

# Marginal Utility and Economic Development: Intrinsic Versus Extrinsic Aspirations and Subjective Well-Being Among Chinese Employees

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**Abstract** The post-1979 economic reforms have led to impressive economic growth in China both in terms of gross domestic product and individual income. Individual well-being, however, has not increased on par with the economy (Brockmann et al. in *J Happiness Stud* 10(4):387–405, 2009; Easterlin et al. in *Proc Natl Acad Sci* 109(25):9775–9780, 2012). In the current series of studies, traditional and multilevel regression models are applied to examine the relationship between income and employee well-being. Results suggest a curvilinear relationship between income and satisfaction (both with one’s job and one’s income), supporting a diminishing marginal utility effect. Additionally, confirming a central postulate of Goal Contents Theory (GCT), individuals who espoused the importance of income (an extrinsic motive) were less satisfied with income itself. Further examining the application of GCT in a Chinese context, results suggest individuals who value extrinsic motives (i.e., money, possessions, fame) exhibit lower levels of job satisfaction, life satisfaction, and feelings of accomplishment. Finally, there is a significant multilevel effect such that between-city levels of health have a significant positive relationship with life satisfaction. These results offer organizational and policy implications related to the interaction between economic prosperity and human development.

**Keywords** Intrinsic needs · Goal contents theory · Job satisfaction · Well-being · China

## 1 Introduction

Chinese economic growth during the past several decades has been staggering. Since the 1979 market reforms China has been one of the fastest growing economies in the world, with an average annual gross domestic product (GDP) growth rate of nearly 10 %

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(Morrison 2014). Per capita income has grown in rough accord with the economy, particularly in urban areas (Sutherland and Yao 2011). Compared to both mature and developing economies, China's cumulative income growth rate has been exceptional (Lakner and Milanovic 2013). In economic terms such growth is an overwhelming positive development. It follows that the rise of individual financial achievements, and the associated aspirations, should be a positive development because the pursuit of monetary incentives is arguably a central component of liberal economies. In fact empirical evidence suggests that citizens of capitalist economies display a relative greater preference for extrinsic incentives (e.g., achievement, power) compared to intrinsic values (e.g., universalism, self-direction) (Schwartz 2006). Financial and material aspirations have indeed increased in China, particularly among individuals born during the post-reform era (Durvasula and Lysonski 2010; Gu and Hung 2009; Podoshen et al. 2010; Zhan and He 2011).

While this apparent change in aspirations is an ostensible boon from an economics standpoint, it may pose hidden organizational and societal detriments. A series of studies suggest that there may be potential individual-level drawbacks to financial aspirations, and, in addition, subsequent financial success is less beneficial to one's well-being than intrinsic rewards (Kasser and Ryan 1993, 1996). Specifically, individuals who display greater materialistic aspirations (relative to intrinsic aspirations) and values display less life satisfaction and numerous adverse outcomes such as negative self-appraisal, anxiety, and depression (Dittmar et al. 2014). Most of these studies utilized participants from western nations, and, the relationship between materialism and well-being has been so steeped in western culture that some authors have referred to the phenomenon as the "dark side of the American dream" (Kasser and Ryan 1993). While materialism may have been a supposed hallmark of American consumerism (Derber 1979) it is more likely that, in the modern era of globalization, materialism is an artifact of liberal markets and impartial to national boundary. Therefore it is important to understand the impact of this value orientation, "dark side" or not, in rapidly growing economies. Several studies have examined this phenomenon in cultures outside the United States (Ryan et al. 1999; Speck and Roy 2008). However, aside from student samples (Kim et al. 2003) or speculative exploration (Yew-Kwang 2002) the study of materialistic aspirations and well-being in Asia has been extremely limited (Wong et al. 2003). Likewise the study of this effect among Chinese employees specifically appears to be nonexistent. Given the aforementioned economic and financial success in China it is important to understand the implications for the health and well-being of employees.

An area of empirical research that has received a fair amount of attention in the post-reform Chinese economy involves changing societal values systems. Values are arguably the cultural fabric of a society. Among cultural values collectivism has been cited as the most central of any to Chinese society (House et al. 2004). The individualism-collectivism continuum is a dimension that has surfaced in multiple widely accepted cultural value frameworks (Hofstede 1980; House et al. 2004; Smith et al. 1996). Interdependence, cohesive social groups, and an identity that emphasizes one's position in relation to others generally characterize collectivism. Higher levels of self-interest, independence, self-reliance, and a preference for loose-knit social networks on the other hand characterize individualist cultures. A regularly documented change in value-orientation among Chinese employees during the past several decades is the relative shift away from collectivism and toward individualism (e.g., McEwin et al. 2006; Steele and Lynch 2013; Ralston et al. 1999). This decrease in collectivist orientation has been paralleled by an increase in financial aspirations (e.g., Gu and Hung 2009). Theorists have argued that aspiration

toward affiliation and community, such as those that are espoused in collectivist cultures, are universal intrinsic psychological needs (Deci and Ryan 2000; Ryan and Deci 2000a, b; Vansteenkiste et al. 2010). For example, when fulfilled, need for affiliation has been shown to be positively related to well-being (e.g., Niemiec et al. 2009). Therefore it is important, particularly as societal values continue to shift in China, to understand the relationship between material (e.g., financial) versus intrinsic (e.g., affiliation) aspirations with individual well-being.

In addition to the decline in collectivism, scholars have also observed a relative stagnant, and in some cases declining, level of life satisfaction and happiness (Brockmann et al. 2009; Easterlin et al. 2012). Authors have speculated on the connection between economic development and unhappiness. The current series of studies extends previous research (Kasser and Ryan 1993, 1996; Ryan et al. 1999) by assessing the effects of a central component of value orientation, extrinsic incentives and intrinsic motives and aspirations, on well-being among Chinese employees.

The intrinsic–extrinsic motivational distinction is one of the perennial dichotomies in the field of organizational behavior (Dyer and Parker 1975). While sometimes difficult to distinguish, both the origin of behavior and the associated benefits of these behaviors are defining characteristics (Brief and Aldag 1977; deCharms 1968). Specifically, if one is seen as the origin of the behavior and the behavior is beneficial in and of itself then it is considered intrinsic. Alternatively, if the behavior is dictated by something outside oneself and the benefits of the behavior are contingent on external reward then it is considered extrinsic (Ryan and Deci 2000a).

Theories of human motivation involving intrinsic motivation were born out of an inability of behaviorist psychology to explain activity driven independently of external forces (White 1959). These seemingly spontaneous behaviors are not associated with instrumental reasons. The extrinsic and intrinsic dichotomy, as well as rewards associated with these two types of motives, is a core component of many needs-based motivational theories (Deci and Ryan 2000; Herzberg et al. 1957; Maslow 1943). Recent needs-theories suggest that fundamental human psychological needs act as motivators, and, that human motivation is driven beyond homeostasis to a point of flourishing and growth (Deci and Ryan 2000). When satisfied, intrinsic needs promote well-being and effectiveness. Alternatively, those motivators that are extrinsic to the individual have a limited utility and the potential to decrease individual well-being and effectiveness. Thus a primary distinction associated with the extent to which a need is beneficial or deleterious is whether the motive is intrinsic or extrinsic (Vansteenkiste et al. 2010).

This is not to suggest that extrinsic rewards cannot be beneficial. Financial incentives can be instrumental, for example, in the direct procurement of basic (e.g., safety, sustenance) needs and the potential indirect acquisition of higher order (e.g., autonomy, development) needs. Extrinsic rewards on their own display a positive association with individual outcomes. For example, monetary incentives display a positive, albeit small, relationship with job (Judge et al. 2010) and life (e.g., Diener and Biswas-Diener 2002) satisfaction. However, utilizing popular frameworks (Csikszentmihalyi 1988; Maslow 1954; Ryan and Deci 2000b; Ryff and Keyes 1995) to compare effects of extrinsic (or lower order) and intrinsic (or higher order) need satisfaction, recent research suggests that higher order intrinsic needs are associated with more positive emotions and less negative emotions than extrinsic needs (Tay and Diener 2011). Intrinsic need fulfillment has numerous benefits—it is related to daily positive affect and vitality (Reis et al. 2000; Sheldon et al. 1996), mental and physical well-being (Kasser and Ryan 1999), lower anxiety, general well-being, as well as higher job satisfaction and lower perceived safety

threats (Lynch et al. 2005). In fact, the accomplishment of intrinsically, relative to extrinsically, rewarding goals are associated with greater life satisfaction and well-being in general (Niemiec et al. 2009).

A concern is that, although extrinsic motivators display a marginally positive individual benefit, extrinsic rewards may also detract from the benefits of intrinsic rewards. Early theories of motivation viewed extrinsic and intrinsic rewards as additive. It was recommended to design reward systems that facilitated both intrinsic and extrinsic motivators, which would lead to eventual greater satisfaction and performance (Porter and Lawler 1968). However, more recent findings are equivocal. When both extrinsic and intrinsic rewards are possible the interactive effects may be quite complicated (Cameron and Pierce 1994; Deci et al. 1999; Eisenberger and Cameron 1996). It appears that mixing the two reward types may sometimes diminish the other type (Deci et al. 1999). For example, individuals may become so focused on extrinsic rewards that they lose focus on the intrinsically rewarding aspects of the task and thereby diminish the associated benefits. Also, individuals may assign greater relative value to one type of need and not the other. The relative importance placed on intrinsic and extrinsic motives, and the associated differential levels of well-being, is one focus of the current study.

