THE CONTRIBUTIONS OF POSITIVE ILLUSIONS TO CULTURAL DIFFERENCES IN WELL-BEING:
THE POSITIVITY MODEL

by

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Abstract

“Positive illusions” refer to the tendencies to perceive the self and others positively. The current study proposes that cultural norms regarding positive illusions contribute to cultural differences in well-being. All pairs of participants completed self-reports and informant reports, and served both as perceivers and targets (N = 906 undergraduate students). A novel validated measure of positive illusions and multi-method assessment of well-being were used to examine cultural differences between Asians and Westerners in well-being. Positive illusions were assessed by means of the halo-alpha-beta model of correlations among ratings of participant’s own and an acquaintance’s personality on the Big Five dimensions (Anusic, Schimmack, Pinkus, & Lockwood, 2009). The results suggest that rating biases influence cross-cultural comparisons of well-being and that European and Asian Canadians have similar levels of well-being.
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Table of Contents

Acknowledgments.................................................................................................................. iii

Table of Contents..................................................................................................................... iv

List of Tables .......................................................................................................................... vi

List of Figures .......................................................................................................................... vii

List of Appendices .................................................................................................................. viii

Chapter 1 - Introduction .......................................................................................................... 1

1.1 National Differences in Well-Being ......................................................................................... 1

1.1.1 Objective Living Conditions as Predictors of National Differences ................................ 1

1.1.2 Psychological Factors as Predictors of National Differences ........................................ 2

1.1.3 Systematic Measurement Error as Predictor of Well-Being ........................................... 3

1.1.4 Positive Illusions as Predictor of Well-Being ................................................................ 3

1.2 East Asians vs. North Americans .......................................................................................... 4

1.2.1 Cultural Research on Self-Enhancement and Positive Illusions .................................... 4

1.2.2 Positive Illusions and Well-Being ................................................................................ 6

1.3 Overview of the Present Study ............................................................................................. 7

Chapter 2 - Method .................................................................................................................. 9

2.1 Participants and Procedure ................................................................................................... 9

2.2 Materials .............................................................................................................................. 9

2.2.1 Well-Being .................................................................................................................... 9

2.2.2 Personality ...................................................................................................................... 10

2.2.3 Demographic Information ............................................................................................. 10

2.3 Data Analyses ...................................................................................................................... 11

2.3.1 Novel Way to Measure Self-Perception Biases .............................................................. 11
List of Tables

Table 1: Statistical Characteristics of the Selected Items and Assumed Similarity Scores........15
Table 2: Effect Sizes of the Mediation Model with Three Asian Groups and the Direct Path Model.........................................................................................................................20
Table 3: Effect Sizes of the Final Mediation Model.........................................................................................21
List of Figures

Figure 1: A fitted Halo-alpha-beta model on self- and partner ratings of personality..................12
Figure 2: Multi-method measurement model of life satisfaction..................................................13
Figure 3: Measurement model of the twin-halo-alpha-beta model.............................................16
Figure 4: The positivity model....................................................................................................17
Figure 5: A measurement model of positivity and life satisfaction.............................................18
Figure 6: Mediation model with three Asian groups.................................................................20
Figure 7: Final mediation model..................................................................................................21
List of Appendices

Appendix A: Sample Characteristics of the Datasets.................................................................33
Appendix B: Ethnicity of the Sample..........................................................................................34
Appendix C: Five Factor Model of One Personality Rating........................................................35
Chapter 1
Introduction

For many people, a major goal in life is to have and maintain high levels of well-being. To achieve this goal, it is important to know what well-being is and which causal factors influence it. Well-being researchers commonly define well-being as a close match between an individual’s actual life and his or her ideal life (Diener, Lucas, Schimmack, & Helliwell, 2009; Schimmack, 2009). Well-being can be measured in several different ways (Diener et al., 2009). One of the most widely used methods is to ask respondents for a global evaluation of their lives. Ample evidence has shown that these measures have sufficient validity to conduct empirical studies of the determinants of well-being (Diener et al., 2009; Schneider & Schimmack, 2009; Veenhoven, 1993).

Over the past forty decades, well-being science has accumulated a large body of empirical findings on the predictors of well-being measures (Diener, Suh, Lucas, & Smith, 1999). One robust finding is that average levels of well-being differ across nations (Deaton, 2008; Veenhoven, 1993). The aim of my thesis is to examine the sources of these national differences in well-being. Specifically, I am going to examine whether cultural differences in positive illusions contribute to these national differences.

1.1 National Differences in Well-Being

1.1.1 Objective Living Conditions as Predictors of National Differences

On average, citizens of modern nations (i.e., higher GDP, higher levels of education, higher life-expectancy, higher social equality, higher political and personal freedom, higher literacy rates, and greater fulfillment of basic needs) report higher well-being than citizens of more traditional nations (Deaton, 2008; Diener & Diener, 1995; Diener, Diener, & Diener, 1995; Diener, et al., 1999; Suh, 2002). This evidence is consistent with theories that fulfillment of universal basic human needs contributes to well-being. However, the aforementioned indicators of modernity do not fully explain national differences in well-being. Correlations between objective measures of development (e.g., GDP per capita in Purchasing Power Parity or Human Development Index) and life satisfaction ratings range from $r = .6 - .8$ (Deaton, 2008). This finding suggests that
objective living conditions are an important determinant of well-being, but that additional factors contribute to national differences in well-being.

One additional factor that could contribute to national differences in well-being is individualism (Hofstede, 1980; Schimmack, Oishi, & Diener, 2005). People in individualistic countries tend to be more independent and have more freedom of choice. In contrast, people in collectivistic countries are more likely to follow social norms, duty and obligations. Whereas an individualistic society fosters people to take responsibility of their own action, a collectivistic society fosters people to take responsibility for other members of their group as well. Empirical studies show that people in individualistic countries tend to report higher well-being than people in collectivistic countries (Diener, Diener, et al., 1995). Diener and Diener et al. (1995) proposed that individuals in individualistic cultures have high well-being because they have more freedom. However, the strength of the association between freedom and life satisfaction also varies across nations; freedom is a better predictor of life satisfaction in individualistic culture than in collectivistic culture (Oishi, Diener, Lucas, & Suh, 1999). As a result, less freedom may have a relatively small effect on well-being in collectivistic societies. It is also difficult to demonstrate unique effects of individualism because individualism and indicators of modernity are strongly intercorrelated (Diener, 2009). One solution to this problem is to examine mediator variables at the level of individuals that explain national differences in well-being. For this reason, it is important to find determinants of well-being at the individual level that vary across cultures.

