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Exploring the internal composition and external determinants of happiness: Evidence from Thailand

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Abstract

Primary data collected in 2012 from Chiang Mai and Bangkok, Thailand are analyzed to examine the internal composition and external determinants of happiness, aka subjective well-being (SWB). The internal structure of happiness is explored through two complementary approaches; deduction and induction, in order to determine the most important dimensions in which Thai people themselves experience SWB. The first, deductive approach, following Calkins and Ngu Wah Win (2013) separates overall well-being *a priori* into five putative sub-dimensions of well-being: physical; economic; social; mental; and spiritual. The second, inductive approach employs principal component analysis (PCA) to hermeneutically elicit an alternative set of structural components of happiness *ex post*. The weighted average approach of linear least squared was employed in order to investigate important of each internal happiness components and to compare which approach provide a better statistical fit. It is hypothesized that inductive approach provide a better fit; but in fact, both approaches are found to be valid, complementary, and even to overlap. This is an important finding, both for understanding happiness in Thailand and for the methodology of future world happiness studies. Descriptive analysis and ordered logit regression were used to

determine the key determinants of overall happiness. Such determinants are hypothesized not to include rises in income (following the Easterlin paradox), but to include other objectively verifiable social parameters (e.g. education, family structure, community quality, time use, etc.). Recommendations are generated with respect to the subset of variables that are both significant and policy-operable to suggest how government projects and social programs might enhance overall SWB in Thailand. Additional suggestions are made to individual Thais and their households for living more happily.

Keywords: Subjective well-being, principal component analysis, ordered logit regression, Thailand

1. Introduction

Thailand has been the scene of continued political violence, wide extremes in income, tsunami, and geographical disparities in the standard of living for the past 30 or more years. It is also known in the tourist literature as the "land of smiles." Are Thais really happier than other people; and if so, how do they experience happiness internally? Are their feelings of happiness more physical, mental, spiritual, or defined by an as yet undetermined mixture of affects? In the face of human and natural disasters, what makes some Thais happier than others?

These issues of the inner feelings and outer causes of happiness in Thailand have been addressed in a partial way by previous Thai researchers (e.g. Gray et al., 2008; Pholpirul, 2007), but no one to date has either separated them or clearly integrated them into a single methodological framework. Now is the time to do so: The paralysis of the Thai governmental apparatus in mid-2014 requires that the factors that constitute and create happiness for anti-Taksin urban and pro-Taksin rural Thais be identified and integrated into a coherent set of pan-national or, depending upon the results, geographically targeted well-being polices. Helping to fill this policy void is the real-world motivation for the current research.

Before doing so, however, the objective bases for analysing SWB and proposing policy must be clarified. Traditionally, happiness has been studied principally to determine the external factors that cause or enhance happiness (Dolan et al., 2008; Van Hoorn, 2007). Recently some researchers (Calkins and Kaewmanee, 2012; Garduno refered to in Borman, 2010; Powdthavee, 2008) have reminded both happiness researchers and policy makers that, since Plato and Aristotle, philosophers have agreed that true happiness does not come from without but lies within us.

As Veenhoven (2000) notes, previous studies have frequently failed to clearly separate happiness into its internal structural dimensions (such as mental satisfaction, spiritual bliss, and emotional joy) versus its exogenous or external determinants. Some evidence already supports the idea that happiness analysis should consider and incorporate both internal and external factors (Nitnitiphrut, 2007). However, studies of internal happiness remain rare in the literature. Calkins and Ngu Wah Win (2013) surveyed differentially affected areas in Myanmar to explore the impact of cyclone Nargis on social capital and happiness. They confirmed the significance but differing relative importance of five internal components of happiness: physical, mental, emotional, social and spiritual. Since Thailand and Myanmar share Theravadan Buddhist values, the same possible constituents of internal happiness could be tested for Thailand. This would help Thai and international happiness researchers to better understand the internal architecture of individual happiness, gauge the level of happiness of various segments of the Thai people, and identify and rank the significant external conditions that lead Thai people to feel happier. Shedding light on these methodological questions is the empirical motivation for the present research.

The overall goal of this paper is to make a theoretically justifiable contribution to the empirical literature on happiness, or "subjective well-being," in Thailand that takes account of both internal and external components. The specific objectives are to identify the best set of internal structural components of subjective well-being for representative regional and gender Thai sub-populations, and to recommend government policies that enhance happiness by operating on external variables identified as significant through regression techniques. Further recommendations will be made for individuals and households on dimensions that go beyond purview of government policies.

2. Conceptual framework and hypothesis formulation

2.1 Conceptual framework and previous literature

Happiness or subjective well-being (Helliwell and Barrington-Leigh, 2010) usually describes a hedonic level of affect (i.e. the intensity of one's feelings of pleasure or pain). Affective experience is normally measured by asking the individual respondent an overall self-rated question like *"Taken all together, how would you say things are these days: would you say that you are very happy, pretty happy or not too happy?"* (General Social Surveys-USA referred in Veenhoven, 2011) or ***"****In general, I consider myself a very happy person."* (Lymbomirsky & Lepper, 1999)

The left side of the conceptual diagram for this study (figure 1) proposes two alternative views of the internal composition the dependent variable of this study, overall happiness as defined above. The first is a set of individual affects, grouped inductively into concepts determined through principal components analysis (PC_i) that have high internal correlations among the constituent factors but low external correlations with other concepts. The second is the set of five well-being dimensions (physical, mental, emotional, social, and spiritual well-being employed by Calkins and Ngu Wah Win (2013) in Myanmar. The top section of table 1 names the 23 affective statements in various dimensions that were differentially divided to form both sets of well-being sub-variables. Those statements include several from the Oxford Happiness Questionnaire (OHQ), but have excluded any statement in the OHQ thought to refer to an external cause of happiness. Such statements were carefully replaced by one or more statements reflecting true hedonic affect.

The remainders of both Figure 1 and Table 1 lay out the potential external causes of the dependent variable overall happiness. The findings from a wide variety of studies into those causes (e.g., Dolan et al., 2008; OECD, 2013) may be summarized into nine headings: socio-demographics; Easterlin-paradox[1] and other economic factors; work; leisure time and allocation choices; religiosity; generosity/sharing/giving behavior; community/social capital; human capital; government/civil rights. It should be noted that all of these external determinants are quite distinct from the subjective evaluation of well-being by the individual herself.

So constructed, the conceptual framework of Figure 1 clearly distinguishes, positions, and inter-relates the internal components of happiness as well as the hypothesized external causes or enhancers of happiness. The numbers in the brackets locate six hypotheses to be tested in the present study. Bold line arrows trace a hypothesized direct link from an exogenous variable to either a principal component or happiness sub-dimension. Dashed arrows predict possible indirect pathways leading eventually happiness.

[1] The Easterlin paradox, propounded by Richard Easterlin in 1974 holds that, beyond a modest household income somewhat above the poverty line, money does not increase happiness.

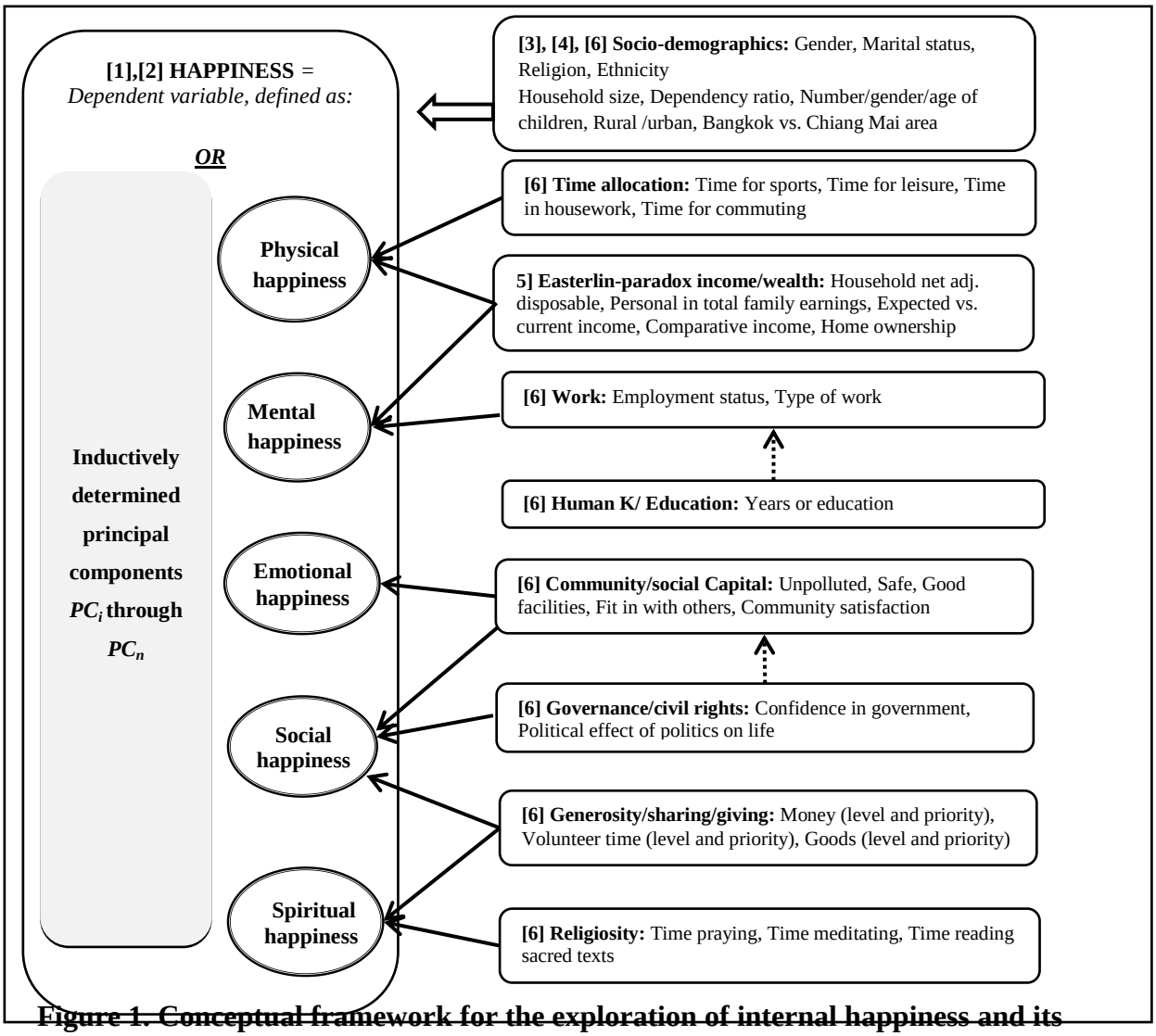

Figure 1. Conceptual framework for the exploration of internal happiness and its external causes

