan				
Data Set 1 (N = 185)				
2	769.09 (376)	2.05	.08 (.07; .08)	5.15 (4.74; 5.60)
3	626.66 (348)	1.80	.07 (.06; .07)	4.68 (4.32; 5.08)
4	526.06 (321)	1.64	.06 (.05; .07)	4.42 (4.10; 4.79)
5	436.09 (295)	1.48	.05 (.04; .06)	4.22 (3.94; 4.54)
6	352.82 (270)	1.31	.04 (.03; .05)	4.04 (3.80; 4.32)

For the four U.S. data sets, solutions of five and six factors consistently provided a good fit to the data. For these factor solutions, the χ^2/df index ranged from 1.36 -1.98 and the RMSEA index ranged from .03 - .05 across the four data sets. The five- and six-factor models for the U.S. data sets also provided interpretable factors. For the two Australian data sets, the five- and six-factor models also provided a good fit to the data and provided interpretable factors. For these factor solutions, the χ^2/df index ranged from 1.55 to 1.89 and the RMSEA index ranged was .04 to .05 across the two data sets. For the four Mexican data sets, the four-, five-, and six-factor models provided a good fit based on the CEFA indices. The χ^2/df and RMSEA indices ranged from 1.41 to 2.02 and .04 to .05, respectively, across the four data sets. However, only the four- and five-factor solutions were interpretable in all four data sets. In addition, the five-factor solutions in the four Mexican data sets were different. In two of the data sets, the Assertiveness factor was found but in the other two data sets Primacy of Self was found. The other four factors (Individualism, Behavioral Consistency, Relational Interdependence, and Group Esteem) were the same in all four data sets. Therefore, only the four-factor model was examined further for the Mexican data sets. The χ^2/df index ranged from 1.54 to 2.02 and the RMSEA was .05 across the four data sets. For the three Philippine data sets, solutions of four to six factors were acceptable based on the CEFA fit indices, but the four- and six-factor structures were less interpretable or replicable across samples. Therefore, I selected the five-factor solution as the more promising. The χ^2/df and RMSEA indices for the five-factor solutions ranged from 1.40 to 1.69 and .03 to .04, respectively, across the three data sets. For the Malaysian data set, the five- and six-factor structures seemed to best fit the data. However, the five-factor model provided the only somewhat interpretable structure. The χ^2/df and RMSEA indices were 1.50 and .05 for the five-factor model. For the Japanese data set, the four-, five-, and six-factor structures

provided good fits to the data based on CEFA results and all three factor structures were retained at this point because they were interpretable. The χ^2/df and RMSEA indices ranged from 1.31 to 1.64 and .04 to .06, respectively. In all of the collectivist countries, with the exception of the Philippines, it was difficult to select a single factor structure that best represented the data in all data sets for the culture. In subsequent analyses, I used CFA to further test the selected factor structures for each country.

Selection of Core Items within Each Country

After conducting the initial CEFA analyses, I considered the possibility that cleaner and more interpretable factor solutions might be obtained by eliminating items that were not pure indicators of particular facets or factors. Thus, I sought to identify a set of core or pure markers of the various facets identified in the CEFA analyses. Specifically, I sought core items that best represented the factor structures that I designated above as most interpretable based on the CEFA results (i.e., for five and six factors in the United States and Australia, four factors in Mexico, five factors in the Philippines, five factors in Malaysia, and four, five and six factors in Japan). For example, although the core items selected for the 5- and 6-factor structures in the United States sample overlapped quite a bit, they were not identical. Items with dual or low loadings (< .30) were not selected as core items. For countries with a similar factor structure, the same core items were selected in hopes of demonstrating cross-cultural replicability. Initially, the goal was to select 4 or 5 core items per factor, but, as in Hardin et al.'s (2004) results, some of the factors were defined by only 2 items. The selected core items are annotated in boldface in Data Set 1 for each culture in Appendix A.

For the United States and Australia, the five- and six-factor models provided the best fit to the data based on the CEFA results. The same core items for both countries were selected for

the six-factor structure. In some of the U.S. and Australian data sets, some of the items (e.g., Item 8 for the Relational Interdependence factor) did not load highly in all data sets, but were selected because they loaded well in half of the data sets for both countries. The core items selected for the five-factor structure were the same for the United States, Australia, and Philippines because similar items best identified these factors in those three countries. For the Malaysian data set, unique core items for a five-factor structure were selected but these items did not correspond well to core items for five-factor solutions in the other cultures. Similar, but slightly different, sets of core items were selected for the four-factor structures in the Mexican and Japanese data sets. The five- and six-factor core items identified in the Japanese data set were similar to those identified for the U.S. and Australian data sets. The core items in each culture were used to test the CFA fit of the selected (i.e., most interpretable) factor structures with freely estimated factor loadings in each culture. In addition, for the four countries with multiple samples (i.e., the United States, Australia, Mexico, and the Philippines), the fit of models with freely estimated and constrained factor loadings were compared to test the replicability of the factor loadings across samples within each culture.

Confirmatory Factor Analyses (CFAs)

Multiple-sample CFAs were conducted in the four cultures with multiple samples to test the generalizability of the factor structures selected based on the CEFA results. For example, in the United States, I tested the generalizability of the five- and six-factor models across all four data sets. Core items were used in these and all subsequent analyses. For each model examined, freely-estimated and constrained models were analyzed at the item-level, with freely-estimated covariances between the independent factors and between the interdependent factors. That is, the factor loadings for the items were either freely estimated in each of the multiple samples or

constrained to be equal. The latent constructs were the factors in the selected CEFA models and the indicators of each construct were the relevant core items. To identify each model, the path coefficient was fixed to 1.0 for one marker item per factor. In each culture, items with the highest loadings on the respective factors in the CEFA results were selected as the marker items. Table 5 shows the CFA fit indices for the factor structures analyzed and the results of χ^2 difference tests comparing the freely-estimated and constrained models. For comparison purposes, the average fit indices across data sets of freely-estimated two-factor models based on the original 30 items are also shown for each culture.

For the United States, five- and six-factor models, both of which were interpretable, were considered. Although some fit indices were still unacceptable based on the stringent criteria of CFA, the constrained CFA model with six factors fit the data better than the constrained model with five factors. The item factor loadings for all six factors ranged from -.32 to .77 and all loadings were statistically significant. As noted in Appendix A, the six factors were labeled Individualism, Primacy of Self, Behavioral Consistency, Assertiveness, Group Esteem, and Relational Interdependence. The difference in fit between the freely-estimated and constrained six-factor models was statistically significant (see χ^2 difference test in Table 5). However, the difference in CFI indices between the two models was only .01, indicating that the difference between the two models has little practical significance (Cheung & Rensvold, 2002). In sum, although the overall fit of the six-factor model was marginal given the stringent nature of CFA, the pattern of factor loadings generalized reasonably well across United States samples.

For the Australian data sets, the five- and six-factor models were examined based on the CEFA analyses. The constrained CFA model with six factors fit the data better than the

Table 5

Multiple-Sample CFA Fit Indices for Various Models in Each Country

Model	χ^2/df	GFI	CFI	RMSEA	$\chi^2_{diff^a}$	<i>p</i>
United States						
2 Factor FE ^b	2.92	.79	.56	.08		
5 Factor FE	3.04	.86	.68	.04		
5 Factor Co	2.94	.86	.67	.04	64.01	<.01
6 Factor FE	2.86	.87	.71	.04		
6 Factor Co	2.77	.87	.70	.04	57.84	<.01
Australia						
2 Factor FE ^b	2.8	.79	.56	.08		
5 Factor FE	2.98	.85	.66	.06		
5 Factor Co	2.92	.85	.66	.06	25.12	<.01
6 Factor FE	2.46	.88	.75	.05		
6 Factor Co	2.44	.88	.75	.05	27.08	<.01
Mexico						
2 Factor FE ^b	3.30	.77	.46	.08		
4 Factor FE	2.34	.90	.78	.05		
4 Factor Co	2.34	.90	.78	.04	22.62	<.01
Philippines						
2 Factor FE ^b	3.03	.79	.54	.08		
5 Factor FE	2.95	.87	.66	.04		
5 Factor Co	2.87	.87	.65	.04	46.33	<.01
Malaysia						
2 Factor FE ^b	4.37	.82	.50	.09		
5 Factor FE	2.15	.87	.69	.07		
Japan						
2 Factor FE ^b	2.75	.79	.57	1.00		
4 Factor FE	2.34	.81	.72	.09		
5&6 Factor						Negative variance, solution is not admissible

Table 5 continued.

