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Life Satisfaction in Asian Households

A Model of Health,  
Family Life and Money

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**Summary:**

Life satisfaction has been extensively studied in developed countries frequently using methods of self-report questionnaires and correlational analysis. This paper contributes to existing literature in two novel respects: first, it makes use of data from a developing country and secondly, uses a third-party evaluation method to investigate the structural relationship between life satisfaction and health, family life and money. Eight versions of life combinations, each representing a combination of good/poor health, good/troubled family life and high/low salary, were distributed to eight sub-groups of 100 respondents. A constrained cumulative logit (proportional odds) model is then fitted to the data. We find a complex nexus of interactions between the covariates under study and life satisfaction. What stands out is the dominance of family life compared with money and good health in meeting a more satisfied life among Asian households.





# Høgskolen i Hedmark

**Tittel:** Livstilfredshet i asiatiske husstander: en modell med helse, familieliv og penger

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**Sammendrag:**

Livstilfredshet har vært utstrakt studert i industriland ved å bruke metoder som spørreskjema med selvrapportering og sammenhengsanalyser. Denne rapporten er et bidrag til eksisterende litteratur på to nye måter: først bruker den data fra industriland og så bruker den en tredjeparts evalueringmetode for å undersøke det strukturelle forholdet mellom livstilfredshet og helse, familieliv og penger. Åtte varianter av livskombinasjoner som alle representerer en kombinasjon av god/dårlig helse, bra/vanskelig familieliv og høy/lav lønn, ble fordelt på åtte undergrupper av 100 respondenter. En tvungen akkumulert logit (proporsjonale odds) modell tilpasses så til dataene. Vi finner en kompleks sammenheng av vekselvirkninger mellom de undersøkte kovariantene og livstilfredshet. Det som skiller seg ut er overvekten av familieliv sammenlignet med penger og god helse når det kommer til livstilfredshet i asiatiske husstander.



# **Life Satisfaction in Asian Households: A Model of Health, Family Life and Money**

## **1 Introduction**

Life and the degree to which a person enjoys it become our measure of life satisfaction. Various labels are used to describe this concept: psychological well-being (Ryff & Keyes, 1995), subjective well-being (Diener, 1984), affective well-being (Warr, 1990), and global well-being (Staudinger, Fleeson & Baltes, 1999). These various labels reflect different ways of conceptualizing and measuring essentially the same concept.

Studies on life satisfaction share three common characteristics: First, they are undertaken in developed countries and are often extrapolated haphazardly to developing countries (Diener, Diener & Diener, 1995; Oishi, Diener, Lucas & Suh, 1999; Suh, Diener, Oishi & Triandis, 1998). Second, the scales conceptualize life satisfaction as a linear combination of cognition and affect (Ryff & Keyes, 1995; Diener, 1984; Warr, 1990; Staudinger, Fleeson & Baltes, 1999). Third, the scales are self-reported, with most of the studies reporting weak correlational relationships. In DeNeve & Cooper (1998), correlations obtained between predictors and life satisfaction, while significant, are quite small in magnitude.

## **2 Factors affecting life satisfaction**

This study examines basic factors of life satisfaction, specifically hypothesizing that the predictors of self-reported life satisfaction for the Asian household are good health, good family life and sufficient amounts of money. More importantly, we provide results indicating among these three which factor(s) matter most. We employ a third party evaluation technique instead of a self-report questionnaire. Respondents were presented with one of the ( $2 \times 2 \times 2$ ) life profiles.

Each vignette combine (1) good or poor health, (2) good or troubled family life and (3) high or low salary. The respondents then indicated whether they would be satisfied with the nexus of life profiles they have read and to what degree.

## **2.1 Good Health**

Health is an often overlooked variable in the formulation of life satisfaction. The role of good health as a predictor of life satisfaction cannot be ignored. Subjective mental and physical health are important variables in Staudinger, Fleeson & Baltes (1999) measure of life satisfaction. DeNeve & Cooper (1998) found that the average correlation between health and life satisfaction ( $r = 0.32$ ) was higher than that between personality and life satisfaction, and socioeconomic status and life satisfaction ( $r = 0.19$ ).

## **2.2 Good Family Life**

Life revolves around work and family and conflicts between them are a basic theme in popular literature as well as empirical research. Researchers propose three forms of family and work conflicts, i.e. bi-directional work-family conflict, work to family conflict and family to work conflict, and found them all to relate negatively with job and life satisfaction (Kossek & Ozeki, 1998).