TABLE 1. Happiness components and proposed variable descriptions

Dependent variables

(these will also be re-organized into "factors" through principal component analysis)

Overall happiness
In general, I consider myself a happy person. (happy)

Physical Happiness (phys)
I have/show a cheerful face. (phys1)
I feel fresh and full of energy to act in life. (phys2)
I feel no pain or discomfort in my body that might be the cause to limit me from doing moderate activities. (phys3)
I feel calm and relaxed. (phys4)

Mental happiness (mental)
I have a sense of meaning and purpose in my life and know how to go for it. (mental1)
If I could live my life over, I would change almost nothing. (mental2)
I feel free to make decisions even in difficult situations. (mental3)
I am quite good at managing the many responsibilities of my daily life. (mental4)
I love to challenge my mind to create something new and different. (mental5)
For me, life has been a continuous process of learning, changing, and growth. (mental6)

Emotional happiness (emo)
I can be myself however I am or wherever I go. (emo1)
I can easily/quickly calm down when I feel bad/stressed. (emo2)
I find myself smiling even when no one else is around. (emo3)

Social happiness (soc)
I fit in very well with the people and the community around me. (soc1)
I have never felt lonely because I have friends with whom to share my concerns. (soc2)
I desire to bring and share my happiness to others. (soc3)

Spiritual happiness (spirit)
In most ways my life is close to my ideal. (spirit1)
I feel my life is bright and beautiful. (spirit2)
I respect myself. (spirit3)
In general, I feel confident and positive about myself. (spirit4)
I feel I am at one with nature. (spirit5)
I feel that developing harmony with the environment reflects my personal experience most of the time. (spirit6)
I feel great peace in my soul. (spirit7)

Independent variables

Socio-demographics
Age in years (age)
Gender: female (female)
Marital status (single, married, divorce, widowed)
Household member (hhmember)
Number of girl babies [1 day to 2 years] (girlbaby)
Number of boy babies [1 day to 2 years] (boybaby)
Number of girl toddlers [3 years to 6 years] (girltoddler)
Number of boy toddlers [3 years to 6 years] (boytoddler)
Number of children in the age of below 6 years old (children0_6)
Number of children in the age of 7-12 years old (children7_12)
Number of children in the age of 13-20 years old (children13_20)
Number of children in the age of over 20 years old (children20up)
Rurality (rural)

Easterlin-paradox and other economic factors
Employment status: unemployed (unemp)
Home ownership (housing)
Annual Household income (hhincome)
Annual Income (income)
Total yearly expenditures (expense)

Work
Type of work (farmer, laborer, company staff, government, self-employment, housewife, art and handicraft, retired)
Work time per week (t_work)
Housework time per week (t_housework)
Commuting time (t_commute)

Leisure time allocation choices
Time as sports spectator per week (t_sportspec)
Time playing sports with team per week (t_teamsport)
Time playing sports or doing exercises alone per week (t_workout)
Sleep time per week (t_sleep)
Leisure time per week (t_leisure)

Religiosity
Praying time (t_pray)
Time use for meditation (t_meditation)
Reading sacred texts per week (t_readsacred)
Annual money donate to religious institutions/beliefs (r_money)
Making merit by goods (r_goods)
Charitable time contribute to religious institutions/beliefs (r_time)

Generosity , sharing, and giving behavior
Time caring for others per week (t_caring)
Volunteering time per week (t_volunteer)
Time spending for community as leader (t_leader)
Time spending for community as member (t_member)
Annual charitable money for public or community (sharemoney)
Donation for public or community by goods (sharegoods)
Charitable time contribution for public or community (t_share)
Annual charitable money for individual (ind_money)
Donation for individual by goods (ind_goods)
Charitable time contribution for individual (ind_time)
Total annual charitable money [both public and individual] (allgivingmoney)

Community / social capital
My living area is no polluted. (community1)
My living area has good facilities. (community2)
My living area is safe. (community3)
My living area is a nice community. (community4)
Community satisfaction (communitysat)

Human Capital
Number of years in education (edu)

Governance/civil rights
Level of government confidence (govtrust)
Level of political affecting on my life (politic)

Noted: variable names used in analysis are in parentheses.

2.2 Testable hypotheses

Six testable hypotheses can be distilled from this framework:

[1] The structure of happiness in Thailand is consistent with a deductive model of well-being based on physical, emotional, social, mental and spiritual happiness affects; instead of an inductive model made up of factors identified through principal component analysis.

[2] Spiritual and mental affects are much more important than emotional or social affects within the happiness structure in Thailand.

[3] Happiness in Thailand is "genderless" in its overall level.

[4] Happiness in Thailand is "universal" in the sense that its overall level and subcomponent structure do not differ significantly by region or level of urbanity.

[5] Consistent with the Easterlin hypothesis, happiness in Thailand does not depend upon individual income, household income, or home ownership.

[6] Happiness in Thailand does depend upon proper time allocation choices, religiosity, giving and volunteering behavior, governance/civil rights, community quality; and family structure and gender, but, it does not depend directly upon education because education is subjacent to income and job satisfaction.

3. Data analysis methods

Four approaches are used to investigate the six hypotheses of this study: principal component and factor analysis and also the weighted average approach of linear regression model (hypotheses [1] and [2]); descriptive analysis of the data (hypotheses [3] and [4]); and regression analyses (ordered logits and probits) for hypotheses [5] and [6]).

To test hypotheses [1] and [2], twenty-three items of internal happiness were used to investigate components of happiness. As many tools of constructing composite index, principal component analysis (PCA) was used to organize group of items that represent internal structure of happiness in term of Thai circumstances. The weighted average approach was employed in order to identify important of each internal happiness component. This tool was used to explore weights of internal components for both deductively five components and inductively components that grouped by PCA. The goodness of fit, such like R-square and/or mean square error, was used to identify which approach is better under Thai's circumstances.

In order to test both *hypotheses 1 and 2,* it was necessary to perform traditional OLS regression of the overall happiness on the five hypothesized subcomponents of happiness: physical, emotional, mental, social, and spiritual (each taking possible values of 1 through 10). By forcing the regression through the origin (i.e., repressing the constant term), the estimation could provide the relative weights of the sub-indicators (Nardo et al, 2005). Then the happiness (H) of individual *i* may be drawn as the following.

$$\widehat{\boldsymbol{H}}_{\boldsymbol{i}} = \widehat{\boldsymbol{\omega}}_{\mathbf{1}}\boldsymbol{h}_{\boldsymbol{i}}^{\mathbf{1}} + \widehat{\boldsymbol{\omega}}_{\mathbf{2}}\boldsymbol{h}_{\boldsymbol{i}}^{\mathbf{2}} + \widehat{\boldsymbol{\omega}}_{\mathbf{3}}\boldsymbol{h}_{\boldsymbol{i}}^{\mathbf{3}} + \widehat{\boldsymbol{\omega}}_{\mathbf{4}}\boldsymbol{h}_{\boldsymbol{i}}^{\mathbf{4}} + \widehat{\boldsymbol{\omega}}_{\boldsymbol{j}}\boldsymbol{h}_{\boldsymbol{i}}^{\boldsymbol{j}}, \quad (1)$$

where

h^m = average internal happiness sub-component *m, m=1,2,…,j*

$\widehat{\omega_m}$ = weights of internal subjective well-being which has *m* sub-component, *m= 1,2,…,j*

In order to dealing with multicollinearity problems, for instance between sub-components *1* and *2*, the relationship between two sub-components were investigated and found the highly correlation which can be expressed as follows:

$$\hat{\omega}_2 h_i^2 = \hat{a}\hat{\omega}_1 h_i^1. \tag{2}$$

Then, the equaltion (2) were substituted into equation (1).

$$\hat{H}_i = \hat{\omega}_1 h_i^1 + \hat{a}\hat{\omega}_1 h_i^1 + \hat{\omega}_3 h_i^3 + \hat{\omega}_4 h_i^4 + \hat{\omega}_j h_i^j, \tag{3}$$

$$\hat{H}_i = (1 + \hat{a})\hat{\omega}_1 h_i^1 + \hat{\omega}_3 h_i^3 + \hat{\omega}_4 h_i^4 + \hat{\omega}_j h_i^j, \tag{4}$$

Let

$$\hat{\rho} = (1 + \hat{a})\hat{\omega}_1. \tag{5}$$

The estimation may be expressed as the following equation.

$$\hat{H}_i = \hat{\rho} h_i^1 + \hat{\omega}_3 h_i^3 + \hat{\omega}_4 h_i^4 + \hat{\omega}_j h_i^j, \tag{6}$$

After estimation, $\hat{\rho}$ could is calculated to depict the weight of h_i^1 and h_i^2.

$$\hat{H}_i = \frac{\hat{\rho}}{(1+\hat{a})} h_i^1 + \frac{\hat{a}\cdot\hat{\rho}}{(1+\hat{a})} h_i^2 + \hat{\omega}_3 h_i^3 + \hat{\omega}_4 h_i^4 + \hat{\omega}_j h_i^j, \tag{7}$$

The coefficients will be normalized with respect to the aggregation of all coefficients equal to 1.

