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How Social Influence Mediates Media Effects on Adolescents' Materialism

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Abstract

This study proposed a theoretical framework by which it can be identified how media influence and social influence interplay and produce joint effects on adolescents' materialistic values. The framework began with how adolescents estimate parents' and friends' materialistic values from media exposure and interpersonal communication and then facilitated an examination of how the parents' and friends' materialistic values, in turn, influence adolescents' materialistic values. This framework was tested with survey data of 697 adolescents in Singapore. Results showed that an adolescent's exposure to advertising was both directly and indirectly associated with his or her materialistic values. The indirect association was mediated by the adolescent's perception of advertising effect on friends and by the adolescents' interpersonal communication with parents and with friends.

Keywords

media effects, influence of presumed influence, interpersonal communication, materialism, adolescents

Introduction

There is worldwide concern that the younger generation is becoming materialistic, particularly in developed countries (Schaefer, Hermans, & Parker, 2004). In the United States, 32 million 12- to 19-year-olds spent a combined US$175 billion in 2003 (Teen Research Unlimited, 2004), growing up possessing four times as many toys as teens 20 to 30 years earlier. In the United Kingdom, adolescents aged between 16 and 18 scored highly on the compulsive buying scale, and they admitted that it was hard to resist buying new things they did not need (Money, 2005). The phenomenon deserves attention from researchers

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and educators because materialism is likely to result in self-doubt, insecurity, poor school performance, and juvenile crime (Chang & Arkin, 2002; Deci & Ryan, 1995; Goldberg, Gorn, Peracchio, & Bamossy, 2003; Morris, 2001).

Social scientists and media critics have attributed the increasing materialism among young people to media influence and social influence. Media influence primarily concerns the effect of advertising, whereas social influence includes the influence of family and the influence of friends (for a review, see Lachance, Beaudoin, & Robitaille, 2003; Mascarenhas & Higby, 1993). Media influence and social influence are likely to interact with each other and produce joint effects on adolescents (Chia, 2006; Valente, Poppe, & Merritt, 1996). A theoretical model that connects an adolescent's media exposure to his or her interaction with social groups is therefore desirable for any rigorous examination of media effects on adolescents' materialism. Such a model enables researchers to test concurrently media influence and social influence on adolescents' views regarding material possessions; such a model also helps in examining how media influence can vary in different social contexts.

In this study, we proposed a theoretical framework with which we used an adolescent's (a) perception of media influence on two primary social groups, namely, parents and peers, and (b) interpersonal communication with these social groups as two key elements to explain the possible connection between media influence and social influence. This framework was built on the idea of "influence of presumed influence" (Gunther & Storey, 2003), which suggests that a person's subjective perception of others can mediate media influence on that person. We expanded this idea and included the component of interpersonal communication in the model so that we could examine whether a person's overt interaction with others can also mediate the influence of media. We selected Singapore as the locale for this study. Compared with their counterparts in other Asian countries (e.g., Hong Kong, Taiwan, and Thailand), youths in Singapore have the highest rates of ownership of expensive digital devices like mobile phones and digital video cameras (National Youth Council, 2005). Many young people in Singapore admitted that they preferred designer goods and that they used material possessions as a criterion in judging others ("Materialistic girls," 2004). We expect that the findings of this study provide theoretical understanding of the roles of media, parents, and peers in cultivating young people's materialistic values in Singapore. As adolescents in most developed countries are also becoming increasingly materialistic, the findings could also provide insights into adolescents' materialism in other societies of the world.

Materialism and Advertising

Materialism used as a philosophical notion refers to the idea that nothing exists except for material matter (Lange, 1865/1925). The term also describes an individual's value orientation and the importance the individual attaches to material possessions (Belk, 1984; Richins & Dawson, 1992; Ward & Wackman, 1971). Materialism is not entirely negative or socially undesirable. According to Csikszentmihalyi and Rochberg-Halton (1981), when objects act as essential means for discovering and furthering personal values and goals of

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life, materialism is potentially harmless and is labeled *instrumental materialism*. Only when consumption furthers no goal beyond possession itself does materialism become dangerous and is labeled *terminal materialism*. Nevertheless, for children or adolescents, who are at the formative stage in terms of developing identity and values (Cramer, 2001; Goldberg et al., 2003), materialism is a problem because it is often viewed as an emerging value centering on acquisitiveness—which is close to terminal materialism. An adolescent's materialistic values are reflected in his or her consumption behavior and attitudes, which include the desire to buy and own things, the enjoyment of possessing these objects, the desire for money to enable the purchasing of these objects, and the desire for jobs that can secure the money necessary for purchases (Goldberg et al., 2003).

Exposure to advertising is likely to arouse adolescents' desires for material possessions and increase their materialism (Meredith & Schewe, 2002; Morris, 2001; Wysocki, 1997). Advertising often portrays material possessions as important objectives or ultimate goals of people's lives. It vigorously associates desirable life qualities—such as happiness and success—with material possessions (Pollay, 1986; Wulfemeyer & Mueller, 1992). A number of survey and experimental studies have demonstrated significant and positive correlations between young people's advertising exposure and their materialistic values (e.g., Goldberg & Gorn, 1978; Greenberg & Brand, 1993; Moschis & Churchill, 1978; Moschis & Moore, 1982). The positive correlation remained significant when the influence of possible third variables like age, sex, socioeconomic status, and school performance was controlled (for a review, see Buijzen & Valkenburg, 2003a).