In Thai extended families, children typically live with their parents through their college years. Many families house three generations under the same roof. Children's behavior thus has a far-reaching impact on the harmonious relationship within the family. A recent poll showed that parents were highly concerned about their children's behavior expecting them to be obedient and well-behaved (Bangkok University Poll, 2002). Thus, for Thai families to have obedient and well-behaved children is a second important—and we find, most important—factor of life satisfaction.



## **2.3 Money**

Career success is often defined by the amount of money one earns (Judge, Cable, Boudreau & Bretz, 1995; Melamed, 1995). For a particular country, it is difficult to quantify the amount of money an individual should earn to qualify for career success. Per capita income is often used as a base income but loses meaning at the individual level. Each person generally has a good idea as to how much is needed to support a comfortable lifestyle. Sufficient amounts of money also depend on each person's spending habit and family obligations. There is no doubt that money is a basic requirement forming the third factor of life satisfaction.

## **3 Method of analysis**

### **3.1 Sample**

Eight-hundred respondents took part in this study. They were drawn from various professions: company employees, small enterprise owners, garment factory workers, restaurant employees, government and state enterprise employees, students and housewives. There were eight ( $2 \times 2 \times 2$ ) versions of life situations in the study and 100 randomly selected participants responded to each version of the eight questionnaires.

### **3.2 Measurements**

A two-page questionnaire was developed. On the first page, the respondents were asked to provide demographic information, such as gender, marital status, number of children, age, monthly income in Thai Baht (approximately Baht 40 to US\$ 1), education and profession.

The second part of the questionnaire contained a short personal history of a fictitious organization employee. To lend authenticity to the story, the instructions confirmed that it was a true personal history. The personal history was manipulated in such a way that there were a total of  $(2 \times 2 \times 2)$  life situations: two for each of the three life satisfaction factors—a negative and a positive condition.

For salary, the negative condition depicted the employee as a clerical worker earning a low monthly salary of Baht 15,000 (US\$ 375) as against an executive who earned a high monthly salary of Baht 50,000 (US\$ 1,250) in the positive condition. The negative health history stated that the employee suffered from viral hepatitis as against enjoying good health in the positive condition. The family life described that the employee in the story had a son and a daughter. In the negative condition, the son was said to be addicted to drugs while the daughter spent her evenings bar-hopping, a conduct most unbecoming of a young Thai woman. The negative story also informed that both children performed poorly in school earning a low GPA of 1.5. In the positive condition, the son and daughter were both well behaved and earned a high GPA of 3.5.

The eight life profiles as described in the questionnaire are:

1. Low salary, good health, good family life
2. Low salary, good health, troubled family life
3. Low salary, viral hepatitis, good family life
4. Low salary, viral hepatitis, troubled family life
5. High salary, good health, good family life
6. High salary, good health, troubled family life
7. High salary, viral hepatitis, good family life
8. High salary, viral hepatitis, troubled family life

After reading the short personal history, the respondents were asked to respond to the question: “If you were this employee, would you be satisfied with his/her kind of life?” for which the respondents answer their degree of satisfaction of a 5-point Likert scale.

## 4 Empirical findings

The respondents demographic characteristics were as follows: 358 male, 442 female; 427 single, 363 married, 7 separated; 438 in the 18-30 years of age bracket, 362 in the 31 years and over age bracket; 296 earned 0-10,000 Baht/month, 293 earned 10-001-20,000 Baht/month and 211 earned more than 20,001 Baht/month; 369 attained less than bachelor's degree, 390 bachelor's degree and 41 higher than bachelor's degree.

To ascertain whether the general characteristics of these eight sub-groups of 100 respondents each were comparable, tests of homogeneity were performed and reported in Table 1. The results show that the eight sub-groups are homogeneous.

Table 2 provides cross-classifications of the response variable, life satisfaction, and the covariates: health, family and money. The cell counts give the number of respondents who indicated their level of satisfaction (very dissatisfied, dissatisfied, neutral, satisfied or very satisfied) with the kind of life situation they read.

### 4.1 Modeling strategy

The model consists of three factors which combine to form  $2^3$  lifetime profiles: salary ( $S$ ), health ( $H$ ), and family ( $F$ ) each with two level scores: high/low, good/poor and good/troubled, respectively. The response category, life satisfaction, has a natural ordering with five cutpoints, selected by design, along a continuum of possible responses. The model is best expressed as a cumulative logit in which the odds likelihood at each level score is compared with those levels below it.