1.1.2 Psychological Factors as Predictors of National Differences

Some researchers have proposed that cultural influences on personality traits contribute to national differences in well-being (Diener & Diener, 1995; Diener, Diener, et al., 1995; McCrae, Terracciano, & 79 members of the Personality Profiles of Cultures, 2005). For example, people in individualistic countries tend to be more extraverted (McCrae & Terracciano, 2005) and Extraversion tends to be a universal positive predictor of well-being (Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). However, the data are inconclusive because different personality measures produce conflicting findings regarding national differences in personality (Steel & Ones, 2002). Culture also moderates the effect of personality on life satisfaction (Schimmack et al., 2002) so that personality is a weaker predictor of well-being in collectivistic cultures. As a result, personality is unlikely to be the sole psychological factor that contributes to national differences in well-being.
1.1.3 Systematic Measurement Error as Predictor of Well-Being

One problem with the existing studies is that they relied exclusively on self-ratings to examine national differences in well-being. It is possible that cultural differences in response styles can lead to invalid conclusions about national differences in well-being (Schimmack, Oishi, & Diener, 2005). Diener, Suh, Smith, and Shao (1995) examined whether method artifacts – such as modesty bias, socially desirable response or negative (or positive) response bias – explain why Asians report lower levels of well-being. They found that Chinese, Japanese and Korean students reported significantly lower life satisfaction than American participants. In contrast, ratings of domain satisfaction showed inconsistent findings, with Asians reporting higher satisfaction in some domains. As a result, the authors concluded that “artifacts are not causing the lower reported [well-being of Asians]” (Diener, Suh, et al., 1995, p. 7).

However, it is possible to account for this finding by assuming that Asians have higher satisfaction in some life domains, which can be reduced if Americans have a general tendency to report higher levels of satisfaction. In fact, Asians reported higher satisfaction in social domains (i.e., friendship and family life), which may be more satisfactory in Asian cultures that value relationship harmony, than other domains (e.g., health). A better control for rating biases is to examine satisfaction ratings of domains in which objective differences are unlikely (Schneider & Schimmack, 2010). For example, there is no reason to suspect that Asian students are objectively less healthy than North American students. However, Asians rated health satisfaction lower than North American students. This finding suggests that American culture may allow individuals to have an overly positive perception of their lives, especially in domains in which objective evaluation criteria are lacking.

In sum, existing studies of culture and well-being have been unsuccessful in identifying psychological factors that contribute to national differences in well-being above and beyond objective living conditions, and cannot conclusively rule out the contribution of method artifacts as an alternative explanation.

1.1.4 Positive Illusions as Predictor of Well-Being

One possible psychological process that could produce cultural differences in well-being is the emphasis on accurate perceptions of reality versus tolerance for positive illusions. This hypothesis is based on the assumption that self-perceptions serve two conflicting goals. On the
one hand, accurate self-perceptions are important for good decision making. On the other hand, positive self-perceptions boost self-esteem and positive emotions (Epstein, 1991). Some cross-cultural studies suggest that Americans favor high self-esteem at the expense of realism, whereas Asian culture may favor the opposite trade-off (Diener, Suh, Smith, & Shao, 1995; Heine, Lehman, Markus, & Kitayama, 1999; Markus & Kitayama, 1991; Suh, Diener, Oishi, & Triandis, 1998).

In sum, I propose that cultural differences in the emphasis on two conflicting universal goals of self-perceptions may contribute to cultural differences in well-being. Accordingly, emphasis on maximizing positive emotions could increase well-being in Western countries compared to Asians, who value realistic self-views even though realism can result in lower well-being (Taylor & Brown, 1988).

1.2 East Asians vs. North Americans

Cultural studies of well-being have been conducted quite extensively across a wide range of cultures and countries by various methods but the current study focuses on individuals from Asian and North American countries. Previous studies repeatedly found that East Asians report lower well-being than Caucasians from North America (Diener & Diener, 1995; Diener, Diener, et al., 1995; Mesquita & Karasawa, 2002; Tsai, Levenson, & McCoy, 2006; Veenhoven, 1991; Wirtz, Chiu, Diener, & Oishi, 2009; Zhang, Yang, & Wang, 2009). This cultural difference could be partially due to differences in objective living conditions. However, East Asians reported lower well-being even after controlling for GDP (Oishi & Schimmack, 2010), and Asian Americans, who share objective living conditions with European Americans, also tend to report lower well-being than European Americans (Benet-Martinez & Karakitsopoulou-Aygun, 2003; Oishi & Sullivan, 2005). Thus, it is interesting to examine the psychological processes underlying this robust finding.

1.2.1 Cultural Research on Self-Enhancement and Positive Illusions

Cultural studies on positive self-perception biases have been conducted in terms of self-enhancement and positive illusions in the literature. Although authors often used the terms positive illusions and self-enhancement interchangeably, it is important to distinguish clearly between these two processes because they may have different consequences for well-being. Self-enhancement has been defined as a relative evaluation of oneself as better than others (or as a
relative evaluation of oneself better than evaluated by others) and positive illusions as a general positive bias in perceptions of self and others (Heine & Lehman, 1999; Robins & Beer, 2001; Rose, Endo, Windschitl, & Suls, 2008; Sedikides, Gaertner, & Toguchi, 2003; Taylor & Brown, 1988). There is an extensive debate about the universality of self-enhancing bias (Heine & Lehman, 1999; Sedikides, et al., 2003). One perspective proposes that self-enhancing bias is prevalent in North American countries but not in East Asian countries (Heine, 2005; Heine & Lehman, 1999; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Others assume that self-enhancement is a universal phenomenon (Sedikides, Gaertner, & Toguchi, 2003). To demonstrate biases in self-perceptions, participants make comparisons of themselves to the average person. For example, Heine and Lehman (1999) asked participants to rate how accurately certain traits described themselves and an average student in their university. Realistic self-perceptions should show an equal number of respondents who rate themselves above and below the average. In Heine and Lehman’s research (1999), North Americans were more likely to rate themselves above average on various positive characteristics (e.g., free, independent, loyal, patient). In contrast, East Asians did not rate themselves more positively than they rated an average student. However, some studies have failed to replicate this finding (Gaertner, Sedikides, & Chang, 2008; Kobayashi & Brown, 2003; Kurman, 2001; Sedikides, et al., 2003). One reason for the conflicting findings is the use of different methods and inconsistent definitions of self-enhancement (Hamamura, Heine, & Takernoto, 2007; Heine & Hamamura, 2007; Rose, et al., 2008; Sedikides, Gaertner, & Vevea, 2005, 2007). I do not propose a solution to these conflicting findings. Instead, I think a major limitation of these studies is the focus on self-enhancement; that is, whether people see themselves as better than others. As a result, these studies fail to provide evidence regarding cultural differences in positive illusions. It is possible that North Americans do not only have overly positive views of themselves, but also of other people. In contrast, Asians may tend to have more realistic views of themselves and others. The reason is that actions in social situations require a realistic perception of the other, whereas flattering perceptions of the other may be self-serving without leading to appropriate actions.