There is a considerable amount of literature to suggest that, primarily among students, higher relative value of extrinsic incentives versus intrinsic needs is associated with lower levels of well-being. Compared to those who emphasize intrinsic motives (e.g., personal growth), students whose aspirations are extrinsic (e.g., money, fame) display less self-actualization and vitality, greater depression, higher levels of anxiety, poorer relationships, lower social functioning (Kasser and Ryan 1993, 1996), greater alienation (McHoskey 1999), lower self-esteem, lower levels of self-actualization (Sheldon and Kasser 1995), more superficial processing of information, less persistence, and lower task performance (Vansteenkiste et al. 2004). Extending these findings to the employment setting, relative greater employee preference for intrinsic benefits over extrinsic motivators is associated with greater job and life satisfaction, less emotional exhaustion, and lower likelihood of turnover (Vansteenkiste et al. 2007). Benefits of greater intrinsic over extrinsic motives has shown to be consistent across several nations, including citizens in Belgium (Vansteenkiste et al. 2007), the United States, Russia, (Ryan et al. 1999), and Germany (Schmuck et al. 2000).

Income is perhaps the most universally prevalent extrinsic motivator utilized in the workplace. Likewise, income is cited as one of the most important factors regarding employment by employees (Jurgensen 1978) and argued by researchers to be the single most instrumental motivator (Locke et al. 1980). However, relative to its ubiquitous application in business, the relationship between income and job satisfaction has arguably not received as much attention in the literature on organizational behavior as one might expect. The first meta-analytic study of literature on the income-job satisfaction link suggests a modest relationship. Specifically, the estimated meta-analytic correlation between pay and job satisfaction is 0.15, and, the relationship between pay and pay satisfaction is slightly stronger at 0.23 (Judge et al. 2010). The relationship between income and life satisfaction (and general subjective well-being) has received extensive attention in published empirical research. The relationship has often been demonstrated as small in magnitude yet significant and positive (Diener and Biswas-Diener 2002; Diener and Oishi 2000; Diener et al. 1993; Diener et al. 1999; Suh et al. 1998). Thus, it appears, as with job satisfaction, a small positive relationship exists between income and life satisfaction.

There is one major distinction between the nature of the relationships that are tested regarding income and life satisfaction and those testing income and job satisfaction—the difference being the linearity of the relationship. The relationship between income and life satisfaction appears to be positive, however it has also been shown to be asymptotic when modeled as a curvilinear function (e.g., Diener et al. 1993; Kahneman and Deton 2010). This asymptotic relationship, or diminishing marginal utility, wherein initial units of consumption yield more utility than subsequent units, can be explained by the phenomenon of hedonic adaptation (Frederick and Loewenstein 1999). In this adaptive process, each unit of additional income only serves to dilute the relative hedonic satisfaction derived from all other units. In terms of job satisfaction, there is a point where procuring additional income will have no effect (Diener et al. 1993; Veenhoven 1991). This effect has been metaphorically referred to as the “hedonic treadmill” (Brickman and Campbell 1971; see Diener et al. 2006 for review). Studies of income and job satisfaction treat the relationship as linear and do not consider the possibility of a curvilinear relationship. Therefore in the current series of studies, the relationship between income and job satisfaction is posited to also be subject to diminishing marginal utility associated with hedonic adaptation and thus curvilinear.

Additionally, in the current studies a second criterion is assessed to provide a more specific empirical assessment of diminishing utility. Job satisfaction was chosen as a criterion because of its important work-relatedness (Judge et al. 2001). Therefore this choice was made due to practical utility. Though an argument can be made that job satisfaction is perhaps a contaminated criterion given the specific purpose of examining diminishing marginal utility (Austin and Villanova 1992; Brogden and Taylor 1950). While income satisfaction is typically measured as a facet of job satisfaction there are no guarantees that the respondent is taking into account this specific facet when reflecting on the global assessment of their own job satisfaction, thus making the criterion deficient. In addition since income satisfaction is only one facet of job satisfaction the respondent is, in all likelihood, incorporating many other job facets into their global assessment of satisfaction, thus suggesting the criterion is contaminated. Therefore, as a second test of the law of diminishing marginal utility as it relates to income and satisfaction, a more closely matched antecedent and criterion (i.e., income satisfaction) relationship is assessed. The first set of analyses assesses the diminishing utility of income as an effect on job satisfaction, as well as the diminishing utility of income as a satisfier in and of itself. Therefore the curvilinear relationship between income and job satisfaction is tested for practical implications, while the test of a curvilinear relationship between income and income satisfaction should serve as a more closely approximated test of the aforementioned utility theorem.

## 2 Study 1

### 2.1 Hypotheses

**H1** The relationship between income and job satisfaction will be best fit by a nonlinear model.

**H2** The relationship between income and income satisfaction will be best fit by a nonlinear model.

## 2.2 Sample

The data for each study in the current manuscript was drawn from the AsiaBarometer survey (Inoguchi 2003, 2004, 2006). Using multistage stratified randomly sampling a total of 800 individuals were selected to participate in Study 1. Respondents were surveyed using a closed-ended face-to-face interview. Respondents were living in Beijing (n = 100), Chongqing (n = 100), Dalian (n = 100), Guangzhou (n = 100), Nanjing (n = 100), Shanghai (n = 100), Tsingtao (n = 100), and Xian (n = 100). Respondents ranged in age from 20 to 59 with an mean of 39. Roughly half of respondents were male (49.1 %). The majority of respondents had completed education at the high school level or below (58.3 %) at the time of the data collection, while the rest received vocational or technical school training (10.9 %) or undergraduate college degree or higher. Most respondents were married (76.9 %) while the rest were single (18.5 %), divorced/separated (2.9 %), or widowed (1.8 %). More than half of respondents identified either as a manual worker (23 %) clerical worker (11.8 %), professional or specialist (7 %), vendor or street trader (6 %), or sales (5.6 %),

## 2.3 Measures

### 2.3.1 Income

Respondents were asked to indicate their gross annual household income during the previous year, in Yuan. Response categories ranged from less than ¥10,000 to more than ¥110,001 in ¥10,000 increments, allowing for a total of 12 possible income range responses.

### 2.3.2 Job Satisfaction

A global single item was used to assess satisfaction with one's job, which has been shown to be an efficient and acceptable measure (Wanous et al. 1997). Respondents were asked, "Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Job." Response options involved a five-point scale ranging from "Completely Dissatisfied" to "Completely Satisfied."

### 2.3.3 Income Satisfaction

A global single item was used to assess satisfaction with one's household income. Respondents were asked, "Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Household income." Response options involved a five-point scale ranging from "Completely Dissatisfied" to "Completely Satisfied."

## 3 Results

Descriptive statistics and correlations of study variables are presented in Table 1 (lower left of matrix). Income frequency ranged from 1 (less than ¥10,000) to 12 (greater than ¥100,001) with a mode of 2 (¥10,001 to ¥20,000) (28.3 %), median of 3 (¥20,001 to ¥30,000), skewness of 1.7 ( $SE = 0.09$ ), and kurtosis of 3.39 ( $SE = 0.17$ ).

**Table 1** Zero order correlations between primary study variables

	M	SD	1	2	3	4	5	6	M	SD
<b>Study 1</b>										
1. Age	39.10	10.64		-0.08**	-0.34***	-0.06	-0.08*	0.00	36.42	10.45
2. Gender	1.51	0.50	-0.01		-0.06	-0.02	0.00	-0.07*	1.50	0.50
3. Education	3.54	1.40	-0.39***	-0.04		0.24***	0.15***	0.23***	3.73	1.67
4. Income	3.28	2.24	-0.16***	-0.01	0.39***		0.44***	0.31***	3.58	3.44
5. Income satisfaction	2.92	1.13	-0.03	0.03	0.11***	0.23***		0.47***	3.06	0.87
6. Job satisfaction	3.18	1.14	-0.08*	0.03	0.17***	0.25***	0.48***		3.18	0.87
M			1	2	3	4	5	6	7	8
SD										
<b>Study 2</b>										
1. Age	40.77	12.69								
2. Gender	1.49	0.50	-0.01							
3. Education	2.73	1.31	-0.37***	-0.07**						
4. Health	3.67	0.98	-1.26***	-0.08**	.09***					
5. Income	2.66	2.77	-0.02	-0.06**	0.34***	.05*				
6. Income satisfaction	3.04	0.89	0.09***	-0.01	0.10***	0.26***	0.28***			
7. Job satisfaction	3.05	1.03	0.01	-0.04	0.19***	0.27***	0.23***	0.44***		
8. Life satisfaction	7.62	1.44	0.03	0.02	0.12***	0.31***	0.18***	0.38***	0.312***	
9. Life accomplishment	2.61	0.73	0.12***	0.00	0.09***	0.15***	0.19***	0.36***	0.275***	0.460***