- a. Comparison of models in χ^2 difference test is between the freely-estimated and the constrained model for each factor structure. n.s. = χ^2 difference test was not statistically significant.
- b. Fit indices for the two-factor model for the original 30 items based on averages of individual data sets, rather than multiple-sample CFAs.

constrained model with five factors, although the six-factor model fit the data only marginally well. Although the difference between the freely-estimated and constrained six-factor model models was statistically significant, there was no difference between the CFI indices, indicating minimal practical significance between the two models. The same six factors reported above for the United States data sets were identified in the Australian data sets. Item loadings for the six-factor model ranged from $-.47$ to $.78$. One item (#3) had a non-significant factor loading. In sum, the overall fit of the six-factor model was marginal based on stringent CFA criteria, but the pattern of factor loadings generalized well across the two Australian data sets.

For the Mexican data sets, the four-factor model was selected based on the CEFA analyses. The four-factor model resulted in inadmissible solutions in two of the four data sets. In the remaining two samples, the four-factor constrained model provided an adequate fit to the data based on some of the fit indices. Although significantly worse than the freely-estimated model, there was no difference between the CFI indices for the two models, indicating minimal practical significance between the two models. The four factors were labeled Individualism, Behavioral Consistency, Relational Interdependence, and Group Esteem. Item loadings for the four-factor model ranged from $.33$ to $.75$ and all loadings were statistically significant.

For the Philippine data sets, the five-factor model was the only model examined based on the CEFA results. The multi-sample constrained five-factor model provided a marginal fit to the data. Although the difference between the freely-estimated and constrained five-factor models was statistically significant, the difference between the CFI indices was $.01$, indicating minimal practical difference between the two models. I labeled the five factors Individualism/Assertiveness, Primacy of Self, Behavioral Consistency, Relational Interdependence, and Group Esteem. In this five-factor model, the items from the Individualism

and Assertiveness factors loaded on the same factor so the distinction between these two factors was not found in the Philippines. Item loadings ranged from .02 to .68 across the five factors. One item (#3) had a non-significant factor loading. In summary, the overall fit of the five-factor model was marginal, but the pattern of factor loadings generalized reasonably well across the Philippine data sets.

In Malaysia and Japan there was only one sample, so multi-sample CFA analyses could not be conducted. However, I examined the fit of the selected models in these two cultures using CFA. In Malaysia, a five-factor model was selected based on the CEFA analyses. I labeled the five factors Individualism, Assertiveness, Important Aspects, Relational Interdependence, and Group Esteem. The overall fit of the model was marginal at best, although superior to the two-factor model. Item loadings ranged from .14 to .75. Two items (#15, 17) had a non-significant factor loading.

In Japan, models with four, five, and six factors were viewed as interpretable in the CEFA analyses. However, CFA tests of the five- and six-factor models resulted in inadmissible solutions. Therefore, I retained only the four-factor solution. I labeled the four factors Individualism, Behavioral Consistency, Relational Interdependence, and Group Esteem. The overall fit of this model was marginal but superior to the two-factor model. Item loadings ranged from .11 to .85 across the four factors. One item (#25) had a non-significant factor loading. Refer to Table 6 for the final factor structure selected for each country based on the CFA results. Although a few of the items listed in Table 6 did not have significant factor loadings in the CFA analysis, they were retained for now because they had high loadings in the CEFA analyses.

Overall, different factor models were obtained for some of the countries. Based on the CEFA fit indices, the four-, five-, and six-factor models fit the data fairly well in all cultures, but

Table 6

Selected Factor Structure for Each Country based on CFA Results

Factors	Items	Factors	Items	Factors	Items
<u>United States (6 factors)</u>		<u>Australia (6 factors)</u>		<u>Mexico (4 factors)</u>	
I. Individualism	1, 7, 10, 27	I. Individualism	1, 7, 10, 27	I. Individualism	1, 7, 9, 10, 13, 20, 29
II. Primacy of Self	22, 24, 25	II. Primacy of Self	22, 24, 25	II. Behavioral Consistency	
III. Behavioral Consistency	20, 29	III. Behavioral Consistency	20, 29	III. Relational Interdependence	8, 12, 16, 21, 23, 30
IV. Assertiveness	3, 13, 18, 30	IV. Assertiveness	3, 13, 18, 30	IV. Group Esteem	4, 6, 14, 26, 28
V. Relational Interdependence	8, 16, 17, 21	V. Relational Interdependence	8, 16, 17, 21		
VI. Group Esteem	4, 14, 26, 28	VI. Group Esteem	4, 14, 26, 28		

Table 6 continued

Factors	Items	Factors	Items	Factors	Items
<u>Philippines (5 factors)</u>		<u>Malaysia (5 factors)</u>		<u>Japan (4 factors)</u>	
I. Individualism/ Assertiveness	1, 3, 7, 10, 13, 18, 27, 30	I. Individualism	1, 4, 6, 7	I. Individualism	1, 7, 10, 27
II. Primacy of Self	22, 24, 25	II. Assertiveness	2, 9, 15, 18	II. Assertiveness	2, 13, 18
III. Behavioral Consistency	20, 29	III. Important Aspects	26, 27, 28	III. Primacy of Self	5, 9, 17, 25
IV. Relational Interdependence	8, 16, 17, 21	IV. Relational Interdependence	3, 12, 17	IV. Group Esteem	8, 14, 15, 23 24, 26, 28, 30
V. Group Esteem	4, 14, 26, 28	V. Group Esteem	8, 11, 14, 20 21, 22, 23		

some of these solutions were not interpretable in some cultures. The same six-factor solution was selected in the United States and Australian data sets, two individualistic cultures. The selected factor structures for the four collectivistic cultures were different. In the CFA analysis, the overall fit of the models was marginal based on stringent CFA criteria but the pattern of factor loadings generalized reasonably well within each country. In every culture, the selected alternative model was superior to the two-factor freely-estimated model.

Replication of Factor Structures across Cultures

In these analyses, I sought to determine whether some of the selected factor structures in particular cultures would generalize across cultures. Only the five-factor model in the United States, Australia, and Philippines, and the six-factor model in the United States and Australia, were candidates for this analysis. For the five-factor model, one data set each from the United States, Australia, and Philippines was included in this analysis. The fit of the constrained five-factor model for the United States, Australia, and Philippines was marginal ($\chi^2/df = 3.09$, GFI = .85, CFI = .63, RMSEA = .05), but did not differ significantly from the fit of the freely-estimated model ($\chi^2/df = 3.16$, GFI = .85, CFI = .64, RMSEA = .05), $\Delta \chi^2(32) = 53.49$, $p > .01$. Thus, although the overall fit of the model was marginal based on some indices, the factor loadings could be considered equal across cultures.

The test of the constrained six-factor model included one data set from the United States and Australia. The fit of the constrained six-factor model was again marginal ($\chi^2/df = 2.73$, GFI = .86, CFI = .70, RMSEA = .05), but did not differ significantly from the fit of the freely-estimated model ($\chi^2/df = 2.72$, GFI = .87, CFI = .72, RMSEA = .05), $\Delta \chi^2(15) = 30.58$, $p > .01$. Again, although the overall model had marginal fit, the factor loadings can be considered equivalent across countries.

Test of Higher-Order Model

I had planned to use CFA analyses to test higher-order models in which higher-order independent and interdependent latent variables were defined by the specific independent and interdependent primary factors, which, in turn, were defined by the respective core items. However, I abandoned this plan for two reasons. First, my test of such a model in the United States resulted in an inadmissible solution, suggesting that the model was misspecified. Second, inspection of the correlations between the independent and interdependent primary factors estimated in the CFA analyses revealed why simple-structure higher-order models would fail to provide adequate fits to the data.

Table 7 shows the means and ranges of the absolute values of the correlations among the specific independent and interdependent factors. These results show that the pair-wise correlations relating independent to interdependent factors were often as high, or nearly so, as the correlations between only independent factors or between only interdependent factors. That is, neither the independent nor interdependent factors defined the distinct clusters of factors needed to clearly identify higher-order independent and interdependent dimensions. In summary, Hypothesis 1 was not supported. Although multiple independent and interdependent factors could be identified, and in some cases replicated across cultures, the proposed hierarchical structure could not be demonstrated.