Most of the previous studies on the topics of advertising and materialism were, however, conducted in the United States before the 1980s. There has not been much communication research in this area in the past 30 years. What little there is includes Buijzen and Valkenburg's (2003b) parent-child survey in the Netherlands. The survey showed that advertising was positively and directly related to children's purchase request and materialism. In addition, Jiang and Chia's recent study (2009) demonstrated a direct and positive association between college students' advertising exposure and materialism in China. There is a need to continue this research effort in this millennium and to continue extending the research to other non-Western societies like Singapore. The media in Singapore carry as significant an amount of advertising as the media in Western societies. As teenagers in Singapore spend significant amounts of time using the Internet, TV, and other types of mass media (Tan, 1999), we expected to find a direct association between adolescents' exposure to advertising and the adolescents' materialistic values in Singapore (see Figure 1); we therefore propose the following hypothesis:

Hypothesis 1 (H1): The level of an adolescent's advertising viewing is positively associated with the level of materialism reported by the adolescent.

Influence of Presumed Influence

Adolescents may not be aware that advertising has an influence on the self, but they usually believe that advertising has an influence on people around them, particularly on their

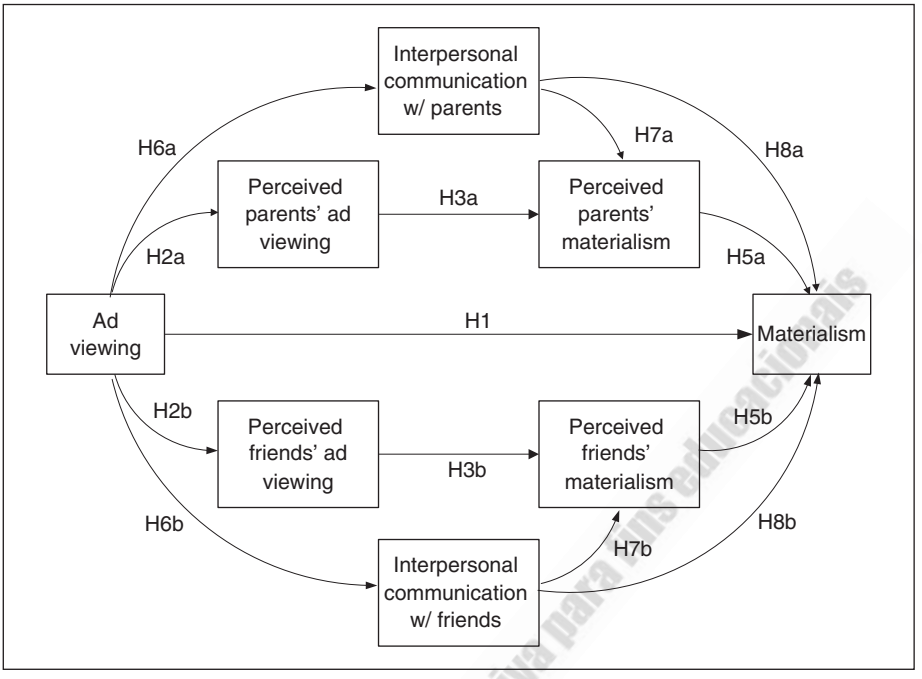

Figure 1. Hypothesized model for the influence of presumed influence on adolescent materialism

friends (Gunther, Bolt, Borzekowski, Liebhart, & Dillard, 2006; Henriksen & Flora, 1999). Adolescents adopt some behavior to accommodate that perception of media influence on their friends. This behavioral reaction to presumed media influence on others is termed the *influence of presumed media influence* (Gunther & Storey, 2003). The influence of presumed influence has received robust support in various contexts of adolescents' behavior. For example, adolescents who perceived greater effects of prosmoking ads on peers reported higher levels of intention to smoke in the future (Gunther et al., 2006). Persons in their late adolescence who perceived greater effects of sex-related media on friends reported more permissive sexual attitudes and higher levels of intention to engage in sexual activities (Chia, 2006). The adolescents tended to adapt their attitudes or behavior to their perceptions of media influence on peers, regardless of whether those perceptions were accurate or not (Chia & Gunther, 2006).

We propose to examine the influence of presumed media influence in the context of adolescent materialism. For an adolescent, purchasing or acquiring material goods is not simply an individual psychological process triggered by exposure to advertising but also a social process that involves the influence of others (Shim, 1996; Ward & Wackman, 1971) and that social influence usually originates from the adolescent's relationship with parents or with friends (Ahuvia & Wong, 2002; Flouri, 2004; Moschis & Moore, 1982). Therefore, in this study, we include adolescents' perceptions of media influence on both (a) parents and (b) friends in the examination to assess whether the adolescents in Singapore would

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adapt their materialistic values to their perceptions of media influence on parents and on friends.

The influence-of-presumed-influence model starts with a proposition that an individual tends to infer media exposure of others from media exposure of the self (Gunther & Storey, 2003). This proposition can find its root in Gunther's (1998) idea of "persuasive press inference," which suggests that people, after attending to a small number of media content, tend to extrapolate the general content of media from that small number of media content. People also assume that media have broad reach and that many others are thus exposed to the similar general content (Gunther, Christen, Liebhart, & Chia, 2001). While conceiving the self as smart enough to resist media effects, people tend to adopt a relatively naive schema (e.g., the magic bullet theory) from which they, according to their presumptions about others' exposure to media content, infer media effects on others (McLeod, Eveland, & Nathanson,1997). The more a person believes that others attend to media, the greater the media effects the person is likely to infer onto others (Eveland, Nathanson, Detenber, & McLeod, 1999).

