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The creative class, post-industrialism and the happiness of nations

Charlotta Mellander[a], Richard Florida[b] and Jason Rentfrow[c]

[a]*The Prosperity Institute of Scandinavia, Jönköping International Business School, Box 1026, 55111 Jönköping, Sweden, charlotta.mellander@ihh.hj.se*
[b]*Joseph L Rotman School of Management, University of Toronto, 105 St George Street, Toronto, Ontario M5S 3E6, Canada, florida@rotman.utoronto.ca*
[c]*Faculty of Politics, Psychology, Sociology and International Studies, University of Cambridge, Free School Lane, Cambridge CB2 3RQ, UK, pjr39@cam.ac.uk*

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Our research examines the role of post-industrial structures and values on happiness across the nations of the world. We argue that these structures and values shape happiness in ways that go beyond the previously examined effects of income. Our analysis explores whether income has different effects on countries at different stages of economic development. Our results indicate that post-industrial structures and values have a stronger effect on happiness in higher income countries, where the standard of living has surpassed a certain level. Income, on the other hand, has a stronger impact on happiness in low-income countries.

Keywords: happiness, income, education, occupational structure, openness
JEL Classifications: I0, J24

Introduction

The desire to understand what makes people happy has a long history. Earlier thinkers from Aristotle (350 BCE) to Smith (1776) to Bentham (1781) fulminated on the question of what constitutes a desirable state of being. There is a long line of empirical studies in psychology (Diener and Lucas, 2000; Diener et al., 1995; Park et al., 2004; Shimai et al., 2006), behavioural economics (Kahneman and Snell, 1990; Kahneman and Thaler, 1991) and econometrics (Di Tella and MacCulloch, 2008; Di Tella et al., 2003) that have sought to identify the determinants of happiness across individuals and nations. Much of this debate has revolved around the effects of money or material well-being on happiness. While common sense as well as the empirical literature gives credence to the view that income plays a key role in shaping subjective well-being, we hypothesize that happiness stems from another structural factor associated with the level of economic development. We argue that higher levels of subjective well-being will be exhibited in societies that have made the transition to post-industrial economies—those with higher levels of education and where a greater share is engaged in knowledge-based and creative work. We test this proposition

empirically by examining the statistical associations between happiness and variables such as education levels, creative work, economic output per capita and other factors.

Concepts and theory

While it was initially found that the relationship between income and happiness only holds within and not across countries—the so-called 'Easterlin effect'—more recent econometric studies by Deaton (2008) and Stevenson and Wolfers (2008) based on new data collected worldwide by the Gallup Organization have challenged this view, finding that income exerts strong effects on happiness across the board. Sacks et al. (2010) suggest that there is a close relationship between material living standards and life satisfaction and that countries that experience a rapid economic growth also get an equivalent increase in life satisfaction levels.

While income levels matter for happiness, work by Graham (2008) finds the relationship between the two is relative. Noting the paradox of the 'happy peasant and the miserable millionaire', Graham contends that although people can adapt to be happy at low levels of income, they are far less happy when there is uncertainty over their future wealth. Thus, the income effect on happiness is not only based on individual perceptions but also on the social and economic context in which individuals are embedded. The effects of unemployment on happiness tend to be larger in places where unemployment is generally low, while the effect is weaker if the individual lives in a place with high unemployment and thus the future is more uncertain. Helliwell (2003) suggests that happiness is affected by institutional factors such as governmental stability or effectiveness more so than economic ones. Helliwell and Putnam (2004) note strong connection between social capital and happiness, beyond income effects. Deaton (2008) examines the relationship between income and life satisfaction and concludes that there is a strong relationship between the two. Deaton does, however, question the usefulness of health or health satisfaction as happiness measures, as he finds such measures have little relation with life satisfaction as a whole.

