

# Development of Materialism in Adolescence: The Longitudinal Role of Life Satisfaction Among Chinese Youths

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Accepted: 4 October 2014 / Published online: 16 October 2014  
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**Abstract** The present research tests the longitudinal role of life satisfaction on materialism among Chinese adolescents, and provides empirical evidence to support the theorisation that materialism develops as compensation for dissatisfaction with life. Study 1 establishes that the negative relationship between life satisfaction and materialism is present and similar among the younger ( $N = 516$ ;  $M = 12.94$  years) and the older adolescents ( $N = 531$ ;  $M = 16.57$  years). A two-wave survey (Study 2) finds no longitudinal effect of materialism on life satisfaction, but life satisfaction has a negative lagged effect on materialism among the younger adolescents ( $N = 123$ ;  $M = 13.81$  years). For the older adolescents ( $N = 106$ ;  $M = 16.38$  years), however, there are cross-lagged effects of materialism on life satisfaction, and vice versa. Age and social economical status (SES) both have important roles in materialism, with the adolescents from lower SES backgrounds in general, and the younger ones in particular, reporting higher levels of materialism than their more well-off counterparts.

**Keywords** Materialism · Life satisfaction · Chinese adolescents · Longitudinal

## 1 Introduction

Concerns are rising that today's young generation are more materialistic than ever. For example, in the US, not only is there an increasing adoption of materialistic values among university freshmen since the late 1960s (Astin 1998), but more than half of 9–14 year-olds agree that 'the only kind of job I want when I grow up is one that gets me a lot of money' (Goldberg et al. 2003). In UK, primary school children value 'money and getting rich' above all other things, regarding them as 'the best thing in life' (Brown 2005). This is

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followed closely by ‘being famous’, which charted at the top of the ten best things in life in the previous year. This tendency of valuing money and possessions over all else is not only limited to English-speaking countries. Hellevik (2003), for example, found a similar shift of values in Norway, where there is a large age cohort difference in materialism. Among Chinese, Gu et al. (2005) found that adolescents in 15 major cities of China endorse a higher level of consumption-oriented materialism than the parent generation. In Hong Kong, where the present research was carried out, 39 % of teenagers choose ‘being a millionaire’ as their top wish, and another 36 % choose ‘starting a big company’ (Harris Interactive 2007). These ratios are comparable to that in the US, where 56 % of teens choose ‘being a millionaire’ and 33 % ‘starting a big company’ (Harris Interactive 2007) as their top life aspiration.

### 1.1 Materialism and Life Satisfaction

What is materialism? One of the most well researched definitions of materialism is in the tradition of Self-determination theory (SDT; Kasser and Ryan 1993; 1996; Ryan and Deci 2000), in which materialism is considered as a value orientation that encompasses a strong ‘extrinsic’ emphasis on money, wealth, and expensive consumer goods as aspirations, as opposed to ‘intrinsic’ aspirations. In its original formulations SDT posits three innate psychological needs: competence, autonomy, and relatedness. Later, a need for security is also considered (e.g., Kasser 2002). When these innate needs are met, people experience optimal functioning. But when these needs are frustrated, people face diminished well-being and motivation. According to SDT, intrinsic motivations or goals satisfy these innate psychological needs and hence bring fulfillment and happiness. Extrinsic motivations or goals such as the pursuit of wealth, however, frustrate these innate needs as they are guided by external influences, such as rewards or approval from others, and therefore are less likely to bring happiness. Extrinsic motivations can also be detrimental to well-being because “excessive concentration on external rewards can distract people from intrinsic endeavors and interfere with personal integration and actualization” (Kasser and Ryan 1993, p. 410).

Kasser and Ryan’s (1993, 1996) Aspiration Index (AI) measure goals that are either intrinsic or extrinsic based on their content. Using college students (Kasser and Ryan 1993) and working adults (Kasser and Ryan 1996), the researchers found support for the contention that “values and expectancies for wealth and money are negatively associated with adjustment and well-being when they are more central to an individual than other self-relevant values and expectancies” (Kasser and Ryan 1993, p. 410). Later studies using AI replicated these findings with different cross-cultural samples such as Russians (Ryan et al. 1999), Germans (Schmuck et al. 2000), British (Chan and Joseph 2000), Singaporeans (Kasser and Ahuvia 2002), and South Koreans (Kim et al. 2003).

The negative relationship between materialism and life satisfaction is not only limited to studies using AI. Other researchers, especially in the field of consumer research, who operationalise materialism as personality traits (e.g., Belk 1985), or as value orientation (e.g., Richins and Dawson 1992), have found similar results. In fact, Wright and Larsen’s (1993) meta-analysis of seven empirical studies published in consumer research journals or conference proceedings shows that the negative relationship between life satisfaction and materialism is consistent and significant across all studies. A recent review (Dittmar et al. 2014) that examines over 1,200 effect sizes further demonstrates that materialism (be it measured by Kasser and Ryan’s AI, Belk’s personality traits, or Richin and Dawson’s values approach) is related to lower personal, financial, and social well-being. This

negative relationship is consistent across different countries and cultures, and among individuals of different age, gender, education level, and social-economical status (SES).

Considerably less research looks at materialism among adolescents, though a handful of studies have documented negative correlates of materialism among adolescents, including self-reported emotional and behavioural problems (Flouri 2004), clinically assessed psychosocial adjustment (Kasser and Ryan 1993), consumer behaviours that have pathological components (Dittmar 2005, 2007), and greater engagement in risky behaviours (Auerbach et al. 2009). Furthermore, Chan's (2007) work with Hong Kong Chinese youths found that materialistic teenagers tend to watch more television, and engage in more social comparison with their friends as well as with celebrities. Oprea et al.'s (2012) longitudinal study with Dutch children showed that materialistic children who are exposed to extensive television advertisements tend to subsequently report lower well-being. These findings, coupled with SDT's argument about intrinsic and extrinsic goals and their influences on well-being and life satisfaction, suggest it is very likely that the negative link between materialism and life satisfaction among adults may exist among adolescents as well. Probably more importantly, life satisfaction may play some role in the development of materialism, as in the hypotheses that unhappy people become materialistic (Solberg et al. 2004), and material possessions may serve some defensive functions when individuals are distressed (Kasser and Sheldon 2000). However, before we can examine the possible longitudinal impact of life satisfaction on materialism in adolescence, we need to establish the ground that materialism is indeed related to life satisfaction among youths. Since the present research focuses on Hong Kong Chinese teenagers, the following section will first give a brief account of Hong Kong society, then proceeds to discuss why materialism may be related to lower life satisfaction among youths in Hong Kong.