We expect that adolescents in Singapore would infer their parents' and friends' advertising viewing from their own advertising viewing. Adolescents who have higher levels of advertising viewing would estimate higher levels of parents' and friends' advertising viewing. The adolescents would then adopt a simple schema of communication effect and, from the estimates of parents' and friends' exposure to advertising, infer media influence on parents and friends, respectively. The more an adolescent infers that parents and friends are being exposed to advertising, the more likely it is that the adolescent will think that parents and friends are materialistic. We therefore propose the following hypotheses (see Figure 1):

Hypothesis 2 (H2): The level of advertising viewing reported by an adolescent is positively associated with the level of advertising viewing that the adolescent believes his or her (a) parents/(b) friends are experiencing.

Hypothesis 3 (H3): The level of advertising viewing that an adolescent believes his or her (a) parents or (b) friends are experiencing is positively associated with the level of materialism that the adolescent believes his or her (a) parents or (b) friends to have.

A person's estimate of media effects on others may also be affected by the extent to which the person perceives others as being predisposed toward the behavior advocated by the media (Chia, 2007; Lambe & McLeod, 2005; Meirick, 2005). The stronger a person's belief that others are vulnerable to the content of media, the more likely the person would be to perceive significant media effects on others. For example, social norms make physical aggressiveness more acceptable for men than for women; as a result, men are perceived as more susceptible to the influence of TV violence than women (Scharrer, 2002). As conventional wisdom suggests that parents are more critical than friends about advertising content, adolescents in Singapore are likely to believe that their parents are more resistant than their friends to advertising effects. This forms our next hypothesis:

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Hypothesis 4 (H4): The association between an adolescent's perception of parents' exposure to advertising and the adolescent's perception of parents' materialistic values would be weaker than the association between the adolescent's perception of friends' exposure to advertising and the adolescent's perception of friends' materialistic values.

Adolescents' perceptions of parents' values or friends' attitudes are subject to errors. Lapinski and Rimal (2005) called these perceptions *perceived norms*, in contrast to *collective norms*," which refer to the actual attitudes and behavior evidenced by others (e.g., parents and friends). Perceived norms are not necessarily consistent with collective norms (i.e., pluralistic ignorance; see Chia & Lee, 2008; O'Gorman, 1986), but they are as influential as collective norms for adolescent materialism. One recent study, for example, found that perceptions of (a) parents' and (b) friends' brand consciousness each contributed to adolescents' assessments of their own brand consciousness (i.e., the influence of perceived norms; see Nelson & McLeod, 2005). In this study, we proposed to test the influence of perceived norms—perceptions of parents' and friends' materialistic values—on adolescents' materialistic values (see Figure 1). Testing this hypothesis was expected to add support to existing literature dealing with parental/peer influence on adolescents and, in particular, to link adolescents' presumptions about media influence on parents or friends to the consequent real media influence on adolescents' own value systems.

Hypothesis 5 (H5): An adolescent's perception of (a) parents' or (b) friends' materialistic values is positively associated with the adolescent's materialistic values.

Interpersonal Communication

In addition to people's subjective perception of others, their overt communication with others serves as another mechanism through which social influence mediates media influence on adolescents (Chaffee, Ward, & Tipton, 1970). Adolescents' exposure to advertising often raises the adolescents' interests in products promoted in the advertisements and consequently induces the adolescents to discuss the products or relevant consumption matters with their parents or friends (Buttle, 1991; Ekström, 2007; O'Donohoe, 1994; Valente et al., 1996). The interpersonal communication would, in turn, produce influence on the adolescents' attitudes and behavior in two ways. First, an increasing level of frequency with which an adolescent discusses consumption issues with parents and with friends would lead to a stronger perception that parents and friends value material possessions and consumption. That perception would, in turn, influence the adolescent's materialistic values (Lapinski & Rimal, 2005). Second, the frequency with which an adolescent communicates with his or her parents/friends about consumption matters would directly increase the strength of the adolescent's economic motivations for consumption and result in an increasing level of materialism (Churchill & Moschis, 1979; Roberts, Manolis, & Tanner, 2008; Shim, 1996). We propose the next three hypotheses accordingly (see Figure 1).

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Hypothesis 6 (H6): The level of advertising viewing reported by an adolescent is positively associated with the frequency with which he or she discusses consumption matters with (a) parents or (b) friends.

Hypothesis 7 (H7): The frequency with which an adolescent discusses consumption matters with (a) parents or (b) friends is positively associated with the adolescent's perception of an increasing level of materialistic values held by the adolescent's (a) parents or (b) friends.

Hypothesis 8 (H8): The frequency with which an adolescent discusses consumption matters with (a) parents or (b) friends is positively associated with the level of materialistic values reported by the adolescents.