Study 1 n = 800, Study 2 n = 1000, Study 3 n = 2000. Study 2 correlations are on the upper diagonal of the Study 1 matrix. In Study 1 Income consisted of 12 categories and in Study 2 and 3 there were 20 categories. Gender is coded as Male = 1 and Female = 2

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

To test Hypothesis 1 job satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.076$ ,  $F(1, 766) = 8.074$ ,  $p < 0.01$ ), which is a medium effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). A probe of the simple linear and quadratic slope is shown in Fig. 1, which also includes mean and standard deviation of job satisfaction within each income category. To

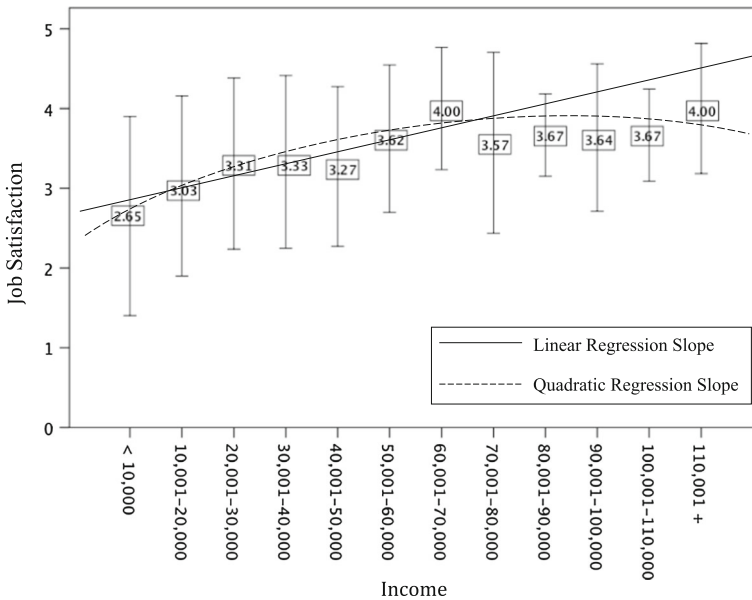
**Table 2** Hierarchical quadratic regression results for the relationship between income and job satisfaction, and, income and income satisfaction

Study	Variable	$\beta$ (SE)	95 % CI	R ( $\Delta R^2$ )
<i>Job satisfaction</i>				
Study 1 (n = 769)	Intercept	2.496*** (0.238)	[2.028, 2.963]	
	Age	-0.003 (0.004)	[-0.011, 0.004]	
	Gender	0.074 (0.079)	[-0.081, 0.229]	
	Income	0.278*** (0.056)	[0.169, 0.388]	
	Income <sup>2</sup>	-0.015** (0.005)	[-0.025, -0.005]	0.275 (0.076**)
Study 2 (n = 913)	Intercept	2.715*** (0.144)	[2.432, 2.998]	
	Age	-0.001 (0.003)	[-0.006, 0.004]	
	Gender	-0.083 (0.053)	[-0.187, 0.021]	
	Income	0.235*** (0.022)	[0.193, 0.278]	
	Income <sup>2</sup>	-0.010*** (0.001)	[-0.012, -0.007]	0.393 (0.056***)
Study 3 (n = 1928)	Intercept	2.767*** (0.11)	[2.552, 2.982]	
	Age	0.001 (0.002)	[-0.002, 0.005]	
	Gender	-0.056 (0.045)	[-0.145, 0.033]	
	Income	-0.005*** (0.020)	[0.110, 0.187]	
	Income <sup>2</sup>	-0.005*** (0.001)	[-0.008, -0.002]	0.243 (0.007***)
<i>Income satisfaction</i>				
Study 1 (n = 786)	Intercept	1.925*** (0.233)	[1.467, 2.382]	
	Age	0.002 (0.004)	[-0.005, 0.01]	
	Gender	0.081 (0.078)	[-0.072, 0.233]	
	Income	0.348*** (0.054)	[0.241, 0.455]	
	Income <sup>2</sup>	-0.022*** (0.005)	[-0.032, -0.012]	0.278 (0.078***)
Study 2 (n = 938)	Intercept	2.470*** (0.133)	[2.209, 2.731]	
	Age	-0.004 (0.002)	[-0.009, 0.001]	
	Gender	0.018 (0.049)	[-0.079, 0.114]	
	Income	0.247*** (0.020)	[0.208, 0.287]	
	Income <sup>2</sup>	-0.008*** (0.001)	[-0.011, -0.006]	0.489 (0.044***)
Study 3 (n = 1980)	Intercept	2.396*** (0.092)	[2.215, 2.577]	
	Age	0.007*** (0.002)	[0.004, 0.010]	
	Gender	0.016 (0.038)	[-0.059, 0.091]	
	Income	0.144*** (0.017)	[0.111, 0.176]	
	Income <sup>2</sup>	-0.004*** (0.001)	[-0.006, -0.002]	0.306 (0.006***)

$\beta$  = Unstandardized regression coefficients. SE = Standard error. Independent variable for each analysis is individual income. Age and Gender are entered as control variables in each regression equation

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$





**Fig. 1** Job satisfaction regressed on employee income in study 1. *Note* Mean of job satisfaction within each income range is shown in boxes. Standard deviation of job satisfaction within each income range is shown as whiskers

test Hypothesis 2 income satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.078$ ,  $F(1, 782) = 19.859$ ,  $p < 0.001$ ), which is a medium effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). The shape of the simple quadratic slope is the same as that shown in Fig. 1. Previous studies suggest that both gender (e.g., Fields and Blum 1997; Ngo et al. 2014; Schwab and Heneman 1977) and age (e.g., Kooij et al. 2011; Ng and Feldman 2010) are significantly related to job satisfaction and therefore these variables were modeled as covariate controls in each regression.

### 3.1 Brief Discussion

Results of the regression analyses of income and job satisfaction were similar to previous research in several respects. First, the linear relationship was modest in magnitude yet statistically significant ( $r = 0.25$ ,  $p < 0.5$ ) (Judge et al. 2010), and, also similar to the relationship between financial status and subjective well-being among developing countries (Howell and Howell 2008). Also, a curvilinear model appears to fit the data more adequately (Table 2). The shape of the curve is asymptotic, similar to empirical research on the relationship between absolute income and well-being (Diener et al. 2010; Diener and Seligman 2004; Frey and Stutzer 2002; Kahneman and Deton 2010). Prior research demonstrates that the curve is asymptotic to the extent that those with above-average income are barely, if any, happier than those below the average (e.g., Deaton 2008; Frey and Stutzer 2002). These results mirror previous findings of the relationship between income and life satisfaction (Fig. 1), which provides support for a rule of diminishing marginal utility for job satisfaction. As a second test of the law of diminishing marginal

utility as it relates to income and satisfaction, a more closely matched antecedent and criterion (i.e., income satisfaction) relationship was assessed. The incremental variance accounted for by the quadratic term in the relationship between income and income satisfaction was slightly greater than that between income and job satisfaction.

The diminishing utility of extrinsic incentives, including income, on well-being can be explained by hedonic adaptation (Diener et al. 2006; Frederick and Loewenstein 1999). However this relationship is also likely to be a function, at least in part, of Goal Contents Theory (GCT). GCT is a “micro-theory” contained within Self-Determination Theory (SDT). The central postulate of GCT is that intrinsic and extrinsic goals, or aspirations, have differential effects on individual well-being (Vansteenkiste et al. 2010). Intrinsic goals, GCT suggests, are positively related to individual performance and well-being because goal contents are congruent with basic psychological needs. Intrinsic goals are inwardly focused and therefore more conducive to need satisfaction. Alternatively, extrinsic goals are outwardly focused and serve as antecedents of ill-being. Extrinsic goals emphasize self-worth through external validation, which detracts from basic psychological need satisfaction, and therefore degrades well-being.

Extrinsic aspirations are expected to increase hedonic adaptation. GCT proposes extrinsic goal aspirations are less related, or even inversely related, to well-being. Therefore a paradoxical effect is expected wherein individuals who value monetary incentives will display a greater diminished marginal utility of income. One of the primary tenets of GCT is that intrinsic and extrinsic goal contents differentially predict individual well-being and adjustment. This differential effect is due, theoretically, to intrinsic needs being universally evolved and therefore conducive to well-being (Vansteenkiste et al. 2010). While previous research has examined the attainment of valued extrinsic incentives versus intrinsic rewards and the relation to well-being (e.g., Nickerson et al. 2003; Niemiec et al. 2009), the current study focuses specifically on satisfaction with the extrinsic monetary incentive itself. Thus in study 2 extrinsic goal orientation is expected to moderate the relationship between income and satisfaction. Building on results from Study 1, perceived importance of income is expected to attenuate the relationship between individual income and individual satisfaction with income. In line with GCT satisfaction with income will be lower for those individuals who place a high importance upon income, thereby exacerbating the effect of hedonic adaptation.

## 4 Study 2

### 4.1 Hypotheses

**H3** There will be an interaction between income importance and income on income satisfaction, such that employees placing a high importance on income will display lower levels of income satisfaction.

