

The Relationship between Land Use Factors and Feeling of Happiness at the Neighbourhood Level

M. Moeinaddini, Z. Asadi-Shekari, Z. Sultan, M. Zaly Shah

Abstract—Happiness can be related to everything that can provide a feeling of satisfaction or pleasure. This study tries to consider the relationship between land use factors and feeling of happiness at the neighbourhood level. Land use variables (beautiful and attractive neighbourhood design, availability and quality of shopping centres, sufficient recreational spaces and facilities, and sufficient daily service centres) are used as independent variables and the happiness score is used as the dependent variable in this study. In addition to the land use variables, socio-economic factors (gender, race, marital status, employment status, education, and income) are also considered as independent variables. This study uses the Oxford happiness questionnaire to estimate happiness score of more than 300 people living in six neighbourhoods. The neighbourhoods are selected randomly from Skudai neighbourhoods in Johor, Malaysia. The land use data were obtained by adding related questions to the Oxford happiness questionnaire. The strength of the relationship in this study is found using generalised linear modelling (GLM). The findings of this research indicate that increase in happiness feeling is correlated with an increasing income, more beautiful and attractive neighbourhood design, sufficient shopping centres, recreational spaces, and daily service centres. The results show that all land use factors in this study have significant relationship with happiness but only income, among socio-economic factors, can affect happiness significantly. Therefore, land use factors can affect happiness in Skudai more than socio-economic factors.

Keywords—Neighbourhood land use, neighbourhood design, happiness, socio-economic factors, generalised linear modelling.

I. INTRODUCTION

NOWADAYS, happiness is a goal of many national and local governments since it could enable people to have a better life [1]. There is a renewed interest in different areas such as psychology, social science, and economics in searching for happiness factors [2], [3]. Different factors such as socio-economic (e.g. employment, inflation, and income) and demographic factors (e.g. gender, age, marital status, education, and health) can affect happiness [3]. Dolan et al. [4] mentioned that all needs including income, health, and recreational activities can affect happiness. Therefore, happiness is the experience of satisfaction [5], and this satisfaction can come from everything around a person [6].

M. Moeinaddini is a Senior Lecturer in Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia (corresponding author, phone: +60129410543, email: mehdi@utm.my).

Z. Asadi-Shekari is a Researcher of Universiti Teknologi Malaysia. Centre for Innovative Planning and Development (CIPD), Faculty of Built Environment, Universiti Teknologi Malaysia (e-mail: aszohreh2@live.utm.my).

Z. Sultan is a Senior Lecturer and M. Zaly Shah is an Associate Professor in Department of Urban and Regional Planning, Faculty of Built Environment, Universiti Teknologi Malaysia (email: zahids@utm.my, zaly@outlook.com).

Various studies use different factors such as quality of life, well-being, satisfaction, and pleasure to represent happiness [7]-[16]. Since human living settlements can affect all of the mentioned factors, there should be a significant relationship between the built environment and happiness [8]. For instance, Berry and Okulicz-Kozaryn [17] proposed that levels of development, in addition to personal characteristics, are the key factors to happiness. One of the primary interests of some limited studies in this area is the effect of the living place on respondents' happiness [18]-[22]. However, these limited studies do not indicate which characteristics of place are most crucial, and how components of a place that might affect human happiness can be classified [23].

There are also some studies that consider the relationship between happiness and environment by focusing on macro-level factors such as air pollution, economic, and life satisfaction at country level [24]-[26]. Welsch and Kühling [27] focused on economics at the national level as one of the factors that have considerable effects on the happiness level and well-being. Dolan et al. [4] proposed that some environmental factors at macro level such as green space, blue space, attractive land use, air pollution, noise pollution, and water pollution, in addition to the socio-economic factors, can affect happiness. Hartig et al. [28] also found that attractive landscapes can increase pleasure and happiness.