Gender Differences

Gender differences in independent and interdependent self-construals have been less emphasized in the literature than cultural differences, so it is important to further explore gender differences. In Hypothesis 2, I predicted that in all cultures females will endorse relational

Table 7

Absolute Values of Correlations Between Independent and Interdependent Self-Constructual Factors

	Mean	Range
United States		
Data Set 1		
1. Correlations between Independent factors	.25	.05 - .50
2. Correlations between Interdependent factors	.37	-
3. Correlations between Independent and Interdependent factors	.29	.06 - .64
Data Set 2		
1. Correlations between Independent factors	.28	.09 - .58
2. Correlations between Interdependent factors	.28	-
3. Correlations between Independent and Interdependent factors	.31	.01 - .62
Data Set 3		
1. Correlations between Independent factors	.31	.06 - .50
2. Correlations between Interdependent factors	.32	-
3. Correlations between Independent and Interdependent factors	.29	.06 - .53
Data Set 4		
1. Correlations between Independent factors	.34	.21 - .61
2. Correlations between Interdependent factors	.53	-
3. Correlations between Independent and Interdependent factors	.30	.11 - .67
Australia		
Data Set 1		
1. Correlations between Independent factors	.39	.10 - .67
2. Correlations between Interdependent factors	.62	-
3. Correlations between Independent and Interdependent factors	.18	.01 - .35
Data Set 2		
1. Correlations between Independent factors	.29	.03 - .55
2. Correlations between Interdependent factors	.51	-
3. Correlations between Independent and Interdependent factors	.21	.01 - .42
Mexico		
Data Set 1		
1. Correlations between Independent factors	.21	-
2. Correlations between Interdependent factors	.26	-
3. Correlations between Independent and Interdependent factors	.25	.06 - .55

Table 7 continued.

	Mean	Range
Data Set 2		
1. Correlations between Independent factors	.22	-
2. Correlations between Interdependent factors	.30	-
3. Correlations between Independent and Interdependent factors	.25	.00 - .56
Philippines		
Data Set 1		
1. Correlations between Independent factors	.41	.20 - .60
2. Correlations between Interdependent factors	.70	-
3. Correlations between Independent and Interdependent factors	.47	.20 - .80
Data Set 2		
1. Correlations between Independent factors	.56	.37 - .70
2. Correlations between Interdependent factors	.79	-
3. Correlations between Independent and Interdependent factors	.62	.42 - .90
Data Set 3		
1. Correlations between Independent factors	.31	.18 - .50
2. Correlations between Interdependent factors	.66	-
3. Correlations between Independent and Interdependent factors	.31	.10 - .62
Malaysia		
Data Set 1		
1. Correlations between Independent factors	.35	.16 - .66
2. Correlations between Interdependent factors	.27	-
3. Correlations between Independent and Interdependent factors	.31	.05 - .61
Japan		
Data Set 1		
1. Correlations between Independent factors	.24	.15 - .34
2. Correlations between Interdependent factors	-	-
3. Correlations between Independent and Interdependent factors	.47	.11 - .57

interdependent items or scales more than males, and that males will endorse assertiveness items or scales more than females. To test Hypothesis 2, a MANOVA was conducted for each data set, with gender as the independent variable and the selected factors for each country as the multiple dependent variables. I computed scale scores for each of the selected factors by averaging the core items that defined each factor. Because most of the scales had small numbers of items, the alpha reliabilities were generally modest. Alpha ranges were .24 to .73 in the United States, .47 to .70 in Australia, .52 to .75 in Mexico, .41 to .70 in the Philippines, .43 to .65 in Malaysia, and .21 to .73 in Japan. The specific independent factors differed to some extent across cultures but two comparable interdependent factors (Group Esteem and Relational Interdependence) were identified in all countries. The MANOVAs revealed significant main effects for gender for one or more data sets in five of the six countries. No gender differences were found in the Japanese sample. Table 8 shows the relevant means and the MANOVA and follow-up ANOVA statistics only for those self-construal scales that exhibited significant gender differences.

For data sets in four of the six countries, consistent gender differences were found for Group Esteem, with females averaging significantly higher than males. This was the case in three of the four U.S. data sets, one of two Australian data sets, three of four Mexican data sets, and two of three Philippine data sets. This means that females averaged higher in items related to doing what is best for the group as a whole, rather than the goals of the individual. Gender differences in Individualism were found in the United States and Malaysia, with females averaging significantly higher than males. In the United States, the results were replicated in three of four data sets. This means that females, more than males, indicated that being an individual and unique is important to them. In one of the four Mexican data sets, Behavioral

Table 8

Self-Construal Factors Showing Significant Gender Differences in Various Data Sets: Follow-up ANOVAS

	<u>Male</u>		<u>Female</u>		<u>MANOVA</u> <u>Statistics</u>	<u>ANOVA Statistics</u>	
	Mean	SD	Mean	SD	F (df, df)	F (df, df)	Eta ²
United States							
<u>Data Set 2</u>							
Individualism	4.43	.70	4.69	.61	5.61 (6,310)**	12.12 (1, 315)**	.04
Group Esteem	4.62	.77	4.93	.61		15.76 (1, 315)**	.05
<u>Data Set 3</u>							
Individualism	4.48	.65	4.66	.62	4.75 (6, 411)**	7.10 (1, 416)**	.02
Group Esteem	4.72	.65	4.98	.60		15.70 (1, 416)**	.04
<u>Data Set 4</u>							
Individualism	4.46	.65	4.73	.70	3.40 (6, 339)**	12.72 (1, 344)**	.04
Group Esteem	4.64	.66	4.86	.63		9.71 (1, 334)**	.03
Australia							
<u>Data Set 2</u>							
Group Esteem	4.55	.67	4.80	.72	2.73 (6, 321)*	8.41 (1, 326)**	.03
Mexico							
<u>Data Set 1</u>							
Behavioral Consistency	3.77	1.45	4.30	1.30	11.95 (4,259)**	8.43 (1, 262)**	.03
Group Esteem	4.91	.66	5.25	.60		18.65 (1, 262)**	.10
<u>Data Set 2</u>							
Group Esteem	4.91	.66	5.25	.60	6.83 (4, 270)**	18.65 (1, 273)**	.06

Table 8 continued.

	<u>Male</u>		<u>Female</u>		<u>MANOVA</u> <u>Statistics</u>	<u>ANOVA Statistics</u>	
	Mean	SD	Mean	SD	F (df, df)	F (df, df)	Eta ²
<u>Data Set 3</u>							
Group Esteem	4.91	.66	5.25	.60	6.83 (4, 270)**	18.65 (1, 273)**	.06
<u>Data Set 4</u>							
Group Esteem	4.72	.77	5.01	.65	4.88 (4, 415)*	12.84 (1, 418)**	.03
Philippines							
<u>Data Set 1</u>							
Group Esteem	4.75	.63	4.93	.52	2.53 (5, 350)	6.93 (1, 354)**	.02
<u>Data Set 2</u>							
Group Esteem	4.77	.61	5.08	.53	5.55 (5, 300)**	22.10 (1, 304)**	.07
Malaysia							
<u>Data Set 1</u>							
Individualism	4.57	.69	4.82	.55	7.44 (5, 240)	10.23 (1, 244)**	.04
Important							
Aspects	4.68	.75	4.97	.55		12.43 (1, 244)**	.05
Relational							
Interdependence	3.49	.89	3.20	.76		7.59 (1, 244)**	.03

** $p < .01$.

Consistency was found to be endorsed more in females than males, meaning that females, more than males, prefer to act the same way, regardless of who they interact with or the setting they are in. In Malaysia, gender differences were also found for Important Aspects and Relational Interdependence. This means that females averaged higher than males on items related to the importance of maintaining personal and group goals (i.e., Important Aspects). Females also averaged higher in relational interdependence indicating that they focus more than males on individual relationships but not overly relying on those relationships as in the items that define Group Esteem. Gender differences in Relational Interdependence were not consistent with my hypothesis because males averaged significantly higher than females. No gender differences were found for the Primacy of Self or Assertiveness scales in any culture.

MANOVAs were also examined to test gender differences in the original Independent and Interdependent Self-Construal scales. Across all data sets for all countries, only one significant gender difference was found. In one of the four U.S. data sets, females scored higher than males on independent self-construal.

In summary, gender differences were found for three specific factors with Group Esteem differences being found in four of six countries. The failure to find gender differences for some scales could be due to low alpha reliabilities. Gender differences for the original self-construal scales were rare. These results further highlight the importance of distinguishing specific factors of Independence and Interdependence. Based on these results, Hypothesis 2 was rejected because the expected gender differences for Relational Interdependence and Assertiveness were not found in this study.