To fix ideas and set notation let  $P(Y \geq j | \mathbf{x})$  equal the cumulative response prob-

ability conditional on covariate value<sup>1</sup>  $\mathbf{x}$  for category,  $j$ . The log-odds (logit) is formed as

$$L_j(\mathbf{x}) = \frac{P(Y \geq j | \mathbf{x})}{P(Y < j | \mathbf{x})}, \quad j = 2, \dots, 5. \quad (1)$$

The cumulative logit model postulates a linear relation,

$$L_j(\mathbf{x}) = \alpha_j + \beta'_j \mathbf{x}, \quad j = 2, \dots, 5. \quad (2)$$

where  $\beta_j$  is a vector of coefficients under maximum likelihood conformable with covariate structure,  $\mathbf{x}$ . A restriction on  $\beta$  such that  $\beta_j = \beta$  delivers a proportional odds logit representation popular in the literature. Such a model allows interpretation of the direction and relative magnitude of the overall response without need to focus on a particular levels of category response.

The odds-ratio between cumulative probabilities under comparative covariate structure  $\mathbf{x}_1$  and  $\mathbf{x}_2$  lends itself to easy interpretation with the proportional odds model,

$$L_j(\mathbf{x}_1) - L_j(\mathbf{x}_2) = \beta'(\mathbf{x}_1 - \mathbf{x}_2). \quad (3)$$

Since the elements of  $\mathbf{x}$  are each bivariate scores, or interactions between bivariate scores,  $\beta$  measures the difference in the configuration of lifetime profiles.

## 4.2 Model selection

We begin with full covariate interaction and proceed in the direction of greater parsimony taking as a measure of goodness-of-fit the residual deviance,  $G^2$ . For the unconstrained model in (1), we first compare full covariate interaction against a more restrictive model of associated independence. The difference between the two models' residual deviance,  $G^2(SF, SH, FH | SFH) = 3.84$ , is distributed as  $\chi^2$  with  $df = 1$ . The probability of achieving a value at least this extreme under the null is  $P\text{-value} = 0.050$  suggesting substantial loss in likelihood with this more restricted representation. Further movements along the hierarchical tree in

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<sup>1</sup>Vector  $\mathbf{x}$  includes both main and possible interaction effects.

favor of other more restrictive representations result in even more statistically significant loss of likelihood and are abandoned in favor of our choice representation model of full factor interaction.

Next, we test the restrictions placed on a proportional odds model (2) against an unrestricted cumulative logit in (1). The difference in residual deviance is  $G^2 = 29.49$  with  $df = 21$  and  $P\text{-value} = 0.103$ . We accept the proportional odds model as a more parsimonious representation.

### 4.3 Estimation and interpretation

Table 3 reports maximum likelihood estimates from the proportional odds model with full factor interaction,

$$L_j(\mathbf{x}) = \alpha_j + \beta_S S + \beta_F F + \beta_H H \\ + \beta_{SF} S \cdot F + \beta_{SH} S \cdot H + \beta_{FH} F \cdot H + \beta_{SFH} S \cdot F \cdot H. \quad (4)$$

The data clearly reveal the dominance of untroubled family life in explaining life satisfaction directly and through moderation affecting salary and health. Inspection of the results indicate that neither coefficients—high salary nor good health—are significantly different from zero at standard levels of confidence whereas the coefficient for family is significant at the 1% level.

Exponentiation of the coefficient in Table 3 for salary translates readily into an odds-ratio of  $\exp\{0.058\} = 1.06$ . Respondents who were given a lifetime profile of poor health and troubled family life were only 1.06 times more likely to show greater satisfaction with a high salary than those with a low salary. Similar results obtain with good health. Those respondents, given a profile of good health but a low salary/troubled family configuration, were only 1.07 times as likely to be more satisfied than with poor health. In both cases, the 95% confidence intervals for the odds-ratios bracket unity rejecting the hypothesis their impacts are statistically significant.

In the absence of both high salary and good health, an untroubled family life

plays a significant role in promoting lifetime satisfaction. The odds-ratio is  $\exp\{1.341\} = 3.82$  with a 95% confidence interval of 2.34 to 6.53. Respondents were 3.82 times more satisfied with an untroubled family even in a profile in which their salaries were low and their health poor.

In conclusion, from a base of low salary, poor health and troubled family, an increase in salary and health elevate the likelihood of greater life satisfaction a mere 1.06 and 1.07 times, respectively. An improvement in family circumstances from this same base raises the chances of greater life satisfaction 3.82 times.