Nardo et al (2005) conducted a study to suggest how to remedy multicollinearity through principal component analysis. Following Nardo, we also chose to compare the relative size and significance of the coefficients, as well as the goodness of fit (adjusted R-squared and mean square error) of the weighted average approach with the corresponding parameters derived from principal components/factor analysis, as described below.

Conventional PCA and factor analysis (FA) intend to group together variables which are collinear in order to form a new set of uncorrelated variables using the covariance matrix. PCA was earliest described by Pearson (1901) and more attribute details launched by Hotelling (1933). There are a couple important differences between PCA and FA. One concerns the fact that the FA has a more specific statistical model (Spearman, 1904 referred to in Nardo et al, 2005). Normally, the results from these two methods are similar but PCA is preferred to use for data reduction while FA for detecting equational structure (Krishnan, 2010).

One drawback should be noticed is that neither PCA nor FA allows one to make inferences on the properties of the general population. Hence the interpretation is specific to the group of participants under investigation. The general form of the factor analysis model is given by:

$$\begin{aligned} \boldsymbol{x_1} &= \boldsymbol{\alpha_{11}F_1 + \alpha_{12}F_2 + \cdots + \alpha_{1m}F_m + e_1} \\ \boldsymbol{x_2} &= \boldsymbol{\alpha_{21}F_1 + \alpha_{22}F_2 + \cdots + \alpha_{2m}F_m + e_2} \\ &\cdots \\ \boldsymbol{x_Q} &= \boldsymbol{\alpha_{Q1}F_1 + \alpha_{Q2}F_2 + \cdots + \alpha_{Qm}F_m + e_Q} \end{aligned}$$

where x_i is a variable with zero mean and unit variance; $\alpha_{i1}, \alpha_{i2}, \ldots, \alpha_{im}$ are the factor loadings related to the variable X_i; $F_1, F_2, \ldots, F_m$ are m uncorrelated common factors, each with zero mean and unit variance; and e_i are the Q specific factors supposed independently and identically distribution with zero mean.

In order to examine *hypothesis 3* -- whether or not happiness in Thailand is "genderless" -- an independent sample t-test was conducted for the female subsample against the male subsample to determine whether or not the mean values for happiness, income, and other variables differed significantly by the gender of the respondent.

Such t-tests may not be used, however, when it is necessary to compare the means of more than two subpopulations. With respect to *hypothesis 4* – whether or not happiness in Thailand is "universal" in the sense that region or level of urbanity is irrelevant -- there were three (rural Chiang Mai; urban Chiang Mai; and urban Bangkok). We therefore resorted to the use of One-way ANOVA to measure and test the significance of disparities in happiness (and a wide range of other variables) among the three sub-sample groups.

The remaining hypotheses [5] and [6] are tested using the following methods. Overall happiness question that respondents did self-rate from 1 to 10 scale were recoded to 5-point scale with respect to marginal effect interpretation of ordered choices model. From models selection criteria, such AIC and BIC, the ordered logit model was selected to analyze the determinants of happiness in Thailand comparing with the ordered probit model. These analysis was employed to explore the determinants of happiness for each subpopulations as well in order to see how external factors of happiness are "universal" among Thai population or not.

Happiness, or more properly subjective well-being,

$$\boldsymbol{H = x'\beta + \varepsilon} \tag{8}$$

where x represents the vectors of explanatory variables; $\boldsymbol{H}_{\mathrm{i}}$ represent observed subjective well-being level. The β represents the coefficient vectors that we would like to estimate, whereas ε_j is an error term.

Further suppose that while we cannot observe happiness, we instead can only observe the categories of response:

$$\boldsymbol{H} = \begin{cases} \boldsymbol{1\ if\ 0 < H \le \mu_1}, \\ \boldsymbol{2\ if\ \mu_1} < H \le \boldsymbol{\mu_2}, \\ \quad \vdots \\ \boldsymbol{N\ if\ \mu_{N-1}} < H \end{cases} \tag{9}$$

Then the ordered logit technique will use the observations on y, which are a form of censored data on H, to fit the parameter vector β.

4. Choice of the study site and data collection methods

Face-to-face interviews were conducted in 2012 with 464 respondents in two provinces of Thailand; Chiang Mai in the north and the capital city Bangkok in central. Data were separated into three sub-populations based on area contexts which are rural-Chaing Mai, urban-Chiang Mai and urban-Bangkok.

The three study areas were purposively selected to include urban and rural sub-populations in diverse geographical regions. These choices gave sample diversity on such dimensions as income, gender, age, and household composition while respecting the financial constraints and institutional allegiances of the research.

Household units were randomly selected and respondents purposively chosen by interviewers to include all household members over 18 years of age. This sampling procedure was followed because one aim of our study was to investigate how wage and others economic factors affect perceptions of happiness. Altogether, 142 interviews were administered in rural Chiang Mai, 82 in urban Chiang Mai, and 240 in urban Bangkok.

Appendix Table A1 reports the total observations, means, maximum, minimum and standard deviation values of the sample, as well as the correlation with happiness for each variable of the survey. The average age of participants was 43 years. Sixty-five percent of all participants were female. By marital status, 34% of all samples were single while 59% of all participants have been married. Average of household size was about four persons. Average time in school was 11 years, corresponding to the upper secondary school level. These and other descriptive statistics are also reported for the three population subsamples in the same table.

5. Empirical results and hypothesis tests

5.1 Internal structure of happiness: deductive *vs.* inductive approaches

Table 2 report regressions for the entire Thai sample and the three regional subsamples that yield the weighted averages of the five deductive components of well-being: physical, mental emotional, social, and spiritual. The statistical properties of the regressions are all very strong, with adjusted R-squareds ranging from 0.951 through 0.985. The signs are also positive, as expected, indicating that each hypothesized subcomponent of well-being is a source of incremental happiness. The first column for each sample reports the nonnormalized coefficient for all regressors that are not excluded because of the multicollinearity correlation explained at the bottom of the table. The t-scores for all remaining regressors are highly significant for the whole sample and for each regional subsample except for physical happiness in urban Bangkok, mental happiness in urban Chaing Mai, emotional happiness in all three subsamples, and social happiness in rural Chiang Mai. Nonetheless, the coefficients for all non-collinear regressors were normalized to total 1.0 i.e., total happiness.

TABLE 2. Weights of internal happiness components by regional subsample

Happiness component	ALL SAMPLES N=464			Rural-Chiang mai N=142			Urban-Chiang mai N=82		Urban-Bangkok N=240		
	Coef. (t-score)	normalized	adj	Coef. (t-score)	normalized	adj	Coef. (t-score)	normalized	Coef. (t-score)	normalized	adj
Physical	0.307 (4.02)	0.300	0.300	0.444 (2.82)	0.450	0.003	0.306 (1.93)	0.300	0.124 (1.14)	0.118	0.118
Mental	0.232 (3.37)	0.227	0.227	0.453 (3.18)	0.460	0.460	0.089 (0.58)	0.087			0.209
Emotional			0.174	0.086 (0.63)	0.088	0.088	0.026 (0.20)	0.025	0.167 (1.52)	0.158	0.158
Social	0.196 (4.55)	0.192	0.018	0.002 (0.03)	0.002	0.002	0.192 (2.45)	0.189	0.267 (4.97)	0.253	0.045
Spiritual	0.288 (3.61)	0.282	0.282			0.448	0.406 (2.70)	0.399	0.498 (5.25)	0.471	0.471
Adj R square	0.9736			0.9506			0.9855		0.9850		
Remark	emotion_avg=.906social_avg			spirit_avg=0.99phys_avg					mental_avg =.824social_avg		

Source: calculated from own survey

If we now turn to principal components analysis based on the 23 affects of happiness, four aggregate factors of happiness are derived from a criss-crossing of elements from the deductive subcomponent (Figure 3). PC1 regroups a subset of four purely spiritual components and may be labelled "spirituality." PC2 merges mental and spiritual elements to express that life has "brightness and meaning." PC3 singles out two social components and may therefore be termed "sociability." Finally, PC4 draws individual elements from physical, mental and emotional categories. It will be noted that some of the 23 feelings of happiness are found to be irrelevant in this inductive approach.

Components 1 and 2 take most important role in happiness. These are followed by PC3 (sociability). The lowest share of happiness and level of significance is for component 4 (PC4), which is composed of appearance (such as a happy smile and looks), as well as pleasant thoughts. This result could imply that appearances of happiness do not reflect how happy people truly are, at least in our Thai sample. This result is arresting, since Thailand is reputed to be the "land of smiles."

Comparing the weight average and PCA approaches, the Adjusted R-squared and Root MSE selection criteria do not vastly differ, although they do slightly favor the PCA-inductive model over the deductive model. To counterbalance this advantage, one PCA factor (PC4: happy appearance and thought) is revealed to be non significant. The deductive approach in five dimensions of happiness proved only slightly better, however.

Rather, both approaches were found to be valid and complementary. There is significant uniformity in the results of the models (Figures 3), particularly regarding PC3 (sociability) and PC1 (spirituality), which are mere subsets of their SWB subcomponent counterparts. For example, spiritual factors were found to make up the greatest share of the feeling of happiness under both approaches. Thus, the two models provide non-contradictory understanding of the internal structure of subjective well-being as it is perceived in Thailand.

Based on these findings, we may accord **weak acceptance to hypothesis [1],** to the effect that "The structure of happiness in Thailand is consistent with a deductive model based on physical, emotional, social, mental and spiritual well-being affects; instead of an inductive model made up of factors identified through principal component analysis."