A few studies are consistent with the hypothesis that North Americans tend to have positive illusions in perceptions of self and others (Brown & Kobayashi, 2002; Church, et al., 2006; Kobayashi & Brown, 2003). For example, Brown and Kobayashi (2003) asked participants to indicate to what extent several traits (e.g., competent, modest, and value friendship) described
themselves, their best friend and other students at their university. Furthermore, they recruited participants with high or low self-esteem. They found that Americans rated themselves and their friends more positively than Asians. Moreover, this cultural difference was most pronounced for high self-esteem participants. This finding suggests that high self-esteem is related to positive illusions rather than self-enhancement. Further evidence comes from a study with more cultural groups and larger samples (Church et al., 2006). This study also found more positive ratings on a broad range of personality traits for Europeans Americans than for Asian Americans and Asians.

In sum, the existing evidence suggests that North Americans tend to have more positive illusions in self-perceptions and perceptions of others than East Asians. It is possible that the same bias also influences perceptions of one’s own life and produce cultural differences in well-being.

1.2.2 Positive Illusions and Well-Being

Numerous studies have shown that measures of positive illusions and self-enhancement correlate with self-report measures of well-being (Alicke & Sedikides, 2009; Cai, Wu, & Brown, 2009; Goorin & Bonanno, 2009; Heine & Lehman, 1999; Taylor & Brown, 1994; Taylor, Lener, Sherman, Sage, & McDowell, 2003a, 2003b; Wu, Tsai, & Chen, 2009). However, a major limitation of these studies is the reliance on self-reports to measure well-being. As a result, it is unclear whether positive illusions make a positive contribution to well-being, or whether the positive correlation reflects shared method variance between measures of positive illusions and well-being. Indeed, studies that used other methods to measure well-being often find much weaker evidence for positive effects of positive self-perception (Colvin, Funder, & Block, 1995; John & Robins, 1994; Robins & Beer, 2001; Taylor, et al., 2003b). For example, Taylor et al. (2003b) found a strong positive correlation between a measure of self-enhancement and self-rated well-being, but a much weaker correlation with informant ratings and clinician ratings of mental health. Some studies even found evidence for negative effects of positive illusions (Colvin, et al., 1995; Heine & Lehman, 1999; John & Robins, 1994; Robins & Beer, 2001). For this reason, it is important to use a multi-method approach to the measurement of well-being (Walker & Schimmack, 2008). A multi-method approach makes it possible to separate spurious correlations between illusion measures and self-ratings of well-being from valid effects of positive illusions on well-being.
Norms regarding positive illusions can influence well-being measures in two ways. On the one hand, it is possible that individuals in cultures, where positive illusions are more accepted, are more likely to provide inflated reports of well-being. On the other hand, it is also possible that individuals in Western cultures have more positive views of their actual lives, and that these overly positive self-perceptions make a substantial contribution to cultural differences in well-being. It is also possible that positive illusions have a weaker effect on well-being in Asian culture. For example, the discrepancy between the actual and ideal self showed weaker effect on depression for Japanese than European Canadians (Heine & Lehman, 1999). However, recent studies suggest that the same relationship between overall positive self-perception and well-being holds in Asian cultures (Cai, Brown, Deng, & Oakes, 2007; Cai, et al., 2009). All in all, previous studies provide contradictory findings about the relationship between positive illusions and well-being. Although there is evidence for a positive relation between positive illusions and self-reported well-being, it is not clear whether this relation replicates with informant ratings of well-being.

To address these limitations of previous studies, I used a multi-method approach for the assessment of well-being (Schneider & Schimmack, 2009; Walker & Schimmack, 2008). By using self-reports and informant reports of well-being, it is possible to examine whether positive illusions influence well-being.

1.3 Overview of the Present Study

The existing evidence suggests that cultural differences in positive illusions could partially account for cultural differences in well-being. However, some of this existing evidence is inconsistent and inconclusive due to methodological limitations. The present study addresses these limitations in several ways. First, measures of culture, positive illusions, and well-being are included in a single study to test the hypothesis that positive illusions mediate cultural differences in well-being between European Canadians and Asian Canadians. Second, a multi-method assessment of well-being in a large sample is used to address the problem of shared method variance between measures of positive illusions and well-being. Third, a novel method for the separation of self-enhancement and positive illusions is used to test the hypothesis that North American and Asian cultures differ mainly in positive illusions rather than self-enhancement. Fourth, the current study included participants from several Asian cultures (i.e.,
East Asians, South East Asians and South Asians) to address the limitation that previous studies often focused exclusively on East Asian cultures (Henrich, Heine, & Norenzayan, 2010). Including three Asian groups in the study has a number of advantages. Theoretically, it can be informative whether East Asians and South Asians are similar to each other, despite some salient cultural differences in religion and history. Similar results across different Asian groups would suggest that Western culture is responsible for the cultural differences. Indeed, I think it is likely that the promotion of positive thinking in North American culture contributes to the cultural differences between North America and East Asia (Rosin, 2009). It is also important to include a broader range of cultures in cross-cultural research, and South Asian culture has been neglected in psychological research.

The data analyses were guided by the following hypotheses: (1) East Asian Canadians report lower life satisfaction than European Canadians (2) East Asians tend to have less positive illusions than European Canadians, (3) other Asian Canadians (i.e., South Asians and South East Asians) are similar to East Asians, (4) positive illusions are more strongly related to self-ratings of life satisfaction than informant ratings of life satisfaction, (5) positive illusions at least partially mediate the effect of culture on life satisfaction.
Chapter 2

Method

2.1 Participants and Procedure

The study was based on five data sets collected at the University of Toronto at Mississauga. Four data sets were collected over a four-year period (2005-2008) and one data set was collected in 2010. The total sample included 906 participants. All questionnaire booklets included basic demographic questions, life satisfaction questions and a personality measure. The five booklets included several other measures that were irrelevant to the current study, and thus will not be discussed further. The sample characteristics of each data set are presented in Appendix A. Of the 906 participants, 67.9% were women and the age ranged from 16 to 44 years (M = 19.09, SD = 1.80). The length of relationship ranged from two weeks to 26 years (M = 33.54 months, SD = 45.68).

Introductory psychology students took part in the study in return for course credit. They were asked to bring a friend or a dating partner to the laboratory and completed the questionnaire. Each participant provided a self-report as well as an informant report of his or her partner and served both as a perceiver and a target. First, participants came into the laboratory and were instructed about the procedure. Then, they filled out the consent forms and were put into separate rooms. All participants completed the questionnaire about themselves before they completed the same set of questionnaire again about their friends. After they finished the questionnaire, they were thanked and given a written form describing the purpose of the study.

2.2 Materials

2.2.1 Well-Being

Participants were asked to think about their life in general and evaluate their life on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The first three items (“In most ways my life is close to my ideal”, “The conditions of my life are excellent” and “I am satisfied with my life”) of the Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) were used because they have better psychometric properties than the last two items (Oishi,
These three items showed good internal consistency for self-ratings (alpha = .83) and informant ratings (alpha = .84).

