RESEARCH ARTICLE

Materialistic cues make us miserable: A meta-analysis of the experimental evidence for the effects of materialism on individual and societal well-being

Olaya Moldes[1] | Lisbeth Ku[2]

[1]Department of Marketing and Strategy, Cardiff Business School, Cardiff University, Cardiff, UK

[2]School of Applied Social Sciences, Faculty of Health and Life Sciences, De Montfort University, Leicester, UK

Correspondence
Olaya Moldes, Department of Marketing and Strategy, Cardiff Business School, Aberconway Building, Column Drive, Cardiff CF10 3EU, UK.
Email: MoldesO@cardiff.ac.uk

Funding information
The British Academy, Grant/Award Number: SRG1819\190659

Abstract
Consumer-oriented societies are awash with materialistic messages that link happiness and success to wealth and consumption. However, despite extensive research evidence that dispositional materialistic orientations are correlated with lower well-being, the effects of materialistic cues on the well-being of individuals and social groups have not been examined. The present research meta-analytically reviews the experimental evidence for the causal effects of materialism on two dimensions of well-being: (a) individual and (b) societal. We included 27 independent studies that met the inclusion criteria of priming materialism and measuring well-being ($N = 3{,}649$), containing a total of 62 effect sizes. Multilevel modeling revealed that materialism has an effect on both individual ($\delta = -0.39$) and societal well-being ($\delta = -0.41$), suggesting that materialistic cues *cause* lower well-being. Moderation effects suggested that materialistic cues might have a higher effect on interpersonal well-being than on self-evaluation indicators. We discuss the limitations of the current evidence, highlight the research gaps and underdeveloped areas, and provide recommendations such as minimum sample size for future experimental work, since the advancement of this area will help us to gain a better understanding of the impact of consumer-oriented societies on the well-being of individuals and social groups.

KEYWORDS
experimental methods, individual well-being, materialism, meta-analysis, societal well-being

1 | INTRODUCTION

Materialism has been broadly defined as an orientation towards money and the acquisition of purchases that convey status as a way to attain personal achievement and individual well-being (Dittmar, Bond, Hurst, & Kasser, 2014; Richins & Dawson, 1992). The endorsement of materialism has been attributed to media consumption (e.g., Dittmar, 2008; Kasser, Ryan, Couchman, & Sheldon, 2004; Shrum, Burroughs, &

Rindfleisch, 2005), and correlational and longitudinal studies have confirmed a positive association between materialism and media exposure (Chan, Zhang, & Wang, 2006; Chia, 2010; La Ferle & Chan, 2008; O'Guinn & Shrum, 1997; Richins, 1987; Sirgy et al., 2012). Indeed, most marketing and advertising communications, rags-to-riches movie plots (such as *Cinderella* and *Pretty Woman*) and documentary series, and reality shows presenting upscale living (such as *The World's Most Extraordinary Homes* and *The Fabulous Life of the Wall Street Billionaires*)

implicitly link money and consumption to positive affective states, high self-esteem, and social recognition. This may be because the promotion of materialistic narratives through popular culture is beneficial for the development of consumer-oriented economies[1], as the more money individuals spend on products and services, the higher the economic growth of a society. However, classic philosophers (e.g., Diogenes, Pythagoras, and Socrates), modern economists (e.g., Kuznets, 1934), and contemporary psychologists (e.g., Diener & Biswas-Diener, 2002; Kasser & Ryan, 1993; Maslow, 1954) have warned that wealth, material possessions, and economic growth indexes do not reflect the welfare of individuals or social groups. In fact, an extensive body of empirical studies has found that a desire for wealth, possessions, and consumption is negatively related to personal well-being in different societies with diverse cultural and political backgrounds (Dittmar et al., 2014). However, the bulk of the research looking at the materialism-well-being paradigm has been correlational in nature and has also largely left unexplored the implications that materialism might have for the well-being of society. Nevertheless, in recent years, a number of experimental studies have examined the causal relationship between materialism and well-being. This expanding body of research looks at the effects of inducing a materialistic focus, not only on personal well-being indicators such as self-esteem (Liang et al., 2016) or positive and negative affect (Nagpaul & Pang, 2016), but also on attitudes and behaviors that have direct implications for the well-being of society, such as helping behaviors (Lamy, Guéguen, Fischer-Lokou, & Guegan, 2016) or pro-environmental donations (Ku & Zaroff, 2014). Given that members of consumer-oriented societies are constantly being badgered by advertisements promoting consumption and media narratives portraying rags-to-riches stories and displaying upscale living, there is a need to scrutinise the effects that materialistic cues have on the well-being of individuals and social groups. Therefore, by systematically reviewing the experimental evidence on the causal relationship between materialism and well-being—not previously examined in past meta-analytic research (Dittmar et al., 2014; Wright & Larsen, 1993)—we aim to gain a deeper understanding of the impact that consumer-oriented economies have on the well-being of society and its individual members. Furthermore, by examining this literature, we aim to identify research gaps and best practices to encourage the development of further experimental work in this area, since this study serves not only to identify causality between materialism and different well-being outcomes, but also help us to further explore the human motivation system (Kasser, 2016).