5.2 Primary affects within happiness

The "adjusted" columns generated through the weighted average technique (Table 2) strongly suggest that happiness is not felt in the same intensity by subcomponent or in the same ways by subsample. While physical and spiritual happiness are virtually tied as most important for the entire sample and for urban Chiang Mai; feelings of mental and spiritual happiness predominate in rural Chiang Mai, and spiritual bliss in urban Bangkok. Despite these differences, spiritual and mental affects are much more important than emotional or social affects within the happiness structure in Thailand.

We therefore cannot *reject hypothesis [2]*, which states that "Spiritual and mental affects are much more important than emotional or social affects within the happiness structure in Thailand."

5.3 Differences by gender

We turn now, in this and the following sections, to a series of potential *external* determinants of overall subjective well-being in Thailand. In terms of gender, for example, t-tests revealed that there is no significant difference (female average happiness = 7.96 and male=7.88) in the level of happiness between men and women in Thailand (Table 3). There are, however, significant differences in the mean of two of the 23 happiness statements: women are lonelier, and have less peace in their soul. A small set of potential explanatory variables also differ significantly by gender: marital status, numbers of children, housewife, In parts of tangible variables, they were found in having own house, annual income, working hours, time to do housework, and time to do sports as well. Partial correlations are presented in Table A1 (column 19 and 20) as well. Neither gender nor any of the marital status dummies turn up significant in the ordered logit estimations.

However in case of number of children, even they are not significantly differences but we still keep them in a model with the respect to previous study. Correlations matrix was done to see the dependency of variables and the directions of variables between dependent variables and

These results lead to *non-rejection of hypothesis [3]:* "Subjective well-being in Thailand is "genderless" in the sense that its overall level and subcomponent structure do not differ significantly by gender or marital status."

Figure 3. Weights of internal happiness components comparing between deductive and inductive approach.

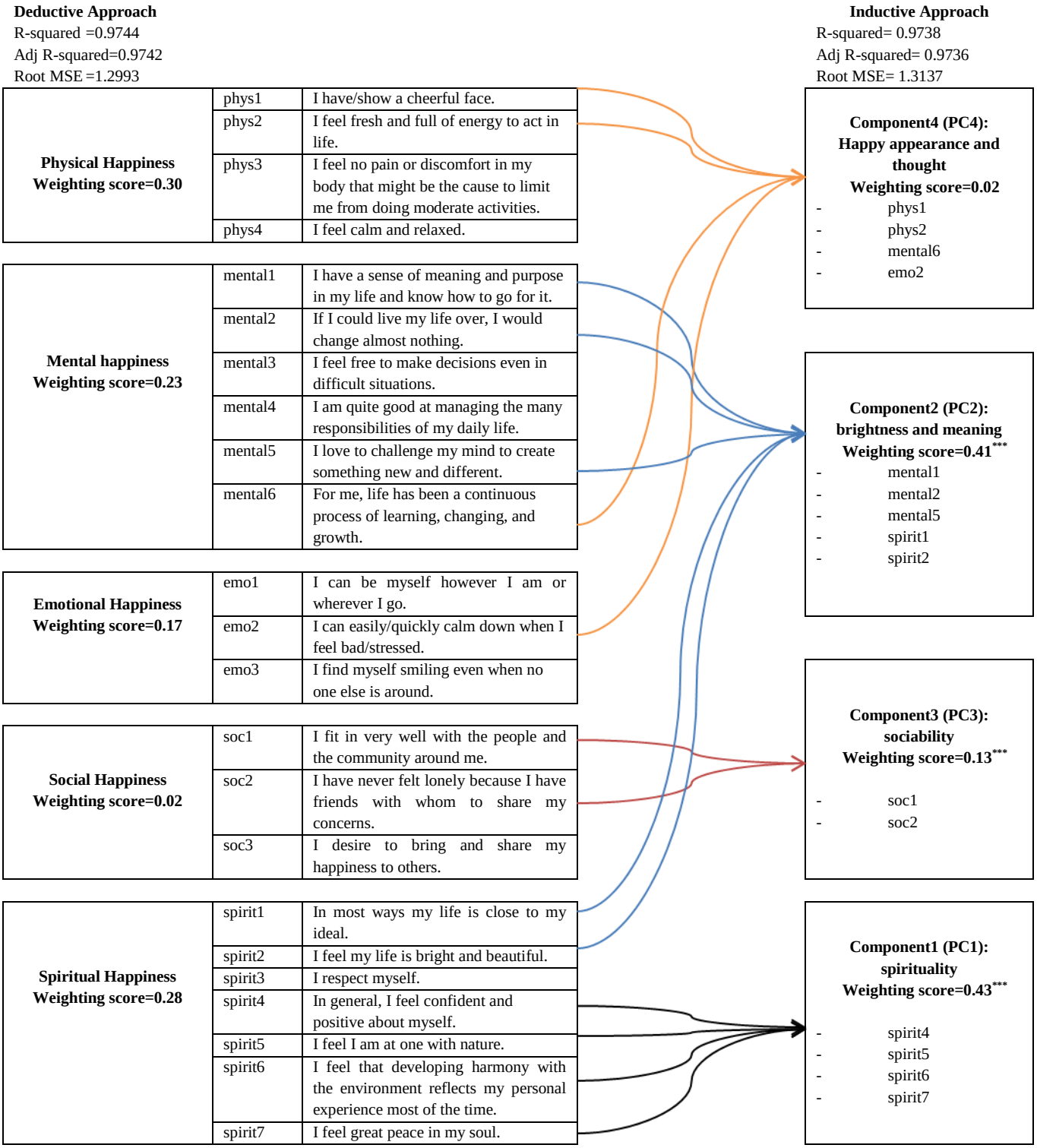

Table 3. average level of happiness by gender and regional subsample

	Overall	Female	Male	Rural-Chiang Mai	Urban-Chiang Mai	Urban-Bangkok
n=	464	302	162	142	82	240
Average level of happiness (1-10)	7.93	7.96	7.88	7.60	7.56	8.26
S.D.	1.56	1.60	1.49	1.84	1.48	1.33
Differences in mean test						
Equally variance assume	-	Yes		No		
Significantly differences in mean	-	No		Yes:		
				urban_Bangkok- rural_Chiangmai = .38621(*)		
				urban_Bangkok -urban_Chiangmai= .36697(*)		

Source: calculation in this study

5.4 Differences by region

One-way ANOVA analysis points to a large number of significantly differences among the three geographical subpopulations (see more details in column 3-18 of Appendix Table A1). With respect to the 23 statements of internal happiness, all items in the emotional and social dimensions displayed significantly different, compared to only two in the spiritual category. There are also differences in social and mental happiness among people who live in different areas. These results lend statistical confirmation to the geographical differences in weighted average subtotal scores presented in table 2. In particular, in the average level of total happiness itself, there exist significant differences (Table 3) between rural (7.60 of 10) and urban Chiang Mai (7.56) and urban-Bangkok (8.26). People in rural Chiang Mai have the greatest physical, social and spiritual happiness. Meanwhile, semi-urban Bangkok residents are happiest overall and in terms of emotional and mental happiness.

Turning to the external determinants of happiness, however, the results by region show no significant differences in the means of happiness among subpopulations in the following variables: gender (confirming our acceptance of hypothesis 3), number of children (except those older than 20 years, the safety and "niceness" of the community, charitable time to help both public institutions and individuals, and the percentage of confidence in government as well.

Table 4 shows the odds ratio of parameters of happiness in the three sub-samples. Community satisfaction is statistically significant for both rural-Chiang Mai and urban-Bangkok. So is the numbers of boy toddlers in family, but in negative way. Working hour is statistically significant in happiness of rural Chiang Mai residents. In contrast, it is leisure hours that constitutes an important happiness factor in urban Bangkok.

People in rural Chiang Mai have the greatest physical, social and spiritual happiness. Meanwhile, urban Bangkok residents are happiest overall and in terms of emotional and mental happiness. In the regressions as well, urban Chiang Mai is the odd man out: hardly anything is significant. Each of the other two sites helps to make different factors significant for the overall sample. For example, rural Chiang Mai has significant working time and time spending team sports, while urban Bangkok has significant time caring for others and political impact.

Taken together, the above results lead us to *reject hypothesis [4]***,** to the effect that "Subjective well-being in Thailand is 'universal' in the sense that its overall level and subcomponent structure do not differ significantly by region or level of urbanity."

5.5 Easterlin and economic variables

We now take up the Easterlin hypothesis – to the effect that, after a certain minimal level, further increases in per capita or household income have no significant effect in increasing subjective well-being. Two variables in the ordered logit regression for the entire sample (Table 5) merit special attention, particularly because neither is significant, and neither follows a simple curve. The rank of money as a form of charity (*r_money*) starts positive, turns negative, and then re-becomes positive; but in any case is non-significant. Income remains non-significant with no change in sign. Table 4 has further demonstrated that neither housing nor choice of occupation among farmers, company staff, and government is a significant contributor to happiness.

Remarkably, income, which is non-significant variable in the regression for the entire sample (Table 5) is statistically significant in urban-Bangkok (Table 8). The implication is that economic factors are still important for people in capital city Bangkok, perhaps because a greater proportion of households lies under the minimum threshold.

Finally, the economic determinants of happiness in urban Chiang Mai reflect a distinctly different pattern from those in other areas. Type of work were tested in the model but had no statistical significant impact on happiness. The only important factor is charitable time, illustrating the role of sharing in the creation of happiness.

Based on these findings, we *cannot reject hypothesis [5]***,** which states that "Consistent with the Easterlin hypothesis, subjective well-being in Thailand does not depend upon income, relative income, expected income, or home ownership."

