

Empirical Typology of Chinese versus American Premarital Couples

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## **Dedication**

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### **Abstract**

Using a sample of 7,567 Chinese premarital couples (living in Hong Kong, Singapore, Taiwan, and Malaysia) who completed the PREPARE inventory before marriage, the current study indicated that Chinese premarital couples exhibit four relational patterns: Vitalized, Harmonious, Traditional, and Conflicted. These four couple types, which were developed through phases including an exploratory analysis of 500 couples, a further analysis of a primary sample (3,567 couples), and a confirmed validation analysis using 3,500 couples, were almost identical to the four premarital types found in a U.S. sample using similar cluster analytic procedure. For Chinese premarital couples, the Traditional type was the largest group, while for European American premarital couples, the Vitalized type was the largest group. There were few differences in Chinese background related to the four types. However, the longer the males were planning to wait for having children, the more likely they were Conflicted couples; the more negative females' parents and friends reaction towards their relationship, the more likely they were Conflicted couples. Having identified the four Chinese premarital couple types may benefit efforts to help with Chinese marital preparation and may be of help to therapists working with Chinese couples.

## Table of Contents

|  |            |
|--|------------|
| <b>LIST OF TABLES .....</b>  | <b>VI</b>  |
| <b>LIST OF FIGURES .....</b>                                       | <b>VII</b> |
| <b>INTRODUCTION.....</b>   | <b>1</b>   |
| RATIONALE FOR STUDYING PREMARITAL COUPLES .....                    | 1          |
| RATIONALE OF CLASSIFYING COUPLES.....                              | 2          |
| RATIONALE OF WORKING ON CHINESE PREMARITAL COUPLES .....           | 2          |
| RATIONALE OF USING A MULTIVARIATE TYPOLOGICAL APPROACH.....        | 3          |
| SPECIAL ISSUES WITH TYPOLOGY RESEARCH IN RELATIONSHIP SCIENCE..... | 5          |
| <b>STATEMENT OF THE PROBLEM .....</b>                              | <b>7</b>   |
| <b>METHOD .....</b>  | <b>9</b>   |
| SAMPLE .....   | 9          |
| MEASURES .....   | 10         |
| SCORING .....  | 16         |
| RELIABILITY AND VALIDITY .....                                     | 17         |
| ANALYSES PROCEDURE .....   | 18         |
| <b>ANALYSES AND RESULTS .....</b>                                  | <b>19</b>  |
| EXPLORATORY ANALYSIS PHASE .....                                   | 19         |
| NARROWING DOWN TO OPTIMAL SOLUTION PHASE.....                      | 20         |
| VALIDATION OF OPTIMAL SOLUTION PHASE .....                         | 22         |
| ADJUSTING TO A WELL-DIFFERENTIATED 4 CLUSTERS SOLUTION .....       | 23         |
| FINAL FOUR TYPES OF CHINESE PREMARITAL COUPLES .....               | 28         |

|  |           |
|--|-----------|
|  | v         |
| DEMOGRAPHIC COMPARISONS BETWEEN PRIMARY-SAMPLE TYPES .....             | 33        |
| COMPARISON WITH EUROPEAN-AMERICAN SAMPLE .....                         | 34        |
| <b>DISCUSSION .....</b>  | <b>36</b> |
| PROFILE OF CHINESE ENGAGED-COUPLE TYPES .....                          | 37        |
| TYPE DIFFERENCES IN DEMOGRAPHICAL AND BACKGROUND CHARACTERISTICS ..... | 39        |
| TYPE DISTRIBUTION COMPARISONS BETWEEN TWO CULTURES .....               | 41        |
| CLINICAL IMPLICATIONS .....  | 42        |
| FUTURE RESEARCH DIRECTIONS .....                                       | 43        |
| <b>CONCLUSION .....</b>  | <b>46</b> |
| <b>BIBLIOGRAPHY .....</b>  | <b>47</b> |
| <b>APPENDIX A: DEMOGRAPHIC VARIABLES .....</b>                         | <b>55</b> |
| <b>APPENDIX B: BACKGROUND VARIABLES .....</b>                          | <b>56</b> |
| <b>APPENDIX C: DISSERTATION PROPOSAL .....</b>                         | <b>57</b> |

**List of Tables**

|  |    |
|--|----|
| Table 1: F and p Values on Marriage Expectations for Cluster Numbers in the<br>Exploratory and Primary Samples ..... | 22 |
| Table 2: Chinese Couple Types.....   | 24 |
| Table 3: Four Chinese Premarital Types: Mean PCA .....   | 32 |
| Table 4: Clusters Distribution Comparison between Chinese Sample and European<br>American Samples .....              | 35 |

**List of Figures**

|  |    |
|--|----|
| Figure 1: Initial Chinese Premarital Typology .....  | 25 |
| Figure 2: European American Premarital Couple Typology (1992).....                           | 26 |
| Figure 3: Chinese Premarital Sample 4 – clusters Solution with Updated 11<br>Dimensions..... | 27 |
| Figure 4: Final Four Types of Premarital Chinese Couples.....                                | 31 |

## **Introduction**

### **Rationale for Studying Premarital Couples**

Divorce is becoming frequent in Chinese societies, not only in mainland China, but also other Chinese societies scattered in Southeast Asia, like Hong Kong, Singapore, Taiwan and Malaysia. Many studies done in the U.S. have showed that the transition from engagement to early marriage is crucial to the early success of marriage (Fowers, Montel & Olson, 1996; Futris, Barton, Aholou, & Seponski, 2011; Holman & Linford, 2001; Larson & Olson, 1989). Many professionals show concerns about the trends of increasing unsuccessful marriages, and some programs have been designed to strengthen premarital preparation in preventing divorce. The effectiveness of premarital preparation in preventing marital discord or dissolution has been demonstrated in several studies (Futris et al., 2011; Hahlweg, Markman, Thurmaier, Engl, & Echert, 1998; Halford, Sanders, & Behrens, 2001; Markman & Hahlweg, 1993).

Family development theory (Rodgers & White, 1993) emphasizes that accomplishing stage-appropriate tasks is important for adequate current and future couple functioning. This theory indicates that “normative transitions between stages are often difficult and by their very nature require adjustment and accommodation to new demands and circumstances” (Fowers & Olson, 1992, p. 10). It also theoretically reflects that successful premarital preparation could facilitate married couples function. Thus, it is meaningful to study premarital couples in support of understanding the transitions. Classifying Chinese premarital couples, which has not been done yet, can be helpful in understanding Chinese premarital couples.

### **Rationale of Classifying Couples**

Even though the technical origins of developing classifications are not clear, it is apparent that this approach has been adopted by scholars to organize and explain the complexity of the world throughout history (Mandara, 2003; Waller & Meehl, 1998). In the 1980s, McQuitty (1987) proposed that classification should be as fundamental to the social and behavioral field as it is to the life and physical sciences. Classifying benefits the study of psychology and the social sciences through helping with identifying, organizing, and describing behavioral patterns of people. Identifying types of couples may be helpful as well, because “premarital interventions would be more appropriate, effective, and cost-efficient if they were focused on the specific needs of identifiable types of engaged couples” (Fowers & Olson, 1992, p. 10).

### **Rationale of Working on Chinese Premarital Couples**

Larson and Holman (1994) proposed the usefulness of an ecological perspective to study premarital and marital couples. Using an ecological perspective, Holman and Linford (2001) conceptualized the factors which impact the couple relationship into three eco-systemic areas: individual, couple, and contextual, which could become a framework to classify couple relationships. According to Holman and Linford (2001), contextual factors refer to “the wider social contexts in which the individual and dyad are embedded” (p. 18). Based on this framework, premarital courtship might have different meanings within certain cultures. Seeing the premarital relationship issues in the cultural contexts in which particular familial structures are imbedded will further the usefulness and richness of couple classification schemes (Gottman, 1994).

Confucianism has deeply influenced Chinese people's minds, thoughts, and behaviors not only in China, but also for Chinese in many other Southeastern Asian countries. Confucianism principles make Chinese family structure hierarchical and patriarchal, with male and seniority indicating higher status (Tzou, Kim, & Waldheim, 2012). Under such a structure, according to Tzou, Kim, and Waldheim (2012), "the father is the symbolic authority of the family while the mother carries out executive commands, children are taught from an early age to defer to their parents and to be obedient and submissive to other elder figures, and sons are designated to carry on the family name and traditions while daughters are considered to be temporary residents of the family until they find their permanent placement in their husbands' homes" (p. 3).

Even though westernization and modernization have changed Chinese people, Confucian expectations and obligations for gender roles, especially those related to marriage and family, are still prevalent among Chinese (Tzou, Kim, & Waldheim, 2012). This makes Chinese couples different from American couples. The uniqueness makes it necessary to explore classifying Chinese engaged couples in order to facilitate more culturally-specific focused premarital intervention.

### **Rationale of Using a Multivariate Typological Approach**

Typologies are used to "ease the conceptualization and understanding of social phenomena" (Toomey, 2004, p. 24). According to Mandara (2003), levels of analyses in the social and behavioral sciences differ according to a researcher's focus on either variables or cases. One level of analysis is designed to "uncover nomothetic laws of the mechanisms and processes implicit in psychology" through variable centered quantitative

methods (p. 129). Another level attempts to explain cases as “behavior of individuals in specific contextual settings” through predominately qualitative methods (p. 130). The typological approach is an intermediary between the variable-centered and case-centered methods (Mandara, 2003). The variable and case centered approaches both offer advantages and disadvantages, while the typological approach, as addressed by Robins and colleagues (Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996), links the “theoretical and quantitative variable-centered approach with the application of the idiographic and qualitative case-centered approach” (Mandara, 2003, p. 144).

Three general classes of methods for classifying objects into typologies in the social and behavioral sciences were discussed by Robins, John, and Caspi (1998). They are univariate, bivariate, and multivariate methods. Univariate ways of classifying objects are about taking a median split. This is convenient, but is not considered reliable in developing typologies (Mandara, 2003). Bivariate analysis develops the typologies through crossing two dimensions to form quadrants. The problem of this method is the arbitrary cut-off scores (Mandara, 2003). Multivariate analysis is regarded as the preferred way of developing typologies, because it classifies objects by a set of relevant variables.

Couple typologies, which use a variety of variables to group “couples with similar relationship qualities and patterns of interaction” (Toomey, 2004, p. 24) create a “common language between researchers and clinicians by linking clinical descriptions with theoretical formulations” (Lavee & Olson, 1993, p. 325). Through using a multivariate typological approach, typologies synthesize large quantities of data into

smaller similar types so that the whole relationship with multidimensional characteristics can be examined, rather than a certain aspect of those relationships. Thus empirical typologies serve to increase the efficiency of both scientists and practitioners (Lavee & Olson, 1993; Toomey, 2004).

### **Special Issues with Typology Research in Relationship Science**

Researchers recognized the utility of using typologies to describe marital relationships in the early 1960s (Allen & Olson, 2001). Concurrently, family scholars proposed to study relationships through systemic approaches (Whiteman & Loken, 2006). Measures that reflect the couple relationship as a unit fit the systemic framework well. A couple-based versus individual assessment approach combines partners' responses.

In 1990, Miller and Olson had already identified two basic approaches to classifying marriage: intuitive and empirical. While early typologies were based on intuitive analysis, it has become more popular and is considered more scientifically accurate and powerful to adopt empirical approaches in which larger and more representative samples provide sufficient power for the analysis (Allen & Olson, 2001).

A number of studies have been conducted with U.S. couples for identifying couple typologies. Based upon the couple's pattern of interaction including the intensity and frequency of arguments, Gottman (1994) identified five different couple types, validating, volatile, avoidant, hostile/engaged and hostile/detached. To describe the sources of marital distress within couple relationships, Snyder and Smith (1986) identified five different couple types: Type I and II reflected relatively nondistressed relationships, Type IV and V were characterized by extensive marital distress, and Type

III reflected moderate levels of distress. Hall and MacDermid (2009) identified four types of couples based on their arrangements of work and family responsibilities: Parallel type, Second shift-career type, Counter-balanced type, and Second shift-nurture type.