There is a substantial literature documenting the transformation from industrial to post-industrial economies and societies. Nearly a half-century ago, Machlup (1962) identified the rise of the knowledge economy. Drucker (1967) coined the term 'knowledge worker' to refer to the emerging social group of workers who understand how to apply knowledge to productive use. This construct was later expanded to one of a 'knowledge society' (Drucker, 1993) where the traditional means of production are replaced by human capital and new institutional structures. Bell (1973) predicted the rise of a 'post-industrial society' led by a class of highly educated scientists and technocrats. Reich (1991) described the rise of what he termed 'symbolic analysts'—a sector of workers comprising engineers, scientists, executives and professors, whose work involves processing and manipulating information and symbols. Empirical support for these transformations revealed that as of 1996, the 'scientific, professional and knowledge economy' (defined as industries where at least 5 per cent of the workforce has graduate degrees) accounted for 36% of US employment (Brint, 2001).

Florida (2002) documents the rise of the creative class as a hallmark of post-industrial societies. Empirical studies find the creative class has been growing substantially for decades in the advanced economies, while the proportion of blue-collar workers has been declining (Boschma and Fritsch, 2009; Clifton, 2008; Florida and Tinagli, 2004).

Post-industrialism has been found to be associated with a significant shift in values. For example, data from the World Values Survey, which began tracking 22 countries in 1981 and now tracks over 60 countries, suggest that the shift from older 'materialist' to more contemporary 'post-materialist' values is closely associated with the shift to post-industrial economic structures (Inglehart, 1989, 1997). This shift revolves around a movement away from traditional religious values, conformity, norms about seniority, conventional views about gender and sexuality and redistributive interest-group politics to new values that are more secular in

nature, encourage self-expression and individualism, openness and tolerance and favour public goods over redistribution (for example, the rise of environmental awareness). Inglehart (1977), Inglehart (1990) and Inglehart and Baker (2000) found the shift to post-materialist values to be most pronounced in the Northern European and Scandinavian nations. Nonetheless, they argue that across the advanced nations, people show less interest in traditional institutions, political parties, social class and organized religion. Politics has become increasingly concerned with issues around individual freedom, individual rights and the right of self-expression (Inglehart, 1977, 1990; Inglehart and Baker, 2000).

Overview of the present research

The present research examines whether and to what degree the creative class and post-industrial structures affect life satisfaction. Consistent with Stevenson and Wolfers (2008) as well as Sacks et al. (2010), we expect individuals who live in wealthy nations to be happier, on average, than those who live in poorer countries. Moreover, based on previous research indicating that people in democratic and tolerant societies are happier than those in restricted and less open societies (Diener et al., 1995; Hofstede, 2001), we expect life satisfaction to be comparatively high in nations that are inclusive and accepting of alternative lifestyles and cultures. This latter hypothesis is particularly important, as previous work suggests that freedom, equality and social relationships have greater influence on well-being in wealthy societies compared to poor ones (Diener and Seligman, 2004).

Our central hypothesis is that national levels of happiness and subjective well-being are higher in nations with greater levels of the creative class and post-industrial structures and post-materialist values. We further suggest that there are at least two distinctive mechanisms driving this difference. One mechanism is employment and the nature of the labour market. Results from a number of studies indicate that well-being is positively related to job satisfaction (Diener and Seligman, 2004), and job satisfaction is linked to job complexity (Judge et al., 2001), the range of skills used on the job (Glisson and Durick, 1988), person–job fit (Roberts et al., 2007) and perceived control over one's work (Grebner et al., 2005). It is conceivable that well-being is higher in post-industrial societies because more individuals are engaged in jobs that offer more satisfying work experiences compared to industrialized societies. Therefore, larger proportions of people in post-industrial nations should derive satisfaction from their jobs and, as a result, experience greater life satisfaction compared to individuals in industrial nations. Also, individuals in creative–knowledge–professional jobs experience lower rates of unemployment than those in blue-collar industrial work or lower skill service jobs. Individuals in creative–knowledge–professional work also tend to have higher level and more flexible skills that enable them to switch jobs more readily than others when laid off, or to find new more fulfilling employment if their job becomes less interesting.