It has not been conclusively determined, however, whether the normative influences of parents and of friends, respectively, are equally strong on the formation of adolescents' materialistic values. As parents form the first reference group with which a person identifies and maintains the longest affiliation, the influence of parents is usually considered most important in the process of a person's consumer socialization (Moschis, 1987). A number of studies have reported that parents serve as the most influential agents in children's consumer socialization and affect expressive aspects such as the development of social and materialistic motivations to consume (for a review, see Carlson & Grossbart, 1988). In the areas of clothing and apparel shopping, particularly, adolescents appear to interact actively with their parents and to receive significantly greater parental influences than peer influence (Frances & Burns, 1992; Mascarenhas & Higby, 1993).However, adolescents are at a stage where they start to detach themselves from parents and attach themselves to friends. With the transformation of personal relationships between parent and child, the influence of parents may be reduced and the influence of peers may increase (Feltham, 1998). One study, for example, showed that adolescent boys and girls in the United States valued their friends' opinions on fashion-related items and often purchased clothing similar to what their friends wore (Meyer & Anderson, 2000). In addition, Lachance and colleagues (2003) examined parental influence and peer influence on the development of French Canadian adolescents' brand sensitivity and concluded that, for both boys and girls, peers represented the most important predictor of consumer socialization. To examine further the relative importance of parental influence and peer influence on the development of adolescents' materialistic values, we propose to compare the strength of parents' influence with friends' influence on adolescents' materialistic values. To conduct such a comparison, we need to test the following two research questions.

Research Question 1 (RQ1): Is the association between an adolescent's perception of parents' materialistic values and the adolescent's materialistic values greater or lesser than the association between the adolescent's perception of friends' materialistic values and the adolescent's materialistic values?

Research Question 2 (RQ2): Is the association between an adolescent's interpersonal communication with parents and the adolescent's materialistic values greater or smaller than the association between the adolescent's interpersonal communication with friends and the adolescent's materialistic values?

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Method

The data analyzed in this study were generated from an anonymous paper-and-pencil survey of 271 students from three middle schools, 227 students from two high schools, and 197 students from one polytechnic school in Singapore ($N = 695$).[1] The participants were aged from 12 to 23 years old ($M = 16.48$, $SD = 2.13$). Of the respondents, 37.3% were male ($n = 258$). The majority were Chinese (74.4%), 10.9% were Malay, 7.8% Indian, and 6.9% belonged to other racial groups. Although it was a convenience sample, the sample's racial statistics closely matched those of the overall population in Singapore (Statistics Singapore, 2008). Most respondents (75.5%) reported a religious affiliation. The survey was administered by trained teachers during classroom hours. Consent and all procedures were approved by the Ministry of Education in Singapore and all the schools involved. Measures for variables are described below.

Advertising Viewing Variables

The respondents' advertising viewing was the main independent (exogenous) variable in the study. To measure this variable, we first asked participants to write down the hours per week they spent using various types of media, including television ($M = 13.47$, $SD = 11.73$), radio ($M = 7.36$, $SD = 14.03$), newspapers ($M = 3.32$, $SD = 3.90$), magazines ($M = 2.47$, $SD = 4.79$), and the Internet ($M = 29.30$, $SD = 29.72$). We then asked the participants to report how much attention they paid to the advertisements that they encountered in each type of media. The responses were given on a 7-point scale, where 1 meant "no attention at all" and 7 meant "a lot of attention" ($M = 4.0$, $SD = 1.42$ for TV commercials; $M = 3.08$, $SD = 1.57$ for radio commercials; $M = 3.15$, $SD = 1.45$ for newspapers advertisements; $M = 3.51$, $SD = 1.65$ for magazine advertisements; and $M = 2.44$, $SD = 1.53$ for Internet advertisements). We multiplied the hours that participants spent on each type of media by the amount of attention participants paid to the advertisements in the type of media in order to compute participants' advertising viewing for that particular type of media. We then added together participants' advertising viewing on TV, on radio, in newspapers, in magazines, and on the Internet to form the variable of overall advertising viewing ($M = 179.63$, $SD = 155.30$). We followed the same procedures to compute the participants' perceptions of parents' advertising viewing ($M = 188.22$, $SD = 200.57$) and the participants' perceptions of friends' advertising viewing ($M = 248.83$, $SD = 242.51$). A paired-sample t test showed that the adolescents perceived that they and their parents shared similar levels of advertising exposure, $t(634) = -.764$, *ns*. The adolescents perceived, however, that they had less advertising exposure than their friends, $t(618) = -7.99$, $p < .001$.

Interpersonal Communication Variables

We asked the participants to rate the frequency with which they and their parents talked about eight types of consumption issues, modified from the Family Communication About Consumption Scale used in Churchill and Moschis's (1979) study.[2] Participants gave

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responses on a 7-point scale that ranged from "never" to "always." The eight items comprised a reliable composite measure for the variable of interpersonal communication with parents ($\alpha = .90$, $M = 3.61$, $SD = 1.31$). We also asked the participants to rate the frequency with which they and their friends talked about the same eight types of consumption issues. The eight items comprised a reliable composite measure for the variable of interpersonal communication with friends ($\alpha = .93$, $M = 4.29$, $SD = 1.40$). A paired-samples t test showed that the adolescents talked about consumption issues with their friends more frequently than with their parents, $t(654) = -12.06$, $p < .001$.

Materialism Variables

We asked participants to respond to a total of 11 statements regarding their attitudes toward material or monetary possessions on a 7-point scale that ranged from "strongly disagree" to "strongly agree." The 11 indicators[3] were modified from the Youth Materialism Scale (Goldberg et al., 2003), and comprised a reliable composite measure for adolescents' self-reported materialism ($\alpha = .86$, $M = 3.95$, $SD = 1.15$). We also asked the participants to assess their friends' materialism using the same scale. The 11 indicators again formed a reliable composite measure for adolescents' perception of friends' materialism ($\alpha = .89$, $M = 4.36$, $SD = 1.25$). In addition, we asked the participants to evaluate their parents' materialistic values using a similar 11-item scale,[4] which was modified from the Parent Materialism Scale (Goldberg et al., 2003). The responses were given on a 7-point scale, which ranged from "strongly disagree" to "strongly agree." A reliability test showed that the 11 indicators comprised a reliable composite measure for adolescents' perception of parents' materialism ($\alpha = .88$, $M = 3.64$, $SD = 1.18$).