Fowers and Olson, studying U. S. couples, (1992, 1993) identified four distinct types of premarital couples, and five types of married couples: Vitalized, Harmonious, Traditional, Conflicted, and Devitalized (for married couples). The Fowers and Olson studies identified the most comprehensive couple typologies, incorporating data on 11 dimensions: realistic expectations about marriage/marital satisfaction, personality issues, communication, conflict resolution, financial management, leisure activities, sexual expectations/relationships, children and parenting, family and friends, equalitarian roles, and religious orientation.

Fowers and Olson (1992) described four types of premarital couples: “Vitalized couples” possess the highest overall scores (higher = more positive) on all of the dimensions except for realistic expectations and religious orientation; “Harmonious couples” were described as possessing a moderate overall relationship quality; “Traditional couples” had the highest scores of any of the typologies on the realistic expectations, religious orientation and children and parenting scales, and they have strengths in the ability to make decisions and plan for the future; “Conflicted couples” had consistently low scores across all of the 11 dimensions (refer to Fowers & Olson, 1992 for comprehensive descriptions of each type).

### **Statement of the Problem**

In describing the four types of premarital couples, Fowers and Olson's (1992) sample consisted primarily of European-Americans. Actually, much of the existing literature on couple typologies ignores the influence of culture or ethnicity on the similarities or differences in couples' characteristics. Recognizing the limitation in generalizing these results to couples of different cultures, several studies have been conducted to try to replicate the couple typologies with different ethnic groups. Allen and Olson (2001) studied whether African American marriages exhibited relational types that were similar to the primarily European-American sample. Five types of African American marriages were found which were similar to those identified by Olson and Fowers (1993), but some differences between the two samples were found. For example, the typology distribution for the two samples was different. Vitalized couples constituted the smallest group among the African-American sample, while Harmonious couples constituted the smallest group among the European-American sample (Allen & Olson, 2001).

Asai and Olson (2004) examined the efficacy of using typologies to describe Japanese couples. There are some similarities between the U.S. sample and the Japanese sample, with differences as well. For example, compared to U.S. samples, the Japanese couples scored higher on the family cooperation dimension of the Harmonious typology, which indicated the importance of parents and in-laws to the marriage (Asai & Olson, 2004). In addition, Olson and Garrett's study (2006) demonstrated that couple typology is relevant to Hispanic couples where one or both are Hispanic. They found considerable

similarity in couple types across four ethnic combinations of married couples (both Hispanic, both Caucasian, Hispanic Male – Caucasian Female, Hispanic Female – Caucasian Male).

To date, no studies have examined typologies in Chinese premarital couples except one exploration using 204 Chinese married couples in Hong Kong (Young, 1995). The typology developed by Young (1995) was limited because it was developed by only studying Chinese couple who lived in Hong Kong. Studies on Chinese couples from other areas (like mainland China, Singapore) where Chinese inhabit and occupy the most populations are needed to capture a more valid picture of Chinese couples. Young's typology for Chinese married couples was developed based on questions asking about their marital life and experience, which is not equal to the expectation and experience that engaged couples have for their relationships. Thus, it becomes necessary to examine typologies in Chinese premarital couples based on testing relationship characteristics specifically suitable to premarital couples. With the rapid change of Asian societies where ideologies about self, relationship, family, and life in the current century could be significantly different compared to that almost 20 years ago, an up-to-date study is needed.

The main objectives of the proposed study are to: (1) develop an empirically-based relational typology for Chinese premarital couples through building on the model of Fowers and Olson's (1992) work in developing American premarital couple typologies; (2) compare these types with those found in a predominantly European-

American sample of premarital couples (Fowers & Olson, 1992) and with types found in a recent European-American sample (see details later).

The following research questions are proposed:

1. Do Chinese premarital couples exhibit relational patterns or types?
2. What are the similarities and differences in characteristics of Chinese premarital couples across the types?
3. Are relational types of Chinese premarital couples similar to those found in samples of predominantly European-American premarital couples?
4. Does the relative frequency of couples in the types differ across the ethnic groups?

By focusing on Chinese premarital couple relationships, I hope to provide a culturally appropriate Chinese couple type development, as well as uncover unique differences or highlight similarities in these premarital relationships when compared with predominantly European-American premarital couples. It is hoped that this research will contribute to the field of premarital preparation for Chinese couples, and increase our understanding of the transition to marriage for Chinese couples.

## **Method**

### **Sample**

A total of 7,567 Chinese premarital couples who completed an English or Chinese version of PREPARE couple inventory before marriage were included in the study. The PREPARE couple inventory is a self-report questionnaire completed independently by both partners. Their individual and couple scores were obtained from data provided

through Life Innovations, a company that offers and scores the PREPARE/ENRICH assessment.

All participated premarital couples were living in Hong Kong, Singapore, Taiwan, and Malaysia. Among the 7,567 couples, the majority of men (78.3%) were between 26 to 35 years old, and the majority of women (92.3%) were between 21 to 35 years old. Their level of education ranged from “some high school” to “graduate-professional” with an average level above “4 years of college” for both men and women. About half of partners (45.5%) had known each other for 5 years or more, and time to planned marriage varied in months from 0-2 months to 13 months or more. The majority of both men (90.5%) and women (89.2%) were working full-time. About half of men (48.5%) and women (50.4%) had professional occupations (Exec-Dr-Lawyer, Mgr-Teacher-Nurse). “Protestant” was the most commonly reported religious affiliation of men (42.7%) and women (46.7%). No couple was married at the time, and very few had been married before (men 3.5 %; women 2.6%). More than 98% of the women did not report pregnancy. According to the couples, most men’s parents (86.2%) and friends (89.8%) as well as the women’s parents (80.5%) and friends (88.4%) had a positive reaction towards their marriage plan. More than 80% of the couples reported that they had never broken up or separated with each other.

### **Measures**

PREPARE is a 125-item inventory designed to identify relationship strengths and growth areas in 11 relationship areas: marriage expectation, personality issues, communication, conflict resolution, financial management, leisure activities, sexual

expectations, children & parenting, family & friends, role relationship, and spiritual beliefs (Life Innovations, 2006). Each of these scales has 10 items. In addition, the inventory has four 10-item scales assessing family/couple cohesion (togetherness) and family/couple adaptability (change) derived from the Circumplex Model of Family Systems (Olson, Russell, & Sprenkle, 1989).

The Chinese version of PREPARE inventory, which was originally translated and back translated by Dr. Simon Lee and professional colleagues at the Hong Kong office of PREPARE/ENRICH. The Chinese version was used by those who could not understand English well. Minimal changes exist between the Chinese version and the American version to keep the essence of each item. The main differences between the American version and the Chinese version are the background items, such as ethnic background, income, education, where they live, occupation, and religion. The author, a Chinese native speaker, reviewed the Chinese version of PREPARE and thought that most of the translations were accurate. There were slight differences in sentence structure and grammar but by my standards, the American measure and the Chinese measure are enough alike to be meaningfully compared. Following are brief descriptions of the scales directly taken from the PREPARE/ENRICH manual (Life Innovations, 2006).

**Idealistic Distortion.** This scale is a modified version of the Edmonds Marital Conventionalization scale (Edmonds, 1967). It measures the tendency of individuals to answer personal questions in a socially desirable manner. It is a validity scale used to revise individual scale scores to correct for that bias. High scores (60 and above) indicate

individuals are presenting their relationship in a highly favorable manner. Low scores (30 and below) indicate a more realistic disclosure concerning relationship issues.

**Marriage Expectations.** This scale assesses an individual's expectations about love, commitment and conflicts in his/her relationship. The intent is to assess the degree to which expectations about marriage relationships are realistic and based on objective ideas. Moderately high scores (60 and above) in this area reflect realistic expectations about relationship issues. Low scores (30 and below) suggest individuals are too romantic in their perception of marriage and their relationship.

**Personality Issues.** This scale assessed each individual's perception and satisfaction with the personality characteristics of their partner as expressed through their behavioral traits. High scores (60 and above) reflect approval of the personality characteristics of the partner and general satisfaction with their personal behavior. Low scores (30 and below) indicate a low level of acceptance and/or lack of comfort with their partner's behavior.

**Communication.** This scale measures each individual's beliefs, feelings and attitudes toward the role of communication in the maintenance of his/her relationship. High scores (60 and above) reflect awareness and satisfaction with the level and type of communication existing in the relationship. Individuals with high scores tend to feel understood by their partner and see themselves as being able to adequately express their feelings and beliefs. Low scores (30 and below) reflect a deficiency in the level of communication essential to satisfactorily maintain a relationship and highlight the need to improve communication skills.

**Conflict Resolution.** This scale evaluates an individual's attitudes, feelings, and beliefs about the existence and resolution of conflicts in the relationship. High scores (60 and above) reflect realistic attitudes about the probability of conflict in the relationship as well as satisfaction with the way most problems are handled. Low scores (30 and below) suggest an ineffective and dissatisfying approach to relationship conflict. Partners may feel their issues are difficult to resolve and/or may have a tendency to avoid disagreements.

**Financial Management.** This scale focuses on attitudes and concerns about the way economic issues are managed within the couple's relationship. High scores (60 and above) reflect satisfaction with financial management and realistic attitudes toward financial matters. Low scores (30 and below) indicate a concern over the way finances are handled in the relationship.

**Leisure Activities.** This scale evaluates each individual's preferences for using discretionary time. High scores (60 and above) reflect compatibility, flexibility, and/or consensus about the use of leisure time activities. Low scores (30 and below) indicate dissatisfaction with the use of leisure time.

**Sexual Expectation.** This scale assesses an individual's feelings and concerns about affection and sexual relationship with his/her partner. Items reflect satisfaction with expressions of affection, level of comfort in discussing sexual issues, attitudes toward sexual behavior, birth control decisions and feelings about sexual fidelity. High scores (60 and above) indicate satisfaction with affectionate expressions and a positive attitudes about the role of sexuality in relationship. Low scores (30 and below) suggest

dissatisfaction with expression of affection and concern over the role of sexuality in the relationship.

**Children and Parenting.** This scale measures an individual's attitudes and feelings about having and raising children. Items reflect a couple's awareness of the impact of children on their relationship, satisfaction with how parental roles and responsibilities are defined, compatibility of philosophies toward discipline of children, shared goals and values desired for the children and agreement on the number of children preferred. High scores (60 and above) reflect a consensus on childrearing values and attitudes. Low scores (30 and below) indicate disagreement over values related to raising children.

**Family and Friends.** This scale assesses feelings and concerns about relationships with relatives, in-laws and friends. Items focus on the attitudes of family and friends toward the marriage, expectations regarding the amount of time spent with family and friends, comfort felt in the presence of the partner's family and friends and perceptions of the situation as either potentially characterized by conflict or satisfaction. High scores (60 and above) reflect comfortable relationships with family and friends. Low scores (30 and below) suggest discomfort with family and friends and may imply that this area is potentially problematic.

**Role Relationship.** This scale evaluates an individual's beliefs, attitudes and feelings about marital and family roles. There is an implied bias in this subscale toward equalitarian role behaviors. Higher scores indicate a preference for more egalitarian roles. High scores (60 and above) suggest the individual's values tend to be equalitarian in

nature. Low scores (30 and below) indicate the individual tends to value more traditional male/female role behaviors and responsibilities.

**Spiritual Beliefs.** This scale assesses attitudes, feelings, and concerns about the meaning of religious beliefs and practices within the context of the relationship. Items focus on the meaning and importance of religion, involvements in church/synagogue activities and the expected role that religious beliefs will have in the marriage. High scores (60 and above) reflect the view that religion is an extremely important component of the relationship. Low scores (30 and below) reflect a more individualistic and less traditional interpretation of the role of religion.

**Couple and Family Closeness.** This scale describes the level of emotional closeness experienced among family members and the degree to which they balance togetherness and separateness. Items deal with family members helping each other, spending time together and feelings of emotional closeness. Couple closeness assesses a couple's current relationship. Family closeness measures closeness in the families-of-origin.