1.1 | Materialism: From theoretical conceptualizations to experimental manipulations

Since the mid-1980s, extensive research has been conducted into the relationship between materialism and well-being. The construct of materialism has been conceptualized and measured in the literature

as: (a) a tendency to believe that wealth and possessions define success, provide happiness, and play a central role in one's life (e.g., Richins, 2004; Richins & Dawson, 1992); (b) a set of personality traits and behaviors related to nongenerosity, envy, possessiveness, and/or the accumulation of material things (e.g., Belk, 1984; Ger & Belk, 1996); (c) beliefs related to love for money and social status, such as achievement, power, prestige, and/or reputation (e.g., Mitchell & Mickel, 1999; Tang, 1992); and (d) the importance of money and possessions, often in relation to other life goals and values (e.g., Kasser & Ryan, 1993, 1996; Srivastava, Locke, & Bartol, 2001). However, it is only in recent years that researchers have started to use experimental methodologies in this area.

Experimental research on materialism has adopted different methodologies to induce a materialistic focus. For example, some authors have primed materialism by exposing participants to visual stimuli (VS) such as advertisements or fashion magazines (e.g., Ashikali & Dittmar, 2012; Bauer, Wilkie, Kim, & Bodenhausen, 2012), while others asked participants to read a text from a magazine or newspaper highlighting the importance of money and consumption (e.g., Ku & Zaroff, 2014; Leyva, 2018). Some have induced a materialistic focus through subtle environmental cues such as shop window displays (e.g., Lamy et al., 2016; Zhang & Zhang, 2016) or screensavers running luxury fashion images in the background (e.g., Jiang, Gao, Huang, DeWall, & Zhou, 2014). This diversity of materialistic inductions will help us to gain an overall picture of the effects of materialistic cues on individual and societal well-being, since it mirrors the variety of stimuli and situations that individuals might encounter in their everyday life as members of a consumer-oriented society. We acknowledge that different methods of priming materialism might generate distinct effects. However, there is currently little comparison of different manipulations within the literature. The present meta-analytic research will, therefore, also aim to provide an initial exploration of the effects of the different types of materialistic inductions by performing moderation analyses.

1.2 | Materialism and individual well-being

Past correlational research has associated dispositional materialism with lower happiness and life satisfaction (e.g., Belk, 1984; Brown & Kasser, 2005; Christopher, Lasane, Troisi, & Park, 2007; Felix & Garza, 2012); lower self-esteem (e.g., Chan & Joseph, 2000; Dittmar, 2005; Kasser et al., 2014); higher depression, anxiety, and compulsive-buying behaviors (e.g., Dittmar & Kapur, 2011; Kim, Kasser, & Lee, 2003; Saunders & Munro, 2000; Schmuck, 2001); lower physical activity (e.g., Kasser, 2005; Pham, Yap, & Dowling, 2012); and higher risky behaviors, such as alcohol and drug consumption (e.g., Kasser, 2005), among other personal well-being outcomes (for a detailed review see Dittmar et al., 2014). Prior meta-analytic work looking at correlational evidence of the association between materialism and well-being included well-being measures on subjective well-being (e.g., life satisfaction), DSM axis (e.g., depression or anxiety) and physical health (e.g., tobacco or drug consumption). However, well-being—as an umbrella term covering

---

[1]Consumer expenditure constitutes 68.1% of gross domestic product in the United States, 65% in the UK, 60.8% in Italy, 57.8% in Spain, 55.3% in France, and 53.9% in Germany (World Bank, 2017).

different elements that lead to good health, comfort, and prosperity—is thought to comprise not only hedonic aspects, but also eudemonic elements, such as self-realization (Ryan & Deci, 2001), as well as other social and relational components, such as healthy interpersonal relationships (Keyes, 1998). Therefore, to obtain an overall picture of the effect of materialism on personal well-being, we have widened the scope of previous meta-analytic work to include studies that measure self-development (e.g., achievement, in Ku, Dittmar, & Banerjee, 2014) as well as relational and social aspects that affect personal well-being (e.g., social integration, in Jiang et al., 2014). Our inclusive approach to well-being is aligned with prior conceptualizations that have broadly defined well-being as the state of "being well" (e.g., Kitayama & Markus, 2000, p. 114; Oishi, 2012, p. 2).

