

To Have or to Learn? The Effects of Materialism on British and Chinese Children's Learning

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This article presents a systematic attempt to examine the associations of materialism with learning in 9- to 11-year-old children in 2 countries of similar economic development but different cultural heritage. Using cross-sectional, longitudinal, and experimental methods, we test a theoretically driven model of associations among materialism, learning motivations, and learning outcomes. Convergent findings suggest that a materialist orientation in elementary school children lowers intrinsic learning motivations, fosters extrinsic learning motivations, and leads to poorer learning outcomes. Materialism was linked directly to lower exam performance, and this link was mediated by lower mastery and heightened performance goals, with patterns not differing between British and Hong Kong Chinese children (Study 1). A follow-up showed that initial materialism predicted worse exam grades 1 year later, suggesting a detrimental long-term effect on Chinese children's school performance (Study 2). We then tested relationships between materialism and learning experimentally, by priming a momentary (state) orientation toward materialism. Writing about material possessions and money affected Chinese children's learning motivations, so that they endorsed lower mastery and higher performance goals (Study 3). A video-diary materialism prime had significant effects on actual learning behaviors, leading British children to (a) choose a performance-oriented learning task over a mastery-oriented task and (b) give up on the task more quickly (Study 4). This research has important implications for personality psychology, educational policy, and future research.

Keywords: materialism, learning motivations, achievement goals, school performance, children

Children in consumerist-oriented societies are awash in materialism. For example, in the U.S., it has been found that almost half of children in Grades 4 through 8 report daydreaming "a lot" about being rich, and one third of them say they would rather go shopping than do anything else (Schor, 2004). In the United Kingdom, over half of 10- to 14-year-olds say they would be happier if they had more money to buy things for themselves, and nearly that many say that the only kind of job they want when they grow up is one that pays a lot (Nairn, Ormrod, & Bottomley, 2007). At the same time, a growing body of empirical studies profiles materialistic children as preoccupied with consumption, self-centered, and insecure. They spend more money on themselves and are less willing to give to others, or help save the environment (Kasser, 2005; Kasser, Ryan, Zax, & Sameroff, 1995). They experience more anxiety and lower self-esteem (Chaplin & John, 2007; Kasser, 2005), suffer from lower physical and psychological well-being (Eastbrook, Wright, Dittmar, & Banerjee, 2013), and often have problems in their peer relationships (Banerjee & Dittmar, 2008). And, central to the present research, more materialistic

children tend to like school less and self-report somewhat lower school grades (Goldberg, Gorn, Peracchio, & Bamossy, 2003).

Even though more large-scale longitudinal and experimental studies are needed to examine the temporal and causal relationships between materialism and its many correlates, the wide range of cognitive, affective, and behavioral components of the general profile of materialistic youths seems to add up cohesively. In contrast to this wealth of evidence, the possible negative relationship between materialism on the one hand, and children's learning motivations, learning behaviors, and exam performance on the other, is in great need of research attention.

One of the first relevant empirical investigations looked at different beliefs teenagers have about education (Nicholls, Patashnick, & Nolen, 1985). Teenagers who believed that education should increase one's earning and status were the least likely to commit to learning and to gain satisfaction from learning in school. Similarly, an experimental study demonstrated that aspiring to the extrinsic life goal of financial success can negatively affect children's learning by discouraging the use of adaptive learning strategies (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Two studies have addressed the relationship between materialism and learning outcomes directly: a large-scale survey among 9-to-14-year-olds, which found that materialistic youths tended to like school less and reported lower school performance (Goldberg et al., 2003), and a longitudinal study among high-school teenagers, which showed that materialistic youths were less intrinsically moti-

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vated in their learning and had lower school performance (Ku, Dittmar, & Banerjee, 2012).

The above studies, although few in number, do consistently suggest that a materialist value orientation may be detrimental to children's learning because it may affect both learning motivations and learning outcomes. However, two important questions still remain. First, why would materialistic children be less motivated in learning and, potentially, do less well in school? Second, is a materialist value orientation actually a cause of children's learning motivations and learning outcomes? The correlational nature of most of the studies leaves the important question of causality unanswered, let alone the direction of causality: there could be a detrimental effect of materialism on learning, or there could be a reverse direction of causality, that is, academically less able students may adopt a materialist value orientation as a maladaptive coping strategy for dealing with negative emotions and insecurity they experience in the academic context.

The present investigation aims to explore the relationships between materialism and children's learning and to address the important issue of causality through both longitudinal and experimental studies.¹ In trying to answer why more materialistic children tend to perform less well in school, we incorporate insights drawn from achievement goals and personality theories into the study of materialism. By proposing a theoretical model of associations between materialism, achievement goals, and learning outcomes (see Figure 1), we argue that a materialist value orientation will discourage intrinsic mastery goals and promote the adoption of extrinsic performance goals. In turn, low mastery goals and high performance goals are expected to have a causal, and negative, impact on children's learning outcomes.

Conceptualizing a Materialist Value Orientation

The type of materialism we encounter in contemporary consumer culture is best conceptualized as a multifaceted construct. Adapting the recent definition of a materialist value orientation for adults (Dittmar, Bond, Hurst, & Kasser, 2013), we use the term "materialist value orientation" to refer to *children's endorsement of values, goals, and associated beliefs that center on the importance of acquiring money and possessions for conveying status and image within their peer group*. Thus, materialism is conceptualized here as a single construct that encompasses three facets: the relative importance of money and expensive material goods within a child's overall value system, commitment to materialist values, and associated beliefs about gaining or repairing recognition, status, and image in the peer context through material possessions.

Importance of Money and Expensive Possessions

A core axis of self-determination theory (SDT; Ryan & Deci, 2000) is the distinction between extrinsic goals, such as financial success, and intrinsic goals, such as affiliation and community involvement (e.g., Kasser & Ryan, 1993), and the tenet that the pursuit of extrinsic materialist goals has detrimental consequences because it cannot satisfy intrinsic psychological needs. Relative financial goal importance (RFGI) provides a measure of the importance of materialism as a personal life goal within the context of an individual's overall system of goals, drawing on circumplex models (Grouzet et al., 2005; Schwartz, 1999) where such extrinsic

goals as financial success are located diametrically opposed to intrinsic goals such as close personal relationships and self-development. It is also interesting that recent experimental work has shown that goals or values can be activated by priming, and made temporarily salient, through increasing their perceived importance (Maio, Pakizah, Cheung, & Rees, 2009). Furthermore, materialist and extrinsic values of money, sex and power are negatively associated with the Honesty-Humility factor of the HEXACO model of personality structure, which denotes honesty, modesty, and low entitlement (Ashton & Lee, 2007, 2008; Lee & Ashton, 2012; Lee et al., 2013). This factor is an additional personality dimension extending the original five-factor model (FFM; McCrae & Costa, 1985), in relation to which lower conscientiousness and greater extraversion have been linked to materialist consumer behavior (Verplanken & Herabadi, 2001). A link between a materialist value orientation and consumer impulsivity has also been demonstrated experimentally in a temporal discounting paradigm (Dittmar & Bond, 2010).

Materialist Values and Beliefs

In consumer and marketing research, materialism is construed as a set of values and expectancies relating to the acquisition of wealth and material goods. According to this conceptualization, materialists value wealth and expensive possessions, believing that these are essential for happiness and satisfaction in life, and using them as a key means of evaluating success (Richins, 2004; Richins & Dawson, 1992). This conceptualization of materialist values and beliefs has been adapted for children aged 9–14 years, drawing also on materialist personality traits and behaviors (Belk, 1984) in the Youth Materialism Scale (YMS; Goldberg et al., 2003), which measures materialism as a desire for the acquisition and consumption of material goods. The YMS concerns the immediate present and the very short-term future. Thus, it offers a good complement to the RFGI's long-term perspective of future adulthood.

Social Motives for Materialism

From around the age of 8 years onwards, peer group acceptance typically becomes a major goal of children's social life, and accordingly we see an increasing concern with adherence to peer group norms and standards and self-presentation to peers (Banerjee & Dittmar, 2008). In this developmental context, the constant stream of messages from consumer culture regarding the latest "must-have" material goods acquires a special significance. It is important to stress that this is a process that is different from the natural—and benign—tendency to maintain positive affiliations with peers; rather, the motivating factor of interest is the presumed admiration, power, and sense of worth in the eyes of others that can be derived from goods and looks. Recent in-depth interviews asking children themselves why they want "cool" and "must-have" material goods confirm that their motives are almost exclusively

¹ In the longitudinal study, we examine materialism as an antecedent to consequent learning outcomes, to test the proposed temporal order as a prerequisite of causality. The experiments aim to document underlying mechanisms through which, in our case, materialism leads to worse learning in children.

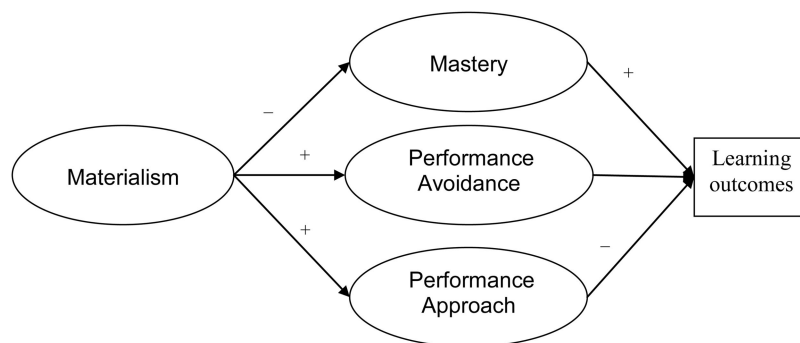


Figure 1. Theoretical model of associations among materialism, achievement goals, and learning outcomes.

extrinsic, focused on greater popularity among peers, and such motives have been found to relate very strongly to materialist value endorsement (see Easterbrook et al., 2013).