CHAPTER FIVE

Discussion

The overall goal of the present study was to evaluate the psychometric properties of the Self-Construal Scale and the generalizability of its structure across a diversity of cultures. The Self-Construal Scale is the most widely used measure of self-construals, an important individual-level component of individualism-collectivism, but its structure has rarely been examined systematically across cultures.

Summary of Results

Overall, the results of this study indicated that the original two-factor model, comprised of broad independent and interdependent self-construal dimensions, does not sufficiently account for the covariance among the items, at least as judged by conventional goodness-of-fit criteria in confirmatory factor analysis. The study also provided support for the examination of alternate models containing additional factors. Regarding psychometric properties, alpha reliabilities and item-total correlations for the original scales were in the low to moderate range in most countries, especially in the Philippine, Malaysian, and Japanese data sets. Alternate factor structures were explored for each country because a universal factor structure that generalized to all countries was not obtained. Although a universal factor structure was not achieved, similar interdependent factors (i.e., Group Esteem and Relational Interdependence) were identified in all countries. In addition, gender differences in Group Esteem were found in all countries, with females averaging higher than males. Hypothesis 1 was only partially accepted. Although multiple independent and interdependent factors were identified, their interrelationships were not consistent with distinct higher-order independent and interdependent dimensions, because the correlations between the independent factors and between the interdependent factors were not

consistently higher than the correlations between some independent and interdependent factors. Hypothesis 2 was rejected because gender differences for relational interdependence and assertiveness were not found. In the following sections, I discuss these findings in more detail, consider the theoretical and applied implications of the results, note strengths and limitations of the study, and consider possible directions for future research.

Psychometric Properties

The low alpha reliabilities and item-total correlations call into question the reliability of the SCS, especially when used in countries outside of the United States. This is a significant problem, because the instrument is primarily intended for use in cross-cultural comparisons. Alpha reliabilities were comparable or lower than those reported by Singelis (1994). Low values occurred more often in the four collectivistic countries (i.e., Mexico, Philippines, Malaysia, and Japan) than in the two individualistic countries (i.e., United States and Australia). About a third of the items had low item-total correlations, which indicates that the individual items do not correlate with other items in the respective scales. The SCS was developed in samples from the United States (European and Asian Americans), which could partially explain the lower reliabilities and item-total correlations in the collectivistic cultures. In the translation of the SCS instrument into the native languages of the various collectivistic countries, the backtranslation method was used (Brislin, 1986). Even though this is generally considered the best translation method, translation inequivalence for some items might still contribute to low item-total correlations. Another possibility is that the SCS items could be interpreted differently in collectivistic cultures or are less relevant indicators of the respective dimensions. In future research, this possibility could be investigated more systematically using various methods for detecting differential item functioning across cultures (e.g., Camilli & Shepard, 1994; Embretson

& Reise, 2000). Another option might be to score independent and interdependent self-construals using item parcels rather than individual items. Item parcels will be more reliable than individual items and some inequivalencies in measurement across cultures may cancel out when items are aggregated into parcels or subscales.

Structure of SCS and its Cross-Cultural Generalizability

Evaluation of original two-factor structure. The original two-factor model with broad independent and interdependent self-construal dimensions, as first reported by Singelis (1994), did not provide a good fit to the data in any of the six countries. Hardin and colleagues (2004) provided support for the two-factor structure even though they examined alternative models. Yet, Hardin and colleagues also reported that 11 of the 30 items had loadings less than .30. The somewhat better fit of the two-factor model in Hardin et al.'s study ($\chi^2/df = 2.68$, GFI = .84, CFI = .58, and RMSEA = .07) could have been obtained because their sample consisted primarily of European American and Asian American students, the same groups sampled in Singelis' original SCS study. Based on the results from the present study, the two-factor structure does not fully explain the complexity of self-construals and suggests that the domain is multi-faceted, as suggested by some previous researchers (Cross, Bacon, & Morris, 2000; Hackman, Ellis, Johnson, & Staley, 1999; Hardin et al., 2004; Kashima, 2002).

Identification of alternative factor structures. In the examination of alternative factor structures for the SCS, four to six factors best represented the data in all six cultures, based on the CEFA fit indices. Yet, some of those factors were not interpretable. In an effort to identify cleaner and more interpretable factor solutions (i.e., better "simple structure"), core items that best represented each factor were selected and other items were eliminated. After the selection of core items, the number of items decreased to 18 in the Mexican samples and 21 in the other five

countries. Core items with low ($< .30$) or dual loadings were not selected. Of course, there are disadvantages in eliminating items, which could reduce content validity or the breadth of item content, as well as the reliability of the resulting subscales. However, the need to do so in hopes of obtaining cleaner factor structures is one indication that the original items were not written specifically to distinguish the different facets of independent and interdependent self-construals. Selection of core items probably improved the interpretability of the subsequent factor structures to some extent, although the CFA fits of subsequent models was still marginal based on conventional CFA fit criteria.

Since a universal model was not identified, the goal shifted to identifying unique factor structures for each country. A six-factor model was identified in the United States and Australia as the best representation of the data and this model was similar to that identified in the study by Hardin and colleagues. The six factors were labeled Individualism, Primacy of Self, Behavioral Consistency, Assertiveness, Relational Interdependence, and Group Esteem. In the Philippine and Malaysian data sets, five-factor models were selected but the factor structures were different in the two countries. In the Philippines, the five factors were labeled Individualism/Assertiveness, Primacy of Self, Behavioral Consistency, Relational Interdependence, and Group Esteem. In Malaysia, the five factors were labeled Individualism, Assertiveness, Important Aspects, Relational Interdependence, and Group Esteem. The four-factor models selected in the Mexican and Japanese data sets also differed. In the Mexican sample, the four factors were labeled Individualism, Behavioral Consistency, Relational Interdependence, and Group Esteem. In the Japanese sample, the four factors were labeled Individualism, Assertiveness, Relational Interdependence, and Group Esteem.

Although selection of the preferred number of factors in any given country can be somewhat subjective, I selected the final factor model for each country drawing on both the CEFA fit indices and the interpretability of the factors across the data sets within the respective countries. Readers who wish to evaluate or make their own judgments regarding the labels of the various factors can refer to the factor labels and high loading items noted in Appendix A. Even for relatively interpretable factors, there were generally some items that fit the factor labels better than others. There was similarity in the Individualism factor across the six countries as some of the same items represented this factor in each country. The same two-item Behavioral Consistency subfactor was found in four of the six countries. For the two interdependent factors, Relational Interdependence and Group Esteem were identified in most of the six countries. Relational Interdependence was identified in five of the six countries and some of the same items represented this factor in each country. Group Esteem was found in all six countries and the items for this factor were almost the same in four of the six countries. In Malaysia and Japan, the items that comprised the Group Esteem factor were different. Thus, across the six countries there were some similarities in the content of those factors that replicated across countries, but also some differences in the items that defined comparable factors.

Within- and between-country replication. Within each country, the same factors replicated fairly well, although not all of the same items were found to represent each factor in all of the data sets within each country. In selecting the core items I retained the items that best represented each factor. The replicability of the factor structures within each country provides support for the meaningfulness of the selected unique structures.

In addition, multi-national CFAs were computed to examine the cross-cultural equivalence for countries with factor structures that appeared to be comparable. A six-factor

multi-national analysis included a data set from the United States and Australia. A five-factor multi-national analysis included a data set from the United States, Australia, and Philippines. Even though the fit indices for both constrained models were marginal, the factor loadings could be considered equal across cultures. The differences in CFI indices between the freely-estimated and constrained models were less than .01, which suggested that the difference between the models has little practical significance (Cheung & Rensvold, 2002). The marginal fit indices are likely due in part to the stringent nature of CFA (Church & Burke, 1994). Taking into account the strict nature of conventional fit criteria in CFA, the multi-national results suggest that there is at least some similarity in the alternative factor models for the SCS across subsets of countries. The results suggest that a more generalizable model of self-construals might be possible if quality items are written a priori to assess a multi-faceted model of self-construals.

Higher-order structure. The plan to test higher-order models was abandoned because when tested in the United States, the model resulted in an inadmissible solution, suggesting that the model might be misspecified. In addition, the estimated correlations between the latent independent and interdependent factors in the CFA analyses were high, indicating that the multiple independent and interdependent factors were not going to identify distinct higher-order independent and interdependent dimensions. Hardin and colleagues (2004) reported nonsignificant correlations between the independent and interdependent factors in their study of Asian, Asian American, and European American college students. In the present study, the correlations between independent and interdependent factors were high in most data sets, particularly in the collectivistic cultures. It is not expected that independent and interdependent self-construals will be inversely correlated, because researchers have argued that they can co-exist in all individuals and cultures (Singelis, 1994). However, the higher correlations in the

collectivistic countries may reflect the greater impact of acquiescence bias in these countries (Smith, 2004), which can contribute artifactual covariation between items and scales that measure different content.