Currently, rapid urbanisation and industrialisation are the main sources of various negative external factors such as traffic congestions, air pollution, fossil fuel consumption, noise pollution, and health problems [29]-[37]. These negative external factors can affect happiness since everything around people can affect their satisfaction level [6]. Although there is a possible relationship between built environment and happiness, there are limited studies that focus on this relationship especially at neighbourhood level. Therefore, this study focuses on this relationship by considering some land use variables, such as beautiful and attractive neighbourhood design, availability and quality of shopping centres, sufficient recreational spaces and facilities, and sufficient daily service centres (banks, educational centres, etc.), in addition to socio-economic factors (gender, race, marital status, employment status, education, and income), as independent variables, and the happiness score as the dependent variable.

II. METHOD

There are various measurement tools for happiness that measure various happiness related indicators such as quality of life [9], satisfaction [13], [14], well-being [4], [10], [12] and pleasure [15], [16]. Oxford happiness questionnaire (OHQ),

which was developed by Hills and Argyle [38], includes 29 items to estimate subjective well-being (SWB). The OHQ is an improved version of the Oxford happiness inventory [39]. They improved Oxford happiness inventory (OHI) by changing the response format. The Likert scale (1= strongly disagree to 6 = strongly agree) was used in OHQ instead of a 0–3 multiple choice scoring format that was used in OHI. In addition, 9 items also were added to OHI by Hills and Argyle [38] in OHQ. Since OHQ can achieve an acceptable validity by comparing data that were collected with other self-report scales of SWB, this questionnaire was used in this study to estimate the happiness score. However, more questions were added to the mentioned questionnaire to collect some land use data such as beautiful and attractive neighbourhood design, availability and quality of shopping centres, enough recreational spaces and facilities, and enough daily service centres (banks, educational centres, etc.), in addition to the socio-economic factors (gender, race, marital status, employment status, education, and income). The Likert scale was also used for land use data. The modified OHQ was used to collect data from more than 300 people who are living in six neighbourhoods. The neighbourhoods were selected randomly from the main Skudai neighbourhoods in Johor, Malaysia. Cronbach's (alpha) was used for the reliability test.

In this study, the dependent variable is the happiness score, which comes from Likert scale response data that only takes positive and discrete values. Therefore, conventional linear regression models with a normally distributed error structure are not suitable for modelling the happiness score. The GLM framework has been more successfully adopted for this type of data [40]–[42]. Happiness score is a scaled factor because it is the average of Likert scale response data. Lognormal and gamma with log link models are used to scale data in the GLM framework [41], [42]. Exponential family models have been more successfully adopted for the data that come from positive and discrete values [41], [42]. Since lognormal is not in the exponential family, GLMs with a gamma distribution are recommended. The gamma model assumes a log link (1):

$$Y = EXP(\beta_0 + \sum_{i=1}^i \beta_i \times X_i), \quad (1)$$

where Y : dependent variable, i : subscript showing the number of independent variables, X : independent variable, β_0 : constant, calculated in the calibration process, β_i : coefficient of the independent variable, calculated in the calibration process of the model.

III. RESULTS

The results of the GLM analysis are discussed in this section. Table I shows the reliability statistics and the Cronbach's alpha value, which is more than 0.7. Tables II–IV, present descriptive statistics for the variables included in the model. Table V indicates the variables included in the model, their parameter estimates, and the significance of the parameters (5% level). The omnibus test, likelihood ratio chi-square test statistics, scaled deviance (SD), and Pearson chi-square statistic show the model goodness of fit (refer to Tables

VI and VII).

TABLE I
RELIABILITY STATISTICS

Cronbach's Alpha	Number of Items
0.853	36

TABLE II
CONTINUOUS VARIABLE INFORMATION

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	Happiness score	300	2.34	5.24	3.9194	.54197
Covariate	Monthly income	300	1	5	2.78	1.162
	Education level	300	1	7	4.07	1.062
	Beautiful neighbourhood	300	1	5	2.5533	.77189
	Enough shopping centres	300	1	5	3.2700	.79532
	Enough recreational spaces and facilities	300	1	5	2.4033	1.31647
	Enough daily service centres	300	1	5	2.8833	1.47999