Research with adults suggests that negative social motives in relation to social comparison, power, and status play a critical role in leading to negative correlates of materialism (Gardarsdóttir, Dittmar, & Aspinall, 2009; Srivastava, Locke, & Bartol, 2001). Although there is debate about the independent effects of goal contents over and above goal motives, there is little doubt that motives that focus on social comparison and control could lead to significant negative effects (cf. Sheldon, Ryan, Deci, & Kasser, 2004).

Learning Motivations: Mastery and Performance Goals

Intrinsic motivation concerns the performance of activities for their own sake, in which pleasure is inherent in the activity itself (Deci & Ryan, 2000). Achievement goal theory is closely related to theories of intrinsic and extrinsic motivation. In the context of learning, achievement goal theories emphasize the types of goals individuals pursue in achievement situations, specifically goals that involve either the development or the demonstration of competence (Dweck & Elliot, 1983; Nicholls, 1984).

Three achievement goals are typically examined: mastery on the one hand, and performance approach and performance avoidance on the other. Mastery goals are “a concern with understanding, developing competence, and improvement,” whereas performance-approach goals are “a desire to *demonstrate* competence, often by outperforming others,” and performance-avoidance goals are “a concern with *not* appearing incompetent or less competent than others” (Anderman, Urdan, & Roesser, 2003, p. 4; original emphases). One survey instrument developed and validated to assess mastery and performance goals, the Patterns of Adaptive Learning Survey (PALS; Midgley et al., 2000), has been widely used with ethnically and socioeconomically diverse samples from all educational stages. Many achievement motivation theorists (Anderman & Maehr, 1994; Dweck & Elliot, 1983; Middleton & Midgley, 1997) focus on these three goals.

Relationships Among Materialism, Learning Motivations, and Learning Outcomes

Achievement Goals and Materialism

Correlational work suggests that a preoccupation with consumption is negatively related to mastery goals (Ku et al., 2012), and experimental research shows that the extrinsic personal goal “image” discourages mastery goal adoption (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005). This may be due to the “crowding-out” effect of extrinsic goals, where the pursuit of money and image may take away the time and energy that pupils could otherwise devote to intrinsic learning, i.e., mastery goals. A further possibility is that extrinsic rewards undermine intrinsic learning, where tangible rewards lower intrinsic motivation and task interest, an effect that is more detrimental for children than for university students (Deci, Koestner, & Ryan, 1999; Henderlong & Lepper, 2002). Given our society’s emphasis on the instrumental value of education—that the main purpose of education is to increase one’s future earning power—it is likely that this kind of instrumental approach to education may help shift materialistic children’s attention to external rewards, such as good grades, which would then discourage their intrinsic engagement with learning. We therefore hypothesize that materialism is negatively associated with mastery goals.

With respect to performance goals and materialism, we draw on social comparison theory (Festinger, 1954). We know from previous research that materialists tend to be more self-conscious, more concerned with self-presentation, and more likely to engage in social comparison (Browne & Kaldenberg, 1997; Chan, 2007). The desire to document and demonstrate one’s ability, or to avoid showing lack of ability when perceived ability is low, characterizes performance goals, and people who adopt such goals are likely to use social comparisons as normative ability assessments (Ames & Ames, 1981; Butler, 1987). If social comparison is involved in the endorsement of a materialist value orientation, resulting in a tendency to compare one’s possessions with others’, this focus can easily translate into a concern with competing with others also in the learning context.

The exact relationship between performance approach and performance avoidance goals is not entirely clear. Notwithstanding differences in theorization, researchers in general agree that achievement goals are not dichotomous ends of one goal dimen-

sion (Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Instead, they represent multiple goal states that can coexist within an individual: While adopting performance approach goals in some contexts, it is possible that a child is also oriented toward performance avoidance goals in other contexts. Hence, we propose that materialism is positively related to both performance approach and performance avoidance goals. It is also likely that the two performance goals intercorrelate.

Learning Outcomes

It is important to measure learning outcomes through objective performance and to employ more than a single measure. We collect children's exam grades from their schools at the end of the relevant academic term, which enables us to relate our findings to Goldberg et al.'s (2003) result that more materialistic children reported lower school grades but avoids the limitations of relying on self-evaluated ability or self-reported performance. Furthermore, we also study pupils' active engagement with learning, their choice of learning tasks, and their persistence when faced with difficulties.

Cross-Cultural Comparison: British and Hong Kong Chinese Children

The present study focuses on data collected in the United Kingdom and in Hong Kong, with a view to testing hypothesized links between materialism and learning in two countries with some similar economic and consumer characteristics but different cultural heritage. Indeed, similarities and differences between the United Kingdom and Hong Kong China can be mapped in terms of a number of economic, consumer, and cultural factors. Given our focus on materialism, we are mainly guided by factors examined in a meta-analysis as potential moderators of the relationship between materialism and well-being broadly conceived (Dittmar et al., 2013). Table 1 shows a country comparison in terms of four economic and one consumer cultural penetration indicators, as well as nine country-level cultural values, including materialism (World Values Survey, 2005), Schwartz's (1992) values (see Dittmar et al., 2013), and Hofstede's (1980) individualism-collectivism. With respect to economic indicators, United Kingdom and Hong Kong China have become increasingly similar in overall wealth. In 2011, they both ranked 26th on the World Bank's list of gross domestic product (GDP; nominal) per capita (World Bank, 2012), and both were in the top quartile of the United Nation's Human Development Index (United Nations, 2013). They differ in their rate of economic development, as well as wealth inequalities, which are both greater in Hong Kong. Advertising expenditure, an indicator of consumer culture penetration, also gave a similar picture. In 2011, Hong Kong spent 1.7% of its GDP on advertising (HKTD, 2012), while the United Kingdom spent a comparable 1.1% (Albert & Ried, 2011; Office for National Statistics, 2011).

The two societies nonetheless differ in their cultural traditions of individualism and collectivism, with the United Kingdom as a prime example of the industrialized West with an individualistic culture (Markus & Kitayama, 1991; Smith, 2011; Triandis, 2001) and Hong Kong as a predominantly Chinese society with a collectivist culture (Smith, Fischer, Vignoles, & Bond, 2013). How-

Table 1

Economic Indicators, Consumer Culture Penetration, and Cultural Values in the United Kingdom and Hong Kong

Variable	United Kingdom	Hong Kong China
Economic indicators		
GDP ^a	37,557.00	29,559.00
Growth (% GDP)	1.75	4.72
GINI (wealth inequalities)	36.00	43.40
Economic Freedom Index	79.00	90.00
Consumer culture penetration		
Advertising spend (% GDP)	1.10	1.70
Culture-level values ^b		
Materialism	4.54	3.80 ^c
Mastery	4.01	4.08
Intellectual Autonomy	4.62	4.28
Hierarchy	2.33	2.91
Harmony	3.91	3.50
Embeddedness	3.34	3.76
Egalitarianism	4.92	4.50
Affective Autonomy	4.26	3.20
Individualism	89.00	25.00

Note. GDP = gross domestic product; GINI = Gini coefficient.

^a These figures are taken from the meta-analysis by Dittmar et al. (2013), where GDP in 2009 was converted to U.S. dollars using Purchasing Power Parity data using the GDP Deflator (World Bank, n.d.). ^b With the exception of individualism, all figures were taken from the meta-analysis by Dittmar et al. (2013). ^c Data were not available for Hong Kong, so the mean for China is given.

ever, with respect to the core cultural-level values identified by Schwartz (1992), the United Kingdom and Hong Kong are fairly similar, with the only substantial difference occurring for Affective Autonomy, which denotes a hedonistic pursuit of one's own pleasure. Affective Autonomy was also the only cultural value found to moderate the link between materialism and well-being, such that materialism is linked to lower well-being in countries where this value is more strongly endorsed, i.e., the United Kingdom compared to Hong Kong (Dittmar et al., 2013).

We have to be tentative in extrapolating from the materialism-well-being meta-analysis findings to children's learning but believe this to be useful nevertheless, given the meta-analytic finding that competence and more intrinsic motives emerged as significant mediators of the link between higher materialism and lower well-being (Dittmar et al., 2013). We would expect that materialism has a greater impact in a country that has a greater rate of economic development, such as Hong Kong, on the one hand, and it should have a stronger impact in a culture that values the pursuit of self-oriented hedonic pleasure, such as the United Kingdom, on the other. However, the main finding of the meta-analysis was that the impact of materialism on well-being showed few and weak moderation effects, suggesting that, notwithstanding some differences in economic indicators, traditional values, and culture between the United Kingdom and Hong Kong China, we would nevertheless propose that the similarities in wealth, consumer culture penetration, and materialist values, are likely to produce essentially similar results regarding the relationships between materialism and learning. Thus, if we can establish the validity of the hypothesized relationships in two well-developed and consumer-oriented societies of different cultural heritage, we can then be more confident that the possible effects of materialism on school children's learn-

ing are not limited to the individualistic cultures of the industrialized West. This foundation is essential before we can venture into testing these effects in societies with different levels of economic and social development.

The Present Research Program and Hypotheses

In summary, then, the present research examines the consequences of children adopting a materialist value orientation for their learning, whereby materialism is expected to lower their mastery goals and heighten their performance goals, so that, in turn, their learning outcomes are compromised. It does so through the triangulation of three methodological approaches: cross-sectional, longitudinal, and experimental. The generality of the model (as shown in Figure 1) is given an initial test through a comparison between two societies that are both comparable and distinct. This is followed by longitudinal and experimental examinations of specific links in the model. Our predictions can be summarized into three core hypotheses:

1. Materialism is linked to significantly worse learning outcomes for children.
2. Learning motivations play a significant role in this relationship, whereby materialism heightens a performance orientation and lowers a mastery orientation which, in turn, have negative effects on learning outcomes.
3. A materialist value orientation may show the same links to children's learning in two different societies that share economic and consumer characteristics but differ in cultural values and traditions.