**Couple and Family Flexibility.** This scale measures the ability of a couple to change and be flexible when necessary. Items deal with leadership issues and the ability to switch responsibilities and change rules when needed. Couple flexibility evaluates a couple's current relationship. Family flexibility assesses patterns of change in families-of-origin.

## Scoring

PREPARE's computer scoring produces a 15-page report for each couple that includes individual and couple scores for the 11 relationship areas. The report also includes a detailed summary of the couples' responses to each item to facilitate the interpretation of the results.

According to the Counselor's manual for PREPARE/ENRICH (Life Innovations, 2006), the *Revised Individual (REV) Score* is designed to provide an accurate assessment of how each person perceives the relationship in a given content area. The Male and Female each get a unique REV Score for each area. To create the Revised Individual (REV) Score, a person's *Raw Score* (which is the sum of the person's responses on the items in the area) is converted into an *Individual Percentile (PCT) Score*. The PCT ranges from 0 – 100% and it is based on comparing a person's raw score with the U.S. *National Norm Base* of the Inventory (which is over 100,000 couples for each Inventory). The *Revised Individual (REV) Score* is created by revising the *Individual Percentile (PCT) Score* downward based on the Idealistic Distortion Score for each person.

The couple score is called *Positive Couple Agreement (PCA)* which indicates the level of positive agreement partners report in each of the content areas. It is a percentage score based on the number of responses in a given area on which partners agree. For example, positive agreement between partners on six of ten items would indicate a PCA Score of 60 percent. PCA scores range from 0% to 100%, depending on the number of items in the scale on which both partners described their relationship in similarly positive terms (refer to Counselor's manual for PREPARE/ENRICH, 2000 version for details). In

this study, typologies were created by comparing the PCA scores on each of the eleven areas in the PREPARE Inventory.

### **Reliability and Validity**

PREPARE scales have high validity in discriminating premarital couples who get divorced from those that are happily married in American samples (Fowers, Montel, & Olson, 1996; Fowers & Olson, 1986). High reliabilities of PREPARE are also reported with alpha reliability of .80 - .85, and test/retest reliability of .80 (average correlation) among American samples (Life Innovations, 2006).

The adaptation of PREPARE to other cultures also demonstrates high level of validity and reliability. For the Chinese population, the reliability and validity of the Chinese language version of ENRICH, the adapted version of PREPARE for married couples, were assessed with a Hong Kong Chinese sample of 102 couples by Young (1995). The Cronbach alpha was generally lower than for American samples with an average alpha of .67. For PREPARE, a Japanese sample (Asai & Olson, 2004) demonstrated face validity and showed the internal consistency of the Japanese version of PREPARE, with an average alpha of .70.

The samples in the current study show slightly lower internal consistency coefficients than American samples, but still generally good, with most of alphas range from .70 - .89. All of the Cronbach coefficient alphas are above .53 except for role relationship (.42 for male and .34 for female; the implication for the low reliability will be discussed in the following section).

### **Analyses Procedure**

Previous typological studies using PREPARE/ENRICH identified four PREPARE premarital types by Fowers & Olson, 1992; seven ENRICH marital types by Lavee & Olson, 1993; five ENRICH marital types by Olson & Fowers, 1993; five African American ENRICH marital types by Allen & Olson, 2001; and four Japanese PREPARE premarital types by Asai & Olson, 2004. These studies were used as a methodological guide in developing the Chinese PREPARE premarital couple types. Two authors of these studies, David Olson and Yoav Lavee served as statistical consultants for the current study. The PCA scores of 11 PREPARE scales were used for the classification analysis, which was carried out in three phases.

In the first phase, an exploratory sample of 500 Chinese premarital couples was randomly selected to seek a structure of similarities and the “natural” number of clusters through hierarchical agglomerative cluster analysis by using several different methods of clustering. The reason for choosing 500 is because with SPSS hierarchical agglomerative clustering becomes difficult with larger numbers of cases.

The second phase of the typology analysis involved randomly dividing the remaining sample into two groups. The first set of couples (n=3567) was subjected to k-means cluster analyses with relocation based on the results obtained in the earlier phase to narrow down the alternatives to an optimal solution. Analyses of variance were used to describe differences for each of the scales among the clusters.

The third phase of the analysis used the second set of couples (n=3500) as a validation sample. The validation was conducted by replicating the k-means cluster analysis of the optimal solution obtained in the second phase.

## **Analyses and Results**

### **Exploratory Analysis Phase**

The first step was the exploratory structure seeking hierarchical agglomerative cluster analysis (n=500 couples) using average linkage within groups with Euclidean distance for computing either similarity or dissimilarity between subjects. Because Euclidean distance measurement is sensitive to the variables' units of measurement, the variables were standardized to avoid possible bias effects of differences in variance across variables. The coefficients statistic was used as the criterion for deciding how many clusters best fit the data (IBM SPSS Statistics Guides, [www.norusis.com/pdf/SPC\\_v13.pdf](http://www.norusis.com/pdf/SPC_v13.pdf)). The coefficient statistic provides an indication of the appropriate number of clusters through local troughs.

Cluster formation is stopped when the increase (for distance measures) or decrease (for similarity measures) in the coefficients column between two adjacent steps is large. The three-cluster solution in this analysis had a coefficient value of 4.097 followed by a value of 4.533 for a two-cluster solution. This change is five times greater than the solution changes from ten to nine, nine to eight...four to three. Thus, two clusters seemed to represent the data well in this procedure.

To minimize biases inherent in specific cluster analytical methods, several other different methods of clustering the data were used, such as single linkage, centroid, and

Ward's. These methods showed similar results. This consensus suggested that there were probably 2, 3, or 4 clusters. A series of k-means cluster analyses were conducted to further assess the appropriateness of these solutions. Cluster numbers were set at 2, 3, and 4. All cluster solutions generated reasonably even distributions of couples (Two clusters: 247 in cluster membership 1 and 253 in cluster membership 2; Three clusters: 124 in cluster membership 1, 215 in cluster membership 2, and 161 in cluster membership 3; Four clusters: 118 in cluster membership 1, 116 in cluster membership 2, 149 in cluster membership 3, and 117 in cluster membership 4). The distances between cluster centers were 76.164 (for two clusters), 63.158, 75.394, and 89.347 (for three clusters), and 53.600, 62.885, 66.360, 76.193, 95.352, and 109.240 (for four clusters). According to Goodman (1999), one rejects the null hypothesis if the p-value is less than or equal to the significance level. The closer the p-value is to the significance level, the better the solution.

The analysis of variance with F test (see Table 1) showed that the clusters were well-differentiated except for the marriage expectation scale, with a 4-cluster solution having a higher possibility to differentiate in the marriage expectation area. The final cluster centers for the three solutions were saved as initial seeds for use in the second and third phases.

### **Narrowing down to Optimal Solution Phase**

The purpose of this phase was to classify a large enough sample of couples to achieve more stable profiles through k-means cluster analyses. Excluding the couples

already clustered, the total pool of cases was randomly split, and k-means cluster analyses were conducted with data from 3,567 couples.

The number of clusters was set to two, three, and four separately, and initial cluster centers accordingly were predefined based on the agglomerative cluster results in the first phase. Given these initial cluster centers, each subject was assigned to the group with the closest center. The analysis proceeded to recompute the center and reassign subjects iteratively to the newly formed clusters.

All 3,567 couples were classified in this analysis. The new generated cluster centers were similar to the initial cluster centers in every cluster solution. Like the 500 subsample, all cluster solutions for the 3,567 couples generated a reasonably even distribution of couples (Two clusters: 1899 in cluster membership 1 and 1668 in cluster membership 2; Three clusters: 1000 in cluster membership 1, 1357 in cluster membership 2, and 1210 in cluster membership 3; Four clusters: 942 in cluster membership 1, 810 in cluster membership 2, 1141 in cluster membership 3, and 674 in cluster membership 4). The distances between cluster centers for the 3,567 subsample were similar to the 500 subsample with 74.22 (for two clusters), 62.614, 70.445, and 91.086 (for three clusters), and 52.745, 59.651, 61.691, 75.348, 99.078, and 107.741 (for four clusters). The analysis of variance with F test (see Table 1) showed that as with the 500 couples, the clusters of 3,567 couples were well-differentiated except in the Marriage Expectation area; the 4-cluster solution had the higher possibility to differentiate in the Marriage Expectation area.

Table 1

F and  $p$  Values on Marriage Expectations for Cluster Numbers in the Exploratory and Primary Samples

| Number of clusters | Exploratory sample (500) |      | Primary sample (3567) |      |
|--------------------|--------------------------|------|-----------------------|------|
|                    | F                        | $p$  | F                     | $p$  |
| 2                  | 0.01                     | 0.93 | 0.39                  | 0.53 |
| 3                  | 1.33                     | 0.27 | 0.04                  | 0.96 |
| 4                  | 1.57                     | 0.20 | 1.23                  | 0.30 |

After examining the k-means analyses, the two-, three-, and four-cluster solutions were all regarded as possible solutions and the four-cluster solution showed better function in differentiating clusters. Another criterion used to determine the optimal solution was to compare the second stage four cluster solution with a previously reported four-cluster solutions by Fowers and Olson (1992) and Asai and Olson (2004). Their study of premarital types used the same measurement instrument (PREPARE) and large, primarily European-American and Japanese samples. This referent provided a convenient benchmark for testing the relative strength of the four cluster solution in this study.

#### Validation of Optimal Solution Phase

To validate the classification further, a k-means cluster analysis with 4 clusters predefined was repeated with data from the second subsample ( $n=3,500$ ), setting the same initial seeds generated from the 500 subsample. The results indicated that, the two samples produced similar profiles with almost the same final cluster centers and cluster

membership distributions (cluster 1: 881, cluster 2: 826, cluster 3: 1094, and cluster 4: 699). The rest of the analyses and results presented below are based on the first (and larger) of the two samples.

### **Adjusting to a Well-Differentiated 4 Clusters Solution**

Figure 1 (see below) shows that the Chinese sample was not well differentiated in the areas of Marriage Expectations and Role Relationship, while the European American sample (see Figure 2) was well differentiated in all areas (Fowers & Olson, 1992). The purpose of cluster analysis is to assign a set of objects into groups so that the objects in a cluster are more similar to each other than to those in other clusters. A report based on a national survey of 50,000 U.S. marriages shows that Couple Closeness and Couple Flexibility can differentiate couples well (Olson, Olson-Sigg, & Larson, 2008). In addition, Role Relationship for the Chinese premarital sample shows low internal consistency coefficients (.42 for male and .34 for female).