A second mechanism that could contribute to social structural differences in well-being is education. Post-industrial nations are characterized by more highly educated individuals. While previous studies have not found a close relationship between education and well-being (Diener, 1984; Diener et al., 1999), we propose several mechanisms through which education affects happiness. Nations with more educated individuals may be comparatively high in life satisfaction because education affords many opportunities and experiences that are linked to happiness. Education is positively related to social mobility, income and occupational status, and negatively related to depression (Becker, 1993; Lipset and Bendix, 1959; Mincer, 1974; Mirowsky and Ross, 2003). Education is also associated with more stable marriages and family ties, factors that are closely correlated with subjective well-being (Glenn and Supancic, 1984; Lyngstad, 2004). More educated individuals postpone marriage and have more opportunities over time to select more suitable partners (Dixon, 1978; Goldstein and Kenney, 2001). Individuals with higher levels of education tend to engage in work that employs

greater levels of cognitive and social skill, and studies of job satisfaction note a close connection between challenging work and happiness (Judge et al., 2001). Education is also closely associated with unemployment. College-educated adults in the USA face levels of unemployment that are markedly lower than those for high-school graduates and even more so for individuals without high school degrees. Furthermore, education is strongly related to open mindedness and having progressive values (McCrae, 1996; McCrae & Sutin, 2009), which, at a national level, could underlie the tolerance and acceptance of minority groups reported in previous studies (for example, Diener et al., 1995; Inglehart, 1990). In these ways, education affords people opportunities and resources to enrich their lives and thus has an indirect effect on happiness.

Data, variables and methods

Our research examines the effects of the creative class and post-industrial structures, on national happiness alongside and in addition to the effects of income. We employ a combination of methods including bivariate correlations, principal component analysis and multivariate regression analysis described in further detail below. But first, we define the main variables in our analysis.

Life satisfaction

Our measure of happiness or life satisfaction data comes from The Gallup World Poll, a measure that has been used in other major studies (for example, Deaton, 2008; Sacks et al. 2010; Stevenson and Wolfers, 2008) The survey is based on approximately 1000 interviews per country (adjusted depending on population size) and takes place in approximately 150 countries. The sample represents roughly 95% of the world's adult population and is stratified proportionally with the distribution of the population across cities and rural areas of different sizes (for more information about the sampling procedure, see Gallup, 2010a). The target population is all civilian, non-institutionalized and aged 15 years or older. The interviews were conducted by telephone in countries where at least 80% of the population has access to telephones, and in most other countries conducted face-to-face (for more information about the methodology, see Gallup, 2010b). Life satisfaction is measured using a standard set of core questions in which individuals ranked their satisfaction of life today from 1 to 10, where 10 reflected the highest level of satisfaction. We use the data for the 2009 World Poll.

Out of the approximately 150 countries covered in the Gallup World Poll, we have data on life satisfaction for 102 countries. When we match with our other variables, 66 of these countries remain in our sample. Further, we leave out African countries, due to some data quality issues with matched variables. The mean life satisfaction value in our sample is 6.005 that is slightly above the mean of the excluded countries (5.356). The minimum and maximum values in our sample are 4.2 and 8.0 to be compared with the excluded countries where the minimum and maximum values are 3.8 and 7.2. However, our sample has slightly more variation with a standard deviation of 1.001 to be compared to the standard deviation of the excluded countries of 0.879. To a certain degree, the difference in the results is an effect of leaving out African countries in our analysis, where scores tend to be lower in general.

Income/economic output

Our measure of income is Gross Domestic Product (GDP) per capita. This measure is based on 2005 data from the World Development Indicators.

Creative class and other class variables

Creative class: The creative class includes occupations in computer science and mathematics; architecture; engineering; life, physical and social science; education, training and library science; as well as arts and design work, work in and entertainment, sports and media; and also professional and knowledge work occupations including management occupations, business and financial operations, legal positions, health care practitioners, technical occupations and high-end sales and sales management. This variable is measured as a share of the total employed labour force. The data used to compute it are reported annually per country and

compiled by the International Labour Organization. For the present study, we calculated an average of the reported numbers for the years 2001–2007 to obtain a reliable estimate.

Service class: We define service class as the proportion of a nation's residents who work in routine service occupations. Routine service occupations are based on occupational data from the International Labour Organization and measured as share of the national employed labour force in routine service occupations such as preparation and food service-related occupations, building and grounds cleaning and maintenance, personal care and service, low-end sales of more standardized products and services, office and administrative support, community and social services and protective services. We calculate the average of the reported service class numbers for the years 2001–2007.