Study 1

This first study, a cross-sectional survey carried out in the United Kingdom and Hong Kong, has three main aims. The first is to examine the direct relationship between materialism and objective learning outcomes: exam results among elementary school children. The second is to test our theoretical model (Figure 1) that a materialist value orientation is linked to poorer school performance through its association with lower mastery and higher performance goals, which are typically linked to poorer learning outcomes. Thus, we expect a significant mediation through achievement goals. The final aim is to examine whether these associations show any systematic differences between school children in the two countries.

Since the target participants of the present research are school-aged children, it raises the concerns that measures of materialism and achievement goals may be conceptually too sophisticated for them. However, a prior exploratory study with children demonstrated that the three measures of materialism that we chose to use had adequate internal consistency and showed good predictive validity (see Ku, 2010, for details). Furthermore, Chaplin and John showed that children's scores on the YMS were highly correlated with the results of a picture-based projective test of materialism (Chaplin & John, 2007), and with parents' evaluations (Chaplin & John, 2010). As for learning motivations, the PALS have been shown to be reliable with third- to nine-graders (Midgley et al., 2000) and have been used widely with children in longitudinal and

cross-cultural studies (e.g., Gottfried, Fleming, & Gottfried, 2001; Shih, 2005). Based on these results, we have good reasons to believe the self-report survey measures of materialism and learning motivations are appropriate for our purposes.

Method

Sample. A total of 197 school children aged between 9 and 10 years participated in this study. Ninety-seven children ($M_{\text{age}} = 9.44$, $SD = 0.54$; 47 girls) were in elementary education in the southeast of England in the United Kingdom, and another 100 ($M_{\text{age}} = 9.47$; $SD = 0.54$; 48 girls) in Hong Kong. In order to achieve some diversity in socioeconomic status, we selected schools in neighborhoods with a high level of public housing (low socioeconomic status [SES]), as well as in neighborhoods with a high level of home ownership (medium-affluent mixed SES).²

Measures. Each child completed a questionnaire pack that contained measures of materialism and achievement goals, as well as demographic questions.

Materialism. To measure materialist values and associated beliefs, we used a shortened version of the Youth Materialism Scale (YMS, Goldberg et al., 2003), where children rated how much they agreed or disagreed with statements, such as "I'd love to buy things that cost lots of money," on Likert-type scales.³ All items loaded onto a single factor, and a two-country confirmatory factor analysis (CFA) confirmed that this structure fitted the two samples well, $\chi^2(22) = 25.78$, ns , comparative fit index (CFI) = .99, root-mean-square error of approximation (RMSEA) = .03, with all item loadings exceeding .40. The internal reliabilities of this seven-item scale were good, $\alpha = .74$ and .82 for the United Kingdom and Hong Kong, respectively. To measure peer-related, or social, motives for materialism, we used a four-item scale from Banerjee and Dittmar (2008), which had the same response format. This scale measures children's beliefs that possessing material goods is closely connected with peer reputation and status, e.g., "children like you more if you have 'cool' things." The internal reliabilities of this four-item scale were acceptable to good ($\alpha = .62$ and .91 for the United Kingdom and Hong Kong, respectively). Finally, to measure the relative importance of money and expensive possessions, we used selected extrinsic and intrinsic goals from the Aspiration Index (AI; Kasser & Ryan, 1993), asking children to rate, from 1 (*not at all important*) to 5 (*very important*), the importance of these two types of goals for their life in the

² School catchment areas were categorized as either low SES or mixed SES on the basis of local school information. In the United Kingdom, the majority of children attending schools in low-SES catchment areas reported living in low-rental, public council housing (55%). For those attending schools in mixed-SES areas, only 23% reported living in council housing. In Hong Kong, the distribution was similar, with 45% children in the low-SES catchment area reported living in public housing, compared to only 16% in the mixed-SES catchment areas. Thus, the proportions of privately owned and public housing differed significantly between low- and mixed-SES school catchment areas, both in the United Kingdom, $\chi^2(2) = 6.85$, $p = .03$, and Hong Kong, $\chi^2(2) = 7.67$, $p = .02$.

³ Similar to findings reported in Banerjee and Dittmar (2008) and Nairn et al. (2007), three items of the YMS had low item-total correlations in both samples and were dropped from analysis ("I really enjoying going shopping," "I have fun just thinking of all the things I'd love to own," "I'd rather not share my snacks with others if it means I'll have less for myself").

future: the extrinsic goal financial success ("having a job that pays well") 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"). The scale reliabilities were acceptable to good for both financial and intrinsic goals ($\alpha = .62$ and $.67$ in the United Kingdom, and $\alpha = .86$ and $.85$ in Hong Kong, respectively).⁴ Relative financial goal importance (RFGI) was computed by subtracting the average score of all goals items from the average score of the financial goal items, which provides a means-corrected, linearly transformed measure of the relative centrality of financial goals within the wider goal system of each person (Kasser & Ryan, 1996). Positive scores reflect an emphasis on financial goals over intrinsic goals, whereas negative scores represent an emphasis on intrinsic over financial goals.

Learning motivations. Learning motivations were measured by the Patterns of Adaptive Learning Scales (PALS, Midgley et al., 2000), which consists of three subscales: Mastery goals (five items; e.g., "One of my goals in class is to learn as much as I can"), performance approach goals (five items; "One of my goals is to show others that I am good at my class work") and performance avoidance goals (four items; e.g., "One of my goals is to avoid looking like I have trouble doing the work"). Participants were asked to indicate on 6-point Likert-type scales how much they agreed or disagreed with each statement. Internal reliabilities were good for all three scales, with α ranging from $.72$ to $.87$ for the United Kingdom and Hong Kong samples.

We carried out a three-factor two-country CFA to demonstrate that the three achievement goals are distinct constructs for both groups. The resulting model, where items were allowed to load exclusively onto their respective factors, had good fit, $\chi^2(134) = 210.70$, $p < .001$, CFI = $.95$, RMSEA = $.05$. Since the two performance goals were highly correlated, an alternative model with all performance goal items loading on one factor was also tested, but this two-factor configuration showed a significant deterioration in model fit, $\Delta\chi^2(4) = 34.89$, $p < .001$, compared to the three-factor configuration.

Exam results. Children's exam results for English and mathematics were collected from the school at the end of the academic term. For the Hong Kong participants, their scores in Chinese, in addition to English and mathematics, were also obtained. Since the exam scores were all in different formats (e.g., some were out of 20, some out of 50, and some were letter grades), they were standardized in all subsequent analyses. In cases where letter grades were used, all the grades were first converted into scores (e.g., from A = 6 to F = 1). An average score across school subjects was computed for each participant, and was then converted into z-scores, by subtracting the mean class score from the average score of each child in that class and then divided by the class standard deviation.

Procedure. The questionnaire for Hong Kong participants was translated into Chinese following standard back-translation procedures. In addition to consent from the schools *in loco parentis*, parents were informed of the purpose and nature of the study and provided with an opt-out form should they not want their child participating in the study, but no objection was received. As the full questionnaire was deemed too long for the children to complete in one sitting, it was split into a materialism part and a learning part, which were completed during class time on two

different days, with the class teachers reading out each question and allowing time for the children to respond.

Results

Table 2 summarizes the correlations among all the major variables in the study. We used structural equation modeling (SEM) to evaluate, first, the association between materialism and children's exam performance (direct relationship) and, second, the associations in the predicted model, whereby a stronger materialist orientation predicts lower mastery and higher performance goals that, in turn, predict worse exam grades (mediated relationship). For both the direct and the mediated links, the strengths of associations found in British and Hong Kong children were compared systematically to provide an empirical test of similarity and difference.

We modeled materialism as a single latent construct indicated by the scale means of the shortened Youth Materialism Scale (sYMS), Social Motives (SMS), and the Relative Importance of Financial Goals (RFGI). The three learning motivations—mastery, performance avoidance, and performance approach—were each modeled as a latent construct, indicated by the respective scale mean.⁵ Exam performance was modeled as an observed variable. Table 2 shows the zero-order correlations between study variables.

For our purposes, a demonstration of measurement equivalence between the United Kingdom and Hong Kong requires that the factors and indicators have the same structure (configural equivalence)⁶ and the same meaning (metric equivalence) in both countries (Byrne, Shavelson, & Muthén, 1989; Milfont & Fischer, 2010).⁷ The measurement model supported configural and metric equivalence.⁸ It yielded indices that indicate a good model fit across British and Hong Kong children, $\chi^2(13) = 15.39$, $p = .28$; CFI = $.995$; RMSEA = $.043$; SRMR = $.056$ (Kline, 2005), which did not change appreciably when the loadings of the three materialism facets on the latent construct were allowed to differ between these groups, $\Delta\chi^2(2) = 0.91$, *ns*. All subsequent analyses incorporated measurement equality.

Children's materialism and exam performance. We hypothesized that materialism is directly and negatively related to children's exam performance. To test this prediction, we modeled the latent materialism construct as a predictor of exam grades in a series of two-group SEM analyses. In the first model, we constrained the strength of the path between materialism and exam performance to be equal between the British and Hong Kong children. The fit indices for the resulting model are good, $\chi^2(5) =$

⁴ One of the 12 goal items was dropped, due to a low item-total correlation.