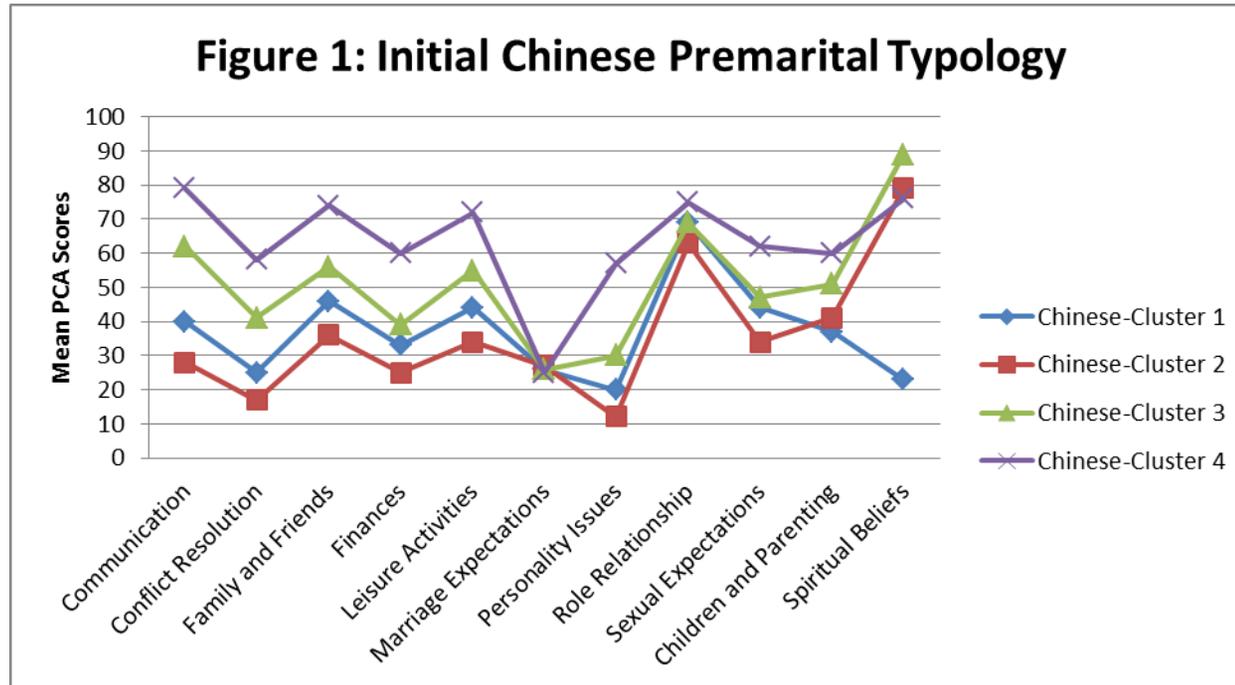
To achieve a well-differentiated 4-clusters solution, Couple Closeness and Couple Flexibility were substituted for Marriage Expectations and Role Relationship to reclassify Chinese premarital couples. A k-means cluster analysis of the updated 11 dimensions with 4 clusters predefined was performed with data from the primary subsample (n=3,567) without setting the initial seeds. The analysis of variance with F test showed that the clusters of 3,567 couples were well-differentiated in all areas. Figure 3 shows a well-differentiated 4-cluster solution.

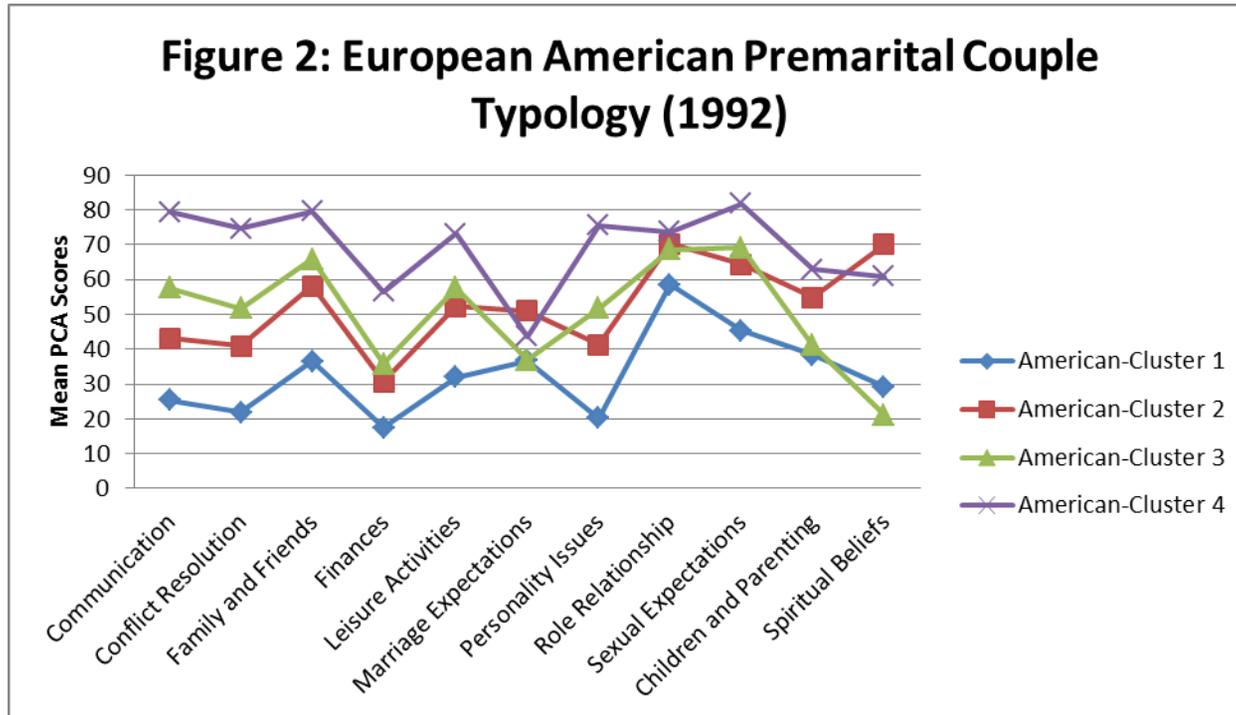
A k-means cluster analysis of the updated 11 dimensions with 4 clusters predefined was also performed with data from the cross-validation subsample (n=3,500)

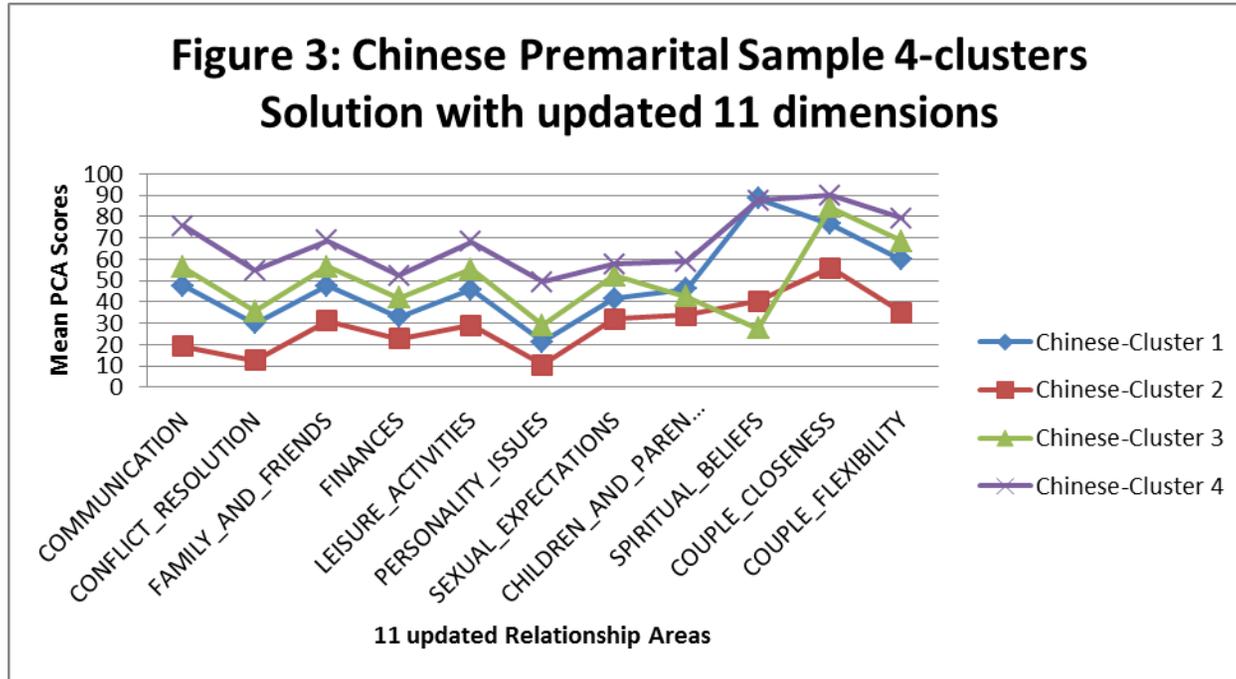
without setting the initial seeds. A breakdown of the primary, cross-validation, and total samples into couple types based on the updated 11 relationship dimensions is presented in Table 2. The rest of the results and discussions are based on the 4-cluster solution generated by the updated 11 dimensions using the primary subsample (n=3567) (Figure 3).

Table 2  
Chinese Couple Types

| Relationship<br>type | Cross-validation |     |        |     |              |     |
|----------------------|------------------|-----|--------|-----|--------------|-----|
|                      | Primary sample   |     | sample |     | Total sample |     |
|                      | n                | %   | n      | %   | n            | %   |
| <b>Vitalized</b>     | 1007             | 28  | 903    | 26  | 1910         | 27  |
| <b>Harmonious</b>    | 697              | 20  | 677    | 19  | 1374         | 19  |
| <b>Traditional</b>   | 1177             | 33  | 1167   | 33  | 2344         | 33  |
| <b>Conflicted</b>    | 686              | 19  | 753    | 22  | 1439         | 20  |
| <b>Total sample</b>  | 3567             | 100 | 3500   | 100 | 7067         | 100 |







### **Final Four Types of Chinese Premarital Couples**

The Chinese premarital types are identified in Table 2 in descending order of their average PCA profiles. It is appropriate to give the four PCA cluster types for Chinese couples the same labels as those Olson and colleagues (1992) gave to the four cluster types they found with European-American couples, because the patterns look similar and because the Chinese couples took the similar version of PREPARE.

In the Chinese couples and the European-American couples, the clusters differed mainly in PCA scores, with some couples having a very high level of agreement, some having a rather high level of agreement, some having a somewhat lower level of agreement, and some having a very low level of agreement. So the four labels (vitalized, harmonious, traditional, conflicted) reflect four levels of PCA scores across the various scales with the Spiritual Beliefs area having the maximum magnitude of the difference. Figure 4 shows the four clusters found among Chinese couples.

Vitalized couples ( $n = 1007$ ; 28%) exhibited the highest mean PCA scores (see Table 3), which was why they were labeled *vitalized* by Fowers and Olson (1992). High agreement was assumed to be an indicator of couple vitality. Despite fluctuations within this range, the high scores continued across all relationship domains for the Chinese couples with one exception, a score that is less than or equal to all other types of couples in spiritual beliefs. Similarly the Fowers and Olson's study (1992) found that European American couples in this type had the highest overall PCA scores of any group on all of the scales as measured except marriage expectations and spiritual beliefs.

Harmonious couples in the Chinese sample ( $n = 697$ ; 20%) exhibited slightly lower overall scores than the vitalized type, with peaks and troughs occurring at different points in their profile. There were peaks at couple closeness and couple flexibility, where the score were lower than Vitalized couples and higher than other two types. There was a trough at spiritual beliefs, where the score was the lowest among all groups. The score at children and parenting was lower than the vitalized group and traditional group, while higher than the conflicted group. In the Fowers and Olson's study, European American couples in this type reported moderate overall relationship quality on PREPARE PCA scales, with lower scores on Marriage Expectations, Children and Parenting, and Spiritual beliefs.

Traditional couples in the Chinese sample ( $n = 1177$ ; 33%) exhibited slightly lower overall scores than the Harmonious type, with the highest score in spiritual beliefs among all types. The score on children and parenting is slightly higher than couples in the harmonious group. In Fowers and Olson's study, European American couples in this type reported moderately low scores on scales including Personality issues, Communication, and Conflict Resolution, while this group had the highest scores of any group on Marriage Expectation and Spiritual Beliefs and a relative peak on the Children and Parenting scale. This result is similar to the Chinese premarital couples in the so-called Traditional group. The reason for naming this group as "traditional" couples is because "it seemed to reflect emphases on more traditional couple strengths in combination with moderately low current relationship quality" (p. 15, Fower and Olson, 1992).

Conflicted couples in the Chinese sample ( $n = 686$ ; 19%), had low PCA scores in all areas except spiritual beliefs, where the score was lower than Vitalized and Traditional types, but higher than the Harmonious type. Fower and Olson named their very similar European-American group as Conflicted because couples in this group were planning to marry in spite of obvious relationship difficulties. In their European American premarital sample, couples in this group reported particularly low scores on the measures of Personality issues, Communication, Conflict Resolution, Leisure Activities, and Sexual Relationship. Similar to what is true for the Chinese sample, in the European-American sample only the score on spiritual beliefs was not the lowest among all groups.