Manufacturing class: This group consists of occupations related to construction and extraction, installation, maintenance and repair, production, transportation and material moving occupations. The variable is measured as share of the regional labour force. The data are from the International Labour Organization. We calculated the average proportion of workers in manufacturing for the years 2001–2007.

Post-industrial structure

Human capital: This variable is based on the World Development Indicators Tertiary Education Enrolment data, expressed as the share of the proper age group enrolled in tertiary education. Tertiary education includes training at a wide range of post-secondary education institutions, including technical and vocational schools, community colleges and universities, which normally require as a minimum condition of admission the successful completion of education at the secondary level. Since these data are not reported for each country every year, we calculate an average of the reported numbers for the years 2001–2006.

Post-industrial values

One of our primary interests concerns the associations between national life satisfaction and attitude towards social tolerance and openness that have been found to be associated with the creative class and post-industrialism.

Acceptance of gays and lesbians: This variable is based on data from the 2009 Gallup World Poll survey, which asks respondents to indicate whether their place is a good place for gay and lesbian people to live.

Acceptance of racial and ethnic minorities: This variable is also from the 2009 Gallup World Poll survey and is based on a question asking respondents to indicate whether their place is a good place for racial and ethnic minorities to live.

It is important to note that all of the above variables are national averages, and as such, tell us little about variation within countries that can differ substantially. Nations can, and likely, do vary considerably in their internal distribution of these variables. Some nations are likely to have more even distributions, while others will be more highly skewed and uneven.

Methods

We employ the following methods in our analysis. We begin with a basic correlation analysis, using both standard bivariate and partial correlations, to examine the relationship between happiness and income or level of economic development and between it and our creative class and post-industrial structure variables. We split our sample of nations into high- and low-income countries to better gauge the effects of creative class/post-industrial structures on happiness over and above the effects of income. We then use a regression to examine the effects of post-industrial structures and the creative class on happiness across nations. The regression analysis employs a new, overarching variable designed to capture the key elements of the creative class/post-industrial structure that we want to capture. We do so for two reasons. First of all, our sample size is too small to support a regression analysis that includes all six of our creative class/post-industrial structure variables, plus our income variables. This would leave us with too few degrees of freedom to generate robust results. Second, our creative class/post-industrial structure variables

include the same type of information and are thus closely correlated, which would lead to multicollinearity problems. So, we use a principal components analysis to create a single variable that reflects the key overarching elements of creative class/post-industrial characteristics we want to capture. This variable provides the key information on creative class/post-industrial structure for our model, while increasing the degrees of freedom in the regression and at the same time decreasing any multicollinearity problems.

Results

The descriptive statistics for all the variables and indicators can be found in Table 1. We also split the descriptive statistics into low- and high-income countries with a cutoff at US $11,000, with the aim of getting at the different dynamics of life satisfaction in each set of countries.

We begin by providing simple correlation coefficients between life satisfaction and key measures for income (GDP per capita), and post-industrial variables represented by educational and occupational measures, as well as tolerance and openness measures. The subsequent section summarizes the key findings from bivariate relations between life satisfaction and the other variables. Since earlier research has suggested a relationship between income levels and life satisfaction, we also conducted partial correlations to control for the effects of income. Also, since earlier research has suggested a non-linear relationship between life satisfaction and income, we speculate that the marginal happiness effects from higher levels of income may be quite different from those at lower levels of income. We therefore split the sample into high- and low-GDP per capita income countries, with a cut-off at the US $11,000 level, roughly at the level of the World Bank definition. We re-run the same bivariate and partial correlations once more to examine possible differences between the high- and low-income groups.

Table 2 provides bivariate and partial correlations for all key variables. Looking at the bivariate correlations for all countries (Table 2, column 1), we observe a strong and significant relationship between GDP per capita and life satisfaction (.80). This suggests that people living in wealthy nations, where the standard of living is high, are more satisfied with their lives compared to people in less wealthy nations. This finding is consistent with previous research.