1.3 | Materialism and societal well-being

Materialism is a socially grounded value that is related to attitudes and behaviors that can have implications for the well-being of a social group and future generations. For example, recent longitudinal works have shown that materialistic values are positively correlated with social dominance and racial and ethnic prejudice (Duriez, Vansteenkiste, Soenens, & De Witte, 2007), but negatively associated with pro-environmental attitudes and behaviors (Hurst, Dittmar, Bond, & Kasser, 2013). Therefore, materialism has broader socio-political implications that could jeopardize the well-being of a society by encouraging self-enhancing attitudes and behaviors, and discouraging prosocial, altruistic, or pro-environmental ones.

In addition, conceptualizations of materialism include elements such as achieving higher social power and status through the acquisition of money and luxury possessions (e.g., Mitchell & Mickel, 1999; Tang, 1992), and linking individual and social success with economic resources (e.g., Richins, 2004; Richins & Dawson, 1992). These conceptualizations imply that materialists are more likely to endorse economic inequality, because only when there are different levels of wealth and economic power in society can one achieve a higher status than one's peers. Indeed, correlational evidence collected at society level has suggested that higher social inequalities—as reflected in steeper social pyramids and bigger material differences—have negative consequences not only for individual health (e.g., lower life expectancy and higher risk of mental health problems), but also for the well-being of the social group (e.g., higher levels of violence and crime; Wilkinson & Pickett, 2010). Therefore, the present article aims to expand the examination of the effects of materialism by reviewing the current experimental research into the wider consequences of materialism on the well-being of society. We consider that a materialistic focus affects not only one's private sphere, but also one's coexistence with other members of society, since the individual's interaction with their social group affects the well-being of the group and other individual members.

For the purposes of this study, we conceptualize *societal well-being* as factors that contribute to the good functioning of a group and that will directly or indirectly affect the current and future welfare of the group and other members. Consequently, we classify "societal well-being" as any measure of individual attitudes and behaviors that directly or indirectly affect the welfare of the group or the personal well-being of other members (e.g., volunteering or helping behaviors). Moreover, we also incorporate sustainability indicators to capture attitudes and behaviors towards the environment and other common resources, since the long-term well-being of a society will depend on the legacy left for future generations (e.g., pro-environmental behaviors or attitudes towards the misuse of public funds). It is worth noting that we make a distinction between *social well-being* and *societal well-being*. *Social well-being* has been described in Keyes (1998) as an indicator of one's social health, measured using items that consider an individual's perceptions of the social group and the place and value that they have within society (such as perception of social integration or evaluations of one's social value). Moreover, *social well-being* also integrates measures that provide an indication on the quality and closeness of one's social relationships (e.g., interpersonal conflict or perception of proximity and/or intimacy with others). Consequently, social well-being falls under personal well-being because aims to capture the social and interpersonal elements of an individual's life that are directly influencing their well-being (i.e., the effect that others and the group has on an individual's well-being). On the other hand, *societal well-being* looks at indicators of the positive or negative impact that a person has on society and other people (i.e., the effect of the individual on the group's well-being), and therefore covers individual attitudes and behaviors towards common resources (such as the environment or collective funds) and other people within society (including both in-group and out-group members). As a result, the construct of societal well-being includes measures on prosocial, pro-environmental, and (un)ethical attitudes and behaviors. Nevertheless, we acknowledge that both constructs, individual and societal well-being, can be mutually dependent and, that there might not be a clear-cut between them, particularly when collecting measures on interpersonal or relational elements because a well-being indicator might capture elements that could have an effect on both (e.g., social engagement). As a result, when classifying the outcome measures included in the present meta-analysis, we have looked at who will be most affected by alterations in the outcome measure, the individual or the group. For a detailed classification of the well-being measures, see Table B in Supplementary Materials.