5.6 Social capital

The estimated coefficients, standard errors, odds ratios, and marginal effects of the ordered logit model for the entire sample are presented in the table 5. The chi-squared value is highly significant with a pseudo R-squared of .11. Twelve of 18 variables tested are statistically significant contributors to happiness in Thailand. The remaining non-significant variables are income (confirming the Easterlin hypothesis above), time spent playing team sports, time spent on religious pursuits like praying and reading sacred texts, charitable time contributions to the public or community, and money spent for religious purposes.

Several of the 18 exogenous variables in Table 5 were included to test statistically for the impacts of social capital accumulation. Many are significant, but occasionally with an unexpected overall sign (left side of the table). For example, the overall coefficients on both leisure time and work time are significantly negative, implying that maintaining a balance between too much of either is favourable to happiness. Similarly, family characteristics like the number of boy toddlers and teenagers 13 to 20 reduce subjective well-being.

Other important factors are positive, however. Community satisfaction -- which includes facilities provided by the community, cleanliness, safety and the feeling of a "nice" – increases happiness.

From the nature of our dependent variable in ordinal form, we may obtain from ordered logit estimations qualitative response models (Greene 2003, Verbeek 2004) The results displayed in the right-hand side of Table 5 indicate the sequence of marginal effects with respect to the independent variable of interest as one moves upward from level 1 to level 5 of happiness. An important finding from the above table is that the determinants of subjective well-being are nonlinear in their effects (Table 5). That is, most variables eventually change sign as the happiness level increases 1 to 5. For example, although the sign on boy toddlers is negative overall, it starts positive for the three lowest ranks of happiness. This means that otherwise less-happy people welcome a son, while those who are already quite happy find him a burden.

Within spirituality, meditation gives a significantly negative effect and the other two components are not significant. Similarly, belief in giving money, time devoted to charity and to caring for others are all negative or non-significant sources of SWB in Thailand. The other variables that progress in this manner (from positive to negative) are working times, leisure times, time caring for others, and effect of politics on one's life. This last variable is interesting, in the sense that the unhappier levels of the population find it good to be affected by politics (perhaps they feel at least that someone is looking out for them.)

In contrast, another set of variables start negative but eventually turn positive. Education is a case in point. Although education reduces the subjective well-being of the least happy ranks of the population, it enhances the happiness of those who are already happier. Other variables that behave in this way are community satisfaction, commuting time, time playing team sports, praying time, time reading sacred texts, volunteering time, and charitable time contribution for public or community. Only further research can determine why those who are already happiest find enhanced pleasure from praying and reading sacred texts. Perhaps they worship more to give thanks thank to make requests. Volunteering and giving to charity also seem to be the most enjoyable when they are undertaken by happy people.

These results do sometimes differ by region, however, confirming our rejection of hypothesis 4. The separate ordered logit regressions by region reported as Tables 6, 7, and 8 indicate that while education is significant for the overall sample, it is not for any of the regional subsamples. Community satisfaction is significant everywhere except urban Chiang Mai; perhaps because most residents are already equally well satisfied. Feeling the effects of government policy has a significantly negative effect in only the overall sample and urban Bangkok. Time caring for others is negative, while time spent volunteering is positive, presumably due to the very different types of human interaction involved between caring for the sick or dying in lone obscurity vs. working openly as part of a team. In urban Chiang Mai, charitable time for public takes the place of these variables. Finally, meditation is significant only in the overall sample, and negatively at that.

Taken together the above results on social capital lead us *to partially reject hypothesis [6],* to the effect that "Happiness in Thailand does depend upon proper time allocation choices, religiosity, giving and volunteering behavior, governance/civil rights, community quality, family structure and gender; but, it does not depend directly upon education because education is subjacent to income and job satisfaction."

TABLE 4. Odds ratio of parameters of happiness using ordered logit model by sub-sample

Dep:happy	Overall	Rural-Chiang Mai	Urban-Chiang Mai	Urban-Bangkok
Socio-demographics				
boytoddler	0.15679[a]	0.0102[b]	0.595357	0.049932a
children13_20	0.68497[b]	0.8621		0.882113
rurality	0.28066[a]			
Human capital				
edu	1.04088[c]	1.0404		1.012744
Community/social capital				
community_sat	1.34698	1.5712[a]	1.385718	2.463529a
Easterlin-paradox and other economic factors				
housing			1.932512	1.393073
income_y	1.00000	1.0000	1	1.000005[b]
Work				
farmer			0.309092	
company staff			1.375074	
government			1.344976	
t_work	0.99962[a]	0.9996[b]	0.999655	0.999855
t_commute	1.00112[a]		1.001634	1.000906
Governance/civil rights				
politic	0.83923[a]	0.9210		0.729597[a]
Leisure time allocation choices				
t_teamsport	1.00075	1.0022[a]	1.001035	
t_leisure	0.99979[b]	0.9999		0.99955[a]
Religiosity				
t_pray	1.00080	1.0021		1.001373
t_meditation	0.99761[c]	0.9977		1.004073
t_readsacred	1.00197	1.0012	1.004362	1.011807
r_money	1.00002	1.0000		
Generousity, giving , and sharing				
t_caring	0.99952[b]	0.9998		0.999324[c]
t_volunteer	1.00636[c]	1.0059		
t_share	1.00027	1.0000	1.017046[a]	1.002832
/cut1	-5.0613	-1.4822	-2.60632	1.599601
/cut2	-4.338	-0.92681	0.390779	4.852663
/cut3	-1.5297	1.417969	3.800167	
/cut4	1.05486	3.962992		
Log likelihood	-427.377	-138.416	-68.758	-166.638
Pseudo R2	0.1133	0.1212	0.1337	0.2717
LR chi2(#)	109.23(18)	38.17 (16)	21.23 (12)	124.35 (15)
Prob > chi2	0	0.0014	0.0471	0

Note: a, b, and c denote significant z test at 1, 5, and 10 percent levels, respectively

TABLE 5. Estimates of parameters of happiness using ordered logit model

				Marginal effect				
Pr(happy= rank)				0.004	0.004	0.111	0.522	0.359
happy	Coef.	Std. Err.	Odds	Rank=1	Rank=2	Rank=3	Rank=4	Rank=5
Socio-demographics								
boytoddler	-1.85283	0.70[a]	0.15679	0.020030	0.020075	0.299157	-0.056562	-0.282701
Children13_20	-0.37838	0.19[b]	0.68497	0.001480	0.001545	0.036569	0.047468	-0.087062
rurality	-1.27060	0.28[a]	0.28066	0.006894	0.007132	0.149867	0.098437	-0.262330
Human capital								
edu	0.04006	0.02[c]	1.04088	-0.000157	-0.000164	-0.003872	-0.005026	0.009218
Community/social capital								
communitysat	0.29786	0.08[a]	1.34698	-0.001165	-0.001217	-0.028787	-0.037367	0.068535
Easterlin-paradox and other economic factors								
income	0.00000	0.00	1.00000	0.000000	0.000000	0.000000	0.000000	0.000000
Work								
t_work	-0.00038	0.0001[a]	0.99962	0.000001	0.000002	0.000037	0.000048	-0.000087
t_commute	0.00112	0.0004[a]	1.00112	-0.000004	-0.000005	-0.000108	-0.000140	0.000257
Leisure time allocation choices								
t_leisure	-0.00021	0.0001[b]	0.99979	0.000001	0.000001	0.000020	0.000026	-0.000048
t_teamsport	0.00075	0.0005	1.00075	-0.000003	-0.000003	-0.000072	-0.000094	0.000172
Religiosity								
t_pray	0.00080	0.00098	1.00080	-0.000003	-0.000003	-0.000077	-0.000100	0.000184
t_meditation	-0.00239	0.0014[c]	0.99761	0.000009	0.000010	0.000231	0.000300	-0.000550
t_readsacred	0.00196	0.00141	1.00197	-0.000008	-0.000008	-0.000190	-0.000246	0.000452
r_money	0.00002	0.00002	1.00002	0.000000	0.000000	-0.000002	-0.000003	0.000005
Generousity, giving , and sharing								
t_caring	-0.00048	0.0002[b]	0.99952	0.000002	0.000002	0.000046	0.000060	-0.000111
t_volunteer	0.00634	0.003[c]	1.00636	-0.000025	-0.000026	-0.000612	-0.000795	0.001458
charity_time	0.00027	0.00053	1.00027	-0.000001	-0.000001	-0.000026	-0.000033	0.000061
Civil rights								
politic	-0.17527	0.04[a]	0.83923	0.000686	0.000716	0.016939	0.021987	-0.040327
/cut1	-5.0613	0.911836						
/cut2	-4.338	0.814285						
/cut3	-1.5297	0.714177						
/cut4	1.05486	0.709019						
Log likelihood	-427.377				LR chi2(18)	109.23		
Pseudo R2	0.1133				Prob > chi2	0.0000		

Note: a, b, and c denote significant z test at 1, 5, and 10 percent levels, respectively

TABLE 6. Estimates of parameters of happiness using ordered logit model for rural Chiang Mai