Overall, Hypothesis 1 was only partially supported. I showed that multiple independent and interdependent factors could be identified, but they did not define distinct higher-order independent and interdependent dimensions (i.e., hierarchical structure). This calls into question the idea that the two original SCS scales can each be broken down into distinct facets that are independent of the facets in the other scale.

Gender Differences

To examine Hypothesis 2, scale scores for the selected factor structure in each country were computed. Given the relatively small number of core items scored for each factor, alpha reliabilities were often low and only a few of the values were above .70. To examine gender differences, a MANOVA was computed for each data set. MANOVAs were also computed using independent and interdependent self-construals as the dependent variables.

Hypothesis 2 was not supported because gender differences were not found for Assertiveness and were found for Relational Interdependence only in Malaysia, with females averaging higher than males. In addition, a gender difference in Group Esteem was obtained in four of six countries and was the only fairly consistent gender difference. In all four countries, females reported being more group-oriented than males. It should be noted that in these four countries (United States, Australia, Mexico, and Philippines) the same Group Esteem items were identified. The effect sizes for all significant gender differences were small, however, so their practical importance is limited. The low reliabilities could have contributed to the small number of significant gender differences.

Theoretical and Applied Implications

The results of the present study have both theoretical and applied implications. As a theoretical contribution, the study contributes additional understanding about the nature and structure of self-construals across cultures. Few studies have examined the dimensionality of self-construals using the SCS (Grace & Cramer, 2003; Hardin et al, 2004). The studies that have examined alternative factor structures usually developed new instruments to assess self-construals (Kashima & Hardie, 2000; Singelis et al., 1995). Even though I used the SCS, results from this study provide some evidence for the existence of multiple self-construal factors. That is, the domain is perhaps too refined and multi-faceted to assess with only two broad dimensions. In addition, the lack of negative correlations between independent and interdependent self-construals supports theory that depicts these dimensions not as bipolar opposites but as coexisting in all individuals (Markus & Kitayama, 1991).

From a measurement perspective, inconsistent and low alpha reliabilities have been an issue for self-construal scales, especially with cross-national samples (Sato & Cameron, 1999; Singelis et al., 1999). Fiske (2002) noted possible Western biases in the development of instruments, which could account, in part, for low alpha reliabilities. The SCS was developed in the United States and initially tested with European and Asian Americans. The development of the SCS was also based on the theory that self-construals consist of two-factors, therefore, the items selected were specifically written to assess that factor structure. However, the results of the present study suggest that existing cultural psychology hypotheses that draw on theory regarding independent and interdependent self-construals may be too simplistic. In addition, it is possible that self-construals are complex internal attributes that are not easily accessible to observation, awareness, or accurate self-report. Indeed, Markus and Kitayama (1998) argued that recall of

one's attributes, such as self-construals, might not be as natural a task for individuals from collectivistic cultures and therefore, difficult to measure using Likert-type scales.

Because of the perceived problems with broad measures of self-construal or individualism-collectivism, some alternative approaches have been applied. For example, some instruments have incorporated the use of different reference groups. For example, Matsumoto, Weissman, Preston, Brown, and Kupperbusch (1997) developed a measure that assesses individualism-collectivism in relation to different social groups (i.e., family, close friends, colleagues, and strangers). This approach is based on the assumption that one's level of individualism-collectivism may differ in relation to different reference groups. The use of scenario-based methods has also been suggested as an alternative assessment method (e.g., Triandis & Gelfand, 1998). Respondents are presented with short and concrete scenarios or incidents and alternative behavioral responses, rather than being asked to directly rate their internal attributes. Forced-choice or paired-comparison methods have also been suggested as an alternative to Likert-type scales, as a means to reduce the impact of acquiescence response bias. Researchers can also attempt to statistically control for response styles, using methods such as within-individual standardization (Hofstede, 2001).

Finally, it should be noted that the SCS consists of only 30 items. Exploring the dimensionality of self-construals using the SCS might not enable researchers to capture the complexity of these domains. For example, the limited number of items might make it difficult to assess in a reliable manner all of the specific factors identified in this study for the various countries. An important implication is that it would probably be best to develop new measures of self-construals based on new items that are designed a priori to assess the diverse facets of self-construals.

Despite the apparent difficulties assessing self-construals, this area of research continues to have potentially important practical implications. For example, valid self-construal measures and models could help counselors better understand the different perceptions that clients bring to the counseling setting regarding the relation between individuals and groups. In addition, as we learn more about other cultures and their self-construals, cross-cultural communications and understanding may improve.

Strengths and Limitations of the Study

Archival data was analyzed for this study, which has both advantages and disadvantages. On the one hand, the available data sets made it possible to test and possibly replicate the psychometric properties and structure of the SCS in multiple data sets in multiple countries. On the other hand, use of existing data limited some of my options. Above I noted some of the methodological problems of a scale like the SCS. Because the data was previously collected, I could not make changes to the scale or the type of assessment method or format used to measure self-construals. These changes could have minimized some of those methodological problems. For example, I was unable to use a scenario method or assess self-construals in relation to different reference groups (e.g., family, friends, etc.) when collecting information about self-construals. The use of the SCS also made it difficult to test the validity of certain models reviewed in Chapter 2 (e.g., horizontal and vertical components of independence and interdependence).

Another limitation involved the samples. In all six countries, all of the participants were undergraduate students. In the collectivistic countries (Mexico, Philippines, Malaysia, and Japan), going to a university might be more complex than in the United States. Overall, a smaller percentage of young adults make it to a university because of high costs and

competitiveness. Therefore, my samples were not representative of the respective cultures, and results may only be generalizable to college populations. It is possible that the reference groups being used when answering questions is other university students. Of course, measuring self-construals may be even more difficult in less educated samples.

The SCS was translated into the each country's native language from the English version of the instrument. The backtranslation method was used to translate the SCS. Even though the backtranslation method is generally considered the best translation method, it is possible that the bilingual translators might interpret the information differently than native non-English speakers. Also, translated items may still be less relevant in cultures other than the one in which they were developed.

Directions for Future Research

The results from this study have several implications for future research. It is recommended that future research continue to examine the dimensionality of self-construals, because the structure of self-construals is clearly unresolved. The examination of self-construals has focused primarily on comparisons of the United States and Canada as individualistic countries versus East Asian countries as representatives of collectivistic countries. Sampling of other countries would be helpful to increase understanding of the structure or facets of self-construals in different countries. Further research is needed to explore the various measurement issues with individualism-collectivism instruments by developing new and better measures with sufficient numbers of items to assess each of the facets of self-construals reliably. Gender differences have rarely been emphasized in studies of self-construals (see, however, Cross et al., 2000). Future research might examine how males and females conceptualize and endorse different facets of self-construals and other individualism-collectivism constructs. Ultimately,

the value of the self-construal construct will depend on its ability to predict important attitudes or behaviors in various cultures (e.g., see examples reviewed in Chapter 2). Although that was not the focus of the present study, future research should continue to elaborate the antecedents and outcomes of differing self-construals and the extent to which these antecedents and outcomes generalize across cultures.

Conclusion

In summary, self-construal continues to be an important construct in cross-cultural research. This type of research is important because self-construals play an important role in understanding cultural differences in behavior, emotion, and cognition. Markus and Kitayama (1991) conceptualized self-construals in terms of broad independent and interdependent dimensions but more recent studies have provided evidence of the multidimensionality of self-construals. Further examination and refinement of the dimensionality of self-construals continues to be a need in personality and cross-cultural psychology research.