⁵ We fixed the error residuals to the unexplained scale variance $(1 - \alpha)S^2$, to achieve an identified model, consistent with SEM guidelines by (Byrne, 2010).

⁶ Configural equivalence of the scales used as indicators of latent variables was supported by the two-group CFA analyses reported in the Method section.

⁷ The requirement of scalar equivalence, or the invariance of indicator intercepts, is not theoretically meaningful for the present SEM, which focuses exclusively on correlations between constructs (Milfont & Fischer, 2010).

⁸ The measurement model refers to a two-group CFA with the same factors, with correlations between the three achievement goals constrained to be equal across groups, and with factor loadings constrained to be equal across groups.

Table 2
Zero-Order Correlations Among Three Materialism Measures, Achievement Goals, and Exam Performance in United Kingdom and Hong Kong Children

Variable	1	2	3	4	5	6	7
1. SMS	—	.36***	.53***	.02	.15	.16	-.21*
2. RFGI	.47***	—	.41***	-.30**	.07	.17*	-.46***
3. sYMS	.76***	.42***	—	-.03	.15	.09	-.17
4. Mastery	-.38***	-.39***	-.25*	—	.16	.11	.58***
5. Performance Approach	.19*	.06	.32***	.15	—	.72***	.08
6. Performance Avoidance	.27**	.16	.47***	.14	.64***	—	-.10
7. Exam Performance	-.29**	-.49***	-.34***	.52***	.06	-.31**	—

Note. SMS = Social Motives Scale (Banerjee & Dittmar, 2008); RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993); sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003). Numbers for the Hong Kong sample are given in italics.

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

6.21, $p = .29$; CFI = .994; RMSEA = .050; SRMR = .035. The second model showed that lifting the equality constraint did not significantly affect model fit, $\Delta\chi^2(1) = 0.47$, ns , thus demonstrating that materialism predicts exam performance with equal strength in both cultures. In the third model, where we assessed whether our findings were influenced by the socioeconomic neighbourhood of the schools that the children attended, we found that SES had no appreciable impact on the relationship of materialism to exam performance.⁹

Thus, the first model best captures our findings (Figure 2). Children's materialist orientation is, indeed, related to lower exam grades in school, and the strength of this relationship is considerable, with standardized path coefficients between .5 and .6. Thus, cross-sectional evidence confirms that there is a direct and strong link between a materialist orientation and school performance in the children we studied. We now turn to the role played by achievement goals as mediators of this relationship.

The role of achievement goals in the relationship between children's materialism and exam performance. Based on our theoretically derived model (Figure 1), we hypothesized that materialism is linked to lower mastery goals and higher performance goals. In turn, we expected that higher mastery goals and lower performance avoidance are linked to better exam performance. We had no directional hypothesis for performance approach, given contradictory findings in the learning literature. To test these predictions, we modeled the three latent achievement goal constructs as mediators between materialism and exam grades, while retaining a direct materialism-exam performance link, and carried out a similar series of two-group SEM analyses. In the first model, we constrained the strength of all paths between materialism and achievement goals, and between achievement goals and exam performance to be equal between the British and Hong Kong children. This means that the strengths of indirect paths between materialism and exam performance were constrained to be equal across groups at the same time. The fit indices for the resulting model are adequate-good, $\chi^2(20) = 29.10$, $p = .09$; CFI = .980; RMSEA = .068; SRMR = .059. In the second model we lifted the equality constraints for all paths between materialism, achievement goals, and exam performance (which includes indirect paths), except for the direct link between materialism and exam grades. This change did not significantly affect model fit, $\Delta\chi^2(5) =$

1.42, ns , thus demonstrating that the strengths of links between materialism and achievement goals, as well as the strengths of links between achievement goals and school performance do not differ significantly between British and Hong Kong children. The predictions from our theoretical model hold across both groups, to the extent that we can treat the strengths of paths as the same in the two cultures. The third model, again assessing the potential influence of SES on our findings as in the previous analysis, showed that SES had no appreciable impact.¹⁰

Thus, the fully constrained (first) model best captures our findings (Figure 3). Children's materialist orientation is related to lower mastery goals and higher performance avoidance goals, as predicted. In turn, these two types of achievement goals had the expected links with exam performance. The links between materialism, performance approach goals, and children's exam performance were not significant. The direct link between materialism and children's exam grades remained significant but is reduced in strength, from .5–.6 down to .2. This suggests that there are aspects of how children's materialist orientation relates to their exam performance that are independent of achievement goals.

Achievement goals appear to play a powerful role in explaining how materialism is associated with children performing less well in school, receiving lower exam grades. Compared to materialism by itself, achievement goals add considerably to how much variation in children's exam grade is explained, shifting the explained variance from 26% and 35% to 53% and 55% for British and Hong Kong children, respectively. Achievement goals are potent mediators that have a significant indirect effect overall in both coun-

⁹ There was no appreciable change to the standardized path coefficients when SES was used as a control variable: the path for British children changed from .51 to .52, and from .59 to .61 for Chinese children.

¹⁰ There was no appreciable change to the standardized path coefficients when SES was used as a control variable. The paths for British children changed from -.33 to -.35, .23 to .27, and .09 to .11 for materialism-mastery, materialism-avoidance, and materialism-approach goals. For the three goals to exam, the paths changed from .59 to .58, -.52 to -.49, and .32 to .29. The paths for Chinese children changed from -.45 to -.47, .26 to .29, and .11 to .14 for materialism-goals, and from .50 to .48, -.55 to -.51, and .29 to .27 for the goals-exam paths. Materialism explains 54% and 55% of the variation in exam grades, respectively.

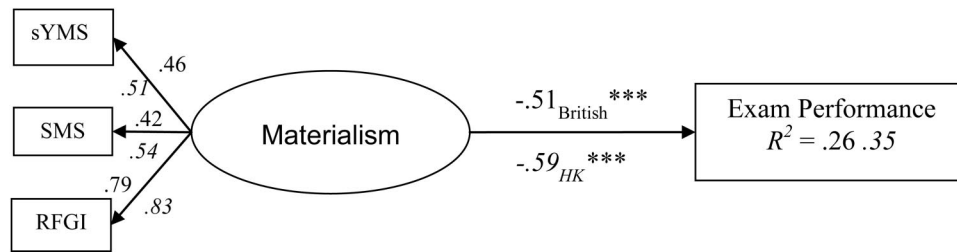


Figure 2. Structural equation model of the relationship between a materialist orientation and exam performance in United Kingdom (British) and Hong Kong (HK) children. sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003); SMS = Social Motives Scale (Banerjee & Dittmar, 2008); RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993). *** $p < .001$. Numbers for the Hong Kong sample are given in italics. Residuals are not shown for the sake of visual clarity, and all factor loadings were significant ($p < .001$). Residuals for the materialism and social motive scales were allowed to covary, given their common method and response format, which differs from the RFGI index (a difference score between the importance of financial [extrinsic] goals and intrinsic goals).

tries, as shown by Sobel tests,¹¹ $z = -4.19$, $p < .001$ and $z = -4.47$, $p < .001$. With respect to individual achievement goals, mastery is a significant mediator, $z = -4.07$, $p < .001$ and $z = -4.21$, $p < .001$, as well as performance avoidance, $z = -1.76$, $p = .039$ and $z = -1.81$, $p = .035$. Performance approach goals did not mediate. These findings provide good cross-sectional support for the directional predictions in our theoretical model (Figure 1).

Discussion

Children's materialism is linked strongly to lower exam performance. This link is mediated significantly by mastery and performance avoidance orientations, supporting the directional predictions from our theoretical model. Materialist children perform worse in exams through being more concerned with not looking stupid in their class and less concerned with learning new material.

The strong correlation of materialism with academic performance, and the direct path that still remained after the mediation of achievement goals suggest that the link between materialism and school performance may have captured some other source of variance not originally hypothesized in our model. One possibility is individual differences in personality, especially the Conscientiousness dimension of the Big Five and Honesty-Humility factor of the HEXACO model, which have both been found to relate closely to academic performance, as well as adaptive and counterproductive academic behaviors (De Vries, De Vries, & Born, 2011). A further possibility is socially or emotionally intelligent responding (see Mick, 1996). We return to this issue in the overall discussion.

Study 2

The finding that a materialist orientation is associated with lower exam performance at one point in time raises the important question of long-term effects. If a child's materialist orientation predicts lower grades in the same school year, could it lead to a deterioration in performance over time? We carried out a longitudinal survey to test this question. One year after the collection of data for Study 1, the same group of Hong Kong children completed a questionnaire with the same measures as used previously. The

aim of this study is to test for temporal sequences between materialism and learning outcomes. We hypothesized that initial materialism would predict lower exam performance 1 year later but remained open to the possibility that disappointing exam grades may lead children to turn to toys, money, or buying things for comfort or distraction.

Method

Participants. Out of the original 100 Hong Kong participants in Study 1 (Time 1), a total of 97 remained in the study 1 year later (Time 2). Hence, the study was made up of 46 girls and 51 boys, with a mean age of 9.47 years ($SD = 0.54$) at Time 1 and 10.60 years ($SD = 0.53$) at Time 2.

Measures and procedure. The questionnaire was administered to the participants in the same way as described in Study 1. They were reminded of the study that they participated in a year ago and were told that this was the second part of the same study. The reliabilities for materialism measures were comparable to those at Time 1: sYMS, $\alpha = .85$; SMS, $\alpha = .91$; Financial goals, $\alpha = .87$; Intrinsic goals, $\alpha = .85$. Children's exam grades were again collected from the schools.