TABLE III
CATEGORICAL VARIABLE INFORMATION

		N	Per cent
Factor	Gender	Male	160 53.3%
		Female	140 46.7%
		Total	300 100.0%
	Race	Malay	135 45.0%
		Chinese	105 35.0%
		Indian	25 8.3%
		others	35 11.7%
		Total	300 100.0%
	Marital Status	Married	176 58.7%
		Divorced	18 6.0%
		Widowed	3 1.0%
		Separated	6 2.0%
		Never Married	97 32.3%
	Employment Status	Total	300 100.0%
		Employed for wages	147 49.0%
		Self-employed	81 27.0%
		Out of work for 1 year or more	15 5.0%
		Out of work for less than 1 year	2 0.7%
		A homemaker	13 4.3%
		A student	35 11.7%
		Retired	3 1.0%
		Unemployed	4 1.3%
		Total	300 100.0%

TABLE IV
CASE PROCESSING SUMMARY

	N	Per cent
Included	300	100.0%
Excluded	0	0.0%
Total	300	100.0%

Table VIII indicates that there is no strong correlation

between the independent variables included in the model since tolerances are greater than 0.1 and the VIFs are less than 10. Therefore, the final model can be defined as:

$$HS = EXP (0.735 + 0.019I + 0.121B + 0.035S + 0.027R + 0.026DS), \quad (2)$$

where HS = happiness score, I = income, B = beautiful neighbourhood, S = sufficient shopping centres, R = sufficient recreational spaces and facilities, DS = sufficient daily service centres.

TABLE V
PARAMETER ESTIMATES

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	.735	.0545	.628	.842	181.902	1	.000
[Gender=1]	-.018	.0093	-.036	.001	3.607	1	.058
[Gender=2]	0a	.	.	.	.	.	.
[Race=1]	-.013	.0153	-.043	.017	.703	1	.402
[Race=2]	.007	.0158	-.024	.038	.222	1	.638
[Race=3]	.003	.0204	-.037	.043	.023	1	.880
[Race=4]	0a	.	.	.	.	.	.
[Marital Status=1]	-.014	.0113	-.036	.008	1.492	1	.222
[Marital Status=2]	-.019	.0202	-.059	.021	.883	1	.347
[Marital Status=3]	.012	.0452	-.076	.101	.075	1	.784
[Marital Status=4]	.001	.0339	-.066	.067	.000	1	.986
[Marital Status=5]	0a	.	.	.	.	.	.
[Employment Status=1]	.001	.0401	-.077	.080	.001	1	.976
[Employment Status=2]	-.013	.0410	-.093	.068	.095	1	.758
[Employment Status=3]	-.004	.0442	-.090	.083	.006	1	.936
[Employment Status=4]	.042	.0665	-.088	.173	.408	1	.523
[Employment Status=5]	.020	.0437	-.066	.105	.205	1	.651
[Employment Status=6]	.015	.0418	-.067	.097	.134	1	.715
[Employment Status=7]	.003	.0590	-.113	.118	.002	1	.962
[Employment Status=8]	0a	.	.	.	.	.	.
Income	.019	.0056	.008	.030	11.594	1	.001
Education	.007	.0050	-.003	.017	1.938	1	.164
Beautiful neighborhood	.121	.0074	.107	.136	267.814	1	.000
Enough shopping centers	.035	.0075	.020	.050	21.866	1	.000
Enough recreational spaces and facilities	.027	.0049	.017	.037	29.544	1	.000
Enough daily service centers	.026	.0047	.017	.036	31.442	1	.000
(Scale)	.006b	.0005	.005	.007			

Dependent Variable: Happiness Score

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

This model shows that happiness is significantly affected by land use and neighbourhood design factors. Among these indicators, beautiful neighbourhood has higher positive parameters; therefore, this indicator has greater effects on

happiness in this model. The second effective indicator with a positive relationship is enough shopping centres. Income is the only significant socio-economic indicator. Overall, more beautiful neighbourhoods and enough shopping centres, recreational spaces and facilities, and daily service centres, in addition to higher income, could contribute to more happiness.