### 2.2.2 Personality

A slightly modified version of the Big Five Inventory (Schimmack, Oishi, Furr, & Funder, 2004) was given to participants. They completed a 43-item version of Big Five Inventory (hereafter abbreviated as BFI) that started with the statement “I tend to…” on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). One of the data set (i.e. fifth dataset) adopted a shorter version of BFI (i.e. 32 items). For each of the Big Five factors, four items were selected for the measurement model. The selected items were to meet the following condition as much as possible: (1) high self-informant agreement compared to other items of the same dimension (2) moderate correlations with items of the same dimension (3) items representing multiple facets within each dimension (e.g. assertiveness and excitement seeking facets for Extraversion), and (4) at least one reverse coded item to separate acquiescence (i.e. a tendency to agree with all items regardless of the content) bias from halo bias (Anusic, Schimmack, Pinkus, & Lockwood, 2009). The four Openness items did not meet the last criterion due to insufficient psychometric property of the negatively worded items. The statistical characteristics of the selected items and the assumed similarity scores (i.e. the extent to which one person perceives others similar to one’s self) are shown in Table 1. Item-specific similarity or assumed similarity was calculated by correlating participants’ self-ratings with participants’ ratings of their partner.

### 2.2.3 Demographic Information

The booklets also included basic demographic questions (e.g., sex, age, religion, first language, and level of education). In addition, participants were asked to indicate their country of birth, cultural heritage, parents’ cultural heritage and how many years they have been living in Canada. Participants varied in their cultural/ethnic backgrounds. The current study included participants who self-identified as East Asian (e.g., Korea, Japan), South East Asian (e.g., Vietnam, Thailand) and South Asian (e.g., India, Pakistan), and as European. The Asian sample consisted of Canadian born Asians and Asian immigrants. Years of living in Canada ranged from 6 months to 23 years: $M = 13.19$ and $SD = 6.12$ (N = 249, this item was only included in the last booklet). An overview of the number of participants at each ethnic group and their mean self- and informant-reported life satisfaction scores are presented in Appendix B.
Lastly, several questions about their acquaintanceship were included in the questionnaire. The items were questions asking about the quality of their acquaintanceship (i.e., “How well do you know your friend”) and about the length of their acquaintanceship with their partner (i.e., either a romantic partner or a friend). The average length of acquaintanceship was 34 months.

2.3 Data Analyses

2.3.1 Novel Way to Measure Self-Perception Biases

The current study uses the Halo-Alpha-Beta Model (HAB model) to separate positive illusions (hereafter called positivity) and self-enhancement from valid variance. The HAB model is a structural equation model of correlations among the Big Five dimensions: Neuroticism, Extraversion, Openness to Experience, Agreeableness and Conscientiousness (Anusic, et al., 2009).

The HAB model separates halo variance (i.e., a general overly positive or negative view) from other variances due to true variance of the Big Five personality traits and other sources of measurement error. The model also includes two higher-order factors of personality, alpha and beta (Digman, 1997). Alpha influences Neuroticism, Agreeableness and Conscientiousness, and beta influences Extraversion and Openness to Experience. In this model, halo is the evaluative bias in ratings by a single rater. Some people may have the tendency to overestimate their positive characteristics. For instance, people who rate themselves high in Openness may rate themselves high in Extraversion and Conscientiousness, and low in Neuroticism. Anusic et al.’s (2009) demonstrated the validity of the halo factor in two ways. First, they showed that across four multi-method studies halo factors of one rater were practically independent of halo factors in ratings of other raters. This shows that halo is a rater-specific factor, which is consistent with the interpretation of halo as a bias factor. Second, another study examined the convergent validity of the halo factor with a validated evaluative bias measure. For this measure, participants rate themselves on four desirable attributes that are objectively unrelated (e.g., attractiveness, trivia knowledge). Although the objective attributes are unrelated, self-ratings of these attributes are moderately positively correlated. The shared variance among these ratings is used as a measure of evaluative biases and correlated highly with the halo factor in Big Five ratings in two studies. There is also evidence that halo is not just a momentary rating bias, but is as stable as other personality traits (Schimmack, 2010). This finding suggests that biased self-perceptions are
a stable personality characteristic that could influence well-being and that could be influenced by culture.


The current study used a twin-HAB model, in which the HAB model is fitted once to self-ratings of the Big Five and once to the ratings of another person (see Figure 1). This model was fitted to a covariance matrix among the personality ratings of one’s own and a partner’s personality (i.e. 40 items = two targets x five dimensions x four items for each dimension). Each item had a primary loading on one of the five personality factors (see Appendix C). The twin-HAB model also included two acquiescence factors. All ratings of the self had positive loadings on one acquiescence factor (self-acquiescence) and all ratings of the partner had positive loadings on the other acquiescence factor (other-acquiescence). Loadings were constrained to be equal for all items. The acquiescence biases were allowed to correlate with each other freely because ratings were made by the same rater and it is likely that acquiescence has similar effects on self-ratings and partner ratings. In addition, corresponding latent factors (i.e., self-halo & other-halo) and self- and partner ratings of the same items (e.g., “I tend to be talkative” and “My partner/friend tends to be talkative”) were allowed to correlate freely with each other. The latter specifications were allowed because residual variance in items partially reflects more specific personality traits (or facets) and it is possible that people are similar or assume similarity in these characteristics. Previous studies have shown that alpha and beta are relatively weak higher-order factors, which has created problems of model identification in previous studies (Anusic, et al., 2009; Riemann
& Kandler, 2010). To increase statistical power in the study, I constrained the variances of higher-order factors in self-ratings and partner ratings to be equal.

2.3.2 Measure of Life Satisfaction

I constructed a multi-method measurement model of life satisfaction to examine the hypotheses (Figure 2). In this model, actual life satisfaction is represented by the shared variance in self-ratings and informant ratings of life satisfaction. The measurement model also used three items for each rater to control for random measurement error.

![Figure 2. Multi-method measurement model of life satisfaction. S - LS = self-ratings of life satisfaction. I - LS = informant ratings of life satisfaction. LS = shared variance among self- and informant-rated life satisfaction. Open circles represent residual variances.](image)

To examine the validity of informant reports in this sample, I first examined the correlation between the latent factors for self-ratings and informant ratings. This correlation was $r = .31$. This correlation is lower than one would expect on the basis of Schneider and Schimmack’s (2009) meta-analysis, which found an agreement of $r = .48$ for well-acquainted informants. The reason for the lower agreement in this study could be the relatively low relationship length in the current study. Previous studies have shown that relationship length moderates self-informant agreement (Schneider et al., 2010). This suggests that self-ratings in the present study are more valid than informant ratings. Using .48 as an estimate of the amount of valid variance in self-ratings, a correlation of $r = .31$ suggests a validity ratio of 1.5 : 1 ($0.69 * 0.45 = 0.31; 0.69 / 0.45 \approx 1.5$). For this reason, the loadings of self-ratings and informant ratings on the well-being factor were fixed in a 1.5 : 1 ratio, with higher validity for self-ratings.
Chapter 3

Results

Analyses were conducted using MPLUS5 (Muthén & Muthén, 2008) with individuals nested within dyads to account for intra-dyadic dependency (i.e., friends or dating pairs sharing similar personality characteristics). To control for dependency, all models used the cluster command to obtain adjusted fit indices. Overall model fit was evaluated based on the following fit indices for structural equation models: Baysian Information Criterion (BIC, better fitting models show lower BIC values), Comparative Fit Index (CFI) > .95, Root Mean Square Error of Approximation (RMSEA) < .06, and Standardized Root Mean Square Residual (SRMR) < .08 (Schermelleh-Engel, Moosbrugger, & Müller, 2003).