References

- Aaker, J., & Schmitt, B. (2001). Culture-dependent assimilation and differentiation of the self-preferences for consumption symbols in the United States and China. *Journal of Cross-Cultural Psychology, 32*, 561-576.
- Bresnahan, M. J., Chiu, H. C., & Levine T. R. (2004). Self-construal as a predictor of communal and exchange orientation in Taiwan and the USA. *Asian Journal of Social Psychology, 7*, 187-203.
- Bresnahan, M. J., Levine, T. R., Shearman, S. M., Lee, S. Y, Park, C., & Kiyomiya, T. (2005). A multimethod multitrait validity assessment of self-construal in Japan, Korea, and the United States. *Human Communication Research, 31*, 33-59.
- Camilli, G., & Shepard, L. A. (1994). *Methods for identifying biased test items* (Vol. 4). Thousand Oaks, CA: Sage.
- Chen, F. F., and West, S. G. (2008). Measuring individualism and collectivism: The importance of considering differential components, reference groups, and measurement invariance. *Journal of Research in Personality, 42*, 259-294.
- Church, A. T., & Burke, P. J. (1994). Exploratory and confirmatory tests of the Big Five and Tellegen's three- and four-dimensional models. *Journal of Personality and Social Psychology, 66*, 93-114.
- Church, A. T., Katigbak, M. S., del Prado, A. M., Ortiz, F. A., Mastor, K. A., Harumi, Y., Tanaka-Matsumi, J., Vargas-Flores, J., Ibáñez-Reyes, J., White, F. A., Miramontes, L. G., Reyes, J. A. S., & Cabrera, H. F. (2006). Implicit theories and self-perceptions of traitedness across cultures: Toward integration of cultural and trait psychology perspectives. *Journal of Cross-Cultural Psychology, 37*, 694-716.
- Church, A. T., Katigbak, M. S., del Prado, A. M., Valdez-Medina, J. L., Miramontes, L. G., &

- Ortiz, F. A. (2006). A cross-cultural study of trait self-enhancement, explanatory variables, and adjustment. *Journal of Research in Personality, 40*, 1169-1201.
- Church, A. T., Ortiz, F. A., Katigbak M. S., Avdeyeva T., Emerson, A. M., Vargas, J. J. F., & Ibanez, J. R. (2003). Measuring individual and cultural differences in implicit trait theories. *Journal of Personality and Social Psychology, 85*, 332-347.
- Cross, S. E., Bacon, P. L., & Morris, M. L. (2000). The relational-interdependent self-construal and relationships. *Journal of Personality and Social Psychology, 78*, 791-808.
- Del Prado, A. M., Church, A. T., Katigbak, M. S., Miramontes, L. G., Whitty, M. T., Curtis, G. J., Vargas-Flores, J., Ibanez-Reyes, J., Ortiz, F. A., & Reyes, J. A. S. (2007). Culture, method, and the content of self-concepts: Testing trait, individual-self-primacy, and cultural psychology perspectives. *Journal of Research in Personality, 41*, 1119-1160.
- Derlega, V. J., Cukur, C. S., Kuang, J. C. Y., & Forsyth, D. R. (2002). Interdependent construal of self and the endorsement of conflict resolution strategies in interpersonal, intergroup, and international disputes. *Journal of Cross-Cultural Psychology, 33*, 610-625.
- Embretson, S. E., & Reise, S. P. (2000). *Item response theory for psychologists*. Mahwah, NJ: Lawrence Erlbaum.
- Fiske, A. P. (2002). Using individualism and collectivism to compare cultures—A critique of the validity and measurement of the constructs: Comment on Oyserman et al. (2002). *Psychological Bulletin, 128*, 78-88.
- Freeman, M. A., & Bordia, P. (2001). Assessing alternative models of individualism and collectivism: A confirmatory factor analysis. *European Journal of Personality, 15*, 105-121.
- Grace, S. L., & Cramer, K. L. (2003). The elusive nature of self-measurement: The self-construal scale versus the twenty statements test. *Journal of Social Psychology, 143*,

649-668.

- Gudykunst, W. B., Matsumoto, Y., Ting-Toomey, S., Nishida, T., Kim, K., & Heyman, S. (1996). The influence of cultural individualism-collectivism, self construals, and individual values on communication styles across cultures. *Human Communication Research, 22*, 510-543.
- Hackman, M. Z., Ellis, K., Johnson, C. E., & Staley, C. (1999). Self-construal orientation: Validation of an instrument and a study of the relationship to leadership communication style. *Communication Quarterly, 47*, 185-193.
- Hardin, E. E., Leong, F. T. L., & Bhagwat, A. A. (2004). Factor structure of the self-construal scale revisited: Implications for the multidimensionality of self-construal. *Journal of Cross-Cultural Psychology, 35*, 327-345.
- Heine, S. J., Lehman, D. R., Peng, K., & Greenholtz, J. (2002). What's wrong with cross-cultural comparisons of subjective Likert scales?: The reference-group effect. *Journal of Personality and Social Psychology, 82*, 903-918.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. London: Sage.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across cultures (2nd ed.)*. Thousand Oaks, CA: Sage Publications.
- Kağıtçıbaşı, C. (1994). A critical appraisal of individualism-collectivism: Toward a new formulation. In U. Kim, H. C. Triandis, C. Kagitcibasi, & G. Yoon (Eds.), *Individualism and collectivism: Theoretical and methodological issues* (pp. 52-65). Thousand Oaks, CA: Sage.
- Kağıtçıbaşı, C. (1996). The autonomous-relational self: A new synthesis. *European*

- Psychologist, 1*, 180-186.
- Kağıtçıbaşı, C. (1997). Individualism and collectivism. In J. W. Berry, M. H. Segall, & C. Kağıtçıbaşı (Eds.), *Handbook of cross-cultural psychology: Vol. 3. Social behavior and applications*. Needham, MA: Allyn & Bacon.
- Kashima, Y., Yamaguchi, S., Kim, U., Choi, S-C, Gelfand, M. J., & Yuki, M. (1995). Culture, gender and the self: A perspective from individualism-collectivism research. *Journal of Personality and Social Psychology, 69*, 925-937.
- Kashima, Y. (2002). Culture and self: A cultural dynamical analysis. In Y. Kashima, M. Foddy, & M. Platow (Eds.), *Self and identity: Personal, Social and Symbolic*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Kashima, E. S., & Hardie, E. A. (2000). The development and validation of the relational, individual, and collective self-aspects (RIC) scale. *Asian Journal of Social Psychology, 3*, 19-48.
- Kim, Y., Kasser, T., & Lee, H. (2003). Self-concept, aspirations, and well-being in South Korea and the United States. *The Journal of Social Psychology, 143*, 277-290.
- Kwan, V. S. Y., Bond, M. H., Boucher, H. C., Maslach, C. & Gan, Y. (2002). The construct of individuation: More complex in collectivist than in individualist culture. *Personality and Social Psychology Bulletin, 28*, 300-310.
- Kwan, V. S. Y., Bond, M. H., & Singelis, T. M. (1997). Pancultural explanations for life satisfaction: Adding relationship harmony to self-esteem. *Journal of Personality and Social Psychology, 73*, 1038-1051.
- Lu, L., & Gilmour, R. (2007). Developing a new measure of independent and interdependent views of the self. *Journal of Research in Personality, 41*, 249-257.

- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.
- Markus, H. R., & Kitayama, S. (1994). A collective fear of the collective: Implications for selves and theories of selves. *Psychological Review*, 98, 224-253.
- Miramontes, L. G., Church, A. T., Katigbak, M. S., Vargas-Flores, J., Ibañez-Reyes, J., Reyes, J. A. S., Winskel, H., & Adams, N. B. (2007, July). *Culture, method, and everyday explanations of behavior. Contribution to the symposium Trait and cultural psychology perspectives in cross-cultural personality research*. A. T. Church (Chair), presented at the IV Latin American Regional Congress of Cross-Cultural Psychology, Mexico City.
- Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin*, 128, 3-72.
- Maslach, C., Stapp, J., & Santee, R. T. (1985). Individuation: Conceptual analysis and assessment. *Journal of Personality and Social Psychology*, 49, 729-738.
- Realo, A., Koido, K., Ceulemans, E., & Allik, J. (2002). Three components of individualism. *European Journal of Personality*, 16, 163-184.
- Rhee, E., Uleman, J. S., & Lee, H. K. (1996). Variations in collectivism and individualism by ingroup and culture: Confirmatory factor analyses. *Journal of Personality and Social Psychology*, 71, 1037-1054.
- Sato, T., & Cameron, J. E. (1999). The relationship between collective self-esteem and self-construal in Japan and Canada. *Journal of Social Psychology*, 139, 426-443.
- Shulruf, B., Hattie, J., & Dixon, R. (2007). Development of a new measurement tool for individualism and collectivism. *Journal of Psychoeducational Assessment*, 25, 385-401.