TABLE VI
OMNIBUS TEST

Likelihood Ratio Chi-Square	df	Sig.
367.934	21	.000

Dependent Variable: Happiness Score

Model: (Intercept), Gender, Race, Marital Status, Employment Status, Income, Education, Beautiful neighbourhood, Enough shopping centres, Enough recreational spaces and facilities, Enough daily service centres

Compares the fitted model against the intercept-only model.

TABLE VII
SD AND PEARSON CHI-SQUARE GOODNESS OF FIT

	Value	df	Value/df
Deviance	1.699	278	.006
Scaled Deviance	300.283	278	
Pearson Chi-Square	1.640	278	.006
Scaled Pearson Chi-Square	289.989	278	

Dependent Variable: Happiness Score

Model: (Intercept), Gender, Race, Marital Status, Employment Status, Income, Education, Beautiful neighbourhood, Enough shopping centres, Enough recreational spaces and facilities, Enough daily service centres

TABLE VIII
COLLINEARITY STATISTICS

	Tolerance	VIF
Income	.970	1.030
Enough daily service centers	.430	2.328
Enough recreational spaces and facilities	.460	2.172
Enough shopping centers	.564	1.773
Beautiful neighborhood	.656	1.525

IV. DISCUSSION AND CONCLUSIONS

The relation between land use factors and happiness has not received enough attention to date. Previous happiness studies were overwhelmingly focused on socio-economic as well as demographic factors but only recently scholars across many disciplines have begun to explore the question of happiness and life satisfaction. Previous studies have identified the positive relationship between income and happiness [43]-[48]. Although the present study also endorses this significant relationship, it failed to find significant association between other socio-economic factors such as gender, marital status, education level, and employment status with happiness. Therefore, the results of the present study are unique and interesting from the perspective of land use factors that are significant in the proposed model.

Some of the previous studies proposed a positive relationship between education level and SWB or happiness [49], [50]. There are a number of studies from the perspective of low income countries, which show that education has a positive relationship with happiness [51], [52]. However, the present study is in line with Flouri [53], which proposed no significant relationship between education level and

happiness. Employment status is another key variable which has been discussed widely in the literature. Although previous studies consistently show a large negative effect of individual unemployment on happiness [54]-[56], the present study does not find any significant relationship between employment status and happiness since the present study does not focus on individual unemployment and the proportion of unemployed people is not considerable (1.3%) in this study (refer to Table III).

The present study identifies more significant role for land use factors statistically. It implies that beautiful neighbourhoods and nearby recreational as well as shopping facilities make the people happier. For example, enough recreational facilities at neighbourhood is one of land use variables that have a positive significant relationship with happiness. This association is in line with previous studies which proposed that even simple types of exercise such as gardening [57] may be associated with higher life satisfaction and happiness that is especially important for people over 60 years [58].

3Mixed land use planning at neighbourhood level may increase the social activities and increase time for leisure. According to Haworth [59], leisure and happiness are interrelated. An individual may use leisure as an opportunity to cope with work stress [60]. Attractive and beautiful neighbourhood design may produce positive moods, and much of this derived pleasure stems from the social relationships that they foster [39]. The results are in line with previous studies [61]-[64], which identified that social activities and frequency of participation in leisure activities are associated positively with happiness [65]. Neighbourhood design indicators are extensively addressed in literature from sustainability perspective but there is less focus on land use factors from the perspective of resident's feeling of happiness. Our cities, particularly in developing countries, fail to make the residents happy. Some design changes at neighbourhood level may improve the happiness scale of residents.

ACKNOWLEDGMENT

The authors wish to thank all of those who have supported this research for their useful comments during its completion. In particular, we would like to acknowledge the Universiti Teknologi Malaysia Research Management Centre (RMC) and Centre for Innovative Planning and Development (CIPD). This research received funding from the Ministry of Education, Malaysia under the Fundamental Research Grant Scheme (FRGS) 2015 (FRGS grant no:R.J130000.7821.4F739).