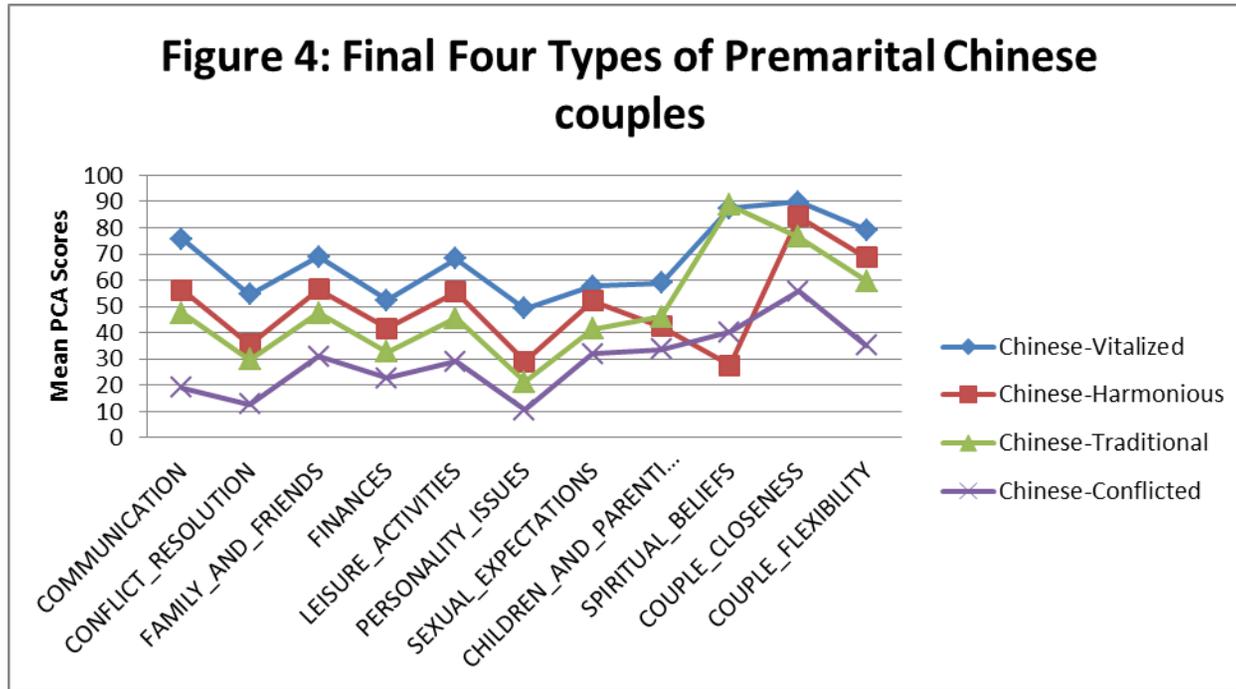


Table 3

## Four Chinese Premarital Types: Mean PCA

| Relationship domain           | Vitalized |           | Harmonious |           | Traditional |           | Conflicted |           | <i>M</i> |
|-------------------------------|-----------|-----------|------------|-----------|-------------|-----------|------------|-----------|----------|
|                               | <i>M</i>  | <i>SD</i> | <i>M</i>   | <i>SD</i> | <i>M</i>    | <i>SD</i> | <i>M</i>   | <i>SD</i> |          |
| <b>Communication</b>          | 75.6      | 14.1      | 56.2       | 19.2      | 47.5        | 18.2      | 19.1       | 14.5      | 51.7*    |
| <b>Conflict resolution</b>    | 54.6      | 16.7      | 35.7       | 17.4      | 29.8        | 15.7      | 12.7       | 11.2      | 34.7*    |
| <b>Family and Friends</b>     | 68.8      | 18.7      | 56.5       | 20.1      | 47.4        | 18.6      | 31.1       | 18.0      | 52.1*    |
| <b>Finances</b>               | 52.4      | 22.8      | 41.8       | 21.6      | 32.8        | 20.4      | 22.8       | 17.2      | 38.1*    |
| <b>Leisure activities</b>     | 68.2      | 15.4      | 55.4       | 17.5      | 45.7        | 17.5      | 29.1       | 16.7      | 50.8*    |
| <b>Marriage expectations</b>  | 25.7      | 16.7      | 25.2       | 17.2      | 25.4        | 17.2      | 27.9       | 20.7      | 25.9     |
| <b>Personality issues</b>     | 49.3      | 21.4      | 29.1       | 17.5      | 21.2        | 14.6      | 10.4       | 10.4      | 28.6*    |
| <b>Role relationship</b>      | 72.7      | 15.3      | 72.7       | 15.0      | 66.4        | 16.4      | 62.5       | 17.5      | 68.7*    |
| <b>Sexual expectations</b>    | 57.7      | 16.3      | 52.3       | 16.9      | 41.5        | 17.8      | 31.9       | 17.1      | 46.3*    |
| <b>Children and parenting</b> | 58.9      | 20.3      | 42.4       | 19.4      | 46.2        | 20.7      | 33.8       | 18.6      | 46.6*    |
| <b>Spiritual beliefs</b>      | 87.5      | 16.0      | 27.6       | 15.8      | 88.6        | 11.4      | 40.3       | 28.5      | 67.1*    |
| <b>Couple closeness</b>       | 90.0      | 10.2      | 84.2       | 12.4      | 76.6        | 15.1      | 55.9       | 21.0      | 77.9*    |
| <b>Couple flexibility</b>     | 79.3      | 14.7      | 68.6       | 16.5      | 59.8        | 17.9      | 35.1       | 18.5      | 62.3*    |

(\* $p < .005$ )

### **Demographic Comparisons between Primary-Sample Types**

Differences between couple types in their demographic and background characteristics were also examined by using cross-tabulation and chi-square analyses. *Kendall's tau-b* measures were computed for ordinal variables (like age, education level) and *Phi* and *Cramer's V* measures were computed for nominal variables (like occupation, religious beliefs). Unlike previous studies, only a few of these showed significant differences among the four types.

The analyses showed a significant negative association between males' reactions to when they want children and premarital couple types,  $\tau = -.028, p = .06$ . This tau is considered to be a small effect size (Cohen, 1988). This means that the longer the male wanted to wait before having children, the more likely they were Conflicted couples. The shorter the time the male wanted to wait for having children, the more likely they were Vitalized couples. However, there was no significant association between females' reaction to when they want children and premarital couple types.

For females, parents' reactions towards their couple relationship ( $\Phi = .08$  and  $Cramer's V = 0.46, p = .03$ ), and friends' reactions towards their relationship ( $\Phi = .076$  and  $Cramer's V = 0.44, p = .056$ ) were significantly related to premarital couple types. The more negative parents' and friends' reactions towards their relationship, the more likely they were Conflicted couples. Religious beliefs were also a predictor of couple types for females ( $\Phi = .067$  and  $Cramer's V = .039, p = .079$ ). The less they reported religious beliefs, the more likely they were Conflicted couples. However, there were no significant differences across couple types in these areas for males.

The rest of the results showed that the Chinese premarital couple types in this study did not prove to be significantly related to age, how soon they planned to marry, how long they had known each other, their education levels, employment status, occupation, monthly income, nationality, current living arrangement, marital status, parents' marital status, whether the woman was pregnant or not, their birth position, numbers of siblings, the numbers of children they wanted to have, or whether they had broken up/separated with current partner before.

### **Comparison with European-American Sample**

In answer to our fourth research question, the distribution of the couples among the 4 types was examined. Among Chinese premarital couples, Traditional types are the most common, followed by Vitalized types, Harmonious types, and Conflicted types. While for European American premarital couples, Vitalized types were the most, followed by Harmonious types, Traditional types, and Conflicted types (see Table 4).

Since the European American couples data used in the 1992 article were collected from 1990 to 1992, the differences between the Chinese data and the European American data confound culture with time when the data were gathered. So data were also examined for a sample of European American (10,000 European American couples) who completed the PREPARE inventory in 2011 and 2012. They were classified according to the cluster structure used for couples in the 1992 article. This recent data was provided by Life Innovations. As shown in Table 4, this recent sample showed a different distribution from the earlier European American data, with Vitalized couples constituting more than half of the sample.

Table 4

Clusters Distribution Comparison between Chinese Sample and European American Samples

|                           | 2007-2011 collected |            | 1990-1992 collected |            | 2011-2012 collected |            |
|---------------------------|---------------------|------------|---------------------|------------|---------------------|------------|
|                           | Chinese             |            | European American   |            | European American   |            |
|                           |                     |            | (1992 published)    |            |                     |            |
|                           | number              | percentage | number              | percentage | number              | percentage |
| <b>Conflicted Couple</b>  | 686                 | 19         | 518                 | 22         | 864                 | 9          |
| <b>Traditional Couple</b> | 1177                | 33         | 543                 | 23         | 1827                | 18         |
| <b>Harmonious Couple</b>  | 697                 | 20         | 609                 | 26         | 1704                | 17         |
| <b>Vitalized Couple</b>   | 1007                | 28         | 685                 | 29         | 5605                | 56         |
| <b>Total</b>              | 3567                | 100        | 2355                | 100        | 10000               | 100        |

## Discussion

There is an increasing trend of divorce in Chinese societies and more interest in premarital preparation for preventing marital discord in U.S. and European (Hahlweg, Markman, Thurmaier, Engl, & Echert, 1998; Halford, Sanders, & Behrens, 2001; Markman & Hahlweg, 1993). The current paper builds on studies of European-American premarital couple typologies, examines the couple types existing in 7,567 premarital Chinese couples living in Hong Kong, Singapore, Taiwan, and Malaysia, and compares those types to the types developed among European-American premarital couples. The results of this study indicated that Chinese premarital couples exhibit relational patterns and could be classified into four types similar to what has been reported for European American premarital couples (Vitalized, Harmonious, Traditional, and Conflicted) based on the premarital inventory PREPARE. Unlike European American samples in which Vitalized couples are most common, Traditional couples were most in the Chinese sample.

The two dimensions which were eliminated in the process of generating the Chinese premarital couple types were Marriage Expectations and Role Relationship. The Chinese sample was not well differentiated in these two areas, which was not a problem for European American samples. Additionally, the Role Relationship scale showed low internal consistency coefficients among Chinese premarital couples. This finding could mean that Chinese premarital couples showed similar expectations about love, commitment, and conflicts in relationship; and similar beliefs, attitudes, and feelings about marital and family roles in whichever type they were. As the results (PCA scores)

suggested, the Chinese couples were generally too romantic in their perception of marriage and their relationships, while they had a preference for more egalitarian roles.

This finding could also mean that the Role Relationship scale in PREPARE is not relevant to Chinese premarital couples. The ten items for evaluating Role Relationship showed an implied bias towards equalitarian role behavior, which is different from what Confucianism reflects about hierarchical and patriarchal family structure among Chinese. The ecological perspective (Larson & Holman, 1994) explained the importance of knowing cultural contexts in interpreting the couple classification. A culturally relevant scale on Role Relationship is needed for classifying Chinese premarital couples.

The four clusters identified in this study showed similar patterns across relationship areas except in the area of Spiritual Beliefs. Although the standard for naming the clusters was based on PCA scores sequence (from high to low), it is possible that the four clusters were distinguished primarily by Spiritual Beliefs.

### **Profile of Chinese Engaged-Couple Types**

In the following two paragraphs I draw selectively from the Counselor's manual for the version of 2000 of PREPARE/ENRICH (Life Innovations, 2006) to interpret the results. Vitalized Chinese premarital couples reported a high degree of satisfaction on overall relationship dimensions. They indicated a very high level of approval of the personality characteristics of the partner and general satisfaction with their personal behavior. These couples were highly satisfied with the level and type of communication existing in the relationship, with feeling understood by their partner and seeing themselves as being able to adequately express their feelings and beliefs. They also had

fairly realistic attitudes about the probability of conflict in the relationship, financial matters as well as satisfaction with the way most problems are handled and their financial management. They reported high compatibility, flexibility, and/or consensus about the use of leisure time activities, as well as satisfaction with expressions of affection and sexual issues. They reported awareness of the impact of children on their relationship, and satisfaction with how parental roles and responsibilities are defined. They had the compatibility of philosophies toward parenting. They were happy with how they related one another's family and friends. These couples indicated an interest in religious activity. They reported high level of couple relationship cohesion and flexibility.