				Marginal effect				
Pr(happy=rank)				0.012993	0.009433	0.170659	0.559963	0.246952
happy	Coef.	Std. Err.	Odds	Rank=1	Rank=2	Rank=3	Rank=4	Rank=5
Socio-demographics								
boytoddler	-4.58296	1.90929[b]	0.0102	0.5418	0.1208	0.1072	-0.5199	-0.2500
children13_20	-0.14838	0.37411	0.8621	0.0019	0.0014	0.0199	0.0045	-0.0276
Human capital								
edu	0.03963	0.04278	1.0404	-0.0005	-0.0004	-0.0053	-0.0012	0.0074
Community/social capital								
community_sat	0.45182	0.15698[a]	1.5712	-0.0058	-0.0041	-0.0605	-0.0136	0.0840
Easterlin-paradox and other economic factors								
housing								
income	0.00000	0.00000	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Work								
farmer								
company staff								
government								
t_work	-0.00043	0.00018[b]	0.9996	0.0000	0.0000	0.0001	0.0000	-0.0001
t_commute								
Governance/civil rights								
politic	-0.08229	0.05953	0.9210	0.0011	0.0007	0.0110	0.0025	-0.0153
Leisure time allocation choices								
t_teamsport	0.00220	0.00084[a]	1.0022	0.0000	0.0000	-0.0003	-0.0001	0.0004
t_leisure	-0.00011	0.00014	0.9999	0.0000	0.0000	0.0000	0.0000	0.0000
Religiosity								
t_pray	0.00206	0.00150	1.0021	0.0000	0.0000	-0.0003	-0.0001	0.0004
t_meditation	-0.00230	0.00196	0.9977	0.0000	0.0000	0.0003	0.0001	-0.0004
t_readsacred	0.00121	0.00184	1.0012	0.0000	0.0000	-0.0002	0.0000	0.0002
r_money	0.00002	0.00002	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Generousity, giving , and sharing								
t_caring	-0.00020	0.00035	0.9998	0.0000	0.0000	0.0000	0.0000	0.0000
t_volunteer	0.00592	0.00382	1.0059	-0.0001	-0.0001	-0.0008	-0.0002	0.0011
t_share	0.00003	0.00056	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000
/cut1	-1.4822	1.494153						
/cut2	-0.92681	1.453525						
/cut3	1.417969	1.417943						
/cut4	3.962992	1.461783						
Log likelihood	-138.416				LR chi2(16)	38.17		
Pseudo R2	0.1212				Prob > chi2	0.0014		

Note: a, b, and c denote significant z test at 1, 5, and 10 per cent levels, respectively

TABLE 7. Estimates of parameters of happiness using ordered logit model for urban Chiang Mai

				Marginal effect				
y=Pr(happy=rank)					0.007369	0.122065	0.688649	0.181916
happy	Coef.	Std. Err.	Odds	Rank=1	Rank=2	Rank=3	Rank=4	Rank=5
Socio-demographics								
children13_20	-0.5186	0.4058	0.5954		0.00379	0.05464	0.01874	-0.07718
Human capital								
edu								
Community/social capital								
community_sat	0.3262	0.2348	1.3857		-0.00239	-0.03437	-0.01179	0.04855
Easterlin-paradox and other economic factors								
housing	0.6588	0.5484	1.9325		-0.00479	-0.06854	-0.02643	0.09975
income	0.0000004	0.0000010	1.0000		0.00000	0.00000	0.00000	0.00000
Work								
farmer	-1.1741	2.2376	0.3091		0.01586	0.17793	-0.07488	-0.11891
company staff	0.3185	0.7092	1.3751		-0.00212	-0.03123	-0.01708	0.05043
government	0.2964	0.6818	1.3450		-0.00199	-0.02929	-0.01535	0.04663
t_work	-0.0003	0.0002	0.9997		0.00000	0.00004	0.00001	-0.00005
t_commute	0.0016	0.0012	1.0016		-0.00001	-0.00017	-0.00006	0.00024
Governance/civil rights								
politic								
Leisure time allocation choices								
t_teamsport	0.0010	0.0010	1.0010		-0.00001	-0.00011	-0.00004	0.00015
Religiosity								
t_readsacred	0.0044	0.0029	1.0044		-0.00003	-0.00046	-0.00016	0.00065
Generousity, giving , and sharing								
t_share	0.0169	0.0079[a]	1.0170		-0.00012	-0.00178	-0.00061	0.00252
/cut1	-2.60632	2.31741						
/cut2	0.390779	2.090086						
/cut3	3.800167	2.149835						
/cut4								
Log likelihood	-68.758				LR chi2(12)	21.23		
Pseudo R2	0.1337				Prob > chi2	0.0471		

Note: a, b, and c denote significant z test at 1, 5, and 10 per cent levels, respectively

TABLE 8. Estimates of parameters of happiness using ordered logit model for urban-Bangkok

						Marginal effect		
y=Pr(happy=rank)						0.036615	0.459152	0.504233
happy	Coef.	Std. Err.	Odds	Rank=1	Rank=2	Rank=3	Rank=4	Rank=5
Socio-demographics								
boytoddler	-2.9971	0.9457[a]	0.0499			0.3798	0.0913	-0.4711
children13_20	-0.1254	0.3052	0.8821			0.0044	0.0269	-0.0314
rurality								
Human capital								
edu	0.0127	0.0414	1.0127			-0.0004	-0.0027	0.0032
Community/social capital								
community_sat	0.9016	0.1771[a]	2.4635			-0.0318	-0.1936	0.2254
Easterlin-paradox and other economic factors								
housing	0.3315	0.3653	1.3931			-0.0113	-0.0713	0.0826
income	0.000005	0.000003[b]	1.000005			0.0000	0.0000	0.0000
Work								
farmer								
company staff								
government								
t_work	-0.0001	0.0002	0.9999			0.0000	0.0000	0.0000
t_commute	0.0009	0.0006	1.0009			0.0000	-0.0002	0.0002
Governance/civil rights								
politic	-0.3153	0.0737[a]	0.7296			0.0111	0.0677	-0.0788
Leisure time allocation choices								
t_teamsport								
t_leisure								
Religiosity								
t_pray	0.0014	0.0023	1.0014			0.0000	-0.0003	0.0003
t_meditation	0.0041	0.0057	1.0041			-0.0001	-0.0009	0.0010
t_readsacred	0.0117	0.0074	1.0118			-0.0004	-0.0025	0.0029
r_money								
Generousity, giving , and sharing								
t_caring	-0.0007	0.0004[a]	0.9993			0.0000	0.0001	-0.0002
t_volunteer								
t_share	0.0028	0.0051	1.0028			-0.0001	-0.0006	0.0007
/cut1	1.5996	1.2423						
/cut2	4.8527	1.2914						
/cut3								
/cut4								
Log likelihood	-166.638				LR chi2(15)	124.35		
Pseudo R2	0.2717				Prob > chi2	0		

Note: a, b, and c denote significant z test at 1, 5, and 10 percent levels, respectively.

6. Summary, conclusions and recommendations

6.1 Resume of findings and hypothesis tests

Descriptive results of the self-evaluation of happiness differ by region and urbanity level in Thailand, but there is only a slight difference in average happiness level by gender (female=7.96, male=7.88). Urban-Bangkok people had the highest average level of happiness, following by rural-Chiang Mai and urban-Chiang Mai (8.26, 7.6 and 7.56 respectively).

To explore the internal architecture of feelings of happiness, two approaches have been used. The deductive approach separates happiness into five dimensions: physical; economic; social; mental; and spiritual and regresses self-evaluated happiness on the average score of each dimension. In contrast, the PCA-inductive approach seeks clusters of variables with high internal correlation but low correlations with the other clusters. Four such clusters or factors were found. Both results gave interesting, mutually compatible, and statistically comparable results; so one cannot be preferred over the other. Under both, spiritual happiness seems to play a more important role than any other dimension. However, clear regional differences in the weightings of both the dimensions and factors imply that the anatomy of happiness is not "universal" across representative Thai sub-populations.

Four principal components were revealed to exist within Thai SWB: spirituality, brightness and meaning, sociability and happy appearance and thought. As in the first approach, overall happiness was regressed on the resulting principal components. It was hypothesized that the principal component results would provide a better statistical fit because they could capture the particular characteristics of the Thai population under study. In fact, the deductive approach, five dimensions of happiness was slightly better. Both approaches were found to be valid, complementary, and even to overlap. This is an important finding, both for understanding happiness in Thailand and for the methodology of future happiness studies in general.

The estimation results led us to the rejection of one hypothesis, the weak or partial acceptance of two others, and the strong non-rejection (i.e., "acceptance") of three remaining hypotheses (Table 9). Notably, we have found significant confirmation of the Easterlin paradox for Thailand, to the effect that income has no significant impact on subjective well-being. Political liberty (few negative effects from politics) was discovered to be significant. Meanwhile, education, a positive community environment, time spend in volunteering, and time spent in commuting were shown to be significant social parameters in increasing happiness.

The results or this paper are of interest not only to happiness researchers, but to happiness practitioners. Those practitioners include, on the one hand, government and welfare institutions, who should assume primary responsibility for enhancing policy-operable variables. On the other, they include individuals and household themselves, who may endeavor to incorporate in their life patterns any significant variables that lie outside the purview of social policy.

TABLE 9. Summary of the hypotheses testing of happiness in Thailand

Hypothesis no.	Statement	Methods of testing	Reject	Weakly/ partially accept	"Accept" (can not reject)
1	The structure of happiness in Thailand is consistent with a deductive model of happiness based on physical, emotional, social, mental and spiritual happiness affects; instead of an inductive model made up of factors identified through principal component analysis.	*Weighted average and PCA/FA*		X	
2	Spiritual and mental affects are much more important than emotional or social affects within the happiness structure in Thailand.	*Weighted average and PCA/FA*			X
3	Happiness in Thailand is "genderless" in its overall level.	*T-test of significant differences in means*			X
4	Happiness in Thailand is "universal" in the sense that its overall level and subcomponent structure do not differ significantly by region or level of urbanity.	*One-way ANOVA and Ordered logit*	X		
5	Consistent with the Easterlin hypothesis, happiness in Thailand does not depend upon individual income, household income, or home ownership.	*Ordered logit*			X
6	Happiness in Thailand does depend upon proper time allocation choices, religiosity, giving and volunteering behavior, governance/civil rights, community quality; and family structure and gender, but, it does not depend directly upon education because education is subjacent to income and job satisfaction.	*Ordered logit*		X	
TOTAL			**1**	**2**	**3**

6.2 Policy implications for government, communities and other institutions

According to the results in this study to enhance the Thai SWB, creating a community environment that includes adequate facilities, a sense of safety, and a nice atmosphere is the single most important happiness creator in Thai society. The evidence shows that those who live in rural areas less happy. Thus, if the local government could provide the better community, it may improve the well-being of people who settle in rural area. Since politics significantly affects happiness of Thai people, especially in urban-Bangkok, re-establishing stability in Thai policy will help elevate

the happiness of all Thais. Additionally, team sports should be promoted in rural area, because of the twin benefits it brings to health and social relationships. Volunteering should also be promoted by government and other social institutions, even it has a slight effect on happiness. Time spent in caring for others, particularly the ill, is a major reducer of happiness, so government programs should be considered that improve the accessibility and reduce the cost of primary health care.