Demographic Variables

Variables that might affect adolescents' materialism, such as participants' age, gender, racial groups, family income (M = S$3,992.3, SD = S$1,353.36), and religiosity (i.e., number of times of attending religious institutions per week; $M = 1.61$, $SD = 0.63$), were all measured and controlled in later analyses.[5]

Results

In order to test the hypotheses and research questions, we performed structural equation modeling (SEM) analyses using LISREL 8.51 (Jöreskog & Sörbom, 1996; see Table 1 for correlation matrix). We chose to test a series of path models (see Figure 2), which show the standardized parameters as well as changes in these parameters as proposed mediators were accounted for in the process. This is called the causal-steps method and can help validate the mediating effects (see Baron & Kenny, 1986; Holbert & Stephenson, 2003; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

In the first model, we included only the independent variable and the dependent variable in the hypothetical model, namely, advertising viewing and adolescents' materialism.

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Table 1. Correlation Matrix for Variables in the Hypothesized Model, Including Age, Gender, Race, Family Income, and Religiosity

	1	2	3	4	5	6	7	8	9	10	11	12
1. Self's ad viewing	—	—	—	—	—	—	—	—	—	—	—	—
2. Perception of parents' ad viewing	.44***	—	—	—	—	—	—	—	—	—	—	—
3. Perception of peers' ad viewing	.53***	.48***	—	—	—	—	—	—	—	—	—	—
4. Interpersonal comm. w/ parents	.16**	.18***	.21***	—	—	—	—	—	—	—	—	—
5. Interpersonal comm. w/ peers	.25***	.28***	.34***	.48***	—	—	—	—	—	—	—	—
6. Perception of parents' materialism	.12**	.09*	.16***	.34***	.31***	—	—	—	—	—	—	—
7. Perception of peers' materialism	.19***	.21***	.34***	.31***	.54***	.43***	—	—	—	—	—	—
8. Adolescents' materialism	.22***	.12**	.24***	.40***	.46***	.56***	.52***	—	—	—	—	—
9. Age	.12**	.11**	.19***	.15***	.18***	.12**	.16***	.15***	—	—	—	—
10. Sex (1 = *male*; 2 = *female*)	.08*	.04	.00	.13**	.12**	–.05	–.02	.07	.04	—	—	—
11. Religiosity	.02	.01	–.04	–.01	–.01	–.15***	–.02	–.13**	–.08*	–.05	—	—
12. Household income	–.15***	–.15***	–.22***	–.02	–.14**	–.01	–.11**	–.02	–.24***	–.04	.08*	—
13. Race (1 = *Chinese*; 2 = *non-Chinese*)	.13**	.18***	.14**	.09*	.17***	–.03	.17***	.07	.11**	–.02	.18***	–.14***

*$p < .05$. **$p < .01$. ***$p < .001$.

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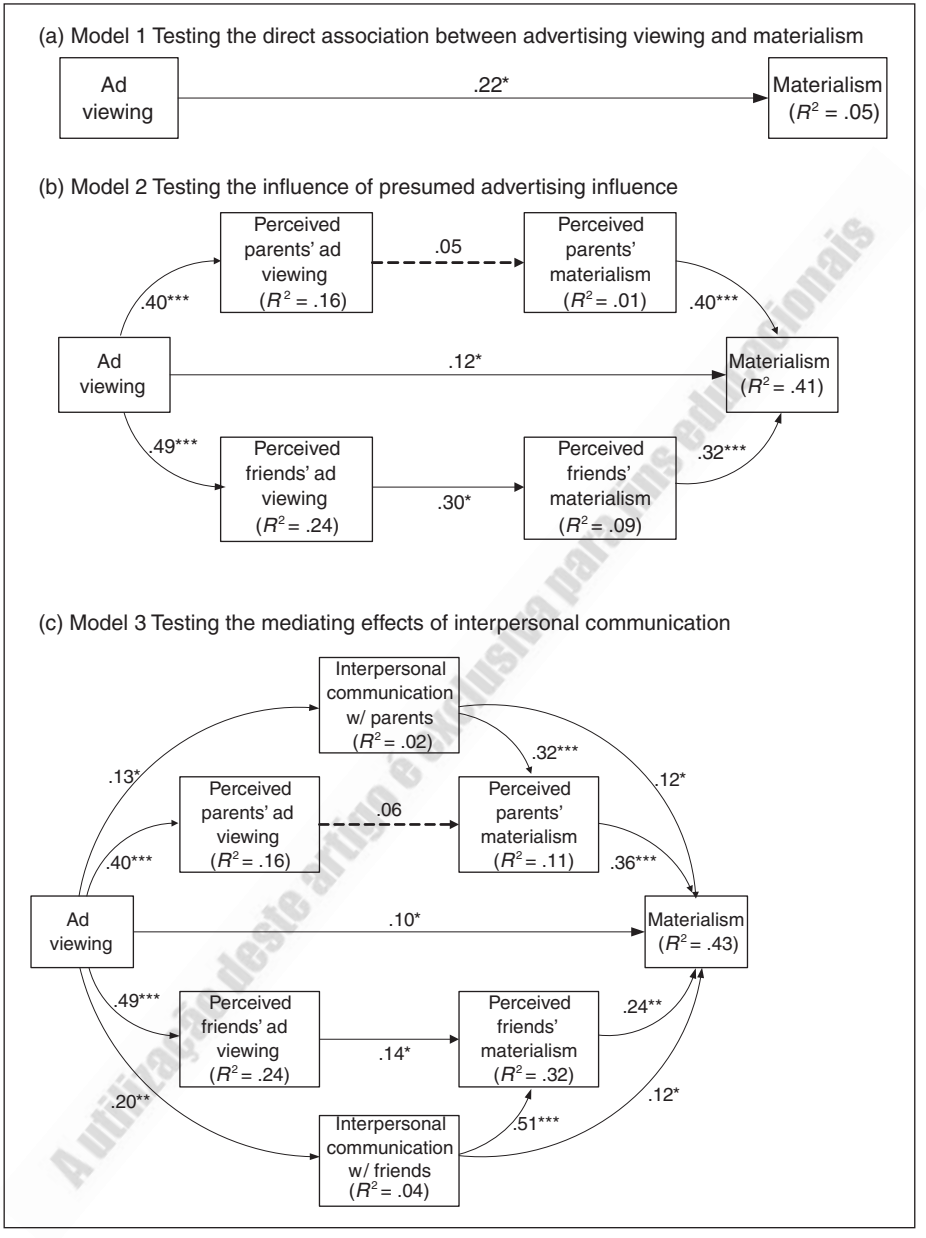