3.1 The Positivity Model

The twin-HAB model (see Figure 1) met standard criteria of acceptable fit for two of the three fit indices (BIC = 121807, CFI = .871, RMSEA = .038 and SRMR = .054). CFI did not show acceptable fit for two reasons. First, CFI tends to be lower if a covariance matrix contains many weak covariances, which is the case in measurement models with items as indicators because single-items have a larger amount of random measurement error (Anusic et al., 2009). Second, lower CFI values can also reflect the presence of weak secondary loadings of items on Big Five factors.

To examine this possibility, I searched for items with consistent secondary loadings in self- and partner ratings. Secondary loadings were included only if the model modification indices suggested the same secondary loadings for ratings of the self and the partner. I identified eight secondary loadings (e.g., secondary loading of “I tend to value aesthetic and artistic experiences” on Neuroticism) that met this criterion and improved overall model fit. In the modified model more than 90% of all possible secondary loadings remained fixed at zero. Moreover, the magnitude of secondary loadings was in the small to moderate range (.1 to .3). As a result, secondary loadings had a negligible effect on the meaning of latent factors and theoretically important parameter estimates.
Table 1
Statistical Characteristics of the Selected Items and Assumed Similarity Scores

<table>
<thead>
<tr>
<th>Item</th>
<th>Self</th>
<th>Partner</th>
<th>Assumed similarity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td><strong>Neuroticism</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relaxed and handle stress well (r)</td>
<td>3.67</td>
<td>1.72</td>
<td>3.48</td>
</tr>
<tr>
<td>worry a lot</td>
<td>4.67</td>
<td>1.65</td>
<td>4.12</td>
</tr>
<tr>
<td>get nervous easily</td>
<td>4.24</td>
<td>1.65</td>
<td>3.63</td>
</tr>
<tr>
<td>be easily upset</td>
<td>4.06</td>
<td>1.67</td>
<td>3.60</td>
</tr>
<tr>
<td><strong>Extraversion</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talkative</td>
<td>5.31</td>
<td>1.52</td>
<td>5.39</td>
</tr>
<tr>
<td>reserved (r)</td>
<td>3.89</td>
<td>1.60</td>
<td>4.09</td>
</tr>
<tr>
<td>outgoing and sociable</td>
<td>5.31</td>
<td>1.40</td>
<td>5.45</td>
</tr>
<tr>
<td>full of energy</td>
<td>5.07</td>
<td>1.39</td>
<td>5.29</td>
</tr>
<tr>
<td><strong>Openness to Experience</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>have an active imagination</td>
<td>5.50</td>
<td>1.34</td>
<td>5.04</td>
</tr>
<tr>
<td>value aesthetic and artistic experiences</td>
<td>5.11</td>
<td>1.51</td>
<td>4.72</td>
</tr>
<tr>
<td>original and come up with ideas</td>
<td>5.32</td>
<td>1.21</td>
<td>5.30</td>
</tr>
<tr>
<td>likes to reflect and play with ideas</td>
<td>5.05</td>
<td>1.22</td>
<td>4.73</td>
</tr>
<tr>
<td><strong>Agreeableness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>have a forgiving nature</td>
<td>5.29</td>
<td>1.53</td>
<td>5.42</td>
</tr>
<tr>
<td>considered and kind to almost everybody</td>
<td>5.65</td>
<td>1.17</td>
<td>5.65</td>
</tr>
<tr>
<td>rude to others (r)</td>
<td>5.47</td>
<td>1.53</td>
<td>5.38</td>
</tr>
<tr>
<td>cold and aloof (r)</td>
<td>5.61</td>
<td>1.40</td>
<td>5.61</td>
</tr>
<tr>
<td><strong>Conscientiousness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>do a thorough job</td>
<td>5.42</td>
<td>1.08</td>
<td>5.52</td>
</tr>
<tr>
<td>easily distracted (r)</td>
<td>2.98</td>
<td>1.51</td>
<td>3.47</td>
</tr>
<tr>
<td>a reliable worker</td>
<td>5.68</td>
<td>1.12</td>
<td>5.60</td>
</tr>
<tr>
<td>lazy (r)</td>
<td>3.40</td>
<td>1.61</td>
<td>4.23</td>
</tr>
</tbody>
</table>

*Note. N = 906. All items started with either “I tend to…” or “I tend to be…”. Assumed similarity = self- and partner ratings of each personality item were correlated. (r) = reverse scored items. *p < .001. *p < .05.
The modification resulted in a CFI that is close to the standard criterion for acceptable model fit, and BIC values favored the modified model over the model with simple structure, BIC = 121329, CFI = .938, RMSEA = .027 and SRMR = .042. As a result, I used these modifications for all subsequent analyses.

Consistent with previous studies (Anusic et al., 2009), primary factor loadings of personality items on Big Five factors ranged from .3 to .7. The model also replicated previous findings of an acquiescence bias in self-ratings that accounts for 4% to 9% of the variance in a single rating. In addition, the model showed an acquiescence factor in partner ratings that accounted for a similar amount of variance. As expected, acquiescence biases in self-ratings and partner ratings were strongly correlated, $r = .54$ (95% confidence interval = .44|.65). This finding shows that acquiescence bias could produce spurious evidence for assumed similarity in personality in studies that do not control acquiescence bias. The correlations between residual variances in corresponding self- and partner ratings tended to be positive: fourteen out of twenty correlations were significant at the .05 level. This finding shows assumed similarity at the item level.

*secondary loadings

Figure 3 shows the remaining parameter estimates. The results showed effects of alpha, beta, and halo on Big Five ratings for self-reports and partner reports. Consistent with previous studies, these effects are small to moderate. Next, the results also showed weak to moderate assumed similarity for the residual variances of Openness to Experience, Extraversion, and Agreeableness. This finding was consistent with previous studies suggesting some real or assumed similarity in these personality traits (Lee, et al., 2009; Watson, Hubbard, & Wiese, 2000).