Table 1. *Descriptive statistics.*

	N	Minimum	Maximum	Mean	Standard deviation
Full sample					
Life satisfaction	66	4.20	8.00	6.01	1.00
Human capital	66	2.27	86.74	44.24	21.04
Creative class	66	3.31	46.57	26.56	11.40
Service class	66	9.14	46.06	24.29	7.92
Manufacturing class	66	14.60	74.49	35.85	10.82
Openness racial and ethnic minorities	66	0.24	0.91	0.587	0.14
Openness gay and lesbian	66	0.02	0.83	0.346	0.22
Valid *N* (list wise)	66				
Low-income countries					
Life satisfaction	43	4.2	6.9	5.498	0.69
Human capital	43	2.27	67.97	34.20	17.27
Creative class	43	3.31	39.18	21.15	9.12
Service class	43	9.14	46.06	21.98	7.97
Manufacturing class	43	14.60	74.49	39.48	11.13
Openness racial and ethnic minorities	43	0.24	0.77	0.532	0.11
Openness gay and lesbian	43	0.02	0.70	0.239	0.14
Valid *N* (list wise)	43				
High-income countries					
Life satisfaction	23	5.4	8.0	6.95	0.78
Human capital	23	31.66	86.74	62.80	13.18
Creative class	23	17.21	46.57	36.69	7.78
Service class	23	21.11	45.46	28.59	5.87
Manufacturing class	23	18.33	41.58	29.06	5.94
Openness racial and ethnic minorities	23	0.39	0.91	0.690	0.14
Openness gay and lesbian	23	0.13	0.83	0.545	0.19
Valid *N* (list wise)	23				

Table 2. *Bivariate and partial correlations between life satisfaction and post-industrial indicators across 66 nations.*

	Bivariate correlations			Partial correlations controlling for GDP per capita		
	All countries	Low income	High income	All countries	Low income	High income
GDP per capita	0.80***	0.62***	0.52**	—	—	—
Human capital	0.49***	–0.03	0.25	–0.06	–0.32**	0.40**
Creative class	0.62***	0.09	0.76***	0.10	–0.31**	0.72***
Service class	0.45***	0.48***	–0.23	0.05	0.33**	–0.57***
Manufacturing class	–0.32**	0.18	–0.53***	–0.05	0.15	–0.37*
Gay and lesbian	0.78***	0.47***	0.75***	0.47***	0.23	0.69***
Racial ethnic minorities	0.63***	0.36**	0.50**	0.34***	0.22	0.43**

Note: ***, significance at the 0.01 level; **, significance at the 0.05 level and *, significance at the 0.1 level.

Comparing the bivariate correlations for low- and high-income countries (as shown in data columns 3 and 4 in Table 2) indicates that the correlations between GDP per capita and life satisfaction are lower for high-income countries (0.52) compared to low-income countries (0.62). Although the correlations are statistically significant in all three cases, they do not significantly differ from one another at the 5% level.

We next examine the links between educational attainment and life satisfaction. As can be seen in the second data row in Table 2, there is a significant relationship between human capital and life satisfaction (0.488). However, in subsequent analysis of this relationship among low- and high-income nations (Table 2, columns 3 and 4), the correlations are comparatively smaller and not significant (–0.03, 0.25, low- and high-income nations, respectively). When we control for GDP (columns 4 though 6), the correlations among all countries drop substantially, but become larger when we examine low- and high-income nations separately (–0.32 and 0.40 for low- and high-income nations, respectively). This suggests that the relationship between educational attainment and life satisfaction varies as a function of national wealth. It is conceivable that highly educated people who live in low-income countries are less satisfied with life because they may have fewer opportunities to apply and use the skills they have developed.

A similar pattern of relationships emerges for life satisfaction and share of the labour force in creative jobs. Across all countries, the correlation between the life satisfaction and the creative class is quite strong, but when we analyse low- and high-income nations separately, only high-income countries display a positive relationship between life satisfaction and creative jobs (0.76). Furthermore, when we control for GDP per capita for all countries (data column 4), the link between life satisfaction and creative jobs drops (0.10), but when we analyse low- and high-income countries separately, the size of the correlations becomes larger or stays about the same (data columns 5 and 6). Specifically, low-income countries display a negative relationship between life satisfaction and creative jobs (–0.31) while high-income countries show a positive relationship (0.72). This suggests that people who live in low-income countries with high shares of creative jobs experience lower levels of life satisfaction compared to people in high-income nations.