Figure 2. Path analysis for (a) the influence of presumed media influence and (b) interpersonal communication on adolescent materialism, after controlling for age, gender, race, religiosity, and family income
*p < .05. **p < .01. ***p < .001.

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We found that, as expected, the analysis (i.e., a saturated model, $\chi^2 = .00$, $df = 0$), presented in Figure 2a, showed support for a significant association between adolescents' advertising viewing and the adolescents' materialistic values, as H1 predicted.

Next, in model 2, we included the influence of presumed advertising influence on adolescents' materialistic values, as H2 to H5 predicted. The model ($\chi^2 = 2.33$, $df = 4$, $p = .68$, root mean square error of approximation [RMSEA] = .00, Normed Fit Index [NFI] = 1.00, Tucker-Lewis Nonnormed Fit Index [NNFI] = 1.00, Comparative Fit Index [CFI] = 1.00, Goodness Fit Index [GFI] = 1.00)[6] presented in Figure 2b showed that the association between adolescents' advertising viewing and the adolescents' materialism remained significant but became smaller.[7] H1 remained supported. The change of the path coefficient suggested that adolescents' perception of advertising influence on friends mediated the influence of advertising (MacKinnon et al., 2002; see also Holbert & Stephenson, 2003). Specifically, we found that adolescents' advertising viewing was positively associated with (a) the adolescents' perception of parents' advertising viewing and (b) the adolescents' perception of friends' advertising viewing. Both H2a and H2b were supported. The association between adolescents' perception of parents' advertising viewing and the adolescents' perception of parents' materialistic values was, however, not significant. H3a failed to receive support. We found a positive and significant association between adolescents' perception of friends' advertising viewing and the adolescents' perception of friends' materialistic values. H3b received significant support. The findings for H3a and H3b together suggested support for H4, which posited that the association between adolescents' perception of parents' advertising exposure and perception of parents' materialistic values would be weaker than the association between the adolescents' perception of friends' advertising exposure and perception of friends' materialistic values. Finally, we found that adolescents' perceptions of parents' materialistic values and the adolescents' perception of friends' materialistic values were each positively associated with the adolescents' own materialistic values. Both H5a and H5b were supported.

Model 3 ($\chi^2 = 11.18$, $df = 6$, $p = .08$, RMSEA = .035, NFI = .99, NNFI = .98, CFI = 1.00, GFI = 1.00),[8] presented in Figure 2c, added a test of the effect of interpersonal communication and provided a complete analysis for the hyphothesized model depicted in Figure 1. The analysis revealed a number of findings. One, the test results for H1 to H5 remained the same after we included the components of interpersonal communication in the model. The path between adolescents' perception of friends' advertising viewing and the adolescents' perception of friends' materialism, however, became smaller.[9] The path coefficient change again suggested a mediating effect of interpersonal communication. Two, adolescents' advertising viewing was positively associated with both (a) the frequency with which the adolescents discussed consumption issues with their parents and (b) the frequency with which the adolescents discussed consumption issues with their friends. Both H6a and H6b were supported. Three, the frequency with which adolescents discussed consumption matters with their parents was positively associated with the adolescents' perceptions of the increasing level of materialistic values held by their parents. Similarly, the frequency with which the adolescents discussed consumption matters with their friends was positively associated with the adolescents' perceptions of the increasing level of

materialistic values held by friends. Both H7a and H7b were supported. Last, but not least, the frequency with which the adolescents discussed consumption matters with their parents and the frequency with which the adolescents discussed consumption matters with their friends were each positively associated with the level of materialistic values reported by the adolescents. Both H8a and H8b received support.