Results

Table 3 shows the correlations among the three facets of materialism and exam performance within and across the two waves. To examine the temporal sequence and long-term effects of materialism and children's exam performance, we used an autoregressive model, modeling materialism as a latent construct and exam performance as an observed variable as in Study 1. This approach allows us to model initial materialism as a predictor of exam grades 1 year later, as well as the opposite, initial exam performance as a predictor of materialist orientation 1 year later, in the context of each child's initial exam grade and initial materialism (as appropriate) and any changes she or he may have made in materialist outlook or grades in the year that had passed.

¹¹ Given that the Sobel statistic provides a conservative test of mediation (MacKinnon et al., 2002) and that our model predicts the directions of the mediational paths, we used one-tailed tests.

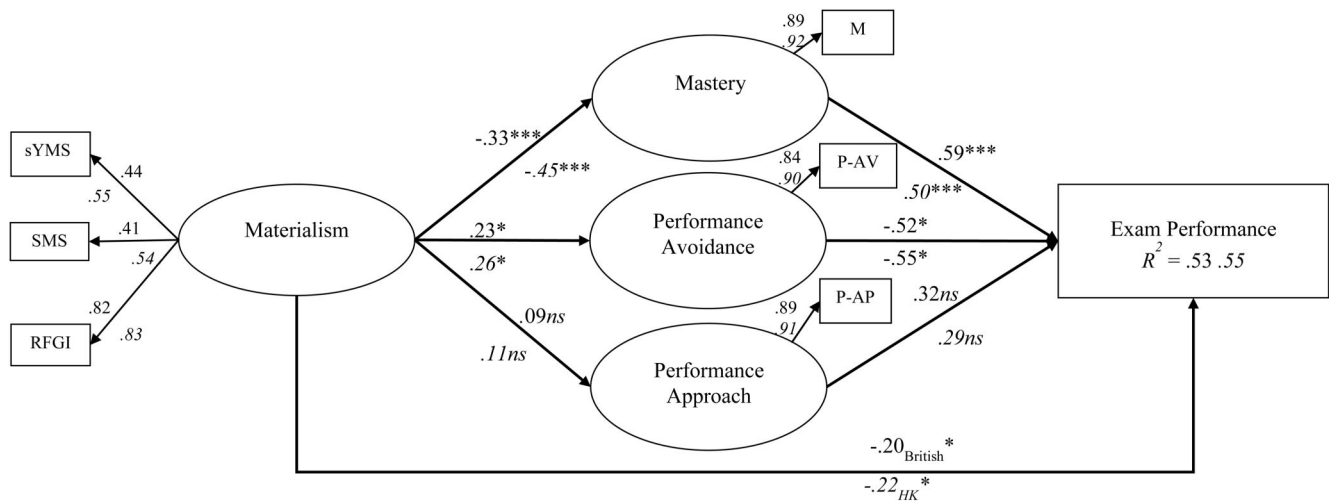


Figure 3. Structural equation model of the relationships between materialism, achievement goals, and exam performance in the United Kingdom (British) and Hong Kong (HK). sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003); SMS = Social Motives Scale (Banerjee & Dittmar, 2008); RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993); M = mastery; P-AV = performance avoidance; P-AP = performance approach. * $p < .05$. *** $p < .001$. Numbers for the Hong Kong sample are given in italics, below path arrows. Residuals and correlations between factors are not shown for the sake of visual clarity. All factor loadings were significant ($p < .001$). The correlations between the three achievement goals were constrained to be equal across groups. Error residuals were allowed to covary between Mastery and RFGI, given that RFGI (the difference between financial intrinsic live goals) has conceptual links with Mastery (intrinsic achievement goal). Error residuals were also allowed to covary between the two Performance goals and sYMS, given that the YMS (with items on showing others one's status) has some conceptual overlap with Performance-oriented achievement goals (showing others one's learning status).

We carried out two SEM analyses. The fit indices for the first model are adequate to good, $\chi^2(13) = 23.70$, $p = .03$; CFI = .985; RMSEA = .092; SRMR = .058. The second model, assessing the potential influence of SES, showed, again, no appreciable impact.¹² The model's standardized path coefficients (Figure 4) show that materialism and exam grades correlate negatively with each other at both time points and that a child's materialist value orientation and exam performance were relatively stable over a 1-year period. Of central interest for our research is the hypothesized path from initial materialism to a child's exam performance 1 year later, with initial exam grades controlled for. Although not strong, this path proved significant, suggesting that materialism has a significant long-term effect on children's school performance, leading to a deterioration in exam grades over a 1-year period. The path in the opposite direction, from initial exam results to materialism a year later was nonsignificant. Thus, our hypothesis is supported that a child's initial materialist value orientation is a significant antecedent of worsening school performance over time.

Discussion

These longitudinal results demonstrate that individual children's materialist value orientation at the first time point significantly predicted deterioration in their exam performance 1 year later. At the same time, the path in the opposite direction proved nonsignificant. In this sense, the findings have provided support for our hypothesis that materialism has a significant negative long-term

effect on children's school performance. Thus, the temporal sequence between materialism and exam grades confirms that materialism is an antecedent of lower school performance, a core condition for any inference of causality.

Study 3

After demonstrating that materialism may indeed be an antecedent of lower exam results among elementary school children, we turn to an experimental test of the first link in the theorized mediating mechanism that we believe plays a crucial role in the negative link between materialism and school performance: achievement goals. Given the limitations of traditional mediation analyses (Baron & Kenny, 1986) and advantages of using experiments to demonstrate steps in a proposed causal chain (Spencer, Zanna, & Fong, 2005), we used the second approach to testing the causal relationships proposed in our model, that a materialist orientation undermines children's mastery-oriented learning goals and encourages the adoption of performance goals. We therefore

¹² There was no appreciable change to the standardized path coefficients when SES was used as a control variable. The path between initial materialism and exam performance 1 year later remained significant ($-.11$), and the path between initial exam performance and materialism 1 year later remained nonsignificant ($-.10$). The covariances between materialism and exam performance changed from $-.41$ to $-.32$ at Time 1, and the Time 2 coefficients were identical, $-.80$. Stability coefficients over time were hardly affected, $.83$ and $.85$ for materialism and $.90$ and $.91$ for exam performance.

Table 3
Zero-Order Correlations Among Three Materialism Measures and Children's Exam Performance at Time 1 and Time 2

Variable	1	2	3	4	5	6	7	8
1. RFGI Time 1	—	.75***	.50***	.46***	.40***	.39***	-.46***	-.48***
2. RFGI Time 2		—	.39***	.42***	.38***	.43***	-.27**	-.33***
3. SMS Time 1			—	.82***	.70***	.63***	-.29***	-.35***
4. SMS Time 2				—	.60***	.70***	-.32***	-.46***
5. sYMS Time 1					—	.80***	-.34***	-.41***
6. sYMS Time 2						—	-.38***	-.52***
7. Exam Time 1							—	.95***
8. Exam Time 2								—

Note. RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993); SMS = Social Motives Scale (Banerjee & Dittmar, 2008); sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003).

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

sought to prime a momentary orientation toward materialism in children (i.e., state materialism) and hypothesized that this heightened orientation would lead children to endorse stronger performance and weaker mastery goals in learning, compared to children who were not primed.

Manipulations of materialism are rare; there are only a handful of recent studies that prime a materialist value orientation experimentally (Ashikali & Dittmar, 2012; Bauer, Wilkie, Kim, & Bodenhausen, 2012). This research has used several priming techniques successfully with young adults, such as using a consumer versus a citizen frame, scrambled sentence tasks, and advertisements of luxury goods. These techniques, however, are unlikely to be well suited for the young children in our research: They are too complex cognitively or not age-appropriate.

In addition, in order to allow for whole-class participation, we needed a priming method that would allow all children in the same class to engage with the same materials in the same class period. We therefore designed a simple questionnaire with two parts. One part assessed children's achievement goals, and another section aimed to make the importance of money and desirable possessions salient momentarily by having children thinking and writing about money and about trendy material

goods that they would like to own. They were also asked to imagine that they receive, as a gift, a sum of money that would be large for a young child and to list what they would buy with it. Children in the experimental condition completed the section about money and material possessions first, and then the scales assessing their achievement goals, whereas children in the control condition completed these measures in the reverse order, first achievement goals scales and then writing about money and trendy material goods. In other words, all children, in both the control and the experimental conditions, completed the same, identical tasks. The actual priming manipulation was simply the order in which children responded to the materialism and achievement goals sections of the questionnaire.

There are several benefits of using this design. First, we do not need to worry about the equivalence of materials used in the experimental and control conditions. Second, the simple writing task is child-friendly, straightforward, and engaging. The writing task also allows for easy administration in a whole class setting. This is important because we can assign half of a class to the control condition and the other half to the experimental condition. By administering our measures in this way, we can control directly

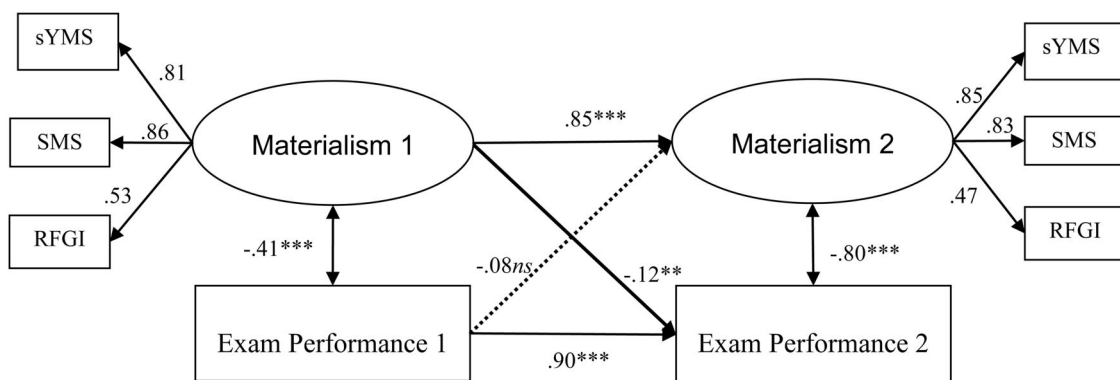


Figure 4. Structural equation model of the longitudinal relationship between children's materialism and exam performance. sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003); SMS = Social Motives Scale (Banerjee & Dittmar, 2008); RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993). *** $p < .01$. ** $p < .001$. Residuals are not shown for the sake of visual clarity, and all factor loadings were significant ($p < .001$). Dashed arrows indicate nonsignificant paths.

for the possible confounding effects of school and class differences.