## 1.2 Possible Negative Link Between Materialism and Life Satisfaction Among Hong Kong Chinese Youths

Hong Kong is an ex-British colony and present-day Special Administration Region of China that is known for being one of the most affluent societies in the world. Its GDP per capita (PPP) ranks the 15th in the world (CIA 2014), and so does its Human Development score (United Nations 2014). Culturally, even though Hong Kong is a Chinese society that have a predominantly collectivist culture (Smith et al. 2013), it is fairly similar to other western industrialised countries such as UK in terms of Schwartz's (1992) core cultural-level values such as mastery, embeddedness, hierarchy, egalitarianism and harmony (Ku et al. 2014). Past research has also suggested that Hong Kong is more materialistic than other Chinese societies such as Taiwan and mainland China (e.g., Tse et al. 1989; Cheung and Chow 1999), and its citizens seem to be the most 'shopaholic' in the world, with as many as 34 % of them reportedly shop twice a week 'just for something to do' (ACNielsen 2006).

People in Hong Kong seem to be unhappy in general. The territory's score on happiness consistently comes in among the lowest in the region (South China Morning Post 2013), and many interviewed blame the territory's desire for money and pursuit for wealth as the culprit for their unhappiness (South China Morning Post 2013). A recent survey of young people aged between 18 and 25 years further found that more than half are unhappy, and the top reasons that are given for their unhappiness are money, school/work pressure, and cramped living environment (Choi and Ng 2013). For teenagers who are receiving

education, academic performance is an important factor that affects their life satisfaction (Ku 2013). However, given that materialistic children and teenagers typically perform less well in school (Goldberg et al. 2003; Ku et al. 2012, 2014), it is conceivable that materialistic teenagers in Hong Kong also suffer from lower level of life satisfaction. Together with SDT's contention that an extrinsic emphasis on money, wealth and expensive possessions over intrinsic orientation towards relationship, community and self-development is related to lower life satisfaction, the present research hypothesizes that:

H1 Materialism and life satisfaction is negatively correlated among teenagers in Hong Kong.

### 1.3 The Development of Materialism in Adolescence

#### 1.3.1 *The Longitudinal Effects of Life Satisfaction on Materialism*

Kasser et al. (2004) propose that individuals may develop a materialistic value orientation as a means to deal with doubts about their self-worth. Chaplin and John's (2007) work is probably one of the strongest empirical evidences that support this contention. Using children (8–10 years), younger adolescents (12–13 years), and older adolescents (16–18 years), the researchers first show that youths in their early adolescence are the most materialistic. But this age difference in materialism disappears when high self-esteem is experimentally primed, supporting the argument that high level of materialism in adolescence is caused by insecurities in the self-worth domain.

The proposition that materialism develops through the pathway of insecurities about the self coincides with the argument that asserts the importance of studying motives for materialism. Srivastava et al. (2001) argue that materialistic goal does not in and by itself lead to lower life satisfaction. Instead, it is the 'negative' motives of overcoming self-doubt, asserting power over others, and self-presentation, that lead to lower life satisfaction. Garðarsdóttir et al. (2008) further assert that overcoming self-doubt is the most important motive that is related to lower life satisfaction among materialists.

Furthermore, as mentioned previously in Sect. 1.2, youths in Hong Kong are particularly susceptible to effects of academic success and failure, which directly affect their life satisfaction. Students who experience insecurity and dissatisfaction in their school life may therefore turn to material possessions as compensation, which in the long term may lead to higher endorsement of materialistic goals and values. Hence, the present research takes the perspective that a prior lower level of life satisfaction will lead to a subsequent heightened orientation towards materialism, and seeks to test this hypothesis:

H2 Initial life satisfaction negatively predicts subsequent materialism.

#### 1.3.2 *The Reciprocal Relationship Between Life Satisfaction and Materialism*

While life satisfaction may affect the development of materialism, it is also probable that materialism may impact on life satisfaction. At least two reasons have been proposed and empirically tested why this may be the case. The first is the gap hypothesis, which argues that materialistic people are less happy because they have high expectations, and therefore are particularly likely to feel the discrepancy between what they have and what they desire. It is this discrepancy that leads to unhappiness (Solberg et al. 2004). The second is a value-

conflict hypothesis that originates from SDT's argument that extrinsic goals are detrimental to life satisfaction and well-being because they may crowd out other intrinsic goals such as affiliation (Kasser 2002; Ryan and Deci 2000). Indeed, Solberg et al. (2004) show that the negative association between materialism is at least partly mediated by the quality of personal relationships, while other researchers demonstrate that materialism may conflict with other well-being inducing values such as family, religiosity, and community (Burroughs and Rindfleisch 2002; Garðarsdóttir et al. 2008; Karabati and Cemalcilar 2010).

In other words, the relationship between materialism and life satisfaction may resemble a downward spiral: unhappy teenagers become more materialistically oriented, who then suffer from further unhappiness and lower well-being. The present research aims to gather longitudinal support for this possible negative spiral relationship between materialism and life satisfaction. Using two-wave survey data, the present research seeks to test for temporal antecedence of materialism and life satisfaction, an essential pre-requisite in an argument that entails causality. The hypothesis formed is:

H3 There are significant negative cross-lagged effects of materialism at Wave 1 on life satisfaction at Wave 2, and life satisfaction at Wave 1 on materialism at Wave 2.

### 1.3.3 *The Role of Age and SES*

According to Piaget, at about 11, children develop the ability to think abstractly, and start to understand and develop values (Piaget 1958, in Barrosse 2007). Furthermore, according to John's (1999) theory of consumer socialization, teenagers at 11–15 years show a heightened need to shape their own identity and conform to group expectations. This results in more attention to the social aspects of consumption and possessions. Based on these theories of cognitive and social development of adolescence, it is reasonable to expect youths in their early adolescence to develop and experience a heightened sense of materialism compared to those in their late adolescence, who should have cognitive and social abilities closer to adults.

Apart from age, SES is also likely to affect the development of materialism in adolescence. It has been argued that children and teenagers from deprived backgrounds are more affected by branding, and more likely to see consumption of brands as means of fitting in and repairing self-concepts than those from well-off backgrounds (Elliott and Leonard 2004; Isaksen and Roper 2008). Since insecurity and self-doubt may play crucial roles in the development of materialism, it is probable that adolescents from relatively deprived backgrounds develop a more intense orientation towards materialism than adolescents from more advantaged backgrounds. Hence, two hypotheses are proposed:

H4 Younger adolescents are more materialistically oriented than older adolescents.

H5 Adolescents from lower SES backgrounds are more materialistically oriented than adolescents from other backgrounds.