The two research questions in this study proposed to compare the strength of parents' influence on adolescents' materialistic values with that of friends' influence. We tested the first research question by comparing Model 3 with a constrained model where the path coefficient for the association between perceived parents' materialistic values and the respondents' materialistic values (i.e., the association proposed by H5a) was constrained as equal to the path coefficient for the association between perceived friends' materialistic values and the respondents' materialistic values (i.e., the association proposed by H5b). The significant difference between the unconstrained model and the constrained model ($\chi^2 = 4.61$, $df = 1$, $p < .05$) suggested that the influence of perceived parents' materialistic values was significantly greater than the influence of perceived peers' materialistic values. We also compared Model 3 with another constrained model where the path coefficient for the association between participants' interpersonal communication with parents and the participants' materialistic values (i.e., the association proposed by H8a) was constrained as equal to the path coefficient for the association between participants' interpersonal communication with friends and the participants' materialistic values (i.e., the association proposed by H8b). The nonsignificant difference between the constrained model and the unconstrained model ($\chi^2 = .00$, $df = 1$, *ns*) indicated that the influence of interpersonal communication with parents was not significantly different from the influence of interpersonal communication with friends.

Overall, Model 3 accounted for 43% of the variance in adolescents' materialism. The analyses showed that advertising had both a direct effect ($\omega^2 = .10$, $p < .05$) and an indirect effect ($\omega^2 = .11$, $p < .001$) on adolescents' materialistic values. We performed joint significance tests (MacKinnon et al., 2002; Taylor, MacKinnon, & Tein, 2008)[10] to test the three-path mediated effects involved in the model. The results showed that adolescents' perception of friends' advertising viewing and the adolescents' perception of friends' materialism together significantly mediated the influence of advertising on the adolescents, $t(693) = 14.97$, $p < .001$ for Path 1; $t(692) = 4.75$, $p < .001$ for Path 2; $t(691) = 6.75$, $p < .001$ for Path 3. The adolescents' interpersonal communication with parents and the adolescents' perception of parents' materialism together significantly mediated the influence of advertising on the adolescents, $t(693) = 3.56$, $p < .001$ for Path 1; $t(692) = 9.20$, $p < .001$ for Path 2; $t(691) = 11.25$, $p < .001$ for Path 3. Similarly, the adolescents' interpersonal communication with friends and the adolescents' perception of friends' materialism significantly mediated the influence of advertising on the adolescents, $t(693) = 5.77$, $p < .001$ for Path 1; $t(692) = 14.78$, $p < .001$ for Path 2; $t(691) = 6.75$, $p < .001$ for Path 3. In addition, we performed Sobel (1982) tests to test two-path mediated effects. We found that adolescents' interpersonal communication with parents (Sobel test = 2.52, $p < .05$) and with friends (Sobel test = 2.60, $p < .01$) each mediated the influence of advertising on the adolescents' materialism.

Discussion

The major goal of this study was the delineation of a theoretical framework through which we could identify how media influence and social influence interplayed and produced joint effects on adolescents' materialistic values. The framework began with how adolescents estimate parents' and friends' materialistic values from media exposure and interpersonal communication and then facilitated an examination of how the parents' and friends' materialistic values, in turn, influence adolescents' materialistic values. While previous studies have predominantly focused on only media or social influence, this study suggests that media influence and social influence complement each other insofar as they influence adolescents' materialism.

Taken as a whole, the findings based on the theoretical framework of this study have raised a few issues that deserve to be discussed in depth. First, adolescents' exposure to advertising remained directly associated with the adolescents' materialistic values, although the association became weaker as other theoretical components were added into the model. This finding provides evidence for social scientists and media critics to attribute the increasing materialism among young people to media and advertisements (Goldberg et al., 2003; Lachance et al., 2003). Advertising not only demonstrates to adolescents that material possessions can help them realize life goals (i.e., instrumental materialism) but also persuades adolescents that material possessions are the life goals (i.e., terminal materialism). In particular, adolescents nowadays appear to rely more on the Internet than on other types of media. The content of online advertising and the influence of online advertising deserve parents' and educators' close attention.

Second, the adolescents appeared to estimate others' (i.e., parents and friends) exposure to advertisements using their own advertising exposure, but at the same time, the data revealed an overall slant toward seeing others, particularly peer groups, as more exposed to advertising than the self. Adolescents also believed that their parents were critical of advertising whereas their friends were not. Therefore, in this study, adolescents inferred media effects that they believed to have on friends from the amount of advertising, but they did not make similar inferences for parents. This finding provides support for the argument that an individual's perception of others' susceptibility to the content of media is often influenced by the individual's stereotype of the social group to which others belong (Meirick, 2005; Scharrer, 2002). Future studies may further explore adolescents' stereotypes about their parents and about their friends.

As adolescents do not infer parents' materialistic values from the amount of advertising that they think their parents are experiencing, interpersonal communication forms one of the primary channels from which adolescents derive parents' attitudes toward material possessions (R^2 increased 10% from Figure 2b to 2c). Parents who talk about products, brands, and purchasing decisions more frequently are more likely to appear materialistic to adolescent children. Future research may desire to explore further whether the content of parents' talk would make a difference. For example, the association between frequency of parents' talk and adolescents' materialistic values might become negative when parents' talk is meant to ward off, rather than to encourage, adolescents' materialism (Buijzen & Valkenburg,

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2003b). On the other hand, we found that adolescents' interpersonal communication with friends (R^2 increased 23% from Figure 2b to 2c) and the adolescents' perception of friends' exposure to advertisements (R^2 = 9%, see Figure 2b) jointly accounted for adolescents' perception of friends' materialistic values. This finding deserves attention from parents and educators because advertising and peer communication are both likely to exaggerate the incidence of desire for material possessions. These exaggerations are likely to contribute to an erroneous perception of peer norms.