Method

Participants. A total of 186 Chinese children ($M_{\text{age}} = 11.28$ years, $SD = 0.88$; 89 girls) attending elementary schools in Hong Kong participated in the experiment after gaining consent from both the schools and the parents.

Measures and procedure. Children were randomly assigned to either the experimental prime condition or the control condition. In the experimental condition, the children ($n = 96$) first wrote down what they thought the trendiest toys and/or clothes were, and then listed five benefits of having money and possessing the trendiest toys and/or clothes. Then they were asked to imagine receiving a windfall gift of \$2,000 HKD (approximately \$313 USD) and to write down the things that they would buy with that money. Finally, the children completed the assessment of their achievement goals and materialist orientation.

The children who were randomly assigned to the control condition ($n = 90$) completed the assessment of their achievement goals and materialist orientation first and subsequently listed their favorite toys and clothes and the benefits of having money and material possessions and wrote down the things they would buy with the imagined windfall gift.

The outcome variable—achievement goals—was measured by the PALS (Midgley et al., 2000), as in Study 1. The scale was simplified to a 4-point Likert-type format. In the present study, Cronbach's alphas ranged from .80 to .90 for the three scales. In order to check that the children's materialist orientation was indeed affected by the writing manipulation, they also answered questions on the three facets of materialism used in Study 1, and Cronbach's alphas ranged from .67 to .74 in the present study. A multivariate analysis of variance (MANOVA) showed that the writing manipulation was successful in momentarily priming materialist orientation as the children in the experimental condition scored significantly higher on all three materialism measures, $F(3, 182) = 43.70, p < .001, \eta_p^2 = .58$.

Results

The children's scores on the three achievement goals are shown in Figure 5. A MANOVA showed that the state materialism prime had a significant and substantial impact on children's endorsement of achievement goals, $F(3, 182) = 8.77, p < .001, \eta_p^2 = .13$. Tests

of between subjects-effects further showed that the children in the materialist prime condition scored significantly lower on Mastery goals than the children in the control, $F(1, 184) = 5.72, p = .02, \eta_p^2 = .03$. For the two Performance goals, the pattern was exactly the opposite—children who were primed with materialist values scored significantly higher on both scales, $F(1, 184) = 4.45, p = .04, \eta_p^2 = .02$ and $F(1, 184) = 14.02, p < .001, \eta_p^2 = .07$ for Performance Approach and Performance Avoidance Goals, respectively. In other words, the findings fully support our hypothesized causal relationships between children's materialism and achievement goals.

Discussion

By writing about the trendiest toys and clothes, and the benefits of having these material goods, children were primed with a materialist value orientation, which then caused systematic changes in their learning motivations. Specifically, heightened state materialism discouraged the adoption of Mastery Goals and promoted both Performance Approach and Performance Avoidance Goals. These results provide evidence to support the hypotheses about how materialism is directly related to Chinese school children's learning motivations.

The final research tasks that remain to be addressed in the testing of our theoretical model are twofold. First, we needed to demonstrate that these findings would replicate among British children. Second, even more important, we also sought to strengthen our findings further by complementing the self-report measures used in this study with behavioral indicators of a mastery or performance approach toward learning.

Study 4

The final experiment was designed to examine the impact of materialism on children's actual learning behaviors. To validate our findings further, we attempted to prime a temporary orientation toward materialism by using a different method from Study 3. We used the idea that children's materialistic value orientation is particularly susceptible to peer influence (Banerjee & Dittmar, 2008), which is one of the primary sources of identification and acceptance for children in their late childhood and early adolescence years (Kantrowitz & Wingert, 1999). Therefore, we showed children a video diary of a highly likable child of the same age and sex expressing desires for material goods, talking about the social benefits that material goods bring, and espousing long-term goals

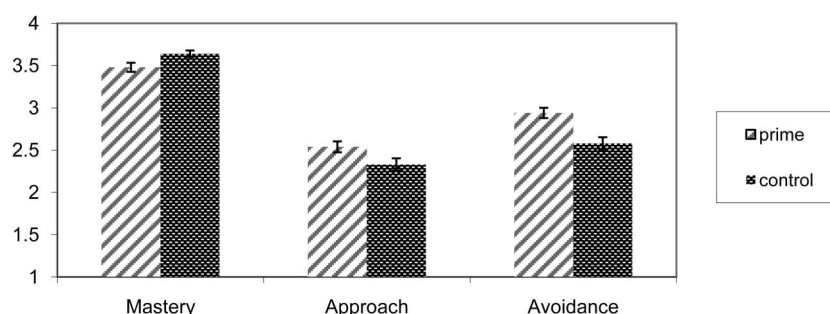


Figure 5. Means of achievement goals (with error bars showing ± 1 SE) in the two conditions.

of financial success. This child served as a social model, who would then induce a momentary materialistic value orientation by making it salient and by highlighting positive social consequences of materialistic attributes.

For measurements of behaviors associated with achievement goals, we followed the conceptualization that adoption of mastery goals represents an individual's concern with increasing competence while performance goals adoption indicates a focus on demonstrating competence to others (e.g., Dweck, 1986; Dweck & Leggett, 1988). Therefore, one of the behavioral measures we used was task choice. Children were given a choice of two learning tasks. One task was described as difficult and challenging but useful for learning new ways of solving puzzles, whereas the other was presented as good for demonstrating their ability in puzzle-solving in comparison with others, although it would not help them much in learning new skills. Children who chose the challenging but rewarding task were categorized as adopting mastery goals, as their concern was to increase their competency. Children who chose the task that could demonstrate their ability were categorized as adopting performance goals. We hypothesized that fewer children in the materialist values prime condition than in the control condition would choose the mastery-oriented task.

In addition to task choice, we also used task persistence as a further behavioral measure. Persisting with one's effort when faced with difficulties in learning has been found consistently to be a behavioral outcome of mastery goals (for a review, see Pintrich & Schunk, 2002). In contrast, performance-oriented goals are often related to reduced persistence when faced with difficulties (see Ames, 1992, for a review). Based on the achievement goals literature, as well as our theorization of the relationship between materialism and learning outcomes, we hypothesized that children in the materialist prime condition would spend less time working on the puzzle than children in the control condition.

Method

After gaining school and parental consent, 84 British children ($M_{\text{age}} = 10.52$ years, $SD = 0.55$; 44 girls) from southeast England participated in the experiment. All children were tested individually at their school, and alternatively assigned to either the experimental or control condition ($n = 42$ in each). Regardless of condition, all children watched a video, worked on a puzzle, and answered questions on materialism.

Materials and procedure. Four sets of videos, simulating excerpts of a child's video diary, "a day in my life," were recorded by two 10-year-old children, one boy and one girl. All female participants watched the video made of the girl, and all male children the video made of the boy. In terms of content, there were two versions, one for the materialist condition and another for the control condition. The same child appeared in both versions.

In all videos, the child first introduced themselves, their family, and their hobbies, such as shopping and gadgets for the materialist condition and drawing and sports for the control condition. They then talked about their upcoming birthday and their birthday wishes. In the materialist version, the child expressed their desire for a "cool" gadget as their birthday present and talked about how material goods can help improve their popularity among peers. In the control condition, the child talked about spending time with friends on their birthday. Afterward, the video showed the child

after their birthday. In the materialist condition, the child described what they received for their birthday and how it impressed other children at school, whereas the child in the control condition described a fun-day-out as a birthday present. The videos ended with the child talking about their future plans and aspirations, with the child in the materialist version emphasizing the importance of financial success and the child in the control condition discussing school work and friendship.

After watching the video, all children were given a choice of two puzzles. The design of the puzzles was based on Sudoku, a logic-based number placement puzzle. The presence of numbers in the puzzle could have suggested that it requires mathematical skills, and so the numbers were replaced with alphabetic characters. This "alphabet" Sudoku had been pilot-tested with four 10-to-14-year-old children, and none were able to finish it within the 10-min time limit allocated to the task in the experiment. The description of the two puzzles was adapted from an experiment examining achievement goals (Elliott & Dweck, 1988):

I have two puzzles for you, and you can choose which one you'd like to work on. This one here, A, is a fun puzzle to work on. It can also help you learn new ways of solving puzzles. It is not easy, so you will probably make some mistakes. But if you try your best to understand the problem, you will learn something fun and new. This one here, B, is also fun to work on. It will also show me how good you are on puzzle-solving problems. Because it's testing your ability, you probably won't learn anything new from doing it. But if you try your best to do it correctly, you will be able to show me how high is your ability compared to other children your age.

The children's choice of the puzzles was recorded as their task choice, the first behavioral measure of achievement goals. Regardless of which choice they made, they were all given the same puzzle with a standardized instruction. Task persistence, the second behavioral measure of achievement goals, was measured by the amount of time they spent working on the puzzle. The time limit set for the puzzle was 10 min, but the children were not aware of this in order to avoid causing stress or any potential change in responses.