## 2 Study 1

The main purpose of Study 1 is to test for a negative relationship between materialism and life satisfaction among two groups of adolescents (Hypothesis 1). A secondary purpose of

the study is to look for possible effects of age and SES on materialism, and tests the hypotheses that youths who are in their early adolescence, and those who are from lower SES backgrounds, are more oriented towards materialism than their older, or more well-off counterparts (Hypotheses 4 and 5).

## 2.1 Method

### 2.1.1 Participants

A total of 1,047 youths participated in the study. Among them, 516 are in early adolescence aged between 11 and 14 years ( $M = 12.94$  years,  $SD = .96$ , 47.7 % girls), and 531 are in mid-to-late adolescence aged between 15 and 18 years ( $M = 16.57$  years,  $SD = .83$ , 62.3 % girls). All participants are ethnic Chinese receiving full-time education in Hong Kong at the time the data was collected. In order to achieve diversity in SES, we selected schools in neighbourhoods with a high level of public housing (lower SES) as well as in neighbourhoods with a high level of home ownership (medium-affluent mixed SES). Public housing estates are low-rental housing provided by the government to low-income families. To be eligible for this type of housing, the maximum monthly income of a family of four is below the median family income in Hong Kong. As such, residents in these estates are representative of the lower SES class. Approximately a third of all participants in the present study report living in public housing estates (33.3 % among the younger group and 33.5 % among the older group), which is comparable to the 31.1 % of the Hong Kong population (Hong Kong Housing Authority 2012).

### 2.1.2 Measures

**2.1.2.1 Materialism** We use extrinsic and intrinsic goals from Kasser and Ryan's (1993; 1996) AI to measure materialism, asking participants to rate, from not at all important (1) to very important (5), the importance of these two types of goals for their life in the future: the extrinsic goal financial success (e.g., having a job that pays well), and the intrinsic goals personal growth (e.g., knowing and accepting who you really are), meaningful relationships (e.g., having good friends that you can count on), and community contributions (e.g., helping people in need). AI was chosen over other measures of materialism since its reliability has been good in prior cross-cultural studies with East Asian participants (e.g., Kasser and Ahuvia 2002; Kim et al. 2003). Furthermore, Ku (2010) demonstrated that AI enjoyed both content and predictive validity when used with Chinese teenagers. The 12 items from AI that we use in the present research were translated by Ku et al. (2012). Cronbach alpha coefficients range from .75 to .82 for the intrinsic and financial goals for the two age groups in the present study.

Also following Kasser and Ryan's suggestion (1996), we compute a relative financial goal importance (RFGI) by subtracting the average score of all AI goals items from the average score of the financial goal items. This provides a means-corrected, linearly transformed measure of the relative centrality of financial goals within the wider goal system of each person. Positive scores reflect a materialistic orientation, in which emphasis is placed on financial goal over intrinsic goals, whereas negative scores represent an emphasis on intrinsic over financial goals.

**2.1.2.2 Life Satisfaction** Participants' evaluation of their life satisfaction is measured by Diener et al.'s (1985) five-itemed Satisfaction with Life Scale (SLS; e.g., in most ways my life is close to my ideal). Participants rated from strongly disagree (1) to strongly agree (6) their agreement with the statements. The items were translated into Chinese following standard back-translation procedures (Brislin 1970). Scale reliabilities are .79 for both groups.

### 2.1.3 Procedure

The questionnaires were administered during regular school hours in nine schools in Hong Kong. In addition to consent from the schools in loco parentis, parents were informed about the purpose and nature of the study. They were also provided with an opt-out form, but no objection was received. The youths were explained of their rights to confidentiality, anonymity and withdrawal, and were also given consent forms to sign.

## 2.2 Results and Brief Discussion

Table 1 reports the correlations among materialism, life satisfaction, gender, and SES among the two groups of adolescents. For both the younger and the older adolescents, materialism is negatively correlated with life satisfaction,  $r_s = -.18$  and  $-.20$ ,  $p_s < .001$  for the younger and older groups respectively. To test for equality of the two correlations, we convert the  $r_s$  to Fisher's  $z_s$ , and obtain a non-significant difference between the two correlations,  $z = .34$ ,  $ns$ , suggesting that the strength of correlations between materialism and life satisfaction among the two groups is not significantly different. Since age, gender and SES are all somewhat correlated with materialism and life satisfaction, we further test the relationship by running a partial correlation of RFGI and life satisfaction that controlled for age, gender and SES. The negative relationship between materialism and life satisfaction remains significant,  $r_s = -.14$  and  $-.20$ ,  $p_s \leq .001$ , for the younger and older adolescents respectively, and the equality of the two correlations is also assumed,  $z = 1.00$ ,  $ns$ .

Since RFGI measures the relative importance that the adolescents place on financial goal against intrinsic goals, by using their scores on RFGI, we divide the adolescents into three different groups. The 'materialistic group' ( $n = 333$ ; 31.8 %) have positive scores on RFGI (i.e., above zero). They are those who believed that becoming financially successful is more important than achieving intrinsic goals. The 'balanced group' ( $n = 73$ ; 7.0 %) are those who score zero on RFGI, indicating their equal emphasis on intrinsic and materialistic goals. The 'intrinsic group' ( $n = 641$ ; 61.2 %) have negative scores on RFGI, as they place more importance on intrinsic goals than on the financial success goal. An ANCOVA on life satisfaction that controls for age, gender and SES show that the three groups' life satisfaction levels are significantly different,  $F(4, 1,041) = 12.74$ ,  $p < .001$ ,  $r^2 = .06$ . Planned contrasts reveal that materialistic adolescents report significantly lower levels of life satisfaction compared to the intrinsic adolescents,  $t(1,043) = 6.65$ ,  $p < .001$ ,  $r = .20$ , and to the balanced youths,  $t(1,043) = 2.83$ ,  $p = .01$ ,  $r = .09$ . Hypothesis 1 is therefore supported. Materialism is negatively related to life satisfaction, and materialistic adolescents score significantly lower on life satisfaction than both the balanced and the intrinsic groups.