REFERENCES

- [1] Helliwell, J. F., Layard, R., Sachs, J. (2015). Setting the Stage. In J. F. Helliwell, R. Layard, J. Sachs (Eds.), *World Happiness Report 2015*. New York City, US: Columbia University.
- [2] Tokuda, Y., Inoguchi, T. (2008). Interpersonal mistrust and unhappiness among Japanese people. *Social Indicators Research*, 89, 349-360.
- [3] Andrés Rodríguez-Pose, A., Von Berlepsch, V. (2012). *Social Capital and Individual Happiness in Europe*. Bruges European Economic Research Papers: Department of European Economic Studies.
- [4] Dolan, P., Peasgood, T., White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology* 29, 94-122.
- [5] Radwan, M.F. (2014). *The Psychology of Attraction Explained: Understand what attracts people to each other*. Create Space: Independent Publishing Platform.
- [6] Ferreira, S. Moro, M. (2010). On the use of subjective well-being data for environmental valuation. *Environmental and Resource Economics*, 46(3), 249-273.
- [7] Savageau, D. (2007). *Places rated Almanac*. Washington, DC: Places Rated Books LLC.
- [8] Ballas, D., Dorling, D. (2013). The geography of happiness. In S. David, I. Boniwell, A. Conley Ayers (Eds.), *The Oxford handbook of happiness*. Oxford, UK: Oxford University Press.
- [9] Marans, R.W., Stimson, R.J. (2011). An Overview of Quality of Urban Life in R.W. Marans, R.J. Stimson (Eds.), *Investigating quality of urban life: Theory, Methods, and Empirical Research*. New York City, US: Springer.
- [10] Gowdy, J. (2005). Toward a new welfare economics for sustainability. *Ecological Economics*, 53(2), 211-222.
- [11] Dolan, P., Peasgood, T., White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology* 29, 94-122.
- [12] Welsch, H., Kühling, J. (2009). Using happiness data for environmental valuation: Issues and applications. *Journal of Economic Surveys*, 23, 385-406.
- [13] MacKerron, G. Mourato, S. (2009). Life satisfaction and air quality in London. *Ecological Economics*, 68, 1441-1453.
- [14] Menz, T., Welsch, H., (2010). Population aging and environmental in OECD countries: The case of air pollution. *Ecological Economics*, 69(12), 2582-2589.
- [15] Maddison, D. Rehdanz, K. (2011). The impact of climate on life satisfaction. *Ecological Economics*, 70, 2437-2445.
- [16] Raphael, D., Renwick, R., Brown, I., Steinmetz, B., Sehdev, H. Phillips, S. (2001). Making the links between community structure and individual well-being: Community quality of life in Riverdale, Toronto, Canada. *Health and Place*, 7, 179-196.
- [17] Berry, B., Okulicz-Kozaryn, A. (2009). Dissatisfaction with City Life: A New Look at Some Old Questions. *Cities*, 26, 117-124.
- [18] Booth M. Z., Sheehan, H. C. (2008). Perceptions of people and place: Young adolescents' interpretation of their schools in the United States and the United Kingdom. *Journal of Adolescent Research*, 23(6), 722-744.
- [19] Cramer, V., Torgersen, S., Kringlen, E. (2003). Quality of life in a city: The effects of population density. *Social Indicators Research*, 69, 103-116.
- [20] Delken, E. (2008). Happiness in shrinking cities in Germany. *Journal of Happiness Studies*, 9, 213-218.
- [21] Scoppa, V., Ponzo, M. (2008). An empirical study of happiness in Italy. *The Berkeley Electronic Journal of Economic Analysis and Policy*, 8(1), 1-21.
- [22] Solano, A. C., Morales, J. F. D. (2002). Life goals and life satisfaction in Spanish and Argentine adolescents from rural and urban settings. *Psicothema*, 14(1), 112-117.
- [23] Morrison, P. (2007). Subjective wellbeing and the city. *Social Policy Journal of New Zealand*, 31, 74-103.
- [24] Ballas, D., Dorling, D. (2007). Measuring the impact of major life events upon happiness. *International Journal of Epidemiology*, 36, 1244-1252.
- [25] Marshall, A. Jivraj, S. Nazroo, J. Tampubolon, G. Vanhoutte, B. (2014). Does the level of wealth inequality within an area influence the prevalence of depression amongst older people? *Health and Place* 27, 194-204.
- [26] Menz, T. (2011). Do people habituate to air pollution? Evidence from international life satisfaction data. *Ecological Economics*, 71, 211-219.
- [27] Welsch, H., Kühling, J. (2009). Using happiness data for environmental valuation: Issues and applications. *Journal of Economic Surveys*, 23, 385-406.
- [28] Hartig, T., Van Den Berg, A., Hagerhall, C. M., Tomalak, M., Bauer, N., Hansmann, R., Ojala, A., Syngolliou, E., Carrus, G., van Herzele, A., Bell, S., Podesta, M. T. C., Waseh, G. (2010). Health benefits of nature experience: Psychological, social and cultural processes. In K. Nilsson, M. Sangster, C. Gallis, T. Hartig, S. de Vries, K. Seeland, J. Schipperijn (Eds.), *Forests, Trees and Human Health*. New York City, US: Springer.