1.4 | Research aims and hypotheses

The aim of this study is to examine the effects that materialistic cues have on individual and societal well-being, by meta-analyzing experimental research that primes materialism and measures well-being. For the purposes of this task, we have, therefore, included experimental studies that induce a temporary materialistic focus in a randomly selected group of individuals and subsequently measure individual or societal well-being in the manipulated group as well as in a control group. The present research also aims to test possible

moderators of the causal relationship between materialism and well-being, such as type of materialistic induction, type of well-being measure, gender, and population type. In addition, by carrying out a systematic review of the literature on experimental research into materialism and well-being, we aim to identify gaps and best practices to develop recommendations for future experimental work in this area.

1.5 | Materialistic cues as a cause of lower individual well-being

Within the extended literature that has found a negative association between the constructs of materialism and well-being, three main theoretical explanations have been proposed (see Dittmar et al., 2014 for an extended review):

1) *Self-determination theory*, which postulates that individuals focused on seeking materialistic goals—also referred to as extrinsic goals (such as wealth, appearance, and social popularity)—might be distracted from pursuing intrinsic ones (such as self-development, intimate relationships, or group belonging) that better satisfy the basic psychological needs of competence, autonomy, and relatedness (Deci & Ryan, 2000; Kasser & Ryan, 1993).
2) *Psychological insecurities*, which proposes that materialism is a coping strategy that people use to escape from aversive emotions and deal with feelings of insecurity (e.g., Donnelly, Ksendzova, Howell, Vohs, & Baumeister, 2016; Kasser, Ryan, Couchman, & Sheldon, 2004).
3) *Negative self-appraisals*, based on previous psychological theoretical accounts of self-discrepancy theory (Higgins, 1987) and social comparison (Collins, 1996), which suggests that consumer-oriented media portraying unattainable ideals leads to lower well-being, because individuals use these unreachable standards when making self-evaluations (e.g., Ashikali & Dittmar, 2012; Richins, 1995).

The first theoretical explanation, *self-determination theory*, is limited when it comes to explaining experimental research results involving materialistic manipulation and subsequent measures of well-being, given that pursuing certain goals (vs. others) requires an extended period of time. This explanation would, therefore, be more relevant to longitudinal research designs (e.g., Sheldon, Ryan, Deci, & Kasser, 2004). The second theoretical explanation, *psychological insecurities*, is a fitting way to test the opposite causal direction in experimental research that manipulates well-being and measures the endorsement of materialistic values (e.g., Chang & Arkin, 2002; Lambert, Fincham, Stillman, & Dean, 2009), but is not suitable for testing the causality of materialism on well-being. Finally, the third theoretical explanation, *negative self-appraisals*, does predict that a materialistic induction would cause a decrease in individual well-being, because materialistic cues will make unattainable consumer culture ideals salient when making subsequent self-evaluations. Therefore, this theory suggests that the gap between the self and

the perceived social standards portrayed by media and advertising will generate emotional discomfort, since individuals will make upward social comparisons and/or self-assessments against an unattainable ideal self. As a result, we will expect that individuals randomly exposed to a materialistic prime will report lower individual well-being than participants allocated to a control group.

1.6 | Materialistic cues as a cause of lower societal well-being

While theoretical accounts based on self-evaluations might provide an explanation for lower individual well-being, through cognitive psychological processes that link perceptions of the self with affective states, they are limited when it comes to predicting prosocial and pro-environmental attitudes and behaviors following exposure to materialistic cues. We, therefore, turn to prior research on value priming (Maio, Pakizeh, Cheung, & Rees, 2009) based on previous work on priming (Bargh & Chartrand, 2000) and values structure (Schwartz, 1992). This study proposes that the induction of a specific value will cause an increase on the importance of those and similar values and decrease on the relevance of opposing values and, it will lead to behaviors consistent with the primed value, while at the same time it will inhibiting behaviors that are opposite to that value in Schwartz's (1992) circular value model (Maio et al., 2009). For example, empirical studies supporting this model found that priming ambition versus helpfulness lead participants to exhibit behaviors that were consistent to those values while diminished behaviors that support opposing values such as pursuing personal achievement versus volunteering for an unpaid research study (Maio et al., 2009). Materialism has been conceptualized in previous literature as a construct involving a desire to acquire wealth, social status, and power (e.g., Mitchell & Mickel, 1999; Richins & Dawson, 1992; Tang, 1992), and has been found to be in opposition to community and affiliation values (Grouzet et al., 2005). Therefore, we predict that priming materialism will lead to lower societal well-being, because it will bring to the forefront self-enhancement goals and consistent behaviors with these goals (such as seeking power or wealth) and will diminish the importance of self-transcendent ones and inhibit supporting behaviors (such as prosocial and pro-environmental attitudes and behaviors, like social cooperation or protecting the environment). As a result, we will expect that individuals randomly exposed to materialistic cues will score lower on societal well-being measures than participants allocated to a control group.