Conditioning on profiles in which health is good but the family is troubled, we find the odds-ratio for salary is  $\exp\{0.058 + 0.427\} = 1.62$ . While this might suggest respondents are 1.62 times more satisfied with a higher salary given their health is good, the 95% confidence interval, 0.95 to 2.77, encompasses unity leading to rejection of the hypothesis that salary has a significant impact on life satisfaction in profiles in which health is good but the family is troubled. However, a profile in which the family is good but health is poor, leads to an odds-ratio for salary of  $\exp\{0.058 + 0.1.242\} = 3.67$  with a confidence interval of 2.19 to 6.14. Respondents are 3.67 times more satisfied with their life when their salaries are high given their family is trouble-free but their health is poor. Finally, in circumstances with the prospect of good health, an untroubled family, the conditional odds-ratio of higher salary rises to  $\exp\{0.058 + 1.242 + 0.427 + 1.060\} = 16.2$  with a 9.20 to 28.66 confidence interval. Clearly, family background moderates in a significant manner the effect of salary on lifetime satisfaction whereas health does not.

A somewhat similar case can be told with good health. The conditional odds-ratio for good health within a profile of a troubled family but high salary is  $\exp\{0.069 + 0.427\} = 1.64$  with a 0.90 to 2.80 confidence interval. But profiles in which salary is low and the family is troubled lead to an odds-ratio for health of  $\exp\{0.069 + 0.380\} = 1.53$  and 0.92 to 2.55 confidence interval. Good health has an insignificant impact on life satisfaction with individuals having low salaries even though their family is trouble-free. With an untroubled family and high salary, the odds-ratio of good health increases to  $\exp\{0.069 + 0.427 +$

$0.358 + 1.060\} = 6.78$ . It is interesting to note the asymmetry of these marginal impacts between good health on life satisfaction and high salary.

## 5 Conclusion

This paper seeks to untangle the effect of three factors—prominent in the literature—related to life satisfaction for Asian households. Using a novel sampling design of third-party evaluations, we confront respondents with eight combinations of real life profiles—low/high salaries, troubled/good families, and poor/good health prospects—and examine their responses in terms of degree of life satisfaction. A proportional odds logit model fits the data with acceptable measures of precision. Our results reveal the dominance of family life in both directly affecting life satisfaction and moderating the effects of salary and health. In the presence of a troubled family, neither higher salaries nor improved health increase life satisfaction as measured by odds ratios. However, given a trouble-free family, higher salaries matter but improved health does not. When the family is untroubled and salaries are high, respondents turn to improved health in raising life satisfaction.

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Table 1: Homogeneity Tests

Characteristic	Test statistic ( $\chi^2$ )	Df	<i>P</i> -value
Gender (male, female)	4.105	7	0.768
Marital status (single, married, separated)	15.03	14	0.376
Age (18 – 30 yrs., 30+ yrs.)	6.922	7	0.437
Monthly income (Baht) (0 – 10K, 10K – 20K, 20K+)	19.76	14	0.138
Education (< B.A., B.A., > B.A.)	12.28	14	0.584

Table 2: Cross-Classification of Life Satisfaction with Covariates

		SATISFACTION					
		Very Dissatisfied	Somewhat Dissatisfied	Neutral	Somewhat Satisfied	Very Satisfied	
HEALTH	FAMILY						
		SALARY					
poor	troubled	low	58	33	2	4	3
		high	57	32	6	3	2
	good	low	25	46	23	5	1
		high	11	29	28	29	3
good	troubled	low	56	34	7	2	1
		high	44	40	13	2	1
	good	low	16	49	19	15	1
		high	2	5	18	50	25

Table 3: Maximum Likelihood Estimates:  
Full Interaction Proportional Odds Model

Coefficients	Value	Std. error
$\alpha_1$	-0.311	0.198
$\alpha_2$	-2.260	0.218
$\alpha_3$	-3.489	0.240
$\alpha_4$	-5.592	0.306
$\beta_S$	0.058	0.278
$\beta_F$	1.341	0.273
$\beta_H$	0.069	0.278
$\beta_{SH}$	1.427	0.389
$\beta_{SF}$	1.242	0.382
$\beta_{FH}$	0.358	0.380
$\beta_{SFH}$	1.060	0.543

Log-likelihood = -947.668

Residual deviance = 1895.34

$df = 149$ .