Harmonious Chinese premarital couples were characterized by a slightly lower level of overall relationship quality than the Vitalized couples. They reported high level of agreement and satisfaction in every dimension except that they did not tend to be religiously oriented and they had not come to a consensus on child-related issues such as the number of children they wished to have or their parental roles. Traditional couples had a profile indicating moderate dissatisfaction with most the relationship dimensions except that they had developed a consensus on child-related issues such as the number of children they wished to have and their parental roles. Also these couples were quite religiously oriented. Conflicted couples indicated distress on all of the relationship dimensions. They reported dissatisfaction with all areas in relationship except that they reported a bit of higher level of religious orientation compared to Traditional couples.

The Chinese premarital types generated based on the 11 dimensions in relationship shows that Traditional type was the largest group size (33%) with Vitalized

type (27%), Conflicted type (20%), and Harmonious type (19%) following. It means 33% of Chinese premarital couples had moderate dissatisfaction with most of the relationship dimensions but they had developed a consensus on child-related issues and they were quite religiously oriented, with 27% of Chinese premarital couples having a high degree of satisfaction on overall relationship dimensions. There were similar numbers of Conflicted couples and Harmonious couples.

### **Type Differences in Demographical and Background Characteristics**

The finding showed that the longer the males were planning to wait to have children, the more likely they were conflicted couples, while there is no such connection for females. It might mean that if a man doesn't want to have children soon after they are married, it might reflect distress in the relationship that results in couple conflict. Conversely the interpretation might be that a conflicted relationship resulted in the man wanting to wait longer to see whether it's a good idea to have children with this woman. If a woman doesn't want to have children soon after they married, all kinds of situation exist and relationship types varied.

A uniquely significant finding for females is about their parents' and friends' reactions toward their relationship. The more negative females' parents and friends reactions toward their relationship, the more likely they were conflicted couples. While the reaction of males' parents and friends did not seem to influence their relationship status. Compared to European-American couples, this is different. Zhang and Kline's cross-cultural study published in 2009 examined the comparative influence of network members on one's intention to marry and relational commitment among college students

in both China and the United States. They found that compared with U.S. participants, Chinese students believed that their dating partners would meet their filial piety beliefs, that such beliefs were more important in their potential decision to marrying their dating partners.

Also, Zhang and Kline's study found that American females were more likely to comply with opinions of people in their social networks than American males, whereas Chinese males were more likely to comply with opinions of people in their social networks than Chinese females, which is opposite to the finding in the current study. They cited a statement by Hsu (1981) that in traditional Chinese societies, filial piety is more important for a son than for a daughter with an example that a filial son has to make financial contributions to his parents even after he has left home and may even divorce his wife if his parents do not like her (Zhang & Kline, 2009). The sample in our study combines Chinese living in Hong Kong, Singapore, Taiwan, and Malaysia in the 21<sup>st</sup> century. We don't know how traditional they are, thus we don't know whether Hsu's work or Zhang and Kline's work may apply to our findings. That is, men in the current sample may not be so filial.

The current study also showed that Chinese premarital couple types did not prove to be significantly related to age, how soon they planned to marry, how long they had known each other, their education levels, employment status, occupation, monthly income, nationality, current living arrangement, marital status, parents' marital status, whether were pregnant or not, their birth position, numbers of siblings in their original families, the numbers of children they want to have, or whether they broke up/separated

with current partner before. These factors do not have significant impact on which relationship type they belong to. This differs from the results found among European American premarital couples (Fowers & Olson, 1992), who showed that age, education level, income, and occupation status were associated with premarital couple types. Another study done by Allen and Olson (2001) found that only a few background characteristics were related to African American couple types. The marital types in their study did not prove to be significantly related to age, the number of years which a couple had been married, income, or occupation. One possibility is that the Chinese sample (where couples knew each other longer and few were married before) was much more homogeneous than the European-American sample in the 1992 article. With less variance there is less possibility of significant relationships.

### **Type Distribution Comparisons between Two Cultures**

Comparing this study of Chinese premarital couples with Olson and Fowers (1992) of European-American premarital couples, there were more Traditional couples (33% vs. 23%), but fewer Harmonious couples (20% vs. 26%). There were similar percentages among Conflicted couples (19% vs. 22%) and Vitalized couples (28% vs. 29%). For Chinese premarital couples, the Traditional type was the largest group, while for European American couples (in both Olson and Fowers's study in 1992 and the recent sample of 10,000 European American couples collected from 2011 to 2012, scored and categorized by Life Innovation company), Vitalized type was the largest group. These results were based on one Chinese premarital sample and it might not be generalizable to

the whole population, while this finding might be the premarital couple relationship reality when comparing general populations in the two cultures.

### **Clinical Implications**

As demonstrated in previous studies (Fowers & Olson, 1992; Lavee & Olson, 1993; Olson & Fowers, 1993; Allen & Olson, 2001; and Asai & Olson, 2004), couple typology could be a tool that potentially may be of help with prevention and intervention. Knowing a couple's relationship type could be helpful to therapists. The four Chinese premarital couple types identified in the current study may benefit Chinese marital preparation and therapists working with Chinese couples.

In the current study, couples characterized as Traditional occupied more than one third of the sample of 3567 couples. Chinese Traditional premarital couples were disagreed on most of the relationship dimensions but had consensus on child-related issues and were quite religiously oriented. When working with Traditional couples, it might be good to provide help in a pastoral setting, and to help with identifying the strengths in agreement on child-related issues. When working with Harmonious type couples, who are characterized as having moderate satisfaction with most relationship dimensions but have less consensus on child-related issues and are not religiously oriented, professionals might want to avoid the pastoral setting and start from identifying their high level of satisfaction with emotional closeness, sexual expectations, and communication.

Because of the nature of couple relationship, couples similar to the Conflicted type might most often show up for couple counseling. Working with Chinese couples in

this type, we might want to keep the findings of the current study in mind. Dealing constructively with issues about males' reaction towards the timing of having children, and females' parents and friends attitudes toward the relationship might lead to relationship improvement.

### **Future Research Directions**

The current study used a large sample of 7,567 Chinese premarital couples and identified four types of Chinese premarital couples. This is the first attempt at developing Chinese premarital couple types, and we would suggest additional efforts at type development for Chinese unmarried couples to validate the types we developed in the current study. All Chinese couples in the current study were living in Hong Kong, Singapore, Taiwan, and Malaysia, although some of them may have originally come from Mainland China. It is not clear how much difference might exist between the Chinese in Mainland China and outside of Mainland China. Future research should study Chinese couples from Mainland China where most Chinese people are living.

The Chinese version of the PREPARE inventory which was taken by the Chinese premarital couples in the current study was translated directly from the English version of PREPARE used by European-American premarital couples, but with minor changes on demographic and background questions. The translation and back translation of PREPARE into Chinese was done by Dr. Simon Lee and professional colleagues at the PREPARE/ENRICH office. It is not known which language version (Chinese or English) of the inventory was used by whom. These might be important factors related to the results. Not being able to read English in these countries might be related to areas they

were living or their being traditional. Using an instrument in English and built to measure people in the U.S. might not be as sensitive to what goes on in Chinese premarital couples as a Chinese language instrument created in China and based on Chinese culture and ways of thinking. It would be optimal to develop a new Chinese instrument based on unique aspects of Chinese romantic relationships.

Premarital couples are different from marital couples in many ways. For example, relationship satisfaction was hard to interpret without knowing whether couples lived together or not, relationship stability was hard to evaluate without formal validation criteria, like an independent measure of relationship satisfaction. PREPARE did not include a satisfaction measure with the Chinese sample, and we were unable to come up with a synthetic validation measure with the data available. Future studies on premarital couples need to identify validation variables which could contribute to a better understanding of relationship quality. In addition, longitudinal studies are needed to see what in PREPARE does or does not predict marriage outcomes in Chinese couples.

Since most of the demographic variables in the Chinese sample were not significantly related to the couple types, all possible results which were significant ( $p < .05$ ), or were approaching significance (e.g.,  $p = .056$ ) were identified. Because this leeway was employed, findings that occurred by chance may have been incorrectly deemed significant and may not be found in a replication study.

In spite of the limitations, the current study may facilitate and promote future research exploring the relationship trajectories for each type of premarital relationship. It

would be interesting to know how successful each couple type is in terms of happiness and success.

### **Conclusion**

Seeing the increasing trend of divorce in Chinese societies, and the effectiveness of premarital preparation in preventing marital discord or dissolution, the current paper built on typology studies on European-American premarital and marital couples, examining the couple types existing in 7,567 premarital Chinese couples living in Hong Kong, Singapore, Taiwan, and Malaysia. Four relational patterns: Vitalized, Harmonious, Traditional, and Conflicted were identified through a three phase cluster analyses. These four couple types were almost identical to the four premarital types found in the U.S. sample using similar cluster analytic procedure. The results also show that type differences only exist in few demographical and background characteristics, for example, parents and friends reaction towards the relationship among Chinese premarital couples. Compared to U.S. couples, where the Vitalized type is the largest group, for Chinese premarital couples the largest group is the Traditional type. The study increases our understanding of Chinese premarital couples, as well as uncovers unique differences or highlight similarities in the premarital relationships when compared with U.S. premarital couples. The four Chinese premarital couple types identified may benefit Chinese marital preparation and therapists working with Chinese couples.

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### Appendix A: Demographic Variables

Both males and females were asked demographic information as below:

- Age (1= below 20, 2= 20-25, 3= 26-30, 4= 31-35, 5= 36-40, 6= 41 and above),
- How soon plan to marry (1= after 0-2 months, 2= after 3-6 months, 3= after 7-12 months, 4= after 13 months or more),
- How long have you known each other (1= less than 1 year, 2= 1-2 years, 3= 3-4 years, 4= 5 years and above),
- Education level (1= graduate education/professional, 2= 4 year college, 3= Some college-technical, 4= Finished high school, 5= Some high school),
- Employment status (1=full time, 2= part time, 3= full & part time, 4= unemployed),
- Occupation (1= Clerical-Sales-Tech, 2= Exec-Dr-Lawyer, 3= Factory-Laborer-Waitperson, 4= Homemaker, 5= Mgr-Teacher-Nurse, 6= Self-employed, 7= Skilled-Trades-Farmer, 8= Student, 9= Unemployed),
- Monthly income (1= 0-1499RMB, 2= 1500-2999RMB, 3= 3000-4999RMB, 4= 5000-7999RMB, 5= 8000-11999RMB, 6= 12000-19999RMB, 7= 20000-49999RMB, 8= 50000 and above),
- Religious belief (1= Catholic, 2= Buddhism, 3= Protestant, 4= others),
- Nationality (1= Chinese (Hong Kong resident), 2= Chinese (mainland resident), 3= Chinese (Macao, Taiwan), 4= Chinese (foreigner), 5= Hong Kong foreigner, 6= Others),
- Current living arrangement (1= Alone, 2= With partner, 3= With others, 4= With parents),
- Where do you live (1=Beijing, Tianjin, Shanghai, 2= Guangdong, 3= Other areas in mainland China, 4= Overseas including Hong Kong and Macao),
- Marital status (1= Never married, 2= Previously married, 3= Widowed),
- Parents' marital status (1= Married, 2= Separated, 3= Div, both single, 4= Div, both remarried, 5= 1 Single, 1 Remarried, 6= Single, 1 deceased, 7= Remarried, 1 deceased, 8= Both parents deceased),
- Whether or not pregnant (N= no, Y= yes).