### 4.2 Sample

Utilizing the same data collection procedure as in Study 1, a total of 1000 individuals were surveyed during 2004. At the time of data collection the respondents were living in Chengdu, (n = 100), Chongqing (n = 200), Hangzhou (n = 100), Nanchang (n = 100), Nantong (n = 100), Shanghai, (n = 200), Wenzhou (n = 100), Wuhan (n = 100). Respondents

ranged in age from 20 to 59 with an average of 39. Exactly half of respondents were male (50 %). The majority of respondents had completed education at the high school level or below (65 %) at the time of the data collection, while the rest had received an undergraduate college degree or higher (34 %), and small percentage had no formal education (1 %). Most respondents were married (73.8 %) while the rest were single (23 %), divorced/separated (2.2 %), or widowed (0.9 %). The occupational categories of respondents were similar to the Study 1 sample, with more than half of respondents identified either as a clerical worker (28.3 %), manual worker (11.5 %), senior manager (10.6 %), professional or specialist (9.7 %), vendor or street trader (6.5 %), or sales (6.5 %).

### 4.3 Measures

#### 4.3.1 Income

Respondents were asked to indicate their gross annual household income during the previous year, in Yuan. Response categories ranged from less than ¥20,000 to more than ¥200,001 in ¥10,000 increments, allowing for a total of 20 possible income range responses.

#### 4.3.2 Job Satisfaction

The same global single item used in Study 1 was utilized to assess satisfaction with one's job. Respondents were asked, "Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Job." Response options involved a five-point scale ranging from "Completely Dissatisfied" to "Completely Satisfied."

#### 4.3.3 Income Satisfaction

The same global single item used in Study 1 was utilized to assess satisfaction with one's household income. Respondents were asked, "Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Household income." Response options involved a five-point scale ranging from "Completely Dissatisfied" to "Completely Satisfied."

#### 4.3.4 Income Importance

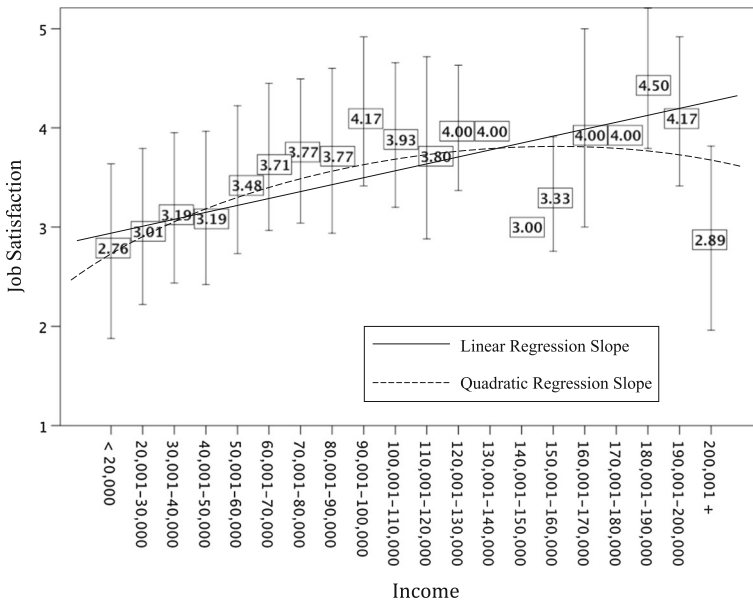
Respondents were presented with a list of twenty-five items, and asked, "Of the following lifestyle aspects or life circumstances, please select five that are important to you." One of those options included income. Responses were coded as 1 (mentioned) or 0 (not mentioned). Rank ordering items of importance is similar to closely related previous research (Kasser and Ryan 1993, 1996).

## 5 Results

Descriptive statistics and correlations of study variables are presented in Table 1 (upper right of matrix). Income frequency ranged from 1 (less than ¥20,000) to 20 (greater than ¥200,001) with a mode of 2 (¥20,001 to ¥30,000) (27.6 %), median of 2, skewness of 2.7 ( $SE = 0.08$ ), and kurtosis of 8.42 ( $SE = 0.16$ ).

First, analyses in Study 1 were replicated to provide an additional test of Hypotheses 1 and 2. To re-test Hypothesis 1 job satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.056$ ,  $F(1, 909) = 8.074$ ,  $p < 0.001$ ), which is a small to medium effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). The difference in line of simple slope best-fit between linear and quadratic regressions is displayed in Fig. 2. Mean and standard deviation of job satisfaction at each income category are included in Fig. 2 to further demonstrate the relationship. To reassess Hypothesis 2 income satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.044$ ,  $F(1, 934) = 53.631$ ,  $p < 0.001$ ), which is a small to medium effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). The simple linear and quadratic slopes are similar to those shown in Fig. 2.

Step-down moderated regression is superior to conventional (i.e., “step up”) moderated regression when testing subgroups and therefore results of this approach are presented in Table 3. The full regression model includes income, the dichotomous income importance variable, and the interaction term. The prediction bias column reflects comparisons between the variable of income and the full model. The slope bias column indicates comparisons of the income variable plus the dichotomous income importance variable against the full model. If there was evidence of slope bias, then the intercept bias was computed by comparing the income variable plus the interaction term against the full model. If there was no evidence for slope bias, then the intercept bias column was



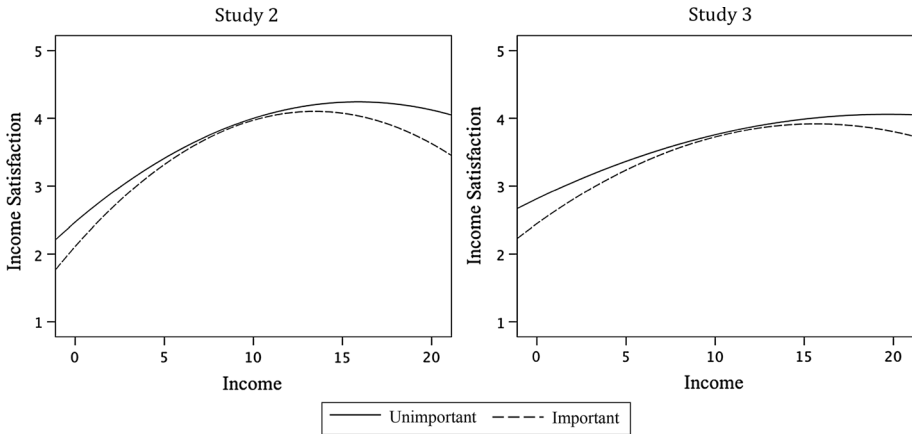
**Fig. 2** Job satisfaction regressed on employee income in study 2. *Note* Mean of job satisfaction within each income range is shown in boxes. Standard deviation of job satisfaction within each income range is shown as whiskers. Missing whiskers in bracket 13, 14, and 17 indicate that values did not deviate from the mean

**Table 3** Step-down moderated regression results for relationship between income and income satisfaction by reported importance of income

Study	$r_{xy}$	$r_{xy}$ (Imp.   Unimp.)	n	Full model			Prediction bias			Slop bias			Intercept bias		
				$\beta$	$\beta$	$\beta$	Importance	Inc. $\times$ Imp.	$R^2$	$R^2D$	$R^2$	$R^2D$	$R^2$	$R^2D$	
2	0.44	(0.439   0.444)	[308   634]	0.111	-0.191	-0.002	0.205***	0.012**	0.000	0.012***	0.000	0.012***			
3	0.28	(0.338   0.264)	[515   1471]	0.084	-0.306	0.026	0.093***	0.015***	0.001	0.013***	0.001	0.013***			

Imp. = Earning a high income reported as important. Unimp. = Earning a high income not reported as important. Tests of slope and intercept bias were conducted only if evidence of predictive bias was indicated. The full model displays unstandardized regression coefficients, shown as  $\beta$ . Imp. was coded as 1 and Unimp. was coded as 0. Full model = income, importance, and the interaction term (Income  $\times$  Importance);  $r_{xy}$  = correlation between income and income satisfaction only;  $R^2D$  = the change in the variance accounted for by the addition of the model; Prediction bias  $R^2D$  = comparison of income alone with the full model; Slope bias  $R^2D$  = comparison of income plus importance (i.e., Imp. or Unimp.) with the full model. If slope bias is significant, then the Intercept bias  $R^2D$  = comparison of income plus interaction term with the full model. If there is no evidence for slope bias, then the Intercept bias  $R^2D$  = comparison of income alone with income plus importance (i.e., Imp. or Unimp.) variable

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$



**Fig. 3** Shape of moderating effect of importance of income on the relationship between income and satisfaction. *Note* Study 2  $n = 1000$ , Study 3  $n = 2000$ . Income response categories ranged from less than ¥20,000 to more than ¥200,001 in ¥10,000 increments, allowing for a total of 20 possible income range responses

computed by comparing income alone with the income variable plus the dichotomous income importance variable. Tests of slope and intercept bias were conducted only if evidence of predictive bias was indicated (Lautenschlager and Mendoza 1986). The first step yielded significant prediction bias, warranting subsequent significance testing. Subsequent tests display significant intercept bias ( $\Delta R = 0.012$ ). Individuals who reported income as important are less satisfied with income, which provides support for Hypothesis 3 (Fig. 3).