We now turn to the relationships between life satisfaction and the service class share of the labour market. For all countries (column 1), there is a strong and significant correlation between life satisfaction and service class (0.45), but different patterns of results emerge when we analyse low- and high-income countries separately. Among low-income countries, the relationship remains positive (0.48) and among high-income countries the link is negative, but not at a statistically significant level. When we control for GDP per capita across all countries, the significant relation between service class and life satisfaction is eliminated, but the correlations stayed moderate in size for low-income countries (0.33) and increased for high-income

countries (–0.57). These results might suggest that in low-income countries, a higher share of service jobs is a sign they are undergoing an economic transition, moving from manufacturing-based production to an economic system that is more dependent on services. This step usually implies higher wage levels in general, and therefore a relatively higher standard of living. In high-income countries, by contrast, higher shares of standardized service jobs may instead signal a lack of knowledge-based production and relatively lower wage levels and standard of living.

Across all countries, the correlation between share of the workforce in manufacturing class jobs and life satisfaction was negative and significant (–0.32), but when low- and high-income nations are analysed separately, the relationship is small and non-significant among low income countries (0.18) and large and negative among high-income countries (–0.53). When we control for GDP per capita, the results reveal a significant negative relationship between life satisfaction and manufacturing for high-income countries remains (–0.370).

Overall, there is a weak and negative relationship between life satisfaction and the working class share of the labour force across all countries. Countries with lower levels of manufacturing class jobs tend to have either a large creative class shares, or an employment predominantly in fishing and farming. Such countries are at an even earlier stage in the economic transformation and also have lower shares of standardized service jobs. When we divide the sample into high- and low-income countries, we find no significant relationships for the latter group. Among high-income countries, however, we find a clear negative and significant relationship. High-income countries with large shares of manufacturing class jobs score lower in terms of life satisfaction.

We now turn to the relationships between life satisfaction and two types of openness: tolerance in relation to gays and lesbians and tolerance in relation to racial and ethnic minorities. Across all countries, there is a positive correlation between life satisfaction and both types of tolerance (0.78, 0.63, gays and racial minorities, respectively). The positive correlations between life satisfaction and the two tolerance indicators remain when we analyse low-income countries (0.47, 0.36, tolerance of gays and racial minorities, respectively) and high-income countries (0.75, 0.50, tolerance of gays and racial minorities, respectively) separately. The results from the partial correlations, which hold GDP per capita constant, reveal positive correlations for all countries (0.47, 0.34, tolerance of gays and racial minorities, respectively). The relationships are comparatively weaker, but when we analysed low- and high-income nations separately, we found interesting results. Among low-income countries, the relationship between life satisfaction and the tolerance indicators was no longer significant (0.23, 0.22, tolerance of gays and racial minorities, respectively). In other words, increased tolerance as a factor influencing increased life satisfaction appears to be a reflection of higher income as well. Among high-income countries, higher levels of tolerance imply higher levels of life satisfaction, which do not appear to be driven by an increase in income levels (0.69, 0.43, tolerance of gays and racial minorities, respectively). Overall, these findings suggest that people are happier in nations where individuals are open and accepting of alternative lifestyles and cultures.

Regression analysis

To further gauge the relations between life satisfaction, income and post-industrial structures, we turn to a regression analysis. Given that the creative class/post-industrial structure variables include similar information and would be highly collinear in a multivariate regression analysis, we employ a principal component analysis to combine the key information from these variables into one overarching variable of creative class/post-industrial structure factor. Table 3 provides the results.

Table 3 illustrates the relationships between our overarching creative class/post-industrial factor and each of six separate variables. All of the variables are closely correlated, with each of them being above 0.5. On the high end are openness to gay and lesbian (0.857), creative class (0.790),

Table 3. *Principal component analysis for the creative class/ post-industrial factor.*

	Component relation
Human capital	0.744
Creative class	0.790
Service class	0.529
Manufacturing class	–0.523
Openness racial and ethnic minorities	0.747
Openness gay and lesbian	0.857

openness to racial and ethnic minorities (0.747) and human capital (0.744), with service class (0.529) and manufacturing class (–0523) showing a somewhat more moderate relation. A high factor score thus implies higher shares of creative class jobs, higher human capital, more service class jobs, lower share of manufacturing class jobs and higher levels of openness towards both gays and lesbians and racial and ethnic minorities.