- [29] Moeinaddini, M., Asadi-Shekari, Z., Ismail, C. R., Zaly Shah, M. (2013). A Practical Method for Evaluating Parking Area Level of Service. *Land Use Policy*, 33, 1-10.
- [30] Moeinaddini, M., Asadi-Shekari, Z., Zaly Shah, M. (2014b). Analyzing the Relationship between Park-and-Ride Facilities and Private Motorized Trips Indicators. *Arabian Journal for Science and Engineering*, 39(5), 3481-3488.
- [31] Moeinaddini, M., Asadi-Shekari, Z., Zaly Shah, M. (2015b). An Urban Mobility Index for Evaluating and Reducing Private Motorized Trips. *Measurement*, 63, 30-40.
- [32] Asadi-Shekari, Z., Moeinaddini, M., Zaly Shah, M. (2013a). Disabled pedestrian level of service method for evaluating and promoting inclusive walking facilities on urban streets. *Journal of Transportation Engineering*, 139, 181-192.
- [33] Asadi-Shekari, Z., Moeinaddini, M., Zaly Shah, M. (2013b). Non-motorised Level of Service: Addressing Challenges in Pedestrian and Bicycle Level of Service. *Transport Reviews*, 33, 166-194.
- [34] Asadi-Shekari, Z., Moeinaddini, M., Zaly Shah, M. (2014). A pedestrian level of service method for evaluating and promoting walking facilities on campus streets. *Land Use Policy*, 38, 175-193.
- [35] Asadi-Shekari, Z., Moeinaddini, M., Zaly Shah, M. (2015a) A Bicycle Safety Index for Evaluating Urban Street Facilities. *Traffic Injury Prevention*, 16, 283-288.
- [36] Asadi-Shekari, Z., Moeinaddini, M., Zaly Shah, M. (2015b). Pedestrian Safety Index for Evaluating Street Facilities in Urban Areas. *Safety Science*, 74, 1-14.
- [37] Asadi-Shekari, Z., Moeinaddini, M., Sultan, Z., Zaly Shah, M., Hamzah, A. (2015c). The Relationship between Street Network Morphology and Percentage of Daily Trips on Foot and by Bicycle at the City-Level. *Jurnal Teknologi*, 76 (14), 23-28.
- [38] Hills, P., Argyle, M. (2002). The Oxford Happiness Questionnaire: a compact scale for the measurement of psychological well-being. *Personality and Individual Differences*, 33, 1073-1082.
- [39] Hills, P., Argyle, M. (1998). Positive moods derived from leisure and their relationship to happiness and personality. *Personality and Individual Differences*, 25 (3), 523-535.
- [40] Hadayeghi, A. (2009). Use of Advanced Techniques to Estimate Zonal Level Safety Planning Models and Examine Their Temporal Transferability. Toronto, Canada: University of Toronto (Doctor of Philosophy).
- [41] Moeinaddini, M., Asadi-Shekari, Z., Zaly Shah, M. (2014a). The Relationship between Urban Street Networks and the Number of Transport Fatalities at the City Level. *Safety Science*, 62, 114-120.
- [42] Moeinaddini, M., Asadi-Shekari, Z., Sultan, Z., Zaly Shah, M. (2015a). Analyzing the Relationships between the Number of Deaths in Road Accidents and the Work Travel Mode Choice at the City Level. *Safety Science*, 72, 249-254.
- [43] Frey, B. S., Stutzer, A. (2002). *Happiness and economics*. Princeton, US: Princeton University Press.
- [44] Clark, A., Frijters, P., Shields, M. (2008). Relative income, happiness, and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, 46(1), 95- 144.