When 10 min had elapsed, or when the children chose to stop, they were praised for their performance. Afterward, as a control for affective response to the video stimuli, the likability of the child in the video was evaluated using three items ("I'd like to be friends with the child in the video"; "I like the child in the video"; and "I am similar to the child in the video"; $\alpha = .89$). There was no significant difference across the two conditions for the rated likability of the child in the video, $t(82) = 0.42$, *ns*, showing that the children in the materialist condition were affected by the content of the video diary, not by the likability of the child in the video. In addition, as a manipulation check, the participants also filled in a short questionnaire that consisted of measures of the three facets of materialism as used in the previous three studies (α ranged from .75 to .90). The children responded on 4-point Likert-type scales, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A MANOVA showed that the video diary manipulation was successful as there was a main effect of experimental conditions on the three facets of materialism, $F(3, 96) = 43.70$, $p < .001$, $\eta_p^2 = .58$.

All children were carefully debriefed about the video diary. They were also told that the Sudoku puzzle was impossible to

finish in 10 min and that the way they approached the puzzle showed their talent in handling logical tasks.

Results

Seventeen children (40%) in the materialist prime condition chose the mastery-oriented task, which differed significantly from the 33 children (79%) in the control condition, $\chi^2(1) = 12.65, p < .001$. Of those who did choose the mastery-oriented task, children in the materialist prime condition spent an average of 7.18 min ($SD = 2.52$) on the puzzle, which was significantly less than the average time spent by children in the control condition ($M = 9.06$ min, $SD = 1.56$), $t(\text{equal variance not assumed}, 23.65) = 3.01, p = .006, r = .53$. In total, 12 children in the materialist condition reached the 10-min limit, significantly fewer than the 26 children in the control condition, $\chi^2(1) = 9.42, p < .01$. As a whole group, the children in the experimental prime condition also spent significantly less time ($M = 6.93$ min, $SD = 2.18$) working on the puzzle than the children in the control condition ($M = 8.74$ min, $SD = 1.87$), $t(\text{equal variance not assumed}, 79.60) = 4.07, p < .001, r = .44$.

An SEM analysis showed that the condition the children were assigned to significantly predicted materialism, which then predicted both task choice and task persistence, $\chi^2(5) = 6.30, p = .28, CFI = .992, SRMR = .035, RMSEA = .056$. Condition was modeled as an observed variable, materialism as a latent construct using the same three facet indicators as in Studies 1 and 2, and the outcome constructs task choice and task persistence were again modeled as observed variables, which were allowed to covary. The resulting standardized regression coefficients in the model are shown in Figure 6. Two Sobel tests, together with two nonsignificant paths between condition and task outcomes, demonstrate that the effects of the materialism prime on task choice and task persistence were fully mediated by changes in children's momentary, state materialist value orientation ($z = 3.94, p < .001$ and $z = -4.80, p < .001$, respectively). This final model was able to explain 44% of the total variance in task choice and 80% of the total variance in task persistence. Hence, the results of the experiment strongly support the hypothesis that the materialist value orientation prime significantly influenced the children's momentary, state materialism levels, which, in turn, had strong effects on their learning behaviors.

Discussion

The results of the experiment strongly support our proposition that a materialist value orientation negatively affects children's learning. When primed with materialist values, the children became much more likely to pass up the chance of a new learning experience and, instead, choose a performance-oriented task. Fewer of them persisted with the chosen task until a given time limit was reached, and they withdrew their effort significantly faster.

It is interesting that the effects of condition, both fully mediated by materialism, were much stronger on task persistence than on task choice. Furthermore, among the children who chose the mastery-oriented puzzle, those in the control condition persisted significantly longer than those in the prime condition. We believe this may have to do with the child's perceptions of their own ability, which have been found to be important in moderating the behaviors of children adopting performance-oriented goals. Specifically, when perceived ability is high, children who adopt performance goals often show a host of mastery-oriented behaviors such as seeking challenges and high persistence. In contrast, when perceived ability is low, then they tend to avoid challenges and demonstrate low persistence (Dweck & Leggett, 1988). Hence, it is possible that some children in the materialism prime condition were, indeed, affected by the experimental manipulation and adopted performance goals, but they still chose the mastery-oriented puzzle because they had high confidence in their ability. Since the Sudoku puzzle that we used was quite difficult for children of 9–10 years, this might have affected these children's perception of their ability and thereby led to a defensive withdrawal of effort, a cognitive behavioral correlate of performance goals (Ames, 1984; Diener & Dweck, 1978). This would explain why the two groups of children who chose the mastery-oriented task differ significantly in the amount of time they spent on working on the puzzle. Future experiments that seek to examine further how a materialist value orientation can influence the adoption of mastery and performance goals in children would benefit from the inclusion of children's self-perceptions of their ability as a factor in their design.

The present experiment sought to assess achievement goals through behavioral measures. However, by getting children to choose between a mastery-oriented and a performance-oriented puzzle, we inevitably were turning achievement goals into dichotomous ends. Furthermore,

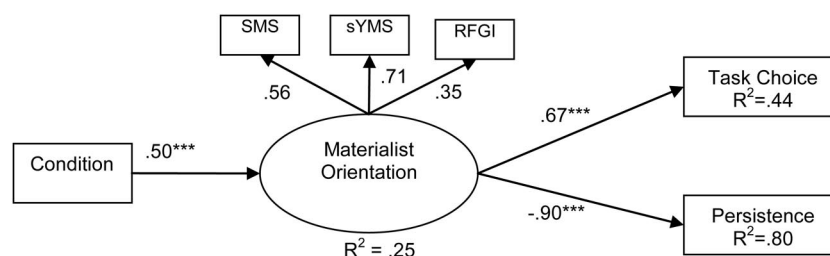


Figure 6. Relationships among experimental condition, materialism, task choice, and task persistence. Control condition = 0; Materialist prime condition = 1; Mastery-oriented task = 0; Performance-oriented task = 1; sYMS = shortened Youth Materialism Scale (Goldberg et al., 2003); SMS = Social Motives Scale (Banerjee & Dittmar, 2008); RFGI = Relative Financial Goal Importance (Kasser & Ryan, 1993). *** $p < .001$. Residuals are not shown, for the sake of visual clarity, and all factor loadings were significant ($p < .001$). Error residuals were allowed to covary between Task Choice and Persistence, and among the three indicators of the Materialist Orientation.

even though the design of our task choice is very similar to previous experimental work on achievement goals (e.g., Elliott & Dweck, 1988; Elliot & Harackiewicz, 1994), the external validity of the task (i.e., whether children would behave in a similar fashion when choosing between puzzles compared to choosing between learning tasks in real life) remains to be tested. Although not ideal, the behavioral data that we gathered in this experiment are nevertheless a forceful addition to the self-reported measures of the previous studies. While experiencing a materialist value orientation, not only did children report a lower level of mastery goal adoption (Study 3), but they also gave up on the chance of learning by choosing a performance-oriented task and exhibited much less persistence (present study). In real life, under time pressure, school pupils are often faced with a choice between studying for the sake of performance (e.g., getting good grades in exams) and studying in order to learn something new. Our findings suggest that, when learning is pitched against performance, it is likely that materialistic children may give up the chance to learn.

General Discussion

The article extends the examination of materialism's impact to the context of learning, and adds further important converging evidence to a literature showing that materialism leads to a number of social and psychological problems, in both developed and developing, individualist and collectivist, richer and poorer cultures (Dittmar et al., 2013; Dittmar & Kapur, 2011; Easterlin & Crimmins, 1991; Ger & Belk, 1996; Kasser et al., 2007; Kasser & Ryan, 1993, 1996). It not only demonstrates that materialism is detrimental to school children's learning and academic performance but also offers a new theoretical model of a significant psychological mechanism underlying the negative link between materialism and exam performance. Materialism, we argue, works its negative effects on school performance by undermining intrinsic mastery-oriented learning and shifting learners' attention from competence *development* to competence *demonstration*.

The negative relationships that materialism has with exam performance suggest that there is a real need to evaluate the impacts of consumerist, socially oriented values on youths' academic achievement. In addition to individual, family, and school factors that contribute to children's academic performance, factors that are deeply embedded in contemporary, and progressively global, consumer society—such as overt preoccupation with consumption, the belief that wealth and financial success are the most important goals worthy to pursue, and the view that social power and status rest on wealth and possessions—are important considerations for a research paradigm that examines factors that facilitate youths' intrinsic learning and enhance learning outcomes.

The relationships found between materialism and performance goals point to the possibility of a common underlying value system that highlights a sense of contingent worth. Materialistic children and teenagers aspiring to wealth and material possessions are more likely to engage in social comparison (Chan, 2007), feel more insecure (Chaplin & John, 2007), feel under more peer pressure (Banerjee & Dittmar, 2008), experience more anxiety and depression (Kasser, 2005), and report lower well-being (Dittmar, Banerjee, Wright, Easterbrook, & Hurst, 2013). All this suggests that materialistic youths may hold an externally oriented, contingent sense of self-worth that prompts them to see their self-value as dependent upon accomplishing certain goals, behaving or appear-

ing in certain ways, or possessing certain material goods. This is very similar to the "ego-involvement" that characterizes a performance goals orientation (Nicholls, 1984, 1989). As Dweck and her colleagues (Dweck, 1986; Dweck & Leggett, 1988) proposed, school children who conceive of intelligence as a fixed entity tend to adopt a performance goals orientation and focus on documenting that entity. This is different from pupils who conceive of intelligence as a malleable quality and therefore seek to develop that quality. In other words, for children who hold an entity theory of intelligence, evaluation of their performance in a task is not just judging their momentary level of ability but, rather, is judging what they perceive to be an important and permanent personal attribute. Hence, in learning, performance-oriented school children seek to maintain their sense of self-esteem by trying to achieve certain standards based on comparison with others or by trying to avoid appearing as if they have problems in achieving those standards. As both materialism and an orientation toward performance goals represent an excessive focus on normative comparison and tangible signs of success and status, materialistic youths and performance-oriented pupils may both see self-worth as dependent on external, contingent criteria.