- Singelis, T. M (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin, 20*, 580-591.
- Singelis, T. M. (2000). Some thoughts on the future of cross-cultural social psychology. *Journal of Cross-Cultural Psychology Special Issue: Millennium, 31*, 76-91.
- Singelis, T. M., Bond, M. H., Sharkey, W. F., & Lai, C. S. Y. (1999). Unpacking culture's influence on self-esteem and embarrassability: The roles of self-construals. *Journal of Cross-Cultural Psychology, 30*, 315-341.
- Singelis, T. M., & Brown, W. J. (1995). Culture, self, and collectivist communication: Linking culture to individual behavior. *Human Communication Research, 21*, 354-389.
- Singelis, T. M., Triandis, H. C., Bhawuk, D. P. S., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: A theoretical and measurement refinement. *Cross-Cultural Research, 29*, 240-275.
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality, 69*, 907-924.
- Uleman, J. S., Bardoliwalla, N., & Toyama, M. (2000). The relational self: Closeness to ingroups depends on who they are, culture, and the type of closeness. *Asian Journal of Social Psychology, 3*, 1-17.
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology, 74*, 118-128.
- Uskul, A. K., Hynie, M., & Lalonde, R. N. (2004). Interdependence as a mediator between culture and interpersonal closeness for Euro-Canadians and Turks. *Journal of Cross-Cultural Psychology, 35*, 174-191.

Vandello, J. A., & Cohen, D. V. (1999). Patterns of individualism and collectivism across the United States. *Journal of Personality and Social Psychology*, 77, 279-292.

Yamaguchi, S. (1994). Collectivism among the Japanese: A perspective from the self. In U. Kim, H. Triandis, C. Kağıtçıbaşı, S. Choi, & G. Yoon (Eds.), *Individualism and collectivism: Theory, method, and application* (pp. 175-188). Thousand Oaks, CA: Sage.

Appendix A

CEFA Factor Labels and Highest Item Loadings per Country

	<u>Five-factor solution</u>		<u>Six-factor solution</u>		
	Factor labels	High loading items	Factor labels	High loading items	
United States					
<u>Data Set 1</u>					
I. Individualism/ Assertiveness		1 (.53), 3 (-.38), 5 (.42), 7 (.76), 10 (.47), 13 (.48), 18 (.65), 27 (.37), 30 (-.34)	I. Individualism	1 (.47), 5 (.42), 7 (.71), 10 (.40), 27 (.33)	
II. Behavioral Consistency		2 (.52), 20 (.33), 29 (.34)	II. Behavioral Consistency	20 (.76), 29 (.58)	96
III. Primacy of Self		22 (.67), 24 (.54), 25 (.48), 27 (.33)	III. Primacy of Self	22 (.58), 24 (.56), 25 (.54), 27 (.34)	
IV. Relational Interdependence		3 (.31), 16 (.49), 17 (.66), 21 (.37), 23 (.43), 30 (.41)	IV. Assertiveness	1 (.31), 2 (.58), 3 (-.34), 10 (.33), 13 (.51), 18 (.58), 30 (-.30)	
V. Group Esteem		4 (.52), 11 (.42), 14 (.44), 19 (.33), 26 (.52), 28 (.52)	V. Relational Interdependence	3 (.34), 16 (.45), 17 (.70), 21 (.42), 23 (.44), 30 (.43)	
			VI. Group Esteem	4 (.58), 6 (.35), 11 (.38), 14 (.43), 19 (.35), 26 (.56), 28 (.55)	

	<u>Five-factor solution</u>		<u>Six-factor solution</u>	
	Factor labels	High loading items	Factor labels	High loading items
<u>Data Set 2</u>				
	I. Individualism/ Assertiveness	1 (.55), 2 (.36), 3 (-.33), 5 (.42), 7 (.67), 9 (.31), 10 (.62), 13 (.43), 18 (.58), 27 (.42)	I. Individualism	1 (.56), 2 (.33), 5 (.46), 7 (.63), 9 (.34), 10 (.61), 27 (.40)
	II. Behavioral Consistency	29 (.36)	II. Behavioral Consistency	20 (.67), 22 (.31), 29 (.51)
	III. Primacy of Self	22 (.44), 24 (.42), 25 (.76), 27 (.42)	III. Primacy of Self	22 (.34), 24 (.32), 25 (.86), 27 (.43)
	IV. Relational Interdependence	3 (.42), 12 (.54), 16 (.36), 17 (.42), 20 (.30), 21 (.49), 23 (.45), 30 (.64)	IV. Assertiveness	2 (.33), 3 (-.42), 13 (.37), 18 (.54)
	V. Group Esteem	6 (.33), 11 (.33), 14 (.30), 26 (.56), 28 (.39)	V. Relational Interdependence	8 (.47), 12 (.53), 16 (.31), 17 (.46), 21 (.50), 23 (.48), 30 (.61)
			VI. Group Esteem	4 (.54), 6 (.39), 11 (.39), 14 (.43), 19 (.36), 26 (.58), 28 (.43)

	<u>Five-factor solution</u>		<u>Six-factor solution</u>	
	Factor labels	High loading items	Factor labels	High loading items
<u>Data Set 3</u>				
	I. Individualism	1 (.60), 5 (.66), 7 (.60), 10 (.33), 27 (.42)	I. Individualism	1 (.54), 5 (.62), 7 (.57), 27 (.42)
	II. Behavioral Consistency	20 (.81), 29 (.60)	II. Behavioral Consistency	20 (.96), 29 (.52)
	III. Assertiveness	2 (.43), 10 (.30), 15 (.39), 18 (.54)	III. Assertiveness	2 (.58), 13 (.32), 14 (.33), 15 (.50), 18 (.59)
	IV. Relational Interdependence	8 (.40), 16 (.37), 17 (.45), 21 (.38)	IV. Primacy of Self	22 (.34), 24 (.70), 25 (.48)
	V. Group Esteem	3 (.43), 4 (.46), 6 (.33), 14 (.42), 22 (.39), 25 (.32), 26 (.60), 28 (.63), 30 (.34)	V. Relational Interdependence	8 (.32), 12 (.35), 16 (.40), 17 (.37), 19 (.32), 21 (.49)
			VI. Group Esteem	3 (.35), 4 (.47), 6 (.38), 14 (.40), 26 (.60), 28 (.63)

	<u>Five-factor solution</u>		<u>Six-factor solution</u>		
	Factor labels	High loading items	Factor labels	High loading items	
<u>Data Set 4</u>					
	I. Individualism	1 (.38), 10 (.31), 22 (.41), 25 (.55), 27 (.72), 5 (.37), 7 (.59)	I. Individualism	1 (.73), 10 (.33), 18 (.33), 27 (.47), 5 (.34), 7 (.45)	
	II. Behavioral Consistency	20 (.52), 29 (.81)	II. Behavioral Consistency	20 (.57), 29 (.78)	
	III. Assertiveness	1 (.37), 2 (.59), 13 (.44), 18 (.41), 30 (-.35)	III. Primacy of Self	22 (.37), 25 (.75), 27 (.40)	
	IV. Relational Interdependence	8 (.30), 12 (.37), 16 (.35), 17 (.59), 21 (.55), 23 (.43), 30 (.36)	IV. Assertiveness	3 (-.36), 9 (.56), 13 (.42), 30 (-.38)	96
	V. Group Esteem	4 (.55), 8 (.30), 11 (.53), 14 (.54), 26 (.32), 28 (.54)	V. Relational Interdependence	12 (.40), 16 (.35), 17 (.58), 21 (.55), 23 (.43), 30 (.35)	
			VI. Group Esteem	4 (.53), 8 (.30), 11 (.55), 14 (.56), 26 (.38), 28 (.59)	

	<u>Five-factor solution</u>		<u>Six-factor solution</u>	
	Factor labels	High loading items	Factor labels	High loading items
Australia				
<u>Data Set 1</u>				
	I. Individualism/ Assertiveness	1 (.31), 2 (.63), 5 (.44), 13 (.50), 18 (.72), 20 (.52), 29 (.39), 30 (-.30)	III. Individualism	1 (.37), 7 (.55), 25 (.51), 27 (.71)
	III. Individualism	1 (.41), 7 (.59), 25 (.51), 27 (.68)	I. Assertiveness	1 (.34), 2 (.55), 13 (.52), 18 (.68)
	II. Primacy of Self	24 (.70)	II. Primacy of Self	24 (.78)
	IV. Relational Interdependence	12 (.38), 16 (.33), 17 (.73), 21 (.50)	IV. Behavioral Consistency	20 (.75), 29 (.50)
	V. Group Esteem	3 (.44), 4 (.49), 6 (.36), 8 (.48), 19 (.47), 23 (.44), 26 (.59), 28 (.55), 30 (.32)	V. Relational Interdependence	12 (.42), 16 (.33), 17 (.52), 21 (.70)
			VI. Group Esteem	3 (.48), 4 (.41), 6 (.31), 8 (.60), 19 (.31), 23 (.47), 26 (.49), 28 (.51), 30 (.44)