- [45] Ahuvia, A. C. (2007). Wealth, consumption and happiness. In A. Lewis (Ed.), *The Cambridge handbook of psychology and economic behaviour*. Cambridge, UK: Cambridge University Press.
- [46] Ahuvia, A. C., Friedman, D. (1998). Income, consumption, and subjective well-being: Toward a composite macromarketing model. *Journal of Macromarketing*, 18, 153-168.
- [47] Diener, E., Biswas-Diener, R. (2002). Will money increase subjective well-being? A literature review and guide to needed research. *Social Indicators Research*, 57, 119-169.
- [48] Layard, R. (2005). *Happiness: Lessons form a new science*. London, UK: Penguin Press.
- [49] Blanchflower, D. G., Oswald, A. J. (2004). Well-being over time in Britain and the USA. *Journal of Public Economics*, 88, 1359-1386.
- [50] Stutzer, A. (2004). The role of income aspirations in individual happiness. *Journal of Economic Behaviour and Organisation*, 54, 89-109.
- [51] Fahey, T., Smyth, E. (2004). Do subjective indicators measure welfare? Evidence from 33 European societies. *European Societies*, 6(1), 5-27.
- [52] Ferrer-i-Carbonell, A. (2005). Income and well-being: An empirical analysis of the comparison income effect. *Journal of Public Economics*, 89, 997-1019.
- [53] Flouri, E. (2004). Subjective well-being in midlife: The role of involvement of and closeness to parents in childhood. *Journal of Happiness Studies*, 5, 335-358.
- [54] Di Tella, R., MacCulloch, R., Oswald, A. (2001). Preferences over inflation and unemployment. Evidence from surveys of happiness. *The American Economic Review*, 91(1), 335-341.
- [55] Frey, B. S., Stutzer, A. (2000). Happiness, economy and institutions. *The Economic Journal*, 110, 918-938.
- [56] Helliwell, J. F. (2003). How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling*, 20, 331-360.
- [57] Ferrer-i-Carbonell, A., Gowdy, J. M. (2007). Environmental degradation and happiness. *Ecological Economics*, 60(3), 509-516.
- [58] Baker, L. A., Cahalin, L. P., Gerst, K., Burr, J. A. (2005). Productive activities and subjective well-being among older adults: The influence of number of activities and time commitment. *Social Indicators Research*, 73, 431-458.
- [59] Haworth, J. T. (1997). *Work, leisure and well-being*. London/New York: Routledge.
- [60] Trenberth, L., Dewe, P., Walkey, F. (1999). Leisure and its role as a strategy for coping with work stress. *International Journal of Stress Management*, 6 (2), 89-103.
- [61] Ragheb, M. G. (1993). Leisure and perceived wellness: A field investigation. *Leisure Sciences*, 75 (1), 13-24.
- [62] Dowall, J., Bolter, C., Flett, R., Kammann, R. (1988). Psychological well-being and its relationship to fitness and activity levels. *Journal of Human Movement Studies*, 14 (1), 39-45.
- [63] Lloyd, K., Auld, C. J. (2002). The role of leisure in determining quality of life: Issues of content and measurement. *Social Indicators Research*, 57 (1), 43-71.
- [64] Wankel, L., Berger, B. (1990). The psychological and social benefits of sport and physical activity. *Journal of Leisure Research*, 22 (2), 167-182.
- [65] Baldwin, K., Tinsley, H. (1988). An investigation of the validity of Tinsley and Tinsley's (1986) theory of leisure experience. *Journal of Counseling Psychology*, 35 (3), 263-267.