As for the effects of age and SES on materialism, a 2 (age groups)  $\times$  2 (SES) ANCOVA that controls for gender shows that there is a significant main effect of age groups,  $F(1, 1,042) = 4.30$ ,  $p = .04$ ,  $r^2 = .01$ , significant main effect of SES,  $F(1,$

**Table 1** Descriptive statistics and zero-order correlations (Study 1)

	Descriptive statistics (%)	Intercorrelations		
		M (SD)	RFGI	SLS
Gender				
Overall	55.1 % girls		.07	.00
Younger Gp.	47.7 % girls		.08	.06
Older Gp.	62.3 % girls		.09	-.08
SES				
Overall	33.4 % lower SES		-.18***	.11***
Younger Gp.	33.3 % lower SES		-.24***	.15***
Older Gp.	33.5 % lower SES		-.10*	.07
RFGI				
Overall		-.29 (.72)	-	-.20***
Younger Gp.		-.35 (.78)	-	-.18***
Older Gp.		-.23 (.65)	-	-.20***
SLS				
Overall		4.04 (.87)		-
Younger Gp.		4.11 (.90)		-
Older Gp.		3.96 (.83)		-

Gender: 0 = girls, 1 = boys; SES: 0 = lower, 1 = mixed

RFGI relative financial goal importance; SLS Satisfaction with Life Scale

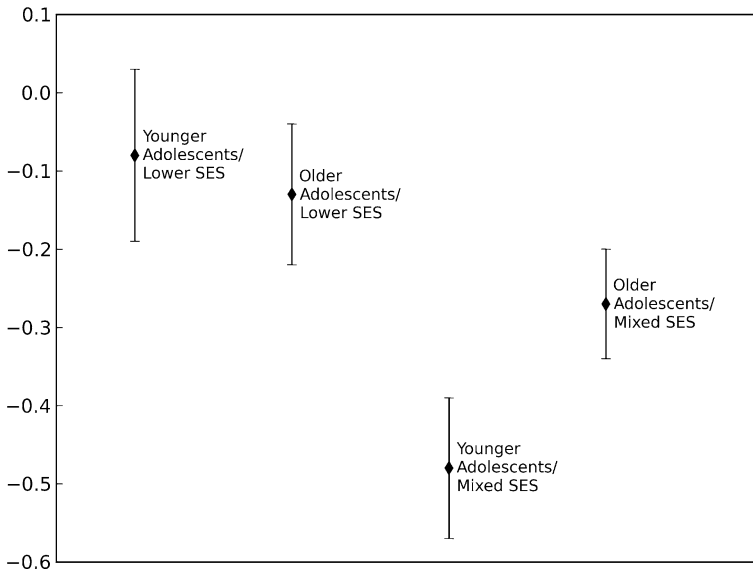
\*  $p \leq .05$ ; \*\*\*  $p \leq .001$

1,042) = 34.94,  $p < .001$ ,  $r^2 = .03$ , and a significant interaction between age groups and SES,  $F(1, 1,042) = 8.19$ ,  $p = .01$ ,  $r^2 = .01$  on RFGI. These results suggest that younger adolescents are in general less materialistic than the older adolescents (Hypothesis 4 rejected), and adolescents from relatively deprived backgrounds tend to be more materialistic than those from other backgrounds (Hypothesis 5 supported). Interestingly, the interaction between age groups and SES suggests the effects of age and SES are not straightforward. From Fig. 1, which shows the means and 95 % confidence interval (CI) of the means, we can see that younger adolescents from mixed SES backgrounds are the least materialistic ( $M = -.48$ ,  $SD = .76$ , 95 %  $CI = -.56, -.40$ ), with the 95 % CI of their score on RFGI not overlapping with any of the other three groups. The older adolescents from mixed SES backgrounds ( $M = -.27$ ,  $SD = .68$ , 95 %  $CI = -.34, -.20$ ) score higher on RFGI than their younger counterparts, but their scores are still significantly lower than those of adolescents from lower SES. The two groups of teenagers from less privileged background do not differ from each other, with the younger ones scoring  $-.08$  ( $SD = .74$ , 95 %  $CI = -.19, .03$ ) and the older ones  $-.13$  ( $SD = .59$ , 95 %  $CI = -.22, -.04$ ). These results suggest that, while the picture is not entirely straightforward, in general SES is more important than age in terms of its effect on materialism in adolescence.

### 3 Study 2

Study 1 provides initial support to the contention that materialistic adolescents may indeed suffer from lower life satisfaction, but the temporal sequence between the two remains





**Fig. 1** Means of materialism (with 95 % CI) by age and SES (Study 1)

unclear. In order to test the hypotheses that an initial lower life satisfaction may lead to a subsequent internalization of materialistic values (Hypothesis 2), and that more intense orientation towards materialism may also lead to later lower life satisfaction (Hypothesis 3), Study 2 employed a two-wave longitudinal design. Given the effects of age and SES on materialism in Study 1, special care is taken to ensure that there is an approximately equal representation of younger and older participants from different SES backgrounds in the present study.

### 3.1 Method

#### 3.1.1 Participants

Participants are from two secondary schools, one from a mixed SES neighbourhood, and another from a predominately lower SES neighbourhood. The two waves of data collection are separated by an approximately 9-month gap. Three hundred and twenty-three adolescents participated in the first wave, out of which 229 remained in the second wave. The adolescents who stayed in the study at Wave 2 are compared with those who did not ( $n = 93$ ), and no significant difference is found on materialism, nor on life satisfaction. The final matched samples consists of 123 younger adolescents ( $M_{\text{Time1}} = 13.81$  years,  $SD_{\text{Time1}} = .68$ ;  $M_{\text{Time2}} = 14.26$  years,  $SD_{\text{Time2}} = .46$ ; 41.5 % girls), and 106 older adolescents ( $M_{\text{Time1}} = 16.38$  years,  $SD_{\text{Time1}} = .65$ ;  $M_{\text{Time2}} = 16.80$  years,  $SD_{\text{Time2}} = .74$ ; 58.8 % girls). All participants are ethnic Chinese receiving full-time education in Hong Kong, and approximately half of them (55.5 %) are living in low-rental public housing estates.

#### 3.1.2 Measures and Procedure

Packets of questionnaires that contained the measures of materialism and life satisfaction were administered during regular school hours, following procedure described in Study 1.

Scale reliabilities of the intrinsic and financials goal of AI at both waves are good for both groups, with alpha ranging from .74 to .91. As in Study 1, RFGI is computed by subtracting the means of AI from the means of the three financial goal items, and is used as an indicator of materialism. Also similar to Study 1, life satisfaction is measured by the five items of Diener et al.'s SLS (1985). Scale reliabilities for the two waves are good among the two groups, and alpha ranges from .74 to .81.

### 3.2 Results and Brief Discussion

Table 2 shows descriptive statistics of materialism and life satisfaction of the two age groups at the two waves. It also reports zero-order correlations of materialism, life satisfaction, gender and SES within and across waves. Although the two age groups again differ in their endorsement of materialistic goal, their scores do not change significantly across the two waves. Similarly, there is no significant difference across the two-waves by SES. These observations suggest the adolescents did not change significantly in their materialistic values orientation over the 9-month period, and therefore render assessment of longitudinal effects of age and SES on materialism impossible. However, since there are significant negative correlations between materialism and life satisfaction both within and across waves among the two age groups, we are able to test for the longitudinal relationships between materialism and life satisfaction (i.e., Hypotheses 2 and 3).