1.7 | Moderators of the causal relationship between materialism and well-being

There are several factors that could affect the strength of the effects on the causal link between materialism and well-being. Prior meta-analytic work on correlational studies found stronger effects for the well-being measures of risky health and compulsive-buying behaviors

and for self-evaluations (Dittmar et al., 2014). This study also found weaker effects for general subjective well-being indicators, such as life satisfaction and positive affect. Furthermore, this study showed that the greater the proportion of women in the sample, the higher the effects that were found. No differences between university students and general population samples were found, but there was a stronger effect for individuals over 18 years old than for participants under that age. However, none of these moderation effects have been tested on experimental research. Furthermore, there is currently little comparison of manipulation types in the literature. As a result, the present research will explore different possible moderators, such as type of manipulation, type of well-being measure, gender, age, type of population, and country to identify possible factors that might reduce or facilitate the effects of priming materialism on well-being.

2 | METHODS

2.1 | Literature search

A literature search was carried out by the first author on Web of Science, Scopus, and PsycInfo in September 2018. It was then updated in February 2020, using keywords relevant to the project (see Table A in Supplementary Materials for a detailed account of the search terms used). The search was refined further to improve its focus (e.g., excluding papers in physics, maths, or pharmacy; limiting studies based on their methodology to ensure that only experimental

studies were included). A total of 711 articles were identified after removing duplicates. Ascending and descending searches using key papers in the area of materialistic values and well-being were carried out on Google Scholar and identified another 24 articles that used experimental methods. Prominent authors in the area were contacted for unpublished data and/or further literature suggestions. As a result, eight further texts (including one unpublished data set) were suggested by the experts contacted by email. Finally, a total of 769 articles were screened (see Figure 1).

2.2 | Inclusion criteria

The present research included experimental studies that primed materialism to a randomly selected subset of their participants and subsequently collected at least one measure of individual or societal well-being for both the manipulated and the control groups.

2.2.1 | Manipulation inclusion

We included experimental studies that induced materialism by (a) exposing participants to VS in the form of either advertisements of luxury products (e.g., Ashikali & Dittmar, 2012; Bauer et al., 2012; Jiang et al., 2014; Ku & Zaroff, 2014), visual descriptions of desirable material items and gadgets by peers (Ku et al., 2014), or TV advertisements for toys (Goldberg & Gorn, 1978); (b) having participants complete a scrambled-sentence task with materialistic concepts
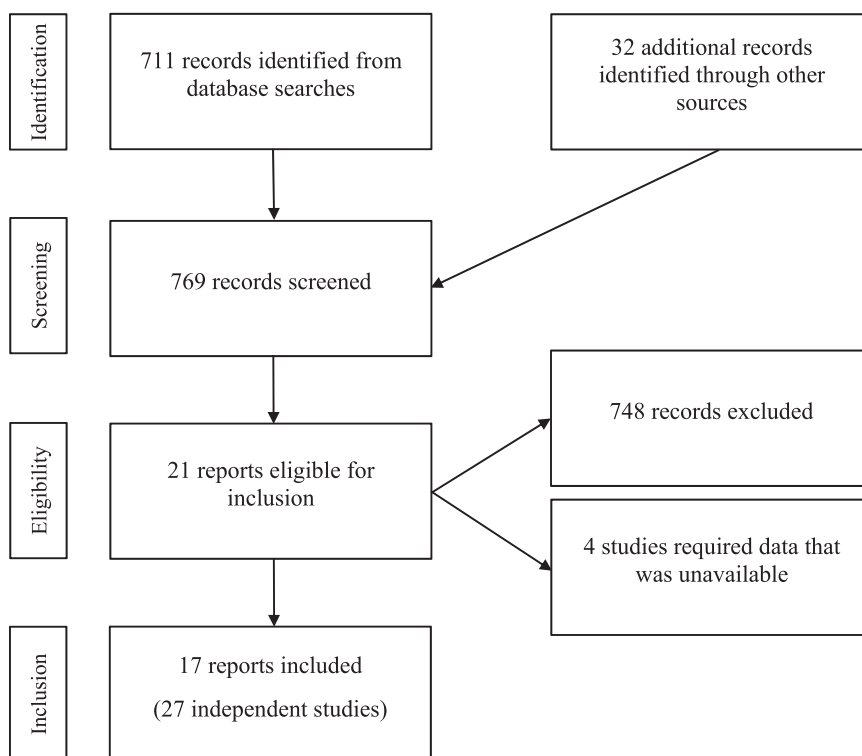