We use this factor as a key variable in a regression for national-level happiness with our measure of economic output (GDP per capita) as the other independent variable. We do this for all countries and for the split sample of high- and low-income nations. The regression thus examines to what extent creative class/post-industrial structures help explain the variance in happiness or life satisfaction across nations, beyond the explanatory power of economic output. Each regression is run with GDP per capita as the single explanatory variable and then again with GDP per capita in combination with our creative class/the post-industrial factor so as to parse out key differences between the two versions.[1] Table 4 summarizes the regression results.

As Table 4 shows, when we use GDP per capita alone, the model generates R^2 is 0.68 for the entire sample and 0.33–0.38 for the split samples. And GDP per capita is significant in all three of these regressions. But look at what happens when we add the creative class/post-industrial factor. The R^2 for the all country model increases from 0.636 to 0.680. While the R^2 stays more or less the same in the model for low-income nations, increasing just slightly from 0.383 to 0.386, the R^2 increases substantially in the model for high-income countries—nearly doubling from .328 to .634, implying that more than 60% of the life satisfaction variation in these nations is explained by the creative class/post-industrial structures. GDP per capita turns insignificant in the high-income country model, while remaining significant in the overall model and the model for low-income countries. The creative class/post-industrial factor is significant in all three versions of the model. Furthermore, it significantly out-performs GDP per capita in the high-income country model, while generating a substantially higher R^2 than in the model with GDP per capita only.

Overall, the findings of the regression analysis provide considerable additional support to the main hypothesis, showing how creative class/post-industrial structures are significantly associated with national happiness over and above the effects of income.

Conclusions

Our research has examined the effects of post-industrial socioeconomic structures and related values on happiness across nations. We hypothesized that post-industrial structures—namely the shift from lower skill industrial work to more knowledge-oriented and creative work associated with higher levels of educational attainment—would have an effect on happiness that operates in addition to income.

Our findings support this hypothesis. Consistent with previous work, we found that GDP per capita (income) was strongly related to life satisfaction. And consistent with our predictions, all the post-industrial economic and value indicators were significantly related to life satisfaction. However, when GDP per capita was held constant, only the associations with the variables for tolerance remained statistically significant. These findings suggest that, all else being equal, national levels of life satisfaction are closely tied to post-industrial values of tolerance and acceptance. However, the relative importance of the indicators became clearer when high- and low-income countries are analysed separately. In lower income countries, GDP per capita, share of

Table 4. *Regression analysis for life satisfaction.*

	All countries		Low income		High income	
Constant	0.902*	3.147	1.766**	1.371	−4.284	2.867
	(1.847)	(3.537)	(2.345)	(1.186)	(−1.255)	(0.927)
GDP per capita	0.595***	0.333***	0.481***	0.524***	1.114***	0.327
	(10.582)	(3.221)	(4.979)	(3.826)	(3.279)	(1.028)
Post-industrial/creative class factor		0.410***		−0.097		0.743***
		(2.951)		(−0.454)		(4.194)
N	66	66	43	43	23	23
R^2	0.636	0.680	0.383	0.386	0.328	0.634
R^2 adjusted	0.631	0.670	0.367	0.354	0.298	0.600

Note: ***, significance at the 0.01 level; **, significance at the 0.05 level and *, significance at the 0.1 level with *t*-values within brackets.

service-class jobs and social tolerance were all positively related to life satisfaction. But when GDP per capita was held constant, only service jobs remained positively related to satisfaction, and human capital and creative capital emerged as negative correlates of life satisfaction. In high-income countries, post-industrial structures and tolerant values were positively related to life satisfaction. When GDP per capita was held constant, the indicators for human capital, creative class and tolerance were all positively related to life satisfaction, while the service and manufacturing indicators were negatively related to life satisfaction.