We use EQS5.1 and run a two-group auto-regressive model to examine the temporal sequence between materialism and life satisfaction among the younger and older participants. This approach allows us to model initial materialism as a predictor of life satisfaction 9 months later while controlling for the effect of initial life satisfaction, as well as the opposite—initial life satisfaction as a predictor of later materialistic orientation while controlling for the effect of initial materialism. Given that SEM guidelines for an acceptable balance between sample size and free parameters suggest at least five respondents per parameter (Kline 2005), our sample size for both the younger and the older teenagers is adequate for evaluating the model. Since scores of RFGI and life satisfaction are normally distributed for both groups at both waves, model parameters are estimated by using maximum likelihood. In accordance with Hu and Bentler's (1999) recommendation, we used absolute fit indices (Chi square, SRMR) and a noncentrality-based index (RMSEA) as indications of model fit. We also use equality constraints and Chi square change to test for similarities and differences between the two groups of adolescents.

The two-group auto-regressive model that we test has materialism Wave 1 and life satisfaction Wave 1 as predictors of materialism Wave 2 and life satisfaction Wave 2. Gender and SES are included as control variables, and the variances of materialism Wave 1 and life satisfaction Wave 1 are allowed to covary. Fit-indices show that the model fits the data very well,  $\chi^2(14) = 19.16$ , *ns*; CFI = .982; RMSEA = .041; SRMR = .050 (Fig. 2). Of central interest to our research is the hypothesised path from initial life satisfaction to an adolescent's materialism 9 months later, with initial materialism controlled for (i.e., Hypothesis 2). The model's standardised path coefficients show that the path is significant and negative among both groups,  $\beta_s = -.21$  and  $-.24$ ,  $p_s < .001$ , suggesting that life satisfaction has a significant long-term effect on adolescents' materialistic aspiration, leading to a heightened orientation towards materialism over a 9-month period. We then test a second model which keeps all the parameters in the original model (as shown in Fig. 2), except that the path from life satisfaction Wave 1 to materialism Wave 2 is set to be equal between the two age groups. The resulting Chi square change is not significant,  $\Delta\chi^2(1) = .26$ , *ns*, suggesting that the negative relationship between life satisfaction at

**Table 2** Descriptive statistics and zero-order correlations within and across the two waves (Study 2)

	Descriptive statistics (%)	Intercorrelations				
		M (SD)	RFGI		SLS	
			Wave 1	Wave 2	Wave 1	Wave 2
<b>Gender</b>						
Overall	49.3 % girls		.15*	.11	.02	.04
Younger Gp.	41.5 % girls		.23*	.12	.06	.01
Older Gp.	58.5 % girls					
<b>SES</b>						
Overall	55.5 % lower SES		-.07	-.13	.26***	.11
Younger Gp.	52.8 % lower SES		-.20*	-.26**	.30***	.15
Older Gp.	58.5 % lower SES		.08	.08	.22*	.07
<b>RFGI Wave 1</b>						
Overall		-.19 (.77)	–	.64***	-.19**	-.26***
Younger Gp.		-.16 (.75)	–	.77***	-.17*	-.17*
Older Gp.		-.22 (.79)	–	.49***	-.21*	-.36***
<b>RFGI Wave 2</b>						
Overall		-.21 (.75)		–	-.33***	-.35***
Younger Gp.		-.17 (.86)		–	-.34***	-.36***
Older Gp.		-.24 (.60)		–	-.33***	-.33***
<b>SLS Wave 1</b>						
Overall		4.09 (.66)			–	.52***
Younger Gp.		4.67 (.68)			–	.74***
Older Gp.		4.11 (.65)			–	.24*
<b>SLS Wave 2</b>						
Overall		3.69 (.69)				–
Younger Gp.		3.66 (.71)				–
Older Gp.		3.72 (.68)				–

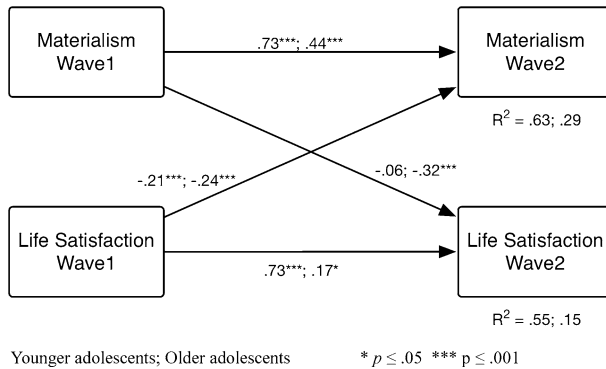
Gender: 0 = girls, 1 = boys; SES: 0 = lower, 1 = mixed

RFGI relative financial goal importance, SLS Satisfaction with Life Scale

\*  $p \leq .05$ ; \*\*  $p \leq .01$ ; \*\*\*  $p \leq .001$

Wave 1 and materialism at Wave 2 is comparable between the two groups. In other words, Hypothesis 2 is supported. Adolescents' initial (dis)satisfaction with their life has a negative and long-term bearing on their subsequent orientation towards materialism. Those who were initially suffering from lower level of life satisfaction are more likely to adopt materialistic goal over other intrinsic goals. This process appears in both age groups, and the strength of such influence is also very similar.

The second hypothesised path from initial materialism to subsequent life satisfaction is only found to be significant among the older adolescents,  $\beta = -.32$ ,  $p < .001$ , and not among the younger adolescents,  $\beta = -.06$ , *ns*. Again, we test for the equality of the parameter between the two groups by keeping all the parameters in the original model but setting the path from materialism Wave 1 to life satisfaction Wave 2 to be equal between the two groups. The significant model fit deterioration,  $\Delta\chi^2(1) = 4.72$ ,  $p = .03$ , shows that there is significant age difference in the long-term effect of materialism on life satisfaction.