## 5.1 Brief Discussion

Results of the regression analyses of income and job satisfaction were similar to Study 1 and previous research in several respects. First, the linear relationship was again significantly positive ( $r = 0.31$ ,  $p < 0.5$ ) (Judge et al. 2010; Howell and Howell 2008). Also, a curvilinear model appears to fit the data more adequately (Table 2). The shape of the curve is asymptotic, similar to empirical research on the relationship between absolute income and well-being (Diener et al. 2010; Diener and Seligman 2004; Frey and Stutzer 2002; Kahneman and Deton 2010). However there is an apparent departure from previous findings. Prior research demonstrates that the curve flattens as it approaches roughly \$10,000 (corrected for Purchasing Power Parity), suggesting that those with above-average income are only marginally happier than those below the average (e.g., Deaton 2008; Frey and Stutzer 2002). While the current results do again support the rule of diminishing marginal utility of income as it pertains to satisfaction, there convex shape of the quadratic line of best fit is more pronounced than Study 1. Specifically, it appears that the relationship between income and job satisfaction increases until the ¥90,001–¥100,000, which is far greater than the median and mode in the current sample (¥20,001–¥30,000). As is shown in Fig. 2 the mean level of job satisfaction at the median income level bracket is 3.01 (i.e., “Somewhat Dissatisfied”) while it is 4.17 (“Somewhat Satisfied”) at the 9th income bracket of the possible 20 (Fig. 2).

The significant intercept bias associated with the income satisfaction on income regression shows an even more pronounced convex quadratic regression line for those who espouse the importance of income versus those who do not. The greatest departure between the two groups of individuals is seen at low and high levels of income (Fig. 3). This is particularly important for the lower end of the income distribution because this is where the vast majority of respondents are clustered. Thus the greatest attenuation of satisfaction associated with espoused income importance is present for the largest portion of the sample, and, therefore the hypothesized effect is having the greatest impact for the majority of the employees. The magnitude of effect appears greater for highest levels of income in the sample. It would seem that the paradoxical effect of income importance on income satisfaction is greatest for the wealthiest individuals.

These results showing the diminishing utility of extrinsic incentives, including income, on well-being can be explained by GCT (Vansteenkiste et al. 2010). The extrinsic income-importance orientation, as GCT would suggest, is detrimental to satisfaction. This suggests an exacerbating effect of goal orientation on hedonic adaptation. Income importance, an extrinsic goal, is outwardly focused and therefore relies on external validation, which detracts from basic psychological need satisfaction, and therefore degrades well-being.

Extending findings from Study 2, in addition to the moderating effect of income importance, it is expected that additional extrinsic value orientations (relative to intrinsic need orientation) will also be associated with lower well-being. Individuals who display a relative preference for intrinsic over extrinsic incentives have been shown to also display greater well-being in general (Ryan et al. 1999; Schmuck et al. 2000). Likewise, individuals who display a relative preference for intrinsic over extrinsic incentives at work have shown greater job satisfaction (Vansteenkiste et al. 2007). Notably, in work-specific values research the benefit of adopting a relative preference for intrinsic instead of extrinsic values was not limited to the work domain—this effect carried over into employees' satisfaction with life, family life, and general well-being (Vansteenkiste et al. 2007). Extending on this work, the current study examines the effect of general (not work-specific) relative importance of intrinsic motives (i.e., affiliation, community) over extrinsic (i.e., materialism) on well-being. Unlike previous research, the current study examines the relationship between this general value orientation and both work and non-work well-being. Using the current sample of Chinese employees, intrinsic orientation is expected to be associated with higher levels of well-being at work and in life in general.

Finally, Study 1 and 2 assessed the relationship between income and job satisfaction at the individual level. Previous research suggests that there is a higher-level effect of income on individual satisfaction. Specifically, income at the country level appears to have a positive effect on individual life satisfaction and well-being. The relationship is such that those individuals living in richer nations are, on average, significantly happier (Deaton 2008; Diener and Biswas-Diener 2002; Diener et al. 2010). To examine the difference between individual income and GDP on well-being previous researchers simply compared estimates regressing the individual criterion on the individual predictor and compared it to the regression of the country level criterion on the country level predictor (e.g., Deaton 2008). Unfortunately standard statistical analyses rely heavily on nonindependence and therefore either aggregating lower-order variables (i.e., measuring only the country-level) or disaggregating higher-order variables (i.e., measuring only the individual level) may bias results. Therefore constructing a multilevel model is a more appropriate methodology for assessing higher order (i.e., clustered data) effects of income. Since China is the only country included in the current study it is relevant to understand the impact of city-level per-capita income on job satisfaction. The magnitude and nature of the relationship of per-

capita income is important from a societal and policy perspective. The number of cities in Study 1 and 2 were too few to construct a multilevel model that would result in accurate standard errors (Hox 2010). Therefore in Study 3 a sample containing a much higher number of cities was utilized to assess the impact of both individual and per-capita income on job satisfaction.

While there are certainly many contingencies that influence the effect of national development on well-being (e.g., Kööts-Ausmees et al. 2013; Morrison et al. 2011) there is abundant evidence to suggest that macro-level indices of wealth such as GDP are positive correlates of life satisfaction and well-being (Diener et al. 2013; Zagorski et al. 2014). While macro indices of wealth have direct positive effects, it does not guarantee expenditures that benefit the general population. A more comprehensive measure of national wealth, the Human Development Index (HDI), was introduced to more accurately approximate a nation's level of development (United Nations Development 1990). Specifically, the HDI assesses those things that many people believe are the requisite antecedents of life satisfaction and well-being—health, education, and income. Previous studies, for example, suggest that there is more likely to be a positive association of income and well-being when individual physical and material welfare increase in tandem, rather than income alone (Diener et al. 2013). Therefore in study 3 both education and health are added to the multilevel models predicting job satisfaction, life satisfaction, and feelings of life accomplishment. Education and health are expected to have a stronger effect on these individual well-being indices.

## 6 Study 3

### 6.1 Hypotheses

**H4a** Individuals who espouse higher importance of social affiliation (an intrinsic need) relative to extrinsic incentives (i.e., money, material possessions, and fame) will display higher levels of subjective well-being (i.e., job satisfaction, life satisfaction, life accomplishment).

**H4b** Individuals who espouse higher importance of community (an intrinsic need) relative to extrinsic incentives (i.e., money, material possessions, and fame) will display higher levels of subjective well-being (i.e., job satisfaction, life satisfaction, life accomplishment).

**H5** Education and health will display a stronger positive relationship with subjective well-being (i.e., job satisfaction, life satisfaction, life accomplishment) compared to income.

### 6.2 Sample

Using the same data collection methodology utilized in the previous two studies, a total of 2000 individuals, representing 99 different cities, were surveyed during 2006.<sup>1</sup> Respondents

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<sup>1</sup> Respondent cities included Anning, Baoding, Beijing, Changsha, Changshu, Chayu, Chengdu, Chifeng, Chongming, Chongqing, Dandong, Dangshan, Dezhou, Dongfeng, Dongliao, Dushan, Emeishan, Faku, Fangzheng, Feixi, Foshan, Fujin, Fuyuan, Gaozhou, Gonggan, Guangzhou, Haikou, Handan, Hangzhou, Hefei, Hengshui, Huacheng, Huining, Huzhou, Jiangxian, Jidong, Jingyuan, Jintang, Jinxian, Jinzhong,



ranged in age from 20 to 69 with an average of 40.77. Roughly half of respondents were male (50.7 %). The majority of respondents had completed education at the high school level or below (74.2 %) at the time of the data collection, while the rest had received an undergraduate college degree or higher. Most respondents were married (78.7 %) while the rest were single (16.6 %), divorced/separated (1.9 %), or widowed (2.2 %). The occupational categories of respondents was slightly different than Study 1 and Study 2, with more than half of respondents identified either as self-employed in agriculture, forestry, or fisheries (13.5 %), clerical worker (12 %), vendor or street trader (10.1 %), professional or specialist (8.6 %), manual worker (4.7 %), sales (4.3 %), or senior manager (2.3 %).

## 6.3 Measures

### 6.3.1 Income

As with Study 2, respondents were asked to indicate their gross annual household income during the previous year, in Yuan. Response categories ranged from less than ¥20,000 to more than ¥200,001 in ¥10,000 increments, allowing for a total of 20 possible income range responses.

### 6.3.2 Health

Respondents were asked a global question about health, wherein they indicated their subjective satisfaction. Response options included a five-point scale, ranging from “Very Dissatisfied” to “Very Satisfied.”

### 6.3.3 Job Satisfaction

The same global single item used in Study 1 and 2 was utilized to assess satisfaction with one’s job. Respondents were asked, “Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Job.” Response options involved a five-point scale ranging from “Completely Dissatisfied” to “Completely Satisfied.”

### 6.3.4 Income Satisfaction

The same global single item used in Study 1 and 2 was utilized to assess satisfaction with one’s household income. Respondents were asked, “Please tell me how satisfied or dissatisfied you are with the following aspects of your life: Household income.” Response options involved a five-point scale ranging from “Completely Dissatisfied” to “Completely Satisfied.”