Most important, the model showed strong evidence for assumed similarity in halo. This novel finding has two important implications. First, it implies that some of the assumed similarity in personality reflects evaluative processes rather than assumptions about actual similarity in personality characteristics. Second, it provides evidence for the hypothesis that there are individual differences in positivity. That is, people with overly positive self-views also tend to have overly positive views of close others.

![Positivity Diagram](image)

*Figure 4. The positivity model. Halo-S = halo of participants’ ratings of their own personality. Halo-O = halo of participants’ ratings of an acquaintance’s personality.*

I then modeled the correlation between the two halo factors as a function of a general positivity bias, self-enhancement bias, and other-enhancement bias (see Figure 4). Positivity bias was modeled as a higher-order factor with equal loadings of self-halo and other-halo. Self-enhancement was modeled as the residual variance in self-halo and other-enhancement was modeled as the residual variance in other-halo with equality constraints. These residual variances were set to be equal as well.

The modifications had no effect on model fit, but are required to separate shared and unique variance components in halo factors to examine the relationship of these variance components with culture and well-being. This model showed that positivity bias and enhancement factors
accounted for significant amount of variance in halo factors: positivity to self-halo, $r = .85$, self-enhancement to self-halo, $r = .53$, positivity to other-halo $r = .75$, other-enhancement to other-halo, $r = .66$, $p < .001$. The model identified beta factors in ratings of the self and ratings of the partner; however, it did not identify alpha as a reliable factor. Most important, the model shows clear evidence for a positivity factor in self-ratings and ratings of a partner.

3.2 Positivity and Life Satisfaction

A primary aim of this study was to examine the influence of positivity on life satisfaction. For this purpose, I included measures of positivity and life satisfaction in a single model. Figure 5 shows the integrated model. The measurement model allowed for extra relationships of the self-rated personality traits on life satisfaction based on previous findings suggesting significant contributions of certain personality traits to well-being (DeNeve & Cooper, 1998). The model relies on the residual variances of the Big Five dimensions to remove halo bias from the personality factors.

*Figure 5. A measurement model of positivity and life satisfaction. Numbers are standardized parameters. S - LS = self-ratings of life satisfaction. I - LS = informant ratings of life satisfaction. LS = shared variance among self- and informant-rated life satisfaction. Long dashed line (with bold typed numbers) represents significant regression. Round dotted line represents non-significant regression.*
The model had acceptable fit, \( \text{BIC} = 137665, \text{CFI} = .948, \text{RMSEA} = .024 \) and \( \text{SRMR} = .040 \). The most important model parameters were an effect of positivity on self-rated life satisfaction, \( \beta = .37, 95\% \text{ CI} = .21| .54 \), and a moderate effect on actual life satisfaction, \( \beta = .29, 95\% \text{ CI} = -.02| .61 \), although the confidence intervals includes zero, which suggests that the effect may not be reliable. In addition, emotional stability (reversed Neuroticism; \( \beta = .27, 95\% \text{ CI} = .13| .41 \)) and Extraversion (\( \beta = .27, 95\% \text{ CI} = .13| .40 \)) showed substantial contribution to actual life satisfaction which is consistent with previous findings (DeNeve & Cooper, 1998).

### 3.3 Culture, Positivity, and Life Satisfaction

Finally, I added culture to the life satisfaction and positivity model. The mediation model with parameter estimates is presented in Figure 6. The first model included separate dummy variables for the three Asian groups with European Canadians as reference group. Culture was assumed to influence only positivity. Overall, the model in Figure 6 had acceptable fit for two indices: \( \text{BFI} = 139544, \text{CFI} = .942, \text{RMSEA} = .025 \) and \( \text{SRMR} = .041 \), and nearly acceptable fit for CFI. Table 2 shows the parameter estimates for standardized positivity and life satisfaction factors, whereas coefficients for culture are not standardized. As a result, effects of the nominal culture variables can be interpreted like \( \delta \)-values to gauge effect sizes. The results were similar for the three Asian groups. For example, Europeans showed significantly more positivity than the three Asians groups: East Asians, \( \delta = -.71, 95\% \text{ CI} = -.96| -.45 \); South Asians, \( \delta = -.63, 95\% \text{ CI} = -.85| -.41 \); and South East Asians, \( \delta = -.50, 95\% \text{ CI} = -.91| -.10 \). Therefore, I combined the three Asian groups and used a simple Asian versus European Canadian contrast for the test of the main hypothesis that positivity mediates the relation between culture and life satisfaction (see Figure 7). A comparison of BIC values favors this simpler model given the lack of significant differences between the three Asian samples, \( \text{BIC} = 138754, \text{CFI} = .946, \text{RMSEA} = .024 \) and \( \text{SRMR} = .041 \). Mediation was tested using the model indirect function of MPLUS, which estimates standard errors for indirect and total effects in structural equation models. The results (Table 3) showed a moderate indirect effect of Asian culture on self-rated life satisfaction compared to Europeans, \( \delta = -.35, 95\% \text{ CI} = -.48| -.22 \) and the effect of culture on actual life satisfaction (i.e., shared variance of self- and informant-rated life satisfaction) was weak and did not reach significance \( \delta = -.17, 95\% \text{ CI} = -.36| .03 \). This effect is not significant, nor is the indirect effect of culture on informant ratings of life-satisfaction, \( \delta = -.07, 95\% \text{ CI} = -.15| .01 \).

Table 2
Effect Sizes of the Mediation Model with Three Asian Groups and the Direct Path Model

<table>
<thead>
<tr>
<th>Predictor variable</th>
<th>Mediation Model</th>
<th>Direct Path Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effect on S-LS</td>
<td>Effect on LS</td>
</tr>
<tr>
<td>East Asian</td>
<td>-0.44**</td>
<td>-0.10*</td>
</tr>
<tr>
<td>South Asian</td>
<td>-0.39**</td>
<td>-0.09*</td>
</tr>
<tr>
<td>South East Asian</td>
<td>-0.31**</td>
<td>-0.07*</td>
</tr>
</tbody>
</table>


Table 3
Effect Sizes of the Final Mediation Model

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Effect size (d) [95%CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture → POS → S-LS</td>
<td>-25 [-.37,-.12]</td>
</tr>
<tr>
<td>Culture → POS → LS → S-LS</td>
<td>-11 [-.23,.02]</td>
</tr>
<tr>
<td>Total</td>
<td>-35 [-.48,-.22]</td>
</tr>
</tbody>
</table>

Note. The final model was based on the whole sample (n = 906). S-LS = self-ratings of life satisfaction. LS = shared variance among self- and informant-rated life satisfaction. POS = positivity. Asians = 1. Europeans = 0.
Chapter 4
Discussion

The current study introduced a novel measurement model to measure positive illusions and self-enhancement. This model was used to examine cultural influences on positive illusions and influences of positive illusions on well-being. The main finding was that, as expected, European Americans have more positive illusions than Asian Canadians. The study also replicated previous findings that positive illusions predict self-report measures of well-being, but that effects on other well-being indicators are considerably weaker. In the present study, positive illusions did not significantly predict informant ratings of well-being, despite convergent validity between self-ratings and informant ratings of well-being and high statistical power. The main reason for the lack of a significant effect of positive illusions on well-being was a weak effect size. Thus, even if the current study had obtained a significant effect in a larger sample, the finding would lead to the conclusion that positive illusions contribute relatively little to well-being.