**Fig. 2** A two-group autoregressive and cross-lagged model of materialism and life satisfaction (Study 2). *Notes* (1) Gender and SES were included as control variables. Both gender (girls = 0; boys = 1) and SES (lower = 0; mixed = 1) were correlated with Materialism Wave 1 among the younger participants,  $r_s = .27$  and  $-.24$ ,  $p_s < .01$ , but not among the older ones. SES was positively correlated with life satisfaction Wave 1,  $r_s = .29$  and  $.22$ ,  $p_s < .05$ , for the younger and older groups respectively. (2) The error terms of Materialism Wave 1 and life satisfaction Wave 1 were significantly correlated among the older adolescents,  $r = -.24$ ,  $p < .05$ , but not among the younger ones

Taken together, Hypothesis 3 is partially supported. It seems that for the older adolescents, initial materialistic values orientation may lead to a lower level of life satisfaction, whereas a (dis)satisfaction with life may also in turn lead to a heightened sense of materialism. For the younger adolescents, however, such negative spiral of life satisfaction is not in place. Only those who suffer from initial lower life satisfaction become more materialistic at a later time point, but those who aspire to materialism in the first place do not necessarily suffer from lower life satisfaction subsequently.

#### 4 Discussion

The main purpose of the present research is to test the hypothesised role of life satisfaction in the development of materialism in adolescence. In Study 1 we replicate the negative relationship between materialism and life satisfaction among Hong Kong Chinese adolescents, a relationship that, among adults, is robust despite differences in age, gender, educational levels, and social, economical and cultural backgrounds (Dittmar et al. 2014). In Study 2, we test the longitudinal effect of life satisfaction on materialism, and the reciprocal relationship between materialism and life satisfaction, adopting Kasser et al.'s (2004) theorisation that materialistic values develop from adolescents' attempts to use material possessions to cope with unhappiness and dissatisfaction in life, but such values will also create unhappiness and dissatisfaction. Results from the 9-month longitudinal study support the effect of life satisfaction on materialism, in that youths who suffer from initial lower life satisfaction report subsequent higher endorsement of financial goal importance. This longitudinal effect of life satisfaction on materialism is present and similar among the younger and the older adolescents. The reciprocal relationship, however, is only supported among the older adolescents, and not among the younger ones.

The lagged effect of life satisfaction on materialism, but not the inverse, among the younger adolescents is very similar to the results of Oprea et al.'s (2012) study with Dutch

children aged between 8 and 11. Oprea et al. propose that their findings may be due to the relatively 'flat' structure of the Dutch society in terms of SES. This explanation, however, is not applicable to our findings as we purposefully drew participants from diverse backgrounds, and have approximately half of our participants from medium-to-affluent backgrounds, and another half from lower SES backgrounds. Instead, we believe the findings suggest there are different stages in which materialism develops from late childhood to late adolescence.

One important thing to remember about Oprea et al.'s (2012) findings is that the longitudinal effect of life satisfaction on materialism is only present among children who are exposed to a lot of advertising. Combined with our findings with the younger and older adolescents, it suggests that it is in late childhood that children start to learn, presumably from advertising (Buijzen and Valkenburg 2003; Oprea et al. 2012, 2013), as well as from their families and peers (Achenreiner 1997; Banerjee and Dittmar 2008; Flouri 2004), that money and material goods may be used to compensate for unhappiness and dissatisfaction in life. In early adolescence, youths who suffer from lower self-esteem and insecurities are particularly likely to have internalised such an orientation (Chaplin and John 2005, 2010; Goldberg et al. 2003), but materialistic life goals and values are not yet strong enough to affect their life satisfaction. By late adolescence, the negative reciprocal relationship between life satisfaction and materialism is established. Unhappy adolescents see achieving financial success and acquiring material goods as more important than accepting oneself, building meaningful relationships, and helping others, but such goals orientation further erode their satisfaction with life.

Our 9-month longitudinal study covered too short a time-span to systematically test the possible developmental stages in materialism through adolescence as mentioned above, but the cross-sectional data in Study 1 provides some initial support that age, and SES, are factors that play important roles in the development of materialism. Using a relatively large sample of teenagers in their early and late adolescence, the study shows that in general, the older adolescents tend to be more materialistic than the younger ones, and the adolescents from a lower SES background tend to endorse materialistic goals more. The one very important finding concerning age and SES is that there is an interaction between the two, in that the adolescents from a lower SES background are the most materialistic of all, and there is not much difference between the younger and the older participants, unlike the marked difference among the teenagers from more affluent backgrounds. In other words, while it takes time for adolescents from more privileged backgrounds to internalise materialistic values, teenagers from a deprived background may be more affected by the socio-psychological factors embedded in money and consumption (Elliott and Leonard 2004; Isaksen and Roper 2008), and hence have developed a heightened orientation towards materialism at a younger age. Future longitudinal studies that cover a longer time-span, ideally one that can chart the transition from early adolescence to late adolescence, are needed to distinguish the intertwined effects of age and SES on the development of materialism.

Apart from the fact that the longitudinal study of the present research only covers a relatively short time span, and therefore has limited use in evaluating a more developmental oriented theory of materialism as proposed above, the present research also suffers from a non-representative sampling method which limits the conclusions one can draw about Hong Kong Chinese teenagers in general. Furthermore, the research focuses on the link between materialism and life satisfaction, but it does not include other factors that may interact with materialism and affect life satisfaction. As a result, there are a few issues in our present findings that our model fails to adequately explain. One of these issues is the

negative change in life satisfaction among the younger adolescents. While it may be true that youths typically experience more self-doubts and insecurities in the beginning of their adolescence, and the negative change that we observe in our participants may reflect the characteristic of this particular developmental stage, we cannot know for sure if this is indeed the case since we did not include measures of self-doubts and/or sense of insecurities from different life domains other than general life satisfaction.

Secondly, and probably more relevant to our major hypotheses, it remains unclear why our findings about age and materialism somewhat differ from those from prior studies (e.g., Chaplin and John 2007). At this point, we can only speculate on the possible reasons, and one that we believe may prove fruitful is an aspect of young adolescents' lives that is unique to Hong Kong, and probably to other industrialised East-Asian societies. According to SDT, materialistic values and goals are detrimental to well-being because they cannot satisfy the innate need for relatedness, autonomy and mastery. Indeed, Kashdan and Breen (2007) showed that materialists are less happy because they often forgo opportunities to gain positive experience in favour of acquiring money and possessions (Kashdan and Breen 2007). Since young adolescents in Hong Kong, especially those from middle-class or more affluent backgrounds, typically spend a lot of structured time in school (Larson and Verma 1999); this lack of autonomy in their daily lives may actually protect them from developing materialistic goals, and also from the ill effects of materialism. For example, Czijszentmihalyi and Hunter (2003) found that even though adolescents rated school activities below average scores in happiness, those who spent more time in school and social activities in school were actually happier than those who spend less. On the other hand, older adolescents have much more independence and autonomy in terms of time use, they are also more likely to spend time and energy on money and consumption related activities such as shopping, an activity that has been shown to be one of the most popular past-times among Hong Kong teenagers as well as adults (ACNielsen 2006). This will inevitably compete with other activities that have been shown to contribute to well-being, such as spending quality time with their family, and helping others in volunteer work (e.g., Primasari and Yuniarti 2012; Wilson 2000). Therefore, future research may benefit from a more thorough analysis of time use and daily activities of adolescents, and see whether these factors mediate the longitudinal relationship between materialism and SWB.