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Footnote 1 continued

Jinzhou, Jiujiang, Jiuyan, Kaifeng, Kaiyang, Lanzhou, Liaozhong, Lingao, Lingbi, Linxi, Lixian, Luannan, Luanxian, Luoping, Luoyuan, Minqing, Nanchang, Nanning, Nanzhang, Ningcheng, Peixian, Pinglu, Pingtang, Qingdao, Qufu, Quzhou, Sanya, Shanghai, Shanglin, Shaoxing, Shenmu, Shixing, Shuangliu, Suide, Tianjin, Tianshui, Weishan, Wuhan, Wuming, Xiamen, Xian, Xiangtan, Xiantao, Xinchang, Xinfeng, Xining, Xinxiang, Xinyang, Xinye, Xiuwen, Yangzhong, Yinchuan, Yiwu, Yulin, Yuncheng, Zaozhuang, Zhanjiang, Zhengzhou, Zhuzhou, Each city consisted of 20 respondents, with one exception being Jiujiang (n = 40).

### 6.3.5 Income Importance

As in Study 2, respondents were asked, “Of the following lifestyle aspects or life circumstances, please select five that are important to you.” One of those options included income. Responses were coded as 1 (mentioned) or 0 (not mentioned).

### 6.3.6 Relative Aspiration Indices

Respondents were presented with a list of twenty-five items, and asked, “Of the following lifestyle aspects or life circumstances, please select five that are important to you.” Only three subsets of items were relevant to the current study. The two intrinsic aspirations of *Affiliation* and *Community Feeling*, as well as the one extrinsic aspiration index of *Materialistic Aspirations*, were constructed to be similar to the numerous variations utilized in previous research (e.g., Duriez 2011; Kasser and Ahuvia 2002; Kasser et al. 2014; Martos and Kopp 2012; Sheldon et al. 2010; Sheldon and Krieger 2014; Sheldon et al. 2004; Vansteenkiste et al. 2006).

Initial scale construction followed generally accepted guidelines for measure development (Hinkin 1998). First, survey items were chosen based on deductive analysis of previous theoretical and empirical articles that utilized very similar items (e.g., Grouzet et al. 2005; Kasser et al. 2014). As a quality check, several Industrial-Organizational (I-O) Psychologists vetted these items. Next, a content validity approach was utilized to determine item adequacy by asking six individuals with graduate level Psychology training to classify items in the six aforementioned categories. Brief definitions were provided to these subject matter experts for Affiliation (“To have satisfying relationships with family and friends”), Community Feeling (“To improve the world”), and Materialism (“To be wealthy and materially successful”). Averages of ratings were computed (ranging from 1—“Does not apply at all” to 7—“Applies completely”). Only those items receiving an average rating of 5 or higher in the hypothesized category were retained.

This process resulted in the final scales of Affiliation (i.e., “Spending time with your family,” “Being on good terms with others,” and “Raising children”), Community Importance (i.e., Contributing to your local community or to society” and “Pleasant community to live in”), and Materialistic Aspiration (i.e., “Earning a high income,” “Owning a lot of nice things,” and “Being famous,”). Responses were coded as 1 (mentioned) or 0 (not mentioned) and then summed for each index. Finally, consistent with previous research (Kasser and Ryan 1993, 1996), relative aspiration scales were created by comparing groups of participants scoring 1 SD above on one scale and 1 SD below on the comparison scale (see Table 4 results).

### 6.3.7 Life Satisfaction

Two items, one measuring magnitude and the other frequency, were used as indicators of general life satisfaction. First, respondents were asked, “All things considered, would you say that you are happy these days?” Response options ranged from 1 (“Very Unhappy”) to 5 (“Very Happy”). Next, respondents were asked, “How often do you feel you are really enjoying life these days?” Response options involved a four-point scale ranging from 1 (“Never”) to 4 (“Often”). Cronbach’s alpha for these items was 0.67, which is satisfactory for a two-item scale.

**Table 4** Means, standard deviations, and dichotomous standard score group comparisons for aspirations on affiliation, community, and extrinsic incentives

	Job satisfaction			Life satisfaction			Life accomplishment		
	M	SD	t	M	SD	t	M	SD	t
AFI	3.09	1.01	-2.50**	7.74	1.44	-3.76***	2.67	0.74	-3.62***
MI	2.91	1.09		7.36	1.41		2.48	0.71	
CFI	3.24	1.03	-4.22***	7.92	1.50	-5.52***	2.76	0.74	-5.10***
MI	2.93	1.01		7.37	1.37		2.50	0.70	

Respondents whose affiliation scores were higher than financial success scores are the AFI group; participants for whom the reverse was true are the MI group. This pattern is followed for the CFI to MI comparison

AFI affiliation importance, MI materialism importance, CFI community feeling importance

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

### 6.3.8 Life Accomplishment

A single global single item assessed one's overall feeling of accomplishment in life. Respondents were asked, "How much do you feel you are accomplishing what you want out of your life?" Response options included a four-point scale ranging from "None" to "A Great Deal."

## 7 Results

Descriptive statistics and correlations of study variables are presented in Table 1 (bottom of table). Income frequency ranged from 1 (less than ¥20,000) to 20 (greater than ¥200,001) with a mode of 1 (less than ¥20,000) (49.2 %), median of 2 (¥20,000 to less than ¥30,000), skewness of 2.8 ( $SE = 0.06$ ), and kurtosis of 10.8 ( $SE = 0.11$ ).

The results of analyses from Hypotheses 1 and 2 were tested again in the interest of replication. To test Hypothesis 1 job satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.007$ ,  $F(1, 1924) = 13.584$ ,  $p < 0.001$ ), which is a small effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). The shape of the simple quadratic slope is the same as that shown in Figs. 1 and 2. To reassess Hypothesis 2 income satisfaction was regressed on income. Regression results show a significant positive relationship and the addition of a quadratic term accounted for significant incremental variance in the criterion ( $\Delta R^2 = 0.006$ ,  $F(1, 1976) = 12.430$ ,  $p < 0.001$ ), which is a small effect according to conventional standards (e.g., Cohen 1988; Whetzel et al. 2010) (Table 2). The shape of the simple quadratic slope is the same as that shown in Figs. 1 and 2. Step-down moderator analysis was conducted to replicate findings from Study 2. The same procedure was utilized, wherein prediction bias reflects comparisons between the variable of income and the full model, after which more specific tests of slope and intercept bias are conducted (Lautenschlager and Mendoza 1986). Results show significant prediction bias and subsequent significant intercept bias ( $\Delta R = 0.013$ ). These results replicate the findings from Study 2, further supporting the hypothesized relationship.

Next, the hypothesis that individuals who espouse higher importance of community relative to extrinsic incentives will display higher levels of subjective well-being was assessed. Results support the hypothesized effect, showing higher mean levels of subjective well-being for those individuals who value affiliation relative to extrinsic incentives. Specifically, affiliation oriented respondents displayed higher levels of job satisfaction ( $M = 3.09$ ,  $SD = 1.01$  versus  $M = 2.91$ ,  $SD = 1.09$ ), life satisfaction ( $M = 7.74$ ,  $SD = 1.44$  versus  $M = 7.36$ ,  $SD = 1.41$ ), and overall feeling of life accomplishment ( $M = 2.67$ ,  $SD = 0.74$  versus  $M = 2.48$ ,  $SD = 0.71$ ). Likewise, community oriented individuals displayed greater job satisfaction ( $M = 3.24$ ,  $SD = 1.03$  versus  $M = 2.93$ ,  $SD = 1.01$ ), life satisfaction ( $M = 7.92$ ,  $SD = 1.50$  versus  $M = 7.37$ ,  $SD = 1.37$ ), and overall feeling of accomplishment ( $M = 2.76$ ,  $SD = 0.74$  versus  $M = 2.50$ ,  $SD = 0.70$ ), (Table 4). These results support hypotheses 4a and 4b.

Finally, the large number of clusters, or cities, warranted consideration of multilevel analysis to control for contextual effects. Each multilevel model in study 3 was constructed in successive steps. Each step involved a significance test of incremental variance explained by the successive model (see Snijders and Bosker 1994, 1999). First, to estimate the significance of variation in job satisfaction across cities a model without a random intercept was estimated for comparison to a model with a random intercept. An analysis of variance was conducted to assess the  $-2$  log likelihood value for the model without the random intercept is 5606.13. The  $-2$  log likelihood value for the model with the random intercept is 5569.022. The difference of 37.108 is significant on a Chi squared distribution with one degree of freedom (one model estimated a variance term associated with a random intercept, the other did not, and this results in one  $df$ ). These results indicate significant intercept variation. In summary, there is significant intercept variation in terms of job satisfaction scores across the 99 cities in the sample. An estimated 6% ( $ICC1 = 0.06$ ) of the variation in individuals' job satisfaction score is a function of the city wherein he or she resides (Bryk and Raudenbush 1992; Kreft and De Leeuw 1998). It should be noted that sizable ICC1s have conventionally been used as indicators of potential bias caused by cluster level variation. While multilevel studies typically report ICC values between 0.15 and 0.30 (Mathieu et al. 2012) or 0.05 and 0.20 (Peugh 2010), depending on the field, there isn't a convention for significance.