Subsequently, I discuss the implications of major findings and point out limitations and directions for future research on cultural influences on well-being.

4.1 Cultural Differences in Life Satisfaction

The first hypothesis that East Asian Canadians report significantly lower self-reported life satisfaction than European Canadians was supported. This finding is consistent with previous cross-cultural studies and comparisons of Asian and European Americans (Benet-Martinez & Karakitapoglu-Aygun, 2003; Diener & Diener, 1995; Diener, Diener, et al., 1995; Mesquita & Karasawa, 2002; Oishi & Sullivan, 2005; Tsai, et al., 2006; Veenhoven, 1991; Wirtz, et al., 2009; Zhang, et al., 2009). The current study also showed that this difference generalizes to other Asian cultures in South East Asia and South Asia. Given the heterogeneity of Asian cultures, this pattern of results suggests that the North American culture is responsible for cultural differences in well-being.

4.2 Culture and Positive Illusions and Self-Enhancement

Second, East Asian Canadians showed significantly less positive illusions than European Canadians. This finding is consistent with previous cultural studies (Brown & Kobayashi, 2002;
Church, et al., 2006). Consistent with the result of East Asian Canadians, South East Asian and South Asian Canadians significantly differed in positive illusions from European Canadians. In addition, subsequent analyses revealed no cultural differences in self-enhancement. Given the consistent evidence for cultural differences in positive illusions and the lack of distinction between positive illusions and self-enhancement in self-enhancement studies, the results of self-enhancement studies may simply show cultural differences in positive illusions. However, positive illusions about close others are also self-serving and could be construed as a form of self-enhancement. Although, it is still important to note that North Americans have positive illusions about others, not just the self.

4.3 Self-Reported Life Satisfaction and Life Satisfaction

Third, it was hypothesized that there are larger cultural differences in self-reported life satisfaction than in actual life satisfaction (i.e., the shared variance among self- and informant-rated life satisfaction). As predicted, Asian Canadians showed larger differences in self-reported life satisfaction than in the shared variance between self- and informant ratings of life satisfaction.

This finding suggests that self-ratings of well-being can be biased; consequently, this bias can inflate cultural differences between Europeans and Asians at least temporarily. However, interestingly, if actual life satisfaction was considered as the outcome measure, culture weakly predicted individuals’ well-being. Thus, after controlling for shared variance, Asians did not report lower life satisfaction than Europeans. This finding adds to the main conclusion that cultural differences in well-being can be explained by a person’s tendency to perceive the self and others positively.

It is important to point out that the current research does not devalue existing well-being measures used in cross-cultural contexts, and findings in the literature. Those well-being measures have been examined in various contexts and have been mostly proven to be reliable and valid to a certain extent. In addition, objective indicators, such as human rights and GDP, certainly explain national differences in well-being. A person who is unable to satisfy his or her own basic needs (e.g., food and shelter) will clearly have lower well-being than someone who can further focus on actualizing his or her own dream.
Thus, the current research assumes that both self- and informant ratings are valid. Since self-ratings are more affected by self-perception biases and informants can have less accurate information about the self, shared variance among self- and informant ratings can be an improved outcome measure that controls for rating biases. The ratio of the factor loadings of each rating on the actual life satisfaction was computed based on a previous meta-analysis of the maximum validity of self-ratings (Schneider, Schimmack, Petrican, & Walker, 2010). It can be argued that informants do not have accurate knowledge of the individuals. However, even with a rather extreme assumption of high validity of self-ratings (i.e., 3:1 ratio of self- and informant-ratings), results did not differ.

### 4.4 Positive Illusions Mediates Cultural Differences in Life Satisfaction

Next, consistent with previous findings, positive illusions predict self-report measures of well-being, at least in short terms (Alicke & Sedikides, 2009; Cai, et al., 2009; Goorin & Bonanno, 2009; Heine & Lehman, 1999; Taylor & Brown, 1994; Taylor, et al., 2003a, 2003b; Wu, et al., 2009). Analyses supported the main hypothesis that positive illusions mediate cultural differences in well-being. Positive illusions fully mediated explained differences in cultural differences in self-reported life satisfaction. This novel finding could have been predicted based on some previous works (Church, et al., 2006; Heine, Kitayama, & Lehman, 2001; Kobayashi & Brown, 2003). However, the finding also contradicts with some other studies (Sedikides, et al., 2003). These contradictory arguments in positive self-perception biases could be due to methodological problems. The majority of previous studies used different scores of two average ratings to index positive self-perception biases (Kwan, John, Kenny, Bond, & Robins, 2004). However, this measure is not an ideal way to measure self-perception biases. By subtracting two scores, it fails to take method artifacts (e.g., an individual’s actual standing of the trait or an individual’s tendency to perceive others) into consideration (Kwan, et al., 2004). Thus, it is crucial to control for method artifacts (e.g., acquiescence biases) in self reports. A more important problem is that most cultural studies focused on the tendency to evaluate the self positively (i.e., self-enhancement). It is important to consider positive illusions because Westerners may not only rate the self but others more positively than Asians. Therefore, another reason can be that most studies focused on self-enhancing bias rather than positive illusions.
All in all, a novel finding is that positive illusions significantly contribute to cultural differences in self-reported life satisfaction using a validated measurement model of evaluative bias (i.e., the positivity model) and a multi-method assessment of life satisfaction. The favored interpretation is that cultural norms for positive illusions have contributed to differences in well-being between Asians and Europeans. Europeans prefer positive self-perceptions over accurate self-perceptions to feel good about the self and feel positive emotions (Epstein, 1991), whereas Asians place greater emphasize on accurate self-perceptions (Diener, Suh, et al., 1995; Heine, et al., 1999; Markus & Kitayama, 1991; Suh, et al., 1998). Accordingly, positive illusions substantially explain cultural differences in well-being.

The current study does not propose that positive illusions alone contribute to national differences in well-being and that other indicators should be ignored. Instead, the present research suggests that there are cultural differences in positive self-perception and accurate self-perception, and that these differences contribute to cultural differences in well-being.

### 4.5 Limitations & Future Directions

Although the present research is probably the first study investigating differences in well-being between cultures using a validated measurement model, it does have its limitations. The first limitation is the assumption of the validity ratio in actual life satisfaction (e.g., self-rating: informant rating = 1.5:1). As discussed above, I assumed that both self- and informant ratings were valid and that self-ratings seemed to be more valid in the current study based on previous meta-analysis of self-informant agreement of life satisfaction (Schneider & Schimmack, 2009). However, further research can suggest a theoretically reasonable method to estimate the validity ratio of self- and informant ratings.