6.3 Life choice implications for ordinary citizens and households

Ordinary citizens of Thailand can begin to modify their lifestyles with the non-policy operable findings of the present study. They should know that too much time spent at either work or leisure, time spent in meditation, time caring for others, and the presence of boy toddlers were found to significantly reduce subjective well-being. They may be surprised to learn that many social capital parameters such as time used in sports, prayer and reading sacred texts, belief in giving money and time given to charity were found to be non-significant determinants of subjective well-being.

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APPENDIX TABLES

Table A1 Complete descriptive Statistics by sub-samples

Descriptive Statistics	variables	Total				Rural, Chiang Mai				Urban, Chiang Mai				Urban, Bangkok				Correlation with happiness	
		Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Corr.	Sig.2-tailed
Dependent Variable																			
Happiness																			
In general, I consider myself a happy person.	happy	1	10	7.93	1.56	2	10	7.60	1.84	1	10	7.56	1.48	5	10	8.26	1.33	1	
Physical Happiness																			
I have/show a cheerful face.	phys1	1	10	8.38	1.54	2	10	8.54	1.70	1	10	7.77	1.68	5	10	8.50	1.34	0.45	0.00
I feel fresh and full of energy to act in life.	phys2	1	10	8.11	1.61	1	10	8.26	1.80	1	10	7.63	1.39	3	10	8.18	1.53	0.47	0.00
I feel no pain or discomfort in my body that might be the cause to limit me from doing moderate activities.	phys3	1	10	6.89	1.98	1	10	6.92	2.73	1	10	7.11	1.74	1	10	6.79	1.46	0.19	0.00
I feel calm and relaxed.	phys4	1	10	7.54	1.59	2	10	7.85	1.80	1	10	7.07	1.64	1	10	7.52	1.39	0.45	0.00
Mental Happiness																			
I have a sense of meaning and purpose in my life and know how to go for it.	mental1	1	10	7.56	7.95	1	10	7.42	2.01	1	10	7.56	1.59	4	10	7.64	1.52	0.48	0.00
If I could live my life over, I would change almost nothing.	mental2	1	10	6.20	7.30	1	10	6.10	3.19	1	10	6.15	2.55	1	10	6.29	3.44	0.30	0.00
I feel free to make decisions even in difficult situations.	mental3	3	10	7.97	1.45	3	10	8.27	1.71	4	10	8.21	1.39	4	10	7.72	1.24	0.32	0.00
I am quite good at managing the many responsibilities of my daily life.	mental4	1	10	7.76	7.82	1	10	7.94	1.76	1	10	7.35	1.39	4	10	7.80	1.40	0.39	0.00
I love to challenge my mind to create something new and different.	mental5	1	10	6.70	7.47	1	10	6.10	2.70	3	10	7.24	1.55	1	10	6.88	2.37	0.31	0.00
For me, life has been a continuous process of learning, changing, and growth.	mental6	1	10	8.00	8.12	1	10	7.96	1.88	4	10	8.09	1.41	4	10	8.00	1.48	0.33	0.00
Emotional Happiness																			
I can be myself however I am or wherever I go.	emo1	4	10	8.18	1.40	4	10	8.67	1.47	5	10	8.05	1.30	4	10	7.94	1.31	0.24	0.00
I can easily/quickly calm down when I feel bad/stressed.	emo2	1	10	7.55	1.62	2	10	7.63	1.86	1	10	7.04	1.72	3	10	7.68	1.39	0.35	0.00

Descriptive Statistics	variables	Total				Rural, Chiang Mai				Urban, Chiang Mai				Urban, Bangkok				Correlation with happiness	
		Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Corr.	Sig.2-tailed
I find myself smiling even when no one else is around.	emo3	1	10	7.96	1.66	1	10	8.30	1.94	1	10	7.74	1.78	3	10	7.84	1.41	0.32	0.00
Social Happiness																			
I fit in very well with the people and the community around me.	soc1	1	10	9.01	1.94	1	10	8.77	2.42	1	10	8.56	1.93	2	10	9.31	1.55	0.08	0.08
I have never feel lonely because I have friends with whom to share my concerns.	soc2	1	10	8.73	2.11	1	10	8.49	2.36	3	10	8.17	1.98	1	10	9.07	1.94	0.18	0.00
I desire to bring and share my happiness to others.	soc3	1	10	8.01	1.86	3	10	8.05	1.85	1	10	7.68	1.50	1	10	8.09	1.97	0.45	0.00
Spiritual happiness																			
In most ways my life is close to my ideal.	spirit1	1	10	6.97	1.82	1	10	6.72	2.15	1	10	7.06	1.86	3	10	7.08	1.58	0.51	0.00
I feel my life is bright and beautiful.	spirit2	1	10	7.42	1.73	1	10	7.42	1.95	1	10	7.06	1.78	3	10	7.54	1.55	0.54	0.00
I respect myself.	spirit3	1	10	8.08	1.76	5	10	8.80	1.45	1	10	8.01	1.67	3	10	7.67	1.83	0.34	0.00
In general, I feel confident and positive about myself.	spirit4	1	10	8.20	1.43	5	10	8.80	1.37	1	10	7.96	1.44	4	10	7.92	1.35	0.38	0.00
I feel I am at one with nature.	spirit5	1	10	7.07	1.97	2	10	8.12	1.87	1	10	6.35	2.07	1	10	6.70	1.75	0.25	0.00
I feel that developing harmony with the environment reflects my personal experience most of the time.	spirit6	1	10	7.04	1.87	2	10	7.95	1.95	1	10	6.59	1.89	3	10	6.65	1.62	0.27	0.00
I feel great peace in my soul.	spirit7	1	10	7.31	1.67	3	10	7.96	1.84	1	10	6.93	1.59	2	10	7.06	1.49	0.31	0.00
Independent Variables																			
Socio-demographics																			
Age in years	age	16	80	42.61	12.62	20	80	51.68	12.75	16	71	39.01	12.79	21	69	38.48	9.32	-0.01	0.78
Gender: female	female	0	1	0.65	0.48	0	1	0.67	0.47	0	1	0.55	0.50	0	1	0.68	0.47	0.02	0.61
Marital status: single	single	0	1	0.34	0.47	0	1	0.07	0.26	0	1	0.46	0.50	0	1	0.45	0.50	0.04	0.36
Marital status:married	married	0	1	0.59	0.49	0	1	0.85	0.36	0	1	0.43	0.50	0	1	0.50	0.50	-0.06	0.21
Marital status:divorce	divorce	0	1	0.04	0.19	0	1	0.03	0.17	0	1	0.10	0.30	0	1	0.03	0.16	0.00	0.98
Marital status:widowed	widowed	0	1	0.03	0.17	0	1	0.05	0.22	0	1	0.01	0.11	0	1	0.03	0.16	0.05	0.30
Household members (persons)	hhmember	1	12	3.42	1.58	1	9	3.55	1.49	1	8	3.45	1.45	1	12	3.33	1.68	-0.02	0.62
number of Girl babies (1 day-2 yrs) (persons)	girlbaby	0	1	0.01	0.10	0	1	0.02	0.14	0	0	0.00	0.00	0	1	0.01	0.09	-0.05	0.29
number of boy babies (1 day-2 yrs) (persons)	boybaby	0	1	0.01	0.11	0	1	0.01	0.12	0	1	0.01	0.11	0	1	0.01	0.11	0.02	0.71
number of Girl toddlers (3-6 yrs) (persons)	girltoddler	0	2	0.02	0.17	0	1	0.01	0.12	0	1	0.02	0.16	0	2	0.03	0.19	-0.04	0.44