Next, to formally test whether slopes vary significantly between cities for the independent variables,  $-2$  log likelihood ratios were compared between a model with and a model without a random slope for each IV and job satisfaction (Bryk and Raudenbush 1992). Comparing a random and fixed slope model with education as the IV resulted in a  $-2$  log likelihood difference of 11.54, which is significant ( $p = 0.003$ ,  $df = 2$ ). Comparing a random and fixed slope model with income as the IV resulted in a  $-2$  log likelihood difference of 0, which is not significant ( $p = 1$ ,  $df = 2$ ). While the difference in AIC (i.e., 4) and BIC (i.e., 15) suggested a slightly better fit for the random slope model, the lack of  $-2$  log likelihood difference suggested a fixed slope model fits the data more adequately. Finally, a random slope for the independent variable of health did not provide a significantly better fit either; with a  $-2$  log likelihood difference of 0.89 ( $p = 0.65$ ,  $df = 2$ ). Therefore a random slope model allowing education, but not income and health, is reported as the third successive model in Table 5. While providing a better fit and explanation of variance, allowing random intercept and a random slope for education resulted in nonsignificant effects of level two variables on individual job satisfaction.

As with job satisfaction, to estimate the significance of variation in life satisfaction across cities a model without a random intercept was estimated for comparison to a model with a random intercept. An analysis of variance was conducted to assess the  $-2$  log likelihood

**Table 5** Results of multilevel modeling with job satisfaction as the dependent individual level variable

Level and variable	Job satisfaction		
	Null model	Random intercept and fixed slope	Random intercept and random slope
Level 1			
Intercept	3.052*** (0.034)	1.183** (0.394)	1.123** (0.387)
Age		0.009*** (0.002)	0.009*** (0.002)
Gender		0.008 (0.043)	0.007 (0.043)
Education		0.152*** (0.024)	0.149*** (0.027)
Income		0.053*** (0.010)	0.055*** (0.010)
Health		0.259*** (0.023)	0.258*** (0.023)
Level 2			
Mean city education		-0.123* (0.050)	-0.087 (0.048)
Per capita income		0.036 (0.023)	0.026 (0.021)
Mean city health		0.0616 (0.102)	0.058 (0.099)
Variance components			
Within-city (L1) job sat (residual) variance	0.991	0.881	0.871
Between-city (L2) job sat (intercept) variance	0.062	0.034	0.167
Slope (L2) variance			0.012
Additional information			
Intraclass correlation coefficient-1 (ICC1)	0.060		
Intraclass correlation coefficient-2 (ICC2)	0.550		
-2 log likelihood	5569.022	5318.636	5307.098
Akaike information criterion (AIC)	5575.022	5340.640	5333.097
Bayesian information criterion (BIC)	5591.731	5401.780	5405.351

Age and Gender are entered as covariate control variables. Gender is coded as Male = 1 and Female = 2. L1 = Level 1; L2 = Level 2. L1 n = 1925 and L2 n = 99. Values in parentheses are standard errors. The Random Intercept and Random Slope model only allows Education slopes to vary between cities as this was the only significant model comparison

ICC intraclass correlation coefficient

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

value for the model without the random intercept is 7133.952. The -2 log likelihood value for the model with the random intercept is 7068.428. The difference of 65.524 is significant on a Chi squared distribution with one degree of freedom. These results indicate significant intercept variation. In summary, there is significant intercept variation in terms of life satisfaction scores across the 99 cities in our sample. An estimated 8 % (ICC1 = 0.08) of the variation in individuals' life satisfaction score is a function of the city in which he or she lives (Bryk and Raudenbush 1992; Kreft and De Leeuw 1998).

Next, to formally test whether slopes vary significantly between cities for the independent variables, -2 log likelihood ratios were compared between a model with and a model without a random slope for each IV and job satisfaction (Bryk and Raudenbush 1992). Random slope models regressing life satisfaction on education and income failed to

**Table 6** Results of multilevel modeling with life satisfaction as the dependent individual level variable

Level and variable	Life satisfaction		
	Null model	Random intercept and fixed slope	Random intercept and random slope
<b>Level 1</b>			
Intercept	7.610*** (0.051)	3.632*** (0.602)	3.620*** (0.604)
Age		0.012*** (0.003)	0.012*** (0.002)
Gender		0.186** (0.059)	0.188*** (0.059)
Education		0.114*** (0.033)	0.111*** (0.322)
Income		0.076*** (0.013)	0.075*** (0.013)
Health		0.425*** (0.032)	0.424*** (0.038)
<b>Level 2</b>			
Mean city education		-0.059 (0.427)	-0.060 (0.074)
Per capita income		-0.002 (0.035)	-0.003 (0.034)
Mean city health		0.357* (0.156)	0.360* (0.155)
<b>Variance components</b>			
Within-city (L1) life sat (residual) variance	1.921	1.695	1.662
Between-city (L2) life sat (intercept) variance	0.162	0.104	0.588
Slope (L2) variance			0.039
<b>Additional information</b>			
Intraclass correlation coefficient-1 (ICC1)	0.078		
Intraclass correlation coefficient-2 (ICC2)	0.632		
-2 log likelihood	7068.428	6770.438	6763.904
Akaike information criterion (AIC)	7074.429	6792.437	6789.904
Bayesian information criterion (BIC)	7091.224	6853.870	6862.506

Age and Gender are entered as covariate control variables. Gender is coded as Male = 1 and Female = 2. L1 = Level 1; L2 = Level 2. L1 n = 1977 and L2 n = 99. Values in parentheses are standard errors. The Random Intercept and Random Slope model only allows Health slopes to vary between cities as this was the only significant model comparison

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

converge, suggesting inadequate fit to the data. Comparing a random and fixed slope model with health as the IV resulted in a -2 log likelihood difference of 6.533, which is significant ( $p = 0.0381$ ,  $df = 2$ ). Therefore the random slope and intercept model presented in Table 6 only allows the slope of health on life satisfaction to vary between cities. The level two main effect was positive and significant ( $\gamma_{01} = 0.360$ , S.E. = 0.155,  $p < 0.05$ ).

Finally, to estimate the significance of variation in life accomplishment across cities a model without a random intercept was estimated for comparison to a model with a random intercept. An analysis of variance was conducted to assess the -2 log likelihood value for the model without the random intercept is 4428.514. The -2 log likelihood value for the model with the random intercept is 4379.376. The difference of 49.138 is significant on a Chi squared distribution with one degree of freedom. These results indicate significant intercept variation. In summary, there is significant intercept variation in terms of life accomplishment

scores across the 99 cities in the sample. An estimated 7 % (ICC1 = 0.07) of the variation in individuals' life satisfaction score is a function of the city in which he or she resides (Bryk and Raudenbush 1992; Kreft and De Leeuw 1998).

Next, to formally test whether slopes vary significantly between cities for the independent variables,  $-2 \log$  likelihood ratios were compared between a model with and a model without a random slope for each IV and life accomplishment (Bryk and Raudenbush 1992). Comparing a random and fixed slope model with income as the IV resulted in a  $-2 \log$  likelihood difference of 0, which is not significant ( $p = 1$ ,  $df = 2$ ). Finally, comparison of a random versus fixed slope model for life accomplishment on health resulted in a  $-2 \log$  likelihood difference of 1.536, which is not significant ( $p = 0.464$ ,  $df = 2$ ). Regressing life accomplishment on education with a random versus fixed slope model resulted in a  $-2 \log$  likelihood difference of 12.104, which is significant ( $p = 0.002$ ,  $df = 2$ ). Therefore a

**Table 7** Results of multilevel modeling with life accomplishment as the dependent individual level variable

Level and variable	Life accomplishment		
	Null model	Random intercept and fixed slope	Random intercept and random slope
Level 1			
Intercept	2.613*** (0.025)	1.477*** (0.326)	1.525*** (0.334)
Age		0.010*** (0.001)	0.011*** (0.001)
Gender		0.047 (0.031)	0.045 (0.031)
Education		0.061*** (0.017)	0.068*** (0.018)
Income		0.042*** (0.007)	0.041*** (0.007)
Health		0.119*** (0.017)	0.117*** (0.017)
Level 2			
Mean city education		-0.041 (0.040)	-0.025 (0.040)
Per capita income		0.007 (0.019)	0.001 (0.017)
Mean city health		0.007 (0.085)	-0.018 (0.086)
Variance components			
Within-city (L1) life accomp (residual) variance	0.501	0.465	0.459
Between-city (L2) life accomp (intercept) variance	0.036	0.032	0.121
Slope (L2) variance			0.004
Additional information			
Intraclass correlation coefficient-1 (ICC1)	0.067		
Intraclass correlation coefficient-2 (ICC2)	0.592		
$-2 \log$ likelihood	4379.376	4230.528	4218.424
Akaike information criterion (AIC)	4385.376	4252.528	4244.424
Bayesian information criterion (BIC)	4402.171	4313.96	4317.026

Age and Gender are entered as covariate control variables. Gender is coded as Male = 1 and Female = 2. L1 = Level 1; L2 = Level 2. L1 n = 1977 and L2 n = 99. Values in parentheses are standard errors. The Random Intercept and Random Slope model only allows Education slopes to vary between cities as this was the only significant model comparison

\*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$

random slope model is reported in Table 7 that allows only the life accomplishment on education slope to vary, but the level-two main effects are not significant (Table 7).