Consistent with previous studies, our study shows that parents and friends are two social agents of adolescents' consumer socialization. Adolescents' perceptions of their parents' materialistic values and the adolescents' perceptions of their friends' materialistic values jointly affect the adolescents' materialistic values. Our analyses suggest that the influence of parents' materialistic values is significantly greater than the influence of friends' materialistic values. This provides good news for most parents—they are able to counter the effects exerted by the materialistic friends of their adolescent children. Nevertheless, two things deserve parents' attention. First, parental influence is likely to reduce and peer influence is likely to increase as adolescents grow older (Feltham, 1998). Second, our analyses suggested that, with regard to adolescents, the influence of interpersonal communication with friends was not significantly different from the influence of interpersonal communication with parents. Parents should never underestimate how significant peer communication is for the development of their adolescent children's materialistic values.

In summary, in addition to a direct effect, there is a significant indirect effect of advertising on adolescents' materialistic values. This indirect effect is mediated by adolescents' perception of the influence of advertising on friends, but not by adolescents' perception of the influence of advertising on parents. Previous studies have suggested that people tend to overestimate others' media consumption (Peiser & Peter, 2000) and to misconceive the consequent media effects on others (Perloff, 1996). It is possible that adolescents overestimate friends' advertising exposure and hence misconceive media effects on their friends. Adolescents then base their friends' materialistic values on the misperception of media influence on friends. Being unaware of the errors that are likely to be involved in the series of subjective inferences, adolescents may eventually accommodate friends' materialistic values that have little basis in reality.

In addition, the indirect effect of advertising on adolescents' materialistic values is also mediated by adolescents' interpersonal communication with parents and with friends. Adolescents' exposure to advertisements in the mass media first induces the adolescents' interpersonal discussion on consumption issues with parents and with peers. From the interpersonal discussions, adolescents infer parents' and friends' materialistic values. The adolescents then align their own values with the values of parents and the values of friends. Moreover, the interpersonal discussions on consumption issues with parents and with peers each directly inspire adolescents' interest in and pursuit of material possessions, and make the adolescents increasingly materialistic.

Some drawbacks in this study call for caution in any interpretation of these findings. First, the convenience sample used in the present study compromises the external validity of this research. Particularly, the findings were likely to be skewed by the female respondents,

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as the majority of the sample was female, although we controlled gender in the analyses. Second, the cross-sectional data analyzed in this study limit confidence in any conclusions about causality. For example, it is possible that the association between adolescents' materialistic values and the adolescents' perception of parents/peers' materialistic values results from the fact that adolescents infer parents/peers' materialistic values from their own values. Future studies will require a longitudinal design, or at least a series of experiments, to clarify the causal questions. Finally, we only measured the level of advertisement viewing for adolescents. Other factors, such as adolescents' motivation for viewing advertisements (Ward & Wackman, 1971) or adolescents' attitudes toward advertisements (Gardner, 1985; Yoon, 1995), are also likely to contribute to the effects of advertisements. Future research would benefit from including these variables in the examination.

Despite these limitations, this study confirms that exposure to advertisements can affect an individual's value orientation and drive the individual toward being more concerned with shopping and material possessions than other pursuits. Furthermore, we suggest that social influence, including the influence of parents and the influence of friends, can complement and mediate the effect of advertising. The results of this study do not argue with previous studies, which suggest that parental mediation can reduce the effects of advertising (Buijzen & Valkenburg, 2003b). Instead, this study provides additional evidence to show that the prowess of advertising appears to depend, in part, on the presence of intervention by social agents and, in part, on an individual's perception of the social agents.

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Notes

1. Students in middle schools are usually aged between 12 and 15, high schools between 16 and 17, and polytechnic school between 16 and 20. In Singapore, students need to pass national entrance exams in order to get into middle schools, high schools, or polytechnic schools. Students in the five chosen schools represented different grade ranges for the national entrance exams.
2. Examples of the items are "How frequently do you and your parents talk about the products you want to buy?" and "How frequently do you and your parents talk about your desire for certain brands?"
3. Examples of the items include the following: "You'd rather spend time buying things than doing almost anything else," "You would be happier if you had more money to buy more things for yourself," "You really enjoy going shopping," "You like to buy things your friends have," and "You admire those people who can afford almost everything."

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4. Examples of the items include the following: "The more money they have, the happier they are," "They admire people who dress well," "They would love to be able to afford to buy more things," "They would put up with a job that was less interesting if they were paid more money."
5. We regressed these demographic variables on each variable in our hypothesized model and we used the residuals in the LISREL analyses for this study.
6. Model 1 is a saturated model and the model fit is untestable.
7. We tested the 95% confidence interval for the unstandardized coefficients relating to the path coefficients. We found a significant difference between the two.
8. The degree of freedom was six for this model because we allowed correlations between measurement errors for several pairs of unrelated exogenous variables. For example, we freed up the correlation between the measurement error for adolescents' perception of parents' advertising viewing and the measurement error for adolescents' perception of friends' advertising viewing because the measures for the two variables were repeated measures. When repeated measurement is involved in two unrelated exogenous variables in a path model, specification of the unanalyzed associations between the measurement errors is appropriate (Kline, 1998).
9. We tested the 95% confidence interval for the unstandardized coefficients relating to the path coefficients. We found a significant difference between the two.
10. The joint significance test is recommended for three reasons: (a) it is easy to use, (b) it can control Type I error, and (c) it has good power.

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