## **Appendix B: Background Variables**

Other background information assessed along with the demographic variables include:

- Birth position (1=first, 2=second, 3= third, 4= fourth, 5= fifth or above),
- Numbers of siblings including self (1=1, 2=2, 3=3, 4=4, 5= 5 and more),
- Children you want to have (0= 0, 1= 1, 2= 2, 3= 3, 4= 4, 5= 5 and more),
- When you want children (1= 0-6 months, 2= 7-11 months, 3= 1-2 years, 4= 2-3 years, 5= 4 and more years, 6= do not want children),
- Parents' reaction to marriage (1= Very Negative, 2= Negative, 3= Neutral, 4= Positive, 5= Very Positive),
- Friends' reaction to marriage (1= Very Negative, 2= Negative, 3= Neutral, 4= Positive, 5= Very Positive),
- Broke up or separated with current partner (N= no, Y= yes).

## **Appendix C: Dissertation Proposal**

### **Development of an Empirical Typology of Chinese Premarital Couples and Comparison with European-American Samples**

#### **Introduction**

##### *Rationale of Studying Premarital Couples*

Divorce is becoming frequent in Chinese societies, not only in mainland China, but also other Chinese societies scattered in Southeast Asia, like Hong Kong, Singapore, Taiwan and Malaysia. Many professionals show concerns about the trends, and some programs have been designed to strengthen marriage and prevent divorce.

Family development theory (Rodgers & White, 1993) emphasizes that accomplishing stage-appropriate tasks is important for adequate current and future couple functioning. This theory indicates that “normative transitions between stages are often difficult and by their very nature require adjustment and accommodation to new demands and circumstances” (Fowers & Olson, 1992, p10). Many studies done in the U.S. have showed that, the transition from engagement to early marriage is crucial to the early success of marriage (Fournier & Olson, 1986; Fowers, Montel & Olson, 1996; Futris, Barton, Aholou, & Seponski, 2011; Holman & Linford, 2001; Larson & Olson, 1989). Also the effectiveness of premarital preparation in preventing marital discord or dissolution has been demonstrated in these studies (e.g., Futris et al., 2011).

##### *Rationale of Classifying Couples*

Even though the technical origins of making classification are not clear, it is apparent that this approach has been adopted by scholars to organize and explain the

complexity of the world throughout history (Mandara, 2003; Waller & Meehl, 1998). Back in the 1980s, McQuitty (1987) proposed that classification should be as fundamental to the social and behavioral field as it is to the life and physical sciences. However, some argued that the child and family psychology field has yet to develop studies that systematically classify the objects of interest, such as people and families (Mandara, 2003). Classifying benefits the study of psychology and the social sciences through helping with identifying, organizing, and describing behavioral patterns of people. Identifying types of couples may be helpful as well, because “premarital interventions would be more appropriate, effective, and cost-efficient if they were focused on the specific needs of identifiable types of engaged couples” (Fowers & Olson, 1992, p10).

#### *Rationale of Working on Chinese Premarital Couples*

Larson and Holman (1994) proposed the usefulness of an ecological perspective to research premarital and marital couples. Seeing through the ecological perspective, Holman and Linford (2001) conceptualized the factors which impact the couple relationship into three eco-systemic areas: individual, couple, and contextual, which could become a framework to classify couple relationships. According to Holman and Linford (2001), contextual factors refer to “the wider social contexts in which the individual and dyad are embedded” (p18). Based on this framework, premarital courtship might have different meanings within certain cultures. Seeing the premarital relationship issues in the cultural contexts in which particular familial structures are imbedded will further the usefulness and richness of couple classification schemes (Gottman, 1994).

Confucianism has deeply influenced Chinese people's minds, thoughts, and behaviors not only in China but also many other Southeastern Asian countries. This principle makes Chinese families structure hierarchical and patriarchal, with male and seniority indicating higher status (Tzou, Kim, & Waldheim, 2012). Under such a structure, according to Tzou, Kim, and Waldheim (2012), "the father is the symbolic authority of the family while the mother carries out executive commands, children are taught from an early age to defer to their parents and to be obedient and submissive to other elder figures, and sons are designated to carry on the family name and traditions while daughters are considered to be temporary residents of the family until they find their permanent placement in their husbands' homes" (p3).

Even though westernization and modernization have made changes in Chinese people, the expectations and obligations for gender roles, especially those related to marriage and family, are still prevalent among Chinese (Tzou, Kim, & Waldheim, 2012). This makes Chinese couples special compared to American couples. The uniqueness makes it necessary to classify Chinese engaged couples for facilitating more culturally-specific focused premarital intervention.

#### *Rationale of Using Multivariate Typological Approach*

Typologies, one type of classification system, are used to "ease the conceptualization and understanding of social phenomena" (Toomey, 2004, p24). According to Mandara (2003), levels of analyses in the social and behavioral sciences differ according to a research's focus on either variables or cases, with the lowest levels of analyses to "uncover nomothetic laws of the mechanisms and processes implicit in psychology" through almost entirely quantitative methods, and the highest levels to

explain the “behavior of individuals in specific contextual settings through predominately qualitative” methods, and “the typological approach is an intermediary between the extreme variable-centered and extreme case-centered methods” (p130). The extreme variable and case centered approach both offer advantages and disadvantages, while the typological approach links the “theoretical and quantitative variable-centered approach with the application of the idiographic and qualitative case-centered approach” (Mandara, 2003, p144; Robins, John, Caspi, Moffitt, & Stouthamer-Loeber, 1996).

Three general classes of methods for classifying objects into typologies in the social and behavioral sciences were discussed by Robins, John, and Caspi (1998). They are univariate, bivariate, and multivariate methods. Univariate ways of classifying objects are about taking a median split. This is convenient, but is not considered reliable in developing typologies (Bandara, 2003). Bivariate analysis develops the typologies through crossing two dimensions to form quadrants. The problem of this method is the arbitrary cut-off scores (Bandara, 2003). Multivariate analysis is regarded as the preferred way of developing typologies, because it classifies objects by a set of relevant variables.

Couple typologies, which use a variety of variables to group “couples with similar relationship qualities and patterns of interaction” (Toomey, 2004, p24) create a “common language between researchers and clinicians by linking clinical descriptions with theoretical formulations” (Lavee & Olson, 1993, p. 325). Through using multivariate typological approach, typologies synthesize large quantities of data into smaller similar types so that the whole relationship with multidimensional characteristics can be examined, rather than a certain aspect of those relationships. Thus empirical typologies

serve to increase the efficiency of both scientists and practitioners (Lavee & Olson, 1993; Toomey, 2004).

*Special Issues with Typology Research in Relationship Science*

Researchers recognized the utility of using typologies to describe the marital relationship in the early 1960s (Allen & Olson, 2001). Concurrently, family scholars proposed to study relationship through systemic approaches (Whiteman & Loken, 2006). Measures that reflect the couple relationship as a unit fit the systemic framework well. A couple-based versus individual assessment approach combines partners' responses. Dyadic relationship analytic strategies have been discussed by Maguire (1999); Whiteman and Loken (2006) elaborated on Maguire's primer for analyzing dyadic data and specially discussed several methods for typologizing dyadic relationships.

In 1990, Miller and Olson had already identified two basic approaches to classifying marriage: intuitive and empirical. While early typologies were based on intuitive analysis, it has become more popular to adopt empirical approaches in which larger and more representative samples provide sufficient power for the analysis (Allen & Olson, 2001).

A number of studies have been conducted for identifying couple typologies. Based upon the couple's pattern of interaction including the intensity and frequency of arguments, Gottman (1994) identified five different couple types, validating, volatile, avoidant, hostile/engaged and hostile/detached. To describe the sources of marital distress within couple relationships, Snyder and Smith (1986) identified four different couple types. Hall and MacDermid (2009) identified four types of couples based on their arrangements of work and family responsibilities. Fowers and Olson (1992, 1993)

identified four distinct types of premarital couples, and five types of married couples: Vitalized, Harmonious, Traditional, Conflicted, and Devitalized (for married couples). The Fowers and Olson studies identified the most comprehensive couple typologies, incorporating data on 11 dimensions: realistic expectations about marriage/marital satisfaction, personality issues, communication, conflict resolution, financial management, leisure activities, sexual expectations/relationships, children and parenting, family and friends, equalitarian roles, and religious orientation.

In their typology for premarital couples, “vitalized couples” possess the highest overall scores on all of the scales within PREPARE except for realistic expectations and religious orientation; “harmonious couples” were described as possessing a moderate overall relationship quality; “traditional couples” have the highest scores of any of the typologies on the realistic expectations, religious orientation and children and parenting scales, and they have strengths in the ability to make decisions and plan for the future; “conflicted couples” had consistently low scores across all of the PREPARE categories (refer to Fowers & Olson, 1992 for comprehensive descriptions of each type).

### **Statement of the Problem**

In describing the four types of premarital couples, Fowers and Olson’s (1992) sample consisted primarily of European-Americans. Actually, much of the existing literature on couple typologies ignores the influence of culture or ethnicity on the similarities or differences in couples’ characteristics. Recognizing the limitation in generalizing these results to couples of different cultures, several studies have been conducted and to try to replicate the couple typologies with different ethnic groups. Allen and Olson (2001) studied whether African American marriages exhibit relational types

that were similar to the primarily European-American sample. Five types of African American marriages were found which were similar to those identified by Olson and Fowers (1993), but some differences between the two samples were found. For example, the typology distribution for the two samples was different. Vitalized couples constituted the smallest group among the African-American sample, while Harmonious couples constituted the smallest group among the European-American sample (Allen & Olson, 2001).

Asai and Olson (2004) examined the efficacy of using typologies to describe Japanese couples. There are some similarities between the U.S. sample and the Japanese sample, with differences as well. For example, compared to U.S. samples, the Japanese couples scored higher on the family cooperation dimension of the Harmonious typology, which indicates the importance of parents and in-laws to the marriage (Asai & Olson, 2004).

To date, no studies have examined typologies in Chinese premarital couples except one exploration using 204 Chinese married couples in Hong Kong (Young, 1995). Therefore, the main objectives of the proposed study are to 1) develop an empirically-based relational typology for Chinese premarital couples through replicating Fowers and Olson's (1992) work in developing American premarital couple typologies, as well as 2) compare these types with those found in predominantly European-American samples of premarital couples who had taken a very similar, English language premarital inventory PREPARE (Fowers & Olson, 1992).

Hereby, I am proposing the following research questions:

1. Do Chinese premarital couples exhibit rational patterns or types?

2. What are the similarities and differences in characteristics of Chinese premarital couples across the types?
3. Are relational types of Chinese premarital couples similar to those found in samples of predominantly European-American premarital couples?

By focusing on Chinese premarital couple relationships, I hope to provide an appropriate sociocultural context for Chinese couple type development, as well as uncover unique differences or highlight similarities in these premarital relationships when comparing with predominantly European-American premarital couples. It is hoped that this research will contribute to the field of premarital preparation for Chinese couples, and increase our understanding of the transition to marriage for Chinese couples.

## **Method**

### *Sample*

A total of 7,567 Chinese premarital couples (living in Hong Kong, Singapore, Taiwan, and Malaysia) who completed the PREPARE inventory before marriage will be included in the study. The PREPARE Inventory is a self-report questionnaire completed by both partners simultaneously. Their scores were obtained from data provided through the kindness of Professor David Olson, CEO of Life Innovations, the company that offers and scores PREPARE tests.

### *Sample Demographics*

Among the 7,567 couples, the majority of men (78.2%) were between 26 to 35 years old, and the majority of women (92.1%) were between 21 to 35 years old. Their level of education ranged from “some high school” to “graduate-professional” with an average level above “4 year college” for both men and women. Partners had known each

other an average of 3.1 (SD = .97) years and planned to be married in 2.8 (SD = 1.0) months. The majority of both men (90.5%) and women (89.1%) were working full-time. “Protestant” was the most commonly reported religious belief of men (42.7%) and women (46.7%). All reporters were not married at the time, and almost none of them were married once (men 3.7%; women 2.8%). More than 98% women did not report pregnancy at the time.