	<u>Five-factor solution</u>		<u>Six-factor solution</u>	
	Factor labels	High loading items	Factor labels	High loading items
<u>Data Set 2</u>				
	I. Individualism	1 (.44), 5 (.30), 7 (.65), 10 (.45), 25 (.38), 27 (.69), 30 (-.31)	I. Individualism	1 (.47), 7 (.61), 10 (.39), 25 (.32), 27 (.74)
	II. Behavioral Consistency	5 (.34), 20 (.67), 22 (.39), 29 (.65)	II. Behavioral Consistency	20 (.79), 29 (.58)
	III. Assertiveness	3 (-.57), 2 (.42), 15 (.30), 18 (.69), 30 (-.34)	III. Assertiveness	2 (.43), 3 (-.56), 13 (.33), 18 (.69), 30 (-.33)
	IV. Relational Interdependence	12 (.45), 16 (.37), 17 (.66), 21 (.43)	IV. Primacy of Self	9 (.48), 13 (.53), 24 (.30), 25 (.30)
	V. Group Esteem	4 (.58), 11 (.31), 14 (.48), 23 (.37), 27 (.69), 28 (.58)	V. Relational Interdependence	10 (.33), 12 (.45), 16 (.36), 17 (.65), 21 (.41)
			VI. Group Esteem	4 (.57), 11 (.30), 14 (.46), 23 (.38), 26 (.69), 28 (.56)

<u>Four-factor solution</u>		<u>Four-factor solution</u>		<u>Four-factor solution</u>	
Factor label	High loading items	Factor label	High loading items	Factor label	High loading items
Mexico					
<u>Data Set 1</u>		<u>Data Set 2</u>		<u>Data Set 3</u>	
I. Individualism	1 (.41), 2 (.46), 7 (.41), 9 (.32), 10 (.32), 13 (.44), 25 (.59), 27 (.46), 5 (.36), 24 (.44)	I. Individualism	1 (.55), 2 (.41), 5 (.33), 7 (.49), 9 (.38), 10 (.44), 24 (.40)	I. Individualism	1 (.50), 9 (.32), 10 (.45), 13 (.35), 15 (.30), 25 (.35), 5 (.43), 7 (.47), 24 (.32)
II. Behavioral Consistency	18 (.30), 20 (.76), 29 (.59)	II. Behavioral Consistency	20 (.73), 29 (.69)	II. Behavioral Consistency	20 (1.00), 29 (.57)
IV. Relational Interdependence	3 (.37), 8 (.48), 12 (.41), 16 (.47), 17 (.63), 21 (.37), 23 (.39), 30 (.62)	III. Relational Interdependence	8 (.52), 12 (.43), 16 (.49), 17 (.54), 21 (.58), 23 (.59), 30 (.59)	III. Relational Interdependence	8 (.52), 12 (.38), 16 (.52), 17 (.47), 21 (.44), 23 (.54), 30 (.43)
III. Group Esteem	15 (.37), 4 (.53), 6 (.43), 14 (.64), 26 (.75), 28 (.62)	IV. Group Esteem	4 (.55), 6 (.39), 11 (.42), 14 (.74), 15 (.60), 25 (.36), 27 (.35), 26 (.52), 28 (.54)	IV. Group Esteem	25 (.38), 27 (.37), 4 (.39), 14 (.58), 26 (.67), 28 (.65)

Four-factor solution

Factor labels	High loading items
<u>Data Set 4</u>	
I. Individualism	1 (.54), 9 (.34), 10 (.65), 13 (.30), 15 (.38), 18 (.31), 27 (.35), 7 (.45), 4 (.33), 4 (.36)
II. Behavioral Consistency	20 (.85), 29 (.60)
III. Relational Interdependence	8 (.38), 12 (.31), 16 (.44), 17 (.61), 21 (.50), 23 (.49), 30 (.54)
IV. Group Esteem	3 (.30), 6 (.42), 26 (.69), 28 (.55)

<u>Five-factor solution</u>		<u>Five-factor solution</u>		<u>Five-factor solution</u>	
Factor label	High loading items	Factor label	High loading items	Factor label	High loading items
Philippines					
<u>Data Set 1</u>		<u>Data Set 2</u>		<u>Data Set 3</u>	
I. Individualism/ Assertiveness	1 (.43), 7 (.38), 13 (.37), 27 (.46), 30 (-.34), 10	I. Individualism/ Assertiveness	1 (.44), 2 (.38), 5 (.50), 7 (.47), 8 (.32)9(.49), 10 (.39)	I. Individualism/ Assertiveness	1 (.59), 10 (.32), 27 (.47), 5 (.32), 7 (.37)
II. Behavioral Consistency	9 (.33), 18 (.40), 20 (.68), 29 (.57)	II. Behavioral Consistency	12 (1.01), 29 (.46)	II. Behavioral Consistency	18 (.54), 20 (.69), 29 (.53)
III. Primacy of Self	5 (.35), 24 (.69), 25 (.50),	III. Primacy of Self	15 (.41), 25 (.59), 24 (.57)	III. Primacy of Self	15 (.31), 22 (.45)
IV. Relational Interdependence	8 (.35), 16 (.37), 17 (.70), 23 (.32)	IV. Relational Interdependence	8 (.38), 12 (.32), 17 (.44), 19 (.30), 21 (.47), 23 (.37), 30 (.35)	IV. Relational Interdependence	4 (.53), 6 (.38), 11 (.47), 14 (.66), 26 (.48), 28 (.51)
V. Group Esteem	10 (.51), 3 (.34), 4 (.60), 6 (.53), 11 (.56), 14 (.59), 26 (.40), 28 (.40)	V. Group Esteem	4 (.43), 6 (.35), 11 (.40), 14 (.47), 26 (.59), 28 (.71)	V. Group Esteem	3 (.33), 8 (.50), 12 (.36), 21 (.44), 23 (.60), 30 (.35)

Five-factor solution

Factor label	High loading items
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Malaysia

Data Set 1

I. Individualism	1 (.48), 4 (.38), 6 (.37), 7 (.54)
II. Important Aspects	26 (.59), 27 (.51), 28 (.87)
III. Assertiveness	2 (.53), 9 (.33), 15 (.30), 18 (.59)
IV. Group Esteem	8 (.48), 11 (.30), 14 (.34), 20 (.56), 21 (.41), 22 (.44), 23 (.48)
V. Relational Interdependence	3 (.34), 12 (.73), 17 (.36)

<u>Four-factor solution</u>		<u>Five-factor solution</u>		<u>Six-factor solution</u>	
		Factor label	High loading items	Factor label	High loading items
Japan					
<u>Data Set 1</u>					
I. Individualism	1 (.79), 7 (.34), 10 (.62), 27 (.70)	I. Individualism	1 (.72), 7 (.41), 10 (.64), 27 (.79)	I. Individualism	1 (.71), 7 (.43), 10 (.64), 27 (.79),
II. Assertiveness	2 (.41), 13 (.45), 18 (.37), 20 (.69), 29 (.57)	II. Behavioral Consistency	20 (1.01), 29 (.56)	II. Behavioral Consistency	20 (1.01), 29 (.56)
III. Primacy of Self	5 (.31), 7 (.40), 9 (.39), 17 (-.34), 25 (.48),	III. Assertiveness	3 (-.51), 10 (.53), 15 (.31), 18 (.58), 30 (-.36)	III. Assertiveness	3 (-.60), 9 (.44), 18 (.60), 30 (-.49)
IV. Group Esteem	5 (-.36), 8 (.50), 14 (.57), 15 (-.39), 17 (.40), 23 (.32), 24 (-.49), 25 (.30), 26 (.83), 28 (.76), 30 (.48)	IV. Relational Interdependence	17 (.32), 21 (.30)	IV. Primacy of Self	7 (.33), 15 (.47), 24 (.37), 25 (.41)
		V. Group Esteem	8 (.45), 14 (.69), 17 (.39), 19 (.31), 23 (.31), 26 (.82), 28 (.75), 30 (.37)	V. Relational Interdependence	11 (.39), 12 (.48), 21 (.56), 23 (.35)
				VI. Group Esteem	8 (.34), 14 (.64), 17 (.31), 19 (.32), 25 (.31), 26 (.83), 28 (.73)