To summarise, we provide a focused, albeit limited, exploration of the development of materialism in adolescence. Based on Kasser et al.'s (2004) theorisation about the development of materialism, we test the effects of life satisfaction on adolescents' endorsement of materialistic goals. The lagged effect of life satisfaction on materialism provides longitudinal evidence for the contention that materialism may develop as a result of using money and material possessions as coping mechanisms. Among the older adolescents, materialistic values also seemed to bring forth further unhappiness, resulting in a downward spiral. These results add to a growing literature that speaks of the negative impact of materialism on life satisfaction on both individual and societal levels (e.g., Kasser 2002; Kasser and Kanner 2004; Dittmar 2008). As our society grows more materialistic, and our youths more unhappy, we are facing the development of a vicious cycle that may become increasingly difficult to break. As this cycle seems to be set in motion by mid-adolescence and is in its full maturation by late adolescence, it seems imperative for governments, schools and parents to start intervention early. Effort should be focused on youths in their early adolescence, or even late childhood, given that consumer culture messages are often targeted at children through the media and advertising (Buckingham 2011; Linn 2004; Schor 2004).

## References

- Achenreiner, G. B. (1997). Materialistic values and susceptibility to influence in children. *Advances in Consumer Research*, 24, 82–88.
- ACNielsen. (2006). Hong Kong people the world's greatest shopaholics: ACNielsen. Retrieved from: <http://hk.nielsen.com/news/20060606.shtml>.
- Astin, A. W. (1998). The changing American College Student: Thirty-year trends, 1966–1996. *The Review of Higher Education*, 21(2), 115–135.
- Auerbach, R. P., McWhinnie, C. M., Goldfinger, M., Zbela, J. R. Z., Zhu, X., & Yao, S. (2009). The cost of materialism in a collectivistic culture: Predicting risky behavior engagement in Chinese adolescents. *Journal of Clinical Child and Adolescent Psychology*, 39, 117–127.
- Banerjee, R., & Dittmar, H. (2008). Individual differences in children's materialism: The role of peer relations. *Personality and Social Psychology Bulletin*, 34, 17–31.
- Barrosse, E. (Ed.). (2007). *A topical approach to life-span development*. New York, NY: Beth Mejia.
- Belk (1985). Materialism: Trait aspects of living in the material world. *Journal of Consumer Research*, 12, 265–280.
- Brislin, R. (1970). Back translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1, 186–216.
- Brown, J. (2005, December 19). Money is the best thing in the world, say primary school children. *The Independent*, p. 9. <http://www.independent.co.uk/news/uk/this-britain/money-is-best-thing-in-the-world-say-primary-children-520067.html>. Accessed 21 March 2013.
- Buckingham, D. (2011). *The material child: Growing up in consumer culture*. Malden, MA: Polity Press.
- Buijzen, M., & Valkenburg, P. M. (2003). The effects of television advertising on materialism, parent-child conflict, and unhappiness: A review of research. *Applied Developmental Psychology*, 24, 437–456.
- Burroughs, J. E., & Rindfleisch, A. (2002). Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research*, 29, 348–370.
- Chan, K. (2007). Materialism and social comparison among adolescents. *Social Behavior and Personality*, 35, 213–228.
- Chan, R., & Joseph, S. (2000). Dimensions of personality, domains of aspiration, and subjective well-being. *Personality and Individual Differences*, 28, 347–354.
- Chaplin, L. N., & John, D. R. (2005). The development of self-brand connections in children and adolescents. *Journal of Consumer Research*, 32, 119–129.
- Chaplin, L. N., & John, D. R. (2007). Growing up in the material world. *Journal of Consumer Research*, 34, 480–493.
- Chaplin, L. N., & John, D. R. (2010). Interpersonal influences on adolescent materialism: A new look at the role of parents and peers. *Journal of Consumer Psychology*, 20, 176–184.
- Cheung, G. W., & Chow, I. H. S. (1999). Subcultures in greater China: A comparison of managerial values in the People's Republic of China, Hong Kong, and Taiwan. *Asia Pacific Journal of Management*, 16, 369–387.
- Choi, J., & Ng, L. Y. (2013). Many HK teens unhappy. *Young Post*, 3 July 2013. Retrieved from: <http://yp.scmp.com/article/5221/many-hk-teens-unhappy>.
- CIA. (2014). The world factbook, Hong Kong. Retrieved from: <https://www.cia.gov/library/publications/the-world-factbook/geos/hk.html>.
- Cziszszentmihalyi, M., & Hunter, J. (2003). Happiness in everyday life: The uses of experience sampling. *Journal of Happiness Studies*, 4, 185–199.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71–75.
- Dittmar, H. (2005). Compulsive buying—a growing concern? An examination of gender, age, and endorsement of materialistic values as predictors. *British Journal of Psychology*, 96, 467–491.
- Dittmar, H. (2007). The costs of consumer culture and the “Cage Within”: The impact of the material “Good Life” and “Body Perfect” ideals on individuals’ identity and well-being. *Psychological Inquiry*, 18, 23–31.
- Dittmar, H. (2008). *Consumer culture, identity and well-being: The search for the ‘Good Life’ and the ‘Body Perfect’*. Hove, New York: Psychology Press.
- Dittmar, H., Bond, R., Hurst, M., & Kasser, T. (2014). The relationship between materialism and personal well-being: A meta-analysis (manuscript submitted for publication).
- Elliott, R., & Leonard, C. (2004). Peer pressure and poverty: Exploring fashion brands and consumption symbolism among children of the “British poor”. *Journal of consumer Behavior*, 3, 347–359.