Second, the current study cannot address the question of whether Asians possess positive illusions. To answer the question, it requires an absolute standard, which the current study did not have. However, the results suggest more variation in positive illusions within North American and Asian culture. They also suggest that this variation explains variation in self-ratings of well-being within and across cultures.

Additionally, since the study is not a cross-cultural study, it can be argued that Asians participants in the current study did not show real cultural differences due to acculturation. In
other words, Asians might have acculturated to Canada, that is an individualistic country, and show similar behaviours and attitudes to that of Westerners. However, acculturation is not a quick process. It is important to point out that the present study assumes that Asian participants in Canada will still show characteristics similar to people in their origin country. Although, there will be weaker difference in well-being among nations because there are less objective differences (e.g., education, life-expectancy, social equality and political freedom) among participants.

To examine whether Asians have acculturated to Canada, subsequent analyses were conducted. If acculturation happened in the current sample, Asian Canadians who spent more time in Canada should show similar characteristics to European Canadians and individuals who have not been living in Canada for very long should show similar characteristics to Asians. In other words, Asians who just came to Canada should show different levels of life satisfaction and Extraversion than individuals who just came to Canada, if Asians in the present study acculturated to Western society. This can be predicted based on previous cultural studies (Diener & Diener, 1995; McCrae & Terracciano, 2005). Years living in Canada was correlated with four variables: self-ratings of life satisfaction (i.e. mean score on three SWLS items), informant ratings of life satisfaction, participants’ own ratings of Extraversion (i.e. mean score of four items) and participants’ rating of their partner. This analysis was only based on one dataset (i.e., fifth data set, see Appendix A) because the information on years was not available in other data sets. Years living in Canada of Asian participants ranged from six months to 23 years (M = 11.34, SD = 6.18). All correlations were not significant with 172 participants: self-ratings of life satisfaction, \( r = -.023, p = .09 \); informant-ratings of life satisfaction, \( r = .004, p = .75 \); participants’ own ratings of Extraversion, \( r = -.007, p = .57 \); and participants’ ratings of their partner’s Extraversion, \( r = .010, p = .36 \). These findings support the assumption that Asian participants did not acculturate to the Western society. However, it is still possible that Asians in Canada show different patterns from Asians in origin country. In addition, it is possible that Asian Canadians generally have higher actual well-being than second generation Asians in other countries. Therefore, further research may expand to cross-cultural studies on general public using multiple measures of well-being. Indeed, it would be interesting to see whether this novel finding, that positive illusions explains cultural differences in well-being, holds in cross-cultural settings.
Lastly, there is a possibility of rater bias in informant ratings. Since most of the European Canadians were rated by European Canadian informants, it is possible that Europeans showed higher well-being because they were rated by European informants with high positive illusions. Thus, future research should address this problem by using mixed pairs (e.g., Asian & Asian, Asian & European, and European & European pairs).

4.6 Conclusions

One consistent finding in the literature is that Westerners tend to report higher levels of well-being than Asians. Studies in Western cultures suggested that positive illusions contribute to higher well-being. The current study attempted to propose a novel way to measure positive illusions and propose that positive illusions explain cultural differences in well-being. The shared variance among evaluative biases in ratings of self and others (friend or dating partner) were used to measure positive illusions. The outcome measure of actual life satisfaction used self- and informant ratings of life satisfaction to control for rating biases. The results showed less positive illusions and lower well-being for Asian (i.e. South, South East, and East Asian) than for European Canadians. Positive illusions predicted individuals’ well-being. Most importantly, positive illusions fully mediated the effect of culture on well-being. The current research facilitates researchers in cross-cultural studies to consider psychological factors, positive illusions, in their studies. Biases in self-reports should not only be controlled for in personality or well-being research but also in other area of cultural research. One of the ways to consider ratings biases is to adopt multi-trait-multi-method approaches, and another way is to use the positivity model. All in all, the current research suggests that cultural norms for positive illusions substantially explain cultural differences in well-being, and that Asians and Europeans have similar levels of well-being.
References


Appendix A

Sample Characteristics of the Datasets

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Sample size</th>
<th>Age</th>
<th>Sex</th>
<th>Relationship</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Male</td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>171</td>
<td>19.71 (1.96)</td>
<td>85</td>
<td>86</td>
<td>Dating pairs</td>
</tr>
<tr>
<td>2</td>
<td>247</td>
<td>18.95 (2.42)</td>
<td>72</td>
<td>174</td>
<td>Friendship pairs</td>
</tr>
<tr>
<td>3</td>
<td>135</td>
<td>19.33 (1.18)</td>
<td>37</td>
<td>98</td>
<td>Friendship pairs</td>
</tr>
<tr>
<td>4</td>
<td>104</td>
<td>18.80 (1.35)</td>
<td>20</td>
<td>84</td>
<td>Friendship pairs</td>
</tr>
<tr>
<td>5</td>
<td>249</td>
<td>18.82 (1.20)</td>
<td>76</td>
<td>173</td>
<td>Friendship pairs</td>
</tr>
<tr>
<td>Total</td>
<td>906*</td>
<td>19.09 (1.80)</td>
<td>290</td>
<td>615</td>
<td>Friendship pairs</td>
</tr>
</tbody>
</table>

Note. Statistical characteristics of five datasets are indicated above. Age = mean age in years (standard deviation). Length = mean length of relationship in months (standard deviation). * = total sample size per analysis ranged from 893 to 906 (e.g., One student in the second dataset did not indicate his or her sex).
Appendix B

Ethnicity of the Sample

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Sample size</th>
<th>Self LS (SD)</th>
<th>Informant LS (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Asian</td>
<td>363</td>
<td>4.93 (1.28)</td>
<td>5.03 (1.22)</td>
</tr>
<tr>
<td>Southeast Asian</td>
<td>51</td>
<td>5.06 (1.14)</td>
<td>5.00 (1.19)</td>
</tr>
<tr>
<td>East Asian</td>
<td>227</td>
<td>4.97 (1.20)</td>
<td>5.05 (1.11)</td>
</tr>
<tr>
<td>European</td>
<td>259</td>
<td>5.35 (1.11)</td>
<td>5.10 (1.14)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>906</strong>*</td>
<td><strong>5.07 (1.22)</strong></td>
<td><strong>5.06 (1.16)</strong></td>
</tr>
</tbody>
</table>

*Note. Self LS = mean level of three life satisfaction items rated by the self. Informant LS = mean level of three life satisfaction items rated by an informant. SD = standard deviation. * = Six out of nine hundred and six participants did not indicate their ethnicity. These six participants were included because their informant was of Asian or European ethnicity.*
Appendix C

Five Factor Model of One Personality Rating

Note. * = reverse scored items. RN = emotional stability (Higher scores indicate less Neuroticism).