The regression analysis provides further support to our main hypothesis, documenting the relations of creative class/post-industrial structures and life satisfaction over and above the effects of income. Our combined creative class/post-industrial structure variable lends considerable additional explanatory power to our basic model. Both GDP per capita and creative class/post-industrial structure are significant in the model for all countries. But the models for low- and high-income countries show the degree to which creative class/post-industrial structures matter more in high-income nations. While GDP per capita out-performs creative class/post-industrial structure in the model for low countries, the creative class/post-industrial structure variable out-performs GDP per capita in the model for high-income nations, nearly doubling the R^2, indicating that creative class/post-industrial structure explains considerably more of national happiness in high-income countries than GDP per capita.

Taken together, these results suggest that national differences in life satisfaction should be understood not only in terms of income but also in terms of post-industrial structures and values. Indeed, education and creative class work structures both contribute to national levels of life satisfaction in high-income nations. Our conclusion regarding human capital stands in some contrast to the findings of previous research, which found no close relationship between education and well-being (Diener, 1984; Diener et al., 1999).

Yet in low-income nations, income remains central, in line with the extant literature. Even those studies that have argued that the effects of income on happiness level off after a certain level of economic development is reached concur that income matters substantially to happiness in poorer, less-advanced nations. The simple fact of the matter is that a basic level of income or economic development is needed to ensure safety and sustenance. It is not immediately clear why human capital and creative class are negatively related to life satisfaction in low-income nations. One possibility is that individuals with higher education or in creative class occupations are more likely to compare their circumstance with better-off peers in more advanced countries that is in line with Graham's findings (2008, 2009) regarding the relative contexts of poor versus rich nations.

In general, we believe this research has the potential to inform our understanding of the critical ways in which economic and social structures contribute to happiness beyond the effects of income.

The advanced nations offer not only higher incomes and higher economic output but higher levels of education and human development, creative class occupational structures that emphasize cognitive and social skills over physical ones and enable more individuals to engage in challenging and rewarding work and value systems that are more open and tolerant to a wide range of people including racial and ethnic minorities and gays and lesbians. These are all factors that lift happiness and well-being over and above the effects of income or the level of economic development in advanced nations.

Economic development and income clearly matter to happiness, but happiness cannot be reduced to just economics. Social structures, institutions—especially labour market structures and institutions—and values matter a great deal to the happiness of nations. We want to encourage future research on how economic development, social structures, institutions and values work together to shape the happiness of people and nations.

Endnotes

[1] We also ran a stepwise regression with the post industrial variables taken one at a time in combination with GDP per capita as explanatory variables. For all countries, openness to gay and lesbian (positive) turned out the strongest followed by openness to racial and ethnic minorities (positive). For low-income countries, manufacturing class (negative) followed by service class (positive) were the strongest variables. For high-income countries, creative class (positive) followed by openness to gay and lesbian (positive) were the strongest variables.

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Appendix

Table A1. *Low- and high-income countries.*

Low-income countries		High-income countries	
Argentina	8693	Australia	23,262
Belize	3839	Belgium	24,405
Bolivia	1090	Canada	25,894
Cambodia	445	Denmark	32,484
Chile	5896	Finland	27,660
Colombia	2317	France	23,970
Costa Rica	4793	Greece	16,686
Croatia	5490	Hong Kong	32,250
Czech Republic	7056	Ireland	30,736
Dominican Republic	2694	Israel	19,877
El Salvador	2262	Italy	19,663
Estonia	6938	Japan	39,824
Georgia	1075	Netherlands	25,678
Guyana	1044	New Zealand	15,199
Honduras	1080	Norway	41,446
Hungary	6111	Portugal	11,196
Indonesia	983	Republic of Korea	13,865
Jamaica	3357	Slovenia	11,990
Kazakhstan	2166	Spain	16,025
Kyrgyzstan	326	Sweden	31,178
Latvia	5681	Switzerland	35,760
Lithuania	5277	UK	27,632
Macedonia	1947	USA	37,791
Mexico	6387		
Moldova	492		
Mongolia	626		
Nicaragua	862		
Panama	4707		
Paraguay	1392		
Peru	2552		
Philippines	1154		
Poland	5551		
Romania	2438		
Russian Federation	2620		
Slovakia	5121		
Thailand	2601		
Trinidad and Tobago	10,389		
Turkey	3589		
Ukraine	1037		
Uruguay	6987		
Venezuela	5427		
West Bank and Gaza Strip	1014		
Viet Nam	576		