### *Measures*

PREPARE is a 125-item inventory designed to identify relationship strengths and work areas in 11 relationship areas: Marriage Expectation, Personality Issues, Communication, Conflict Resolution, Financial Management, Leisure Activities, Sexual Expectations, Children & Parenting, Family & Friends, Role Relationship, and Spiritual Beliefs (Counselor’s manual for PREPARE/ENRICH, 2000). Each of these scales has 10 items. In addition, the inventory has two 10-items family-of-origin scales assessing Family Cohesion (togetherness) and Family Adaptability (change) derived from the Circumplex Model of Family Systems (Olson, Russell, & Sprenkle, 1989) and an Idealistic Distortion scale with 7 items. The simple and traditional Chinese version of PREPARE inventory was used by Hong Kong subsamples who cannot understand English well. Minimal changes exist between Chinese version and English version to keep the essence of each item. Following are brief descriptions of the scales directly taken from the PREPARE/ENRICH manual (2000).

*Idealistic Distortion.* This scale is a modified version of the Edmonds Marital Conventionalization scale (Edmonds, 1967). It measures the tendency of individuals to answer personal questions in a socially desirable manner. It is a validity scale used to

revise individual scale scores to correct for that bias. High scores (60 and above) indicate individuals are presenting their relationship in a highly favorable manner. Low scores (30 and below) indicate a more realistic disclosure concerning relationship issues.

*Marriage Expectations.* This scale assesses an individual's expectations about love, commitment and conflicts in his/her relationship. The intent is to assess the degree to which expectations about marriage relationships are realistic and based on objective ideas. Moderately high scores (60 and above) in this area reflect realistic expectations about relationship issues. Low scores (30 and below) suggest individuals are too romantic in their perception of marriage and their relationship.

*Personality Issues.* This scale assessed each individual's perception and satisfaction with the personality characteristics of their partner as expressed through their behavioral traits. High scores (60 and above) reflect approval of the personality characteristics of the partner and general satisfaction with their personal behavior. Low scores (30 and below) indicate a low level of acceptance and/or lack of comfort with their partner's behavior.

*Communication.* This scale measures each individual's beliefs, feelings and attitudes toward the role of communication in the maintenance of his/her relationship. High score (60 and above) reflect awareness and satisfaction with the level and type of communication existing in the relationship. Individuals with high scores tend to feel understood by their partner and see themselves as being able to adequately express their feelings and beliefs. Low score (30 and below) reflect a deficiency in the level of communication essential to satisfactorily maintain a relationship and highlight the need to improve communication skills.

*Conflict Resolution.* This scale evaluates an individual's attitudes, feelings, and beliefs about the existence and resolution of conflicts in the relationship. High scores (60 and above) reflect realistic attitudes about the probability of conflict in the relationship as well as satisfaction with the way most problems are handled. Low score (30 and below) suggest an ineffective and dissatisfying approach to relationship conflict. Partners may feel their issues are difficult to resolve and/or may have a tendency to avoid disagreements.

*Financial Management.* This scale focuses on attitudes and concerns about the way economic issues are managed within the couple's relationship. High score (60 and above) reflect satisfaction with financial management and realistic attitudes toward financial matters. Low scores (30 and below) indicate a concern over the way finances are handled in the relationship.

*Leisure Activities.* This scale evaluates each individual's preferences for using discretionary time. High score (60 and above) reflect compatibility, flexibility, and/or consensus about the use of leisure time activities. Low scores (30 and below) indicate dissatisfaction with the use of leisure time.

*Sexual Expectation.* This scale assesses an individual's feelings and concerns about affection and sexual relationship with his/her partner. Items reflect satisfaction with expressions of affection, level of comfort in discussing sexual issues, attitudes toward sexual behavior, birth control decisions and feelings about sexual fidelity.

*Children and Parenting.* This scale measures an individual's attitudes and feelings about having and raising children. Items reflects a couple's awareness of the impact of children on their relationship, satisfaction with how parental roles and

responsibilities are defined, compatibility of philosophies toward discipline of children, shared goals, and values desired for the children and agreement on the number of children preferred.

*Family and Friends.* This scale assesses feelings and concerns about relationships with relatives, in-laws and friends. Items focus on the attitudes of family and friends toward the marriage, expectations regarding the amount of time spent with family and friends, comfort felt in the presence of the partner's family and friends and perceptions of the situation as either potentially characterized by conflict or satisfaction.

*Role Relationship.* This scale evaluates an individual's beliefs, attitudes and feelings about marital and family roles. There is an implied bias in this subscale toward equalitarian role behaviors. Higher scores indicate a preference for more egalitarian roles.

*Spiritual Beliefs.* This scale assesses attitudes, feelings, and concerns about the meaning of religious beliefs and practices within the context of the relationship. Items focus on the meaning and importance of religion, involvements in church/synagogue activities and the expected role that religious beliefs will have in the marriage.

*Demographic variables.* At this point in the development of my study, I am limited in my understanding of the demographics of the sample. Based on previous studies, my sense is that demographics that might vary across couple typologies include: Age, Education, Occupation, Income, Previously divorced, Population of current residence (percentage in large cities), whether the couple is cohabiting, if the woman is premarital pregnant, and Religion. Two other *background variables* will be assessed along with the demographic variables, Parents' reaction to marriage, and Friends' reaction to marriage. All are categorical variables except Age.

### *Scoring*

PREPARE's computer scoring produces a 15-page report that includes individual and couple scores for the 11 relationship areas. The report also includes a detailed summary of the couples' responses to each item to facilitate the interpretation of the results.

According to the Counselor's manual for PREPARE/ENRICH (2000), the *Revised Individual (REV) Score* is designed to provide an accurate assessment of how each person perceives the relationship in a given content area. The Male and Female each get a unique REV Score for each area. To create the Revised Individual (REV) Score, a person's *Raw Score* (which is the sum of the person's responses on the items in the area) is converted into an *Individual Percentile (PCT) Score*. The PCT ranges from 0 – 100% and it is based on comparing a person's raw score with the *National Norm Base* of the Inventory (which is over 100,000 couples for each Inventory). The *Revised Individual (REV) Score* is created by revising the *Individual Percentile (PCT) Score* downward based on the Idealistic Distortion Score for each person.

Accordingly, the couple scores called *Positive Couple Agreement (PCA) scores* indicate the level of positive agreement partners report in each of the content areas. It is a percentage score based on the number of responses on which partners agree on in area. For example, since each area has ten items, positive agreement between partners on six items would indicate a PCA Score of 60 percent. Thus, the PCA scores range from 0% to 100%, depending on the number of items in the scale on which both partners described their relationship in similarly positive terms (refer to Counselor's manual for PREPARE/ENRICH, 2000 for details).

Within this study, the typologies will be created through the comparison of the PCA scores on each of the eleven areas of the PREPARE Inventory. The couples' agreement scores on each item of the eleven scales in the PREPARE Inventory may be explored as well.

### *Reliability and Validity*

PREPARE has high validity to discriminate premarital couples who get divorced from those that are happily married in American samples (Fowers, Montel, & Olson, 1996; Fowers & Olson, 1986). High reliabilities of PREPARE are also reported with alpha reliability of .80-.85, and test/retest reliability of .80 (average correlation) among American samples (Counselor's manual for PREPARE/ENRICH, 2000). Its adaptation to other cultures shows validity and reliability as well. For Chinese population, the reliability and validity of ENRICH, the adapted version of PREPARE for married couples, were conducted among Hong Kong Chinese sample through Young's (1995) study on 102 couples. The Cronbach coefficient alpha is generally lower than for American samples, while it still can predict more than 80% group membership of spouses who consider divorce, which shows a high validity. As to PREPARE, a Japanese sample (Asai & Olson, 2004) demonstrated face validity and validated the internal consistency of the Japanese version of PREPARE. I expect that the reliability and validity among the Chinese sample in current study will be validated as well.

### *Data Analysis Plan*

*Rationale of Adopting Cluster Analysis.* As mentioned above, the preferred way of uncovering typologies is to use multivariate approaches. Arabie and Hubert (1992) addressed that numerous methods that exist for deriving clusters in multivariate data. The

strategies are different according to the ways researchers define groups and the ways researchers identify groupings in the data (Henry, Tolan, & Gorman-Smith, 2005). Among approaches cluster analytic methods are the most popular ones (Mandara, 2003). Henry, Tolan, and Gorman-Smith (2005) proposed that “clustering involves sorting cases or variables according to their similarity on one or more dimensions and producing groups that maximize within-group similarity and minimize between-group similarity” (p121). Whiteman and Loken (2006) stated that this analytic procedure places “each unit of the sample into one of a finite set of groups; the groups are formed by maximizing or minimizing some criterion using the observed indicators” (p1371).

Cluster analysis has been widely used to classify a sample into distinct subpopulations or categories by social and behavioral scientists (e.g., Allen & Olson, 2001; Asai & Olson, 2004; Fowers & Olson, 1992; Hall & MacDermid, 2009), because it allows for consideration of multiple relationship dimensions and perspectives. Since I have 11 dimensions in my study, cluster analyses will be adopted.

*Guidance and Procedure of Conducting Analyses.* Milligan (1996) defined cluster analyses as the “sequence of steps used to completely analyze a data set” and seven steps were proposed (see more details in Mandara, 2003, p136). To develop the types of Chinese premarital couples, I most likely will conduct the analyses through checking and following the 7 steps, which is found to be consistent with the three stage hierarchical agglomerative cluster analytical approach previously reported by Fowers and Olson (1992).

Step 1 Determining sample size. According to Milligan (1996) and Mandara (2003), the samples should be large enough to adequately represent each type in the population. 7567 couples should be large enough to adequately represent the population.

Step 2 Having untransformed and adequately representative variables. The PREPARE is a well-established inventory with 11 clearly distinguished dimensions which adequately reflect premarital couples relationships.

Step 3 Making standardize variables. The PREPARE offers REV scores as standardized scores for variables.

Step 4 Selecting the measure of dissimilarity or similarity. Milligan (1996) suggested to select the “Squared Euclidean distance” as the measure, because it incorporates all three aspects of a profile when computing distances.

Step 5 Deciding clustering method. I will choose “Agglomerative hierarchical methods”, because they begin by assuming that each case is itself a unique cluster. The way that the two most similar (or least distant) clusters are combined is determined by the hierarchical algorithm. I will use the Ward (1963) algorithm, which attempts to minimize the Sum of Square (SS) between each cluster at each step. This method is regarded as the most robust for various types of data according to Milligan (1996).

Step 6 Deciding the number of clusters. Mandara (2003) suggested using replication and cross-validation procedures to identify the appropriate number of clusters. Under this suggestion, I will randomly divide the sample into two subsamples.

Step 7 Validating cluster solution. Several scholars (Breckenridge, 1989, 2000; Overall & Magee, 1992) suggested that the most promising form of validation is replication analysis. Mandara (2003) raised five steps for cross-validation procedure: a)

randomly divide the data into two samples, b) perform a full cluster analysis on one of the samples, c) perform a full cluster analysis on the remaining subjects, d) sample b is classified into clusters according to the centroids derived from sample a, e) computing the agreement between the two sample solutions through using Cohen's kappa or some other measure of rater agreement. According to Breckenridge (2000), the more agreement between the two solutions the more reliable or stable is the cluster solution (Mandara, 2003). The current study will follow the five steps to validate the cluster solutions.

SPSS statistical package will be employed to perform the hierarchical agglomerative cluster analyses using the 11 relationship areas listed above as cluster variables.

Based on a preliminary comparison analysis done by Olson (2004) using Hong Kong Chinese premarital couples and U.S. premarital couples, we hypothesize that:

- 1) The current study will end up with similar clusters like those developed using U.S. couples in 1992;
- 2) Chinese premarital couples will have low PCA scores in most areas/scales compared to U.S. couples;
- 3) There will be fewer Vitalized and more Traditional couples among Chinese premarital couples compared to U.S. couples.

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