One important avenue for further research concerns the extent to which performance-approach and performance-avoidance orientations can or should be differentiated in our modeling of the effects of materialism. In Study 1, only the latter was predicted by materialism and in turn related negatively to exam performance, yet in Study 3, the materialistic prime appeared to result in increased performance-approach and increased performance-avoidance goals. In fact, these results add to an already mixed picture regarding performance goals in the education literature. As noted earlier, the incorporation of self-perception of ability and competence expectations is a key missing ingredient here, given that previous research (see Elliott & Chuch, 1997) has pointed to these factors as crucial in the manifestation of a performance orientation: either approaching a task where one is confident that competence and superiority can be demonstrated or avoiding a task where the threat of failure raises the prospect of unfavorable social comparison. Moreover, this distinction is likely to be further complicated by other moderating factors such as age, gender, and culture (e.g., Elliott, Chirkov, Kim, & Sheldon, 2001; Midgley, Kaplan, & Middleton, 2001). Thus, further research may be able to elucidate the intricate web of moderating factors that might be underlying the patterns of results observed in the present work.

In terms of the development of materialism, the present research provides some longitudinal evidence that is useful in examining the implications of two different perspectives. On the one hand, studies by Banerjee and Dittmar (2008); Chaplin and John (2007); and Kasser, Ryan, Couchman, and Robinson (2004) suggest that insecurity and low self-esteem, resulting from performing badly (in school), may induce children to adopt a materialist value orientation as a maladaptive coping strategy. These children may seek to repair their negative feelings by using material possessions, seeing them as good ways to impress their peers and gain status. On the other hand, based on SDT (Ryan & Deci, 2000), it is possible that the endorsement of short-term consumption-defined materialistic values, linked with more long-term future aspirations for gaining wealth and achieving financial success, as well as social motives for materialism, not only reinforces children's present desires for fashionable material goods but also undermines their mastery-oriented learning and fosters the adoption of

maladaptive performance goals. Such a materialist value orientation further encourages children to focus on normative comparisons in their learning, and leads to a deterioration of their academic performance. The present study did not find significant evidence for the maladaptive coping perspective, although it remains plausible that early insecurities could drive the initial individual differences in materialist value orientations. Even though the difference in effects was relatively small, the present results supported the second perspective, where the adoption of a materialist value orientation led to a significant deterioration in learning outcomes over a 1-year time period.

This finding was then further supported, and strengthened, through the results from two experimental studies, one with Chinese and one with British children. Both experiments demonstrated that a momentary (state) materialist value orientation seems to cause the children to endorse stronger performance and lower mastery goals in learning, as well as adopt behavioral learning strategies that lead to poorer learning outcomes. Not only did convergent findings appear in both cultural groups of children, they also generalized across two different materialism primes: an imaginary task (windfall of money), combined with a written list of desirable material possessions in the first experiment, and a video-diary of a peer expressing materialist values in the second experiment.

Limitations and Future Research Directions

One of the most pronounced limitations of our findings concern the longitudinal study, which addressed longitudinal relationships between materialism and children's learning over a relatively short time span: 1 year. Even though our findings, in conjunction with the experimental work, appear to support a causal and step-wise impact of materialism on children's learning, such that materialism has a negative effect on learning motivations that, in turn, have a negative effect on behavioral learning strategies and learning outcomes, we would not want to argue that our unidirectional, mediational model was fully supported by our data, for at least two reasons. First, the modeling of our correlational data showed that materialism has a direct effect on children's school performance, over and above its predictive associations with their learning motivations. This direct effect clearly suggests that further factors are at work. One such factor may be individual differences in personality, particularly the Honesty-Humility factor of the HEXACO model, which has been shown to negatively correlate with materialism and extrinsic values (Lee et al., 2013). In at least one study with university students, the Honesty-Humility factor also significantly predicts academic performance (De Vries et al., 2011). Together with Belk's early conceptualization of materialism as a type of personality (Belk, 1984), all these suggest that the influence of materialism on learning may go beyond motivations that are induced by situational cues.

In addition, a careful consideration of the full range of motivations that could lead people to engage with the materialist and consumer world is important. As noted earlier, we have placed a major emphasis on the way in which materialist values are founded on the pursuit of social recognition, image, and status, consistent with theoretical conceptualizations of extrinsic goals and values (e.g., Kasser & Ryan, 1996; Schwartz, 1999) and with existing empirical data (Banerjee & Dittmar, 2008; Easterbrook et al., 2013). However, we do recognize that children, like adults, may engage with the material world for a variety of reasons, which can

include meeting basic physiological needs, altruistic aims, and affiliative goals. While existing work has already shown that extrinsic motives for materialism are not only highly prominent in youths but also more significant predictors of well-being (Easterbrook et al., 2013), the way in which other motives may interact with the kind of patterns observed in the present investigation does deserve careful attention in further research.

Second, we believe it is likely that there is a vicious cycle that develops over time, where directions between children's materialism and learning are bidirectional, such that a materialist value orientation leads to poorer learning and greater insecurity (in school performance, self-esteem, and/or peer relations), leading children to adopt a materialist value orientation as a maladaptive coping strategy, reinforced by consumer culture messages, such as advertising in particular, as well as peer role models. As noted earlier, the longitudinal association between initial exam performance and subsequent materialism, while nonsignificant, was not very much smaller than the significant reverse pathway that we focused on in the present study. Clearly, what is needed is longitudinal, developmental research on children across a wider age range, to address the reciprocal effects of a materialist value orientation and learning on each other that extend over several years.

Ideally, future studies that examine the impact of materialism on learning would also sample groups of children from a variety of societies that differ in aspects of culture, economic development, and national wealth. Our present research is somewhat limited in generalizability in at least two ways. First, it is difficult to ascertain whether the patterns that we have uncovered are limited to developed societies with a high level of consumer culture penetration, or whether they can be generalized to other, less developed societies where children are not as heavily targeted by marketing efforts and consumer culture. Furthermore, the equivalence of patterns of empirical relationships may be particularly strong between the United Kingdom and Hong Kong, given that Hong Kong was a British colony for over a century, even though this historical link ended in 1997. Broader cross-cultural research in general is therefore needed to help map limits to the generalizability of the reported patterns, in terms of identifying (a) factors that may influence the strength of the direct relationship between materialism and children's learning outcomes, (b) factors that may influence the strength of the mediated relationships between materialism and children's learning through learning orientations, and (c) mediators other than learning motivations.

Last but not least, future studies will also benefit from adopting additional measures of materialism other than self-reports. The high correlation between materialism and exam performance in Study 1 suggests that the measures of materialism that we used might have captured some other trait variance such as lower conscientiousness, lower intellectual curiosity, or less intelligent understanding of the potential social desirability involved in responding to questionnaire items of self-reported materialism (Mick, 1996). Hence, alternative measures of materialism, such as adaptations of the implicit association test, which has been shown to have higher predictive validity than self-report measures (Greenwald, Poehlman, Uhlmann, & Banaji, 2009), need to be used to prevent the more conscientious, or more intelligent, children from picking more "correct" answers and, hence, potentially inflating the relationship between materialism and school results.

Implications and Conclusions

Our findings on materialism and learning have important practical implications. First, the general emphasis in contemporary consumer culture on a luxurious lifestyle, expensive possessions, and conspicuous consumption evidently may be taking its toll on children's learning motivations and school performance. Materialist values, negative social motives for materialism, and long-term future goals for wealth and expensive material possessions not only appear to affect children's mastery-oriented learning negatively but also seem to result in a deterioration of school grades over time. Given that the negative effects of a materialist value orientation on children's learning have been documented here by triangulation in school children as young as 8–10 years old, it seems imperative to us to focus intervention efforts by governments, schools, and parents on this particular age group. However, it could be argued that efforts to prevent the adoption of a materialist value orientation should begin even earlier, given that key consumer culture messages are deliberately targeted at much younger children through the media and advertising (Buckingham, 2011; Linn, 2004; Schor, 2004).

A closely related issue is the importance of social motives among children in general, and the high endorsement of negative social motives for materialism in particular. Children's susceptibility to materialist primes, and thus to other stimuli likely to make a materialist value orientation salient, suggests that consumer culture messages such as advertising are likely to reinforce the likelihood of seeing the possession of certain material goods as carrying important social consequence. This is in line with observations by many parents that their child believes they *need* to have the right material goods in order to fit in (Brown, 2005; Schor, 2004; UNICEF, 2012). In order to break the vicious cycle of a materialist value orientation and poorer learning outcomes in children, as well as the sense of insecurity, low self-esteem, and poor peer relations likely to be involved, "at-risk" children need to be identified, with particular attention to those children who are socially isolated and perhaps already underachieving at school.

In sum, the present research offers a crucial foundation for understanding the potential deleterious effects of a materialist value orientation on the learning motivation and achievement outcomes of children. We believe it sets an important agenda for further research to illuminate further details of these links, connections with other personal and social correlates of materialism, and developmental trajectories over extended periods of time. It also provides an impetus for intervention work to support those children who may be most at risk from the negative impacts of focusing on extrinsic rather than intrinsic goals in the context of the challenges posed by contemporary consumer culture.

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Received April 5, 2013

Revision received November 6, 2013

Accepted January 22, 2014 ■

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