The magnitude of the significant positive relationships in the multilevel analysis is greater between education and health, compared to income, and subjective well-being. These results provide support for Hypothesis 5. Results also suggest that while it is important to take into account cluster level variance, many of the level two main effects are not significant. While model fit improved for some of the random slope models, it appears that only one of the level two main effects was significant. Results display a significant level two effect when life satisfaction is regressed on mean city health ( $\gamma_{01} = 0.360$ , S.E. = 0.155,  $p < 0.05$ ).

## 7.1 General Discussion

China's astonishing economic growth has enabled a shift in traditional societal values. In the past several decades there has been a decrease in collectivism (Steele and Lynch 2013; Ralston et al. 1999) and subsequent increase in traditional capitalist aspirations such as financial success (Gu and Hung 2009). However the rapid growth in individual income and GDP has not corresponded with life satisfaction and happiness (Brockmann et al. 2009; Easterlin et al. 2012). The current study examines the link between financial success and well-being among Chinese employees. Results confirm a small positive relationship between income and job satisfaction (Judge et al. 2010). However, as with life satisfaction (Diener et al. 1993; Kahneman and Deton 2010), it seems that the relationship between income and job satisfaction is best fit by a curvilinear model. The diminishing marginal utility of income can be explained theoretically by hedonic adaptation. However it appears that this diminishing utility is exacerbated (i.e., moderated) by the GCT postulate that intrinsic and extrinsic goals, or aspirations, have differential effects on individual well-being (Vansteenkiste et al. 2010). Specifically, the more one focuses on the extrinsic incentive of income the more it appears that satisfaction is attenuated.

Additionally, externally oriented aspirations are related to lower well-being, whereas internally oriented aspirations are related to greater well-being. Indeed, in the current study, those employees who place a high importance on income are actually relatively less satisfied as income increases. This external focus generalizes to extrinsic variables and individual outcomes. Much like western samples (e.g., Kasser and Ryan 1993, 1996; Ryan et al. 1999), Chinese employees who value affiliation (i.e., family, friends, children) and community (i.e., contributing to one's community, living in a pleasant community) to materialistic aspiration (i.e., income, things, fame) are more satisfied with their job, life, and overall feelings of accomplishment. Taking together, these findings do offer the caveat that the extrinsic aspirations typically associated with liberal markets (Schwartz 2006) may hinder the fulfillment of greater job and life satisfaction among employed citizens.

Finally, Study 3 utilized health, education, and income as indices for city-level development. At the individual level, health displayed the strongest positive relationship with job satisfaction, life satisfaction, and life accomplishment. Education displayed the next strongest positive relationship with well-being variables. Income displayed a small positive relationship with each well-being variable. These results shed some light on the finding that level of life satisfaction and happiness have remained stagnant in economies that experience large increases in individual income levels (Brockmann et al. 2009; Easterlin et al. 2012).

The relationship between human development variables and subjective well-being were modeled both at the individual and city-level. This was done both to control for between



city variation to more accurately estimate individual level relationships, as well as to assess multilevel main effects (Bryk and Raudenbush 1992; Hox 2010). Only health in the current study displayed a city-level main effect. With regard to income, this may be in accord with previous results modeled at the country level that suggest it is likely not possible for country level income alone to increase subjective well-being at the individual level. Rather, in addition to rising income, additional variables such as physical welfare, satisfaction with one's material wealth, and optimism about the future must also change in order for increases in subjective well-being to take place (Diener et al. 2013).

## 7.2 Implications

Current findings offer implications for Chinese employees, leaders, and policy. Results of the current study suggest that happiness at work and in life is related to the relative aspirations espoused by individual employees. While goal directed behavior could arguably only account for a portion of overall happiness (Sheldon and Lyubomirsky 2007) the current study suggests that higher intrinsic (affiliation and community) relative to extrinsic (material) goal directed behavior is likely to enhance well-being. Multiple recommendations have been made concerning the thought that maximal and sustainable subjective well-being can be achieved through specific intrinsic-oriented behavior (Ryan and Deci 2000a, b; Ryff and Keyes 1995; Sheldon and Lyubomirsky 2007). The total impact of even slight increases in national employee well-being is particularly salient in China given the rapid growth and sheer scale of the national workforce. Additionally, findings regarding the benefit of intrinsic aspirations are timely because of the move toward a more individualistic society (e.g., McEwin et al. 2006; Steele and Lynch 2013; Ralston et al. 1999) and a greater focus on financial and material pursuits (Durvasula and Lysonski 2010; Podoshen et al. 2010; Zhan and He 2011). Community orientation and affiliation, which are intrinsic values in the current study, are strong features of collectivism and therefore maintenance of cultural value systems may buoy individuals from the detrimental impact of materialism.

The diminishing marginal utility of income on job satisfaction, coupled with the benefits of intrinsic aspirations, offer implications for Chinese managers and leaders. The findings lend support to designing employee incentive systems that meet psychological needs, as defined by SDT and GCT. There is an abundant literature on work characteristics that enable the satiation of intrinsic psychological needs and both subsequent performance and well-being (e.g., Baard et al. 2004; Guntert 2015; Janssen et al. 2014; Meyer and Gagné 2008; Trépanier et al. 2013; Van Den Broeck et al. 2008). For instance, designing work systems that enhance employee autonomy (Guntert 2015) or affiliation (Janssen et al. 2014) facilitates intrinsic motivation, which in turn leads to satisfaction and performance. In terms of work design, intrinsic motivation serves as the link between psychological need satiation and subsequent performance and well-being (Ryan and Deci 2000a, b).

## 7.3 Limitations and Future Research

The current results show a convex relationship between income and satisfaction. Unfortunately the income-bracket data is not truly continuous and therefore limits the range, specificity, and power associated with subsequent statistical analysis. The finding that the relationship between income and job satisfaction was more curvilinear in Study 2 (Fig. 2) than Study 1 (Fig. 1) may be due in part to the fact that there were a greater number of income brackets in Study 2 (20 vs 12), which is a closer approximation of continuous data. Therefore it would be more beneficial to have actual raw values of income to ensure

specificity and power. In addition, the bracketed income data does not allow for log transformation. Previous research suggests that the relationship of satisfaction with absolute income is curvilinear, but the log transformation modifies the curve to more closely approximate a linear function (Kahneman and Deton 2010; Stevenson and Wolfers 2013). Unfortunately the log could not be computed so statistical analysis was limited to absolute bracket values. Finally, the current study establishes a link between extrinsic value orientation and lower well-being among Chinese employees, thereby suggesting a connection between the stagnate or declining levels of well-being in post-reform China and the concurrent shift in cultural values. However, a longitudinal study design would provide a more powerful assessment of these phenomena.

Relatedly, the magnitude of the level two effects may have been limited by the low ICC2 estimates for the dependent variables in study 3 (Tables 5, 6, 7). The identification of emergent multilevel relationships depends in part on the reliability of the outcome variable. In other words, reliability of the outcome variable at the city level in study 3 is a prerequisite for detecting emergent relationships. A conventional “rule of thumb” is that a group mean reliability (i.e., ICC2) of 0.70 or above is considered good (Bliese 2000). Therefore the power to detect multilevel phenomenon in study 3 may have been limited.

Also, subsequent researchers would do well to synthesize the empirical findings related to SDT and GCT with other occupational health domain theories. For instance, the current findings support GCT, however they are discordant with theories related to person-environment (P-E) fit. The basic premise of P-E fit is that individual outcomes do not vary solely due to the individual’s personal characteristics, nor do they vary solely to the environment, but rather outcomes are a result of the individual and environmental interplay (Edwards and Cooper 1990). A sub-domain of P-E fit relevant to the current study is supplied-values (S-V) fit, wherein the strength of the relationship between an antecedent and individual outcome is determined by the relative importance placed upon the antecedent by the individual (e.g., Edwards 1996; Shaw and Gupta 2004). Therefore according to S-V fit one might expect the relationship between income and income satisfaction to be stronger for those individuals who place a high value on income, because there is greater S-V fit. However, according to GCT and results of the current study, the opposite is true. It would be useful to formally define the theoretical boundaries that account for these discrepancies.

Finally, it should be noted that the current manuscript involved an investigation of relative intrinsic versus extrinsic importance in general. This is more akin to the work done by Kasser and Ryan (1993, 1996) and others whose conceptualization of relative intrinsic and extrinsic life values scales reflect individuals’ general valuation of certain motives. Essentially, these are general life value orientations. Some prior research focused explicitly on the employee setting has examined intrinsic work value orientation much more closely aligned with specific work goals (Vansteenkiste et al. 2007). Therefore in subsequent research it would be useful to distinguish between both the effects of general value (or goal) orientations and those that are specific work goals.

## 8 Conclusion

The current series of studies offer insight into the effect monetary incentives have on employees in a rapidly growing economy. While the economic prosperity in China over the past few decades is impressive the equivalent increases in well-being (Brockmann et al.

2009; Easterlin et al. 2012) may have been inhibited by increases in extrinsic aspirations and decreases in collectivist values. As the Chinese economy continues to grow it will be important for organizational leaders, employees, and policy makers to be cognizant of the nonlinear and interactive effects of extrinsic and intrinsic incentives, aspirations, and individual employee well-being.

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