- Flouri, E. (2004). Exploring the relationship between mothers' and fathers' parenting practices and children's materialist values. *Journal of Economic Psychology*, 25(6), 743–752.
- Garðarsdóttir, R., Janković, J., & Dittmar, H. (2008). Is this as good as it gets? Materialistic values and well-being. In R. Brown (Ed.), *Consumer culture, identity and well-being: The search for the 'Good Life' and the 'Body Perfect'* (pp. 73–94). Hove & New York: Psychology Press.
- Goldberg, M. E., Gorn, G. J., Peracchio, L. A., & Bamossy, G. (2003). Understanding materialism among youth. *Journal of Consumer Psychology*, 13(3), 278–288.
- Gu, F. F., Hung, K., & Tse, D. K. (2005). Determinants for consumption materialism among late adolescents in China. *Advances in Consumer Research*, 32, 649–650.
- Harris Interactive. (2007). US/China YouthPulse Comparison Study, *Harris Interactive*, 7 (1), 3–5. Retrieved from: [http://www.harrisinteractive.com/news/newsletters/k12news/HI\\_TrendsTudes\\_2008\\_v07\\_i01.pdf](http://www.harrisinteractive.com/news/newsletters/k12news/HI_TrendsTudes_2008_v07_i01.pdf).
- Hellevik, O. (2003). Economy, values and happiness in Norway. *Journal of Happiness Studies*, 4, 243–283.
- Hong Kong Housing Authority. (2012). Housing in Figures, 2012. Retrieved from: <http://www.housingauthority.gov.hk/en/common/pdf/about-us/publications-and-statistics/HIF.pdf>.
- Isaksen, K. J., & Roper, S. (2008). The impact of branding on low-income adolescents: A vicious cycle? *Psychology and Marketing*, 25, 1063–1087.
- John, D. R. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *Journal of Consumer Research*, 26, 183–213.
- Karabati, S., & Cemalcilar, Z. (2010). Values, materialism, and well-being: A study with Turkish university students. *Journal of Economic Psychology*, 31, 624–633.
- Kashdan, T. B., & Breen, W. E. (2007). Materialism and diminished well-being: Experiential avoidance as a mediating mechanism. *Journal of Social and Clinical Psychology*, 26, 521–539.
- Kasser, T. (2002). *The high price of materialism*. Cambridge, Massachusetts: The MIT Press.
- Kasser, T., & Ahuvia, A. (2002). Materialistic values and well-being in business students. *European Journal of Social Psychology*, 32, 137–146.
- Kasser, T., & Kanner, A. D. (Eds.). (2004). *Psychology and consumer culture: The struggle for a good life in a materialistic world*. Washington, DC: American Psychological Association.
- Kasser, T., & Ryan, R. (1993). A dark side of the American dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65, 410–422.
- Kasser, T., & Ryan, R. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 23, 280–287.
- Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). Materialistic values: Their causes and consequences. In T. Kasser & A. D. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (pp. 11–28). Washington, DC: American Psychological Association.
- Kasser, T., & Sheldon, K. M. (2000). Of wealth and death: Materialism, mortality salience, and consumption behavior. *Psychological Science*, 11, 348–351.
- Kim, Y., Kasser, T., & Lee, H. (2003). Self-concept, aspirations, and well-being in South Korea and the United States. *Journal of Social Psychology*, 143, 277–290.
- Ku, L. (2010). *Relationships between materialism and learning among children and adolescents in the UK and Hong Kong*. Unpublished Ph.D. thesis, University of Sussex, UK.
- Ku, L. (2013). Less money and more work makes students happy: The longitudinal effects of materialism and academic performance on Chinese students' well-being. *The 3rd Asian Conference on Psychology and Behavioral Sciences*, Osaka, Japan.
- Ku, L., Dittmar, H., & Banerjee, R. (2012). Are materialistic teenagers less motivated to learn? Cross-sectional and longitudinal evidence from the United Kingdom and Hong Kong. *Journal of Educational Psychology*, 104, 74–86.
- Ku, L., Dittmar, H., & Banerjee, R. (2014). To have or to learn? The effects of materialism on British and Chinese children's learning. *Journal of Personality and Social Psychology*, 106, 803–821.
- Larson, R. W., & Verma, S. (1999). How children and adolescents spend time across the world: Work, play, and developmental opportunities. *Psychological Bulletin*, 125, 701–736.
- Linn, S. (2004). *Consuming kids: The hostile takeover of childhood*. New York: New Press.
- Opree, S. J., Buijzen, M., & Valkenburg, P. M. (2012). Lower life satisfaction related to materialism in children frequently exposed to advertising. *Pediatrics*, 130, 486–491.
- Opree, S. J., Buijzen, M., van Reijmersdal, E. A., & Valkenburg, P. M. (2013). Children's advertising exposure, advertised product desire, and materialism: A longitudinal study. *Communication Research*. Published online 7 March 2013. doi:10.1177/0093650213479129.
- Primasari, A., & Yuniarti, K. W. (2012). What make teenagers happy? An exploratory study using indigenous psychology approach. *International Journal of Research Studies in Psychology*, 1, 53–61.



- Richins, M., & Dawson, S. (1992). Materialism as a consumer value: Measure development and validation. *Journal of Consumer Research*, *19*, 303–316.
- Ryan, R., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78.
- Ryan, R., Chirkov, V. I., Little, T. D., Sheldon, K. M., Timoshina, E., & Deci, E. L. (1999). The American dream in Russia: Extrinsic aspirations and well-being in two cultures. *Personality and Social Psychology Bulletin*, *25*, 1509–1524.
- Schor, J. B. (2004). *Born to buy: The commercialized child and the new consumer culture*. New York: Scribner.
- Schmuck, P., Kasser, T., & Ryan, R. M. (2000). Intrinsic and extrinsic goals: Their structure and relationship to well-being in German and US college students. *Social Indicators Research*, *50*, 225–241.
- Solberg, E. G., Diener, E., & Robinson, M. D. (2004). Why are materialists less satisfied? In T. Kasser & A. D. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (pp. 29–48). Washington, D.C.: American Psychological Association.
- Smith, P. B., Fischer, R., Vignoles, V., & Bond, H. (2013). *Social psychology across cultures: Engaging with a changing world*. London: Sage.
- South China Morning Post. (2013). Singapore, Hong Kong face happiness deficit. *South China Morning Post*, 19 January 2013. Retrieved from: <http://www.scmp.com/news/hong-kong/article/1131222/singapore-hong-kong-face-happiness-deficit?page=all>.
- Srivastava, A., Locke, E. A., & Bartol, K. M. (2001). Money and subjective well-being: It's not the Money, it's the motives. *Journal of Personality and Social Psychology*, *80*, 959–971.
- Tse, D. K., Belk, R. W., & Zhou, N. (1989). Becoming a consumer society: A longitudinal and cross-cultural content analysis of print ads from Hong Kong, the People's Republic of China, and Taiwan. *Journal of Consumer Research*, *15*, 457–472.
- United Nations. (2014). *Human Development Report 2014*. Retrieved from: <http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf>.
- Wilson, J. (2000). Volunteering. *Annual Review of Sociology*, *26*, 215–240.
- Wright, N. D., & Larsen, V. (1993). Materialism and life satisfaction: A meta-analysis. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, *6*, 158–165.