Descriptive Statistics	variables	Total				Rural, Chiang Mai				Urban, Chiang Mai				Urban, Bangkok				Correlation with happiness	
		Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Corr.	Sig.2-tailed
number of Boy toddlers (3-6 yrs) (persons)	boytoddler	0	1	0.02	0.14	0	1	0.01	0.08	0	1	0.02	0.16	0	1	0.03	0.16	-0.15	0.00
number of children in the age of below 6 yrs (persons)	children0_6	0	2	0.07	0.29	0	2	0.06	0.26	0	2	0.06	0.33	0	2	0.08	0.29	-0.10	0.02
number of children in the age of 7-12 (persons)	children7_12	0	2	0.13	0.36	0	2	0.09	0.31	0	2	0.12	0.36	0	2	0.15	0.38	-0.08	0.07
number of children in the age of 13-20 (persons)	children13_20	0	2	0.25	0.51	0	2	0.23	0.45	0	2	0.40	0.66	0	2	0.20	0.47	-0.05	0.28
number of children in the age of over 20 (persons)	children20up	0	5	0.59	0.95	0	5	1.19	1.21	0	3	0.46	0.85	0	2	0.27	0.55	-0.01	0.90
rural	rural	0	1	0.25	0.43	0	1	0.80	0.40	0	0	0.00	0.00	0	0	0.00	0.00	-0.14	0.00
Comminity/social capital																			
My living area has no pollution.	community1	1	10	5.74	2.33	1	10	6.60	2.75	1	10	6.23	2.06	1	10	5.06	1.91	-0.09	0.06
My living area has good facilities.	community2	1	10	7.52	1.63	1	10	8.32	1.76	5	10	7.95	1.29	1	10	6.90	1.38	0.19	0.00
My living area is safe.	community3	1	10	7.62	1.70	2	10	8.70	1.57	5	10	8.28	1.48	1	10	6.75	1.35	0.16	0.00
My living area is a nice community.	community4	1	10	7.84	1.65	5	10	9.09	1.16	5	10	8.37	1.36	1	10	6.93	1.41	0.18	0.00
community satisfaction	communitysat	1.00	10.00	7.18	1.38	4.75	10.00	8.18	1.15	5.25	10.00	7.71	1.10	1.00	10.00	6.41	1.11	0.12	0.01
Human capital																			
number of years in education	edu	0	18	10.98	4.59													0.18	0.00
Easterlin-paradox and other economic factors																			
Unemployed or not: 0 = employed, 1 = unemployed	unemp	0	1	0.04	0.19	0	1	0.05	0.22	0	0	0.00	0.00	0	1	0.05	0.21	0.02	0.73
having own house	housing	0	1	0.54	0.50	0	1	0.87	0.34	0	1	0.46	0.50	0	1	0.37	0.48	-0.01	0.87
Annual Household income (1,000baht)	hhincome	10.8	12,000	484.98	810.64	10.8	4,200	344.45	515.501	23	12,000	698.1	1,403	66	2,400	495	649.62	0.13	0.00
Annual Income (1,000baht)	income	0	1,860	165.86	177.48	0	1,860	138.95	203.495	15	1,800	238.98	251.590	0	1,080	156.8	113.1	0.13	0.00
Total yearly expenditures (1,000baht)	expense	0	684	101.71	92.115	3.6	571.2	95.871	87.076	4.320	684	164.4	145.346	0	488.4	83.762	55.795	0.04	0.44
Work																			
Type of work: farmer	farmer	0	1	0.11	0.31	0	1	0.34	0.48	0	1	0.01	0.11	0	0	0.00	0.00	-0.16	0.00
Type of work: Labour	laborer	0	1	0.33	0.47	0	1	0.21	0.41	0	1	0.17	0.38	0	1	0.47	0.50	-0.03	0.50
Type of work: company staff	salaried	0	1	0.19	0.40	0	1	0.05	0.22	0	1	0.18	0.39	0	1	0.29	0.45	0.13	0.00
Type of work: Government officer	government	0	1	0.12	0.33	0	1	0.14	0.35	0	1	0.20	0.40	0	1	0.09	0.28	0.13	0.01
Type of work: self-employment	self-employment	0	1	0.19	0.39	0	1	0.17	0.38	0	1	0.43	0.50	0	1	0.11	0.32	-0.10	0.03
Type of work: housewife	housewife	0	1	0.03	0.17	0	1	0.04	0.20	0	0	0.00	0.00	0	0	0.00	0.00	0.02	0.70
Type of worker: Art and	artcraft	0	1	0.01	0.10	0	1	0.01	0.12	0	0	0.00	0.00	0	1	0.05	0.21	0.01	0.85

Descriptive Statistics	variables	Total				Rural, Chiang Mai				Urban, Chiang Mai				Urban, Bangkok				Correlation with happiness	
		Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Corr.	Sig.2-tailed
handicrafts																			
Type of work: retirement	retired	0	1	0.01	0.11	0	1	0.03	0.17	0	1	0.01	0.11	0	0	0.00	0.00	0.05	0.33
Work time per week	t_work	0	7,980	2,848.30	1,009.69	0	5,460	2,680.79	1,076.71	0	7,980	3,294.51	1,227.72	0	5,040	2,794.25	832.44	-0.18	0.00
Housework time per week	t_housework	0	4,620	502.85	572.34	0	4,620	915.08	890.69	0	2,100	530.20	498.34	0	1,680	369.83	386.77	-0.05	0.34
Commuting time	t_commute	0	2,100	212.69	294.28	0	1,680	132.95	256.51	0	840	97.05	214.90	0	2,100	297.56	312.00	0.11	0.02
total working time	totaltime_work	0.00	7,980	3,479.5	1,072	0.00	7,860	3,255.1	1,100.9	420	7,980	3,920.6	1,255.6	0.00	6,180	3,461.7	937.95	-0.13	0.01
Leisure time allocation choices																			
time as Sports spectator	t_sportspec	0	1,260	39.93	130.00	0	420	19.93	61.66	0	840	85.00	193.62	0	1,260	36.18	129.36	-0.03	0.53
time playing Sports team	t_teamsport	0	1,440	72.04	196.90	0	1,260	118.93	250.29	0	1,440	112.07	242.89	0	840	31.01	121.74	0.05	0.28
time playing Sports single	t_workout	0	1,260	42.83	142.51	0	1,080	87.84	177.62	0	1,260	60.91	217.53	0	420	10.58	50.00	-0.07	0.14
total amount of time use in sports	timeallsport	0	1,920	155.55	279.84	0	1,920	227.70	299.10	0	1,440	257.99	353.10	0	1,260	78.12	209.60	-0.01	0.78
Sleep time per day	t_sleep	180	770	471.09	70.80	240	770	484.72	81.18	180	720	436.46	91.67	300	600	474.92	49.46	0.03	0.52
Leisure time per week	t_leisure	0	10,500	1,518	1,220.3	0	10,500	1,641.5	1,539.2	0	4,200	1,224.3	860.03	0	6,300	1,547.4	1,101	-0.08	0.10
Religiosity																			
Time as Religious prayer	t_pray	0	840	51.18	113.71	0	840	68.96	136.57	0	630	81.79	135.80	0	630	30.55	83.43	0.07	0.13
time do meditation	t_meditation	0	630	25.26	77.02	0	420	40.99	93.82	0	630	48.83	100.16	0	600	8.13	48.09	-0.01	0.81
time Reading sacred texts	t_readsacred	0	420	19.25	69.86	0	420	38.61	94.59	0	420	32.00	87.65	0	420	3.66	33.13	0.03	0.49
charitable contribution for religious institutions/beliefs by money	r_money	0	50,000	2,142	5,390	0	50,000	3,983	7,793	0	50,000	2,529.6	6,365.5	0	14,400	922.08	1,793	0.02	0.71
charitable contribution for religious institutions/beliefs by goods	r_goods	0	1	0.35	0.48	0	1	0.45	0.50	0	1	0.59	0.49	0	1	0.20	0.40	-0.14	0.00
charitable contribution for religious institutions/beliefs by time (min(s)/year)	r_time	0	6,240	614.81	1,135	0	6,240	893.19	1,313.3	0	5,880	708.15	867.38	0	6,240	419.75	1,066	-0.06	0.16
Generousity, giving , and sharing																			
Time caring for others	t_caring	0	5,460	90.65	470.36	0	5,460	180.22	612.39	0	840	33.29	127.37	0	5,040	58.00	442.98	-0.12	0.01
Time Volunteering	t_volunteer	0	360	5.63	31.24	0	360	17.57	54.09	0	120	1.46	13.25	0	15	0.08	1.02	0.04	0.35
Time as Community leader	t_leader	0	1,500	9.50	83.73	0	1,500	30.49	150.05	0	120	1.46	13.25	0	0	0.00	0.00	-0.10	0.03
Time as Community member	t_member	0	1,200	21.12	94.82	0	1,200	57.63	146.64	0	840	13.90	94.89	0	420	2.75	28.65	0.06	0.24
charitable contribution for public or community by money	sharemoney	0	24,000	439.84	1,751.2	0	24,000	898.63	2,561.1	0	10,000	788.15	2,237.1	0	2,000	50.83	255.65	-0.01	0.84
charitable contribution for public or community by goods	sharegoods	0	1	0.13	0.33	0	1	0.35	0.48	0	1	0.06	0.24	0	1	0.02	0.14	-0.13	0.01
charitable contribution for public	t_share	0	29,820	102.84	1,395.9	0	29,820	321.39	2,512.6	0	180	8.89	39.24	0	180	5.25	30.35	0.03	0.55

Descriptive Statistics	variables	Total				Rural, Chiang Mai				Urban, Chiang Mai				Urban, Bangkok				Correlation with happiness	
		Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Min	Max	Mean	SD	Corr.	Sig.2-tailed
or community by time (min(s)/year)					5				1										
charitable contribution for individual by money	ind_money	0	12,000	271.34	1,076.23	0	10,000	447.94	1,328.20	0	10,000	487.65	1,226.87	0	12,000	94.58	794.55	-0.02	0.75
charitable contribution for individual by goods	ind_goods	0	1	0.10	0.30	0	1	0.22	0.41	0	1	0.14	0.34	0	1	0.02	0.14	-0.07	0.14
charitable contribution for individual by time (min(s)/year)	ind_time	0	9,360	46.67	598.52	0	9,360	75.04	789.69	0	360	4.44	40.00	0	8,640	44.25	569.27	-0.05	0.24
total amount of charitable money	allgiving money	0	60,000.00	2,850.62	6,798.12	0	60,000.00	5,319.69	9,592.76	0	60,000.00	3,805.43	8,372.05	0	18,000.00	1,067.50	2,112.14	0.01	0.84
Governance/civil rights																			
percentage of confidence in government	govtrust	0.0	1.0	0.49	0.26	0.0	1.0	0.60	0.28	0.0	0.9	0.44	0.22	0.1	1.0	0.44	0.24	0.03	0.58
politics affecting	politic	1	10	3.94	2.75	1	10	4.06	3.11	1	10	4.60	2.75	1	10	3.65	2.48	-0.13	0.00