FIGURE 1 Flow diagram of the literature search and selection procedure of the studies. This diagram was constructed according to the American Psychological Association Meta-Analysis Reporting Standards (MARS)

embedded within it (e.g., Bauer et al., 2012; Liang et al., 2016); (c) asking participants to write about unfulfilled material desires (e.g., Maggaß, Hamm, & Ozimek, 2018), to describe a situation in which economic resources, social popularity, and appearance had a positive impact on their life (e.g., Moldes, 2018) or to write about the benefits of having money and possessing the trendiest toys (e.g., Ku et al., 2014); (d) framing a situation from a consumer perspective (e.g., Bauer et al., 2012); (e) having participants read materials from a fashion magazine (e.g., Ku & Zaroff, 2014) or a rags-to-riches story from a newspaper (e.g., Leyva, 2018); or, (f) using environmental cues such as luxury shop window displays or screensavers presented in the background (e.g., Lamy et al., 2016; Zhang & Zhang, 2016).

Most articles were excluded because they lacked an experimental manipulation or were outside the scope of the present research (e.g., there were several entries on the philosophical concept of materialism and beliefs relating to how physical laws might answer most questions, and on materialism as a property of a substance or element from engineering or physics research). We excluded experimental manipulations that only aimed to prime the concept of "money" (e.g., Gąsiorowska, Zaleśkiewicz, & Kesebir, 2018), as prior research has determined that materialism goes beyond a simple desire for money (Burroughs & Rindfleisch, 2002; Dittmar et al., 2014). Mere exposure to money on its own does not imply a materialistic focus. Along the same lines, we excluded studies that used windfall scenarios in which participants in the treatment condition were informed of receiving a sum of money (e.g., Li, Lu, Xia, & Guo, 2018; Ozimek & Förster, 2017; Wang & Krumhuber, 2017). A hypothetical scenario portraying an increase in disposable income might make salient the construct of money or manipulate the perceived social class, but it does not necessarily induce a temporary materialistic outlook. In fact, it has been found that priming money to low-social-class students can help to decrease materialistic desires (as shown in Li et al., 2018). We excluded all studies that asked participants to describe a material purchase (against participants describing an experiential one), because participants in both conditions were reminded about spending behaviors, and recent research has found that experiential consumer products fulfill conspicuous consumption desires as much as material ones (Moldes, Banerjee, Easterbrook, Harris, & Dittmar, 2019). We excluded manipulations that framed a specific task (such as recycling or exercise) by highlighting the intrinsic or self-transcendent goals against extrinsic or self-enhancement motives for performing the task (e.g., Evans et al., 2013; Vansteenkiste, Matos, Lens, & Soenens, 2007), as these manipulations might have changed the participants' orientations when carrying out the task (learning or exercise), but do not necessarily make salient a materialistic focus or consumer culture ideals.

2.2.2 | Well-being inclusion

In the present research, we included studies that had a dependent variable measuring: (a) subjective well-being (SWB), (b) self-evaluations (SE), (c) mental health indicators (MHI), (d) self-development indicators (SDI), and (e) interpersonal well-being (IWB). We included studies that measured prosocial and environmental attitudes and behaviors, as we used these measures as indicators of societal well-being (see Table B in Supplementary Materials for a detailed account of the measures included in each category).

We excluded reports that looked at social judgments of and attitudes towards individuals wearing symbols of consumer culture (e.g., by exposing participants to images of people wearing logos of high-end brands in the manipulation condition and no symbols or logos in the control condition), as these reports examined judgments of people endorsing consumer culture, not the effect of endorsing consumer culture on social judgments (e.g., Lee, Ko, & Megehee, 2015).

2.3 | Coding of the studies

For each experiment the first author coded: (a) type of publication (e.g., book, journal article, and thesis); (b) year of publication; (c) sample size; (d) country in which the data were collected; (e) percentage of female respondents; (f) mean age; (g) an open-ended description of the type of manipulation used for the treatment group; (h) an open-ended description of the type of manipulation used for the control group; (i) measure collected on materialism for a manipulation check, along with the statistics (if reported); (j) well-being measure(s); (k) mean of treatment group; (l) standard deviation (SD) of treatment group; (m) number of people in the treatment group; (n) mean of control group; (o) SD of control group; and (p) number of people in the control group.

We coded only post scores for the output variable after manipulation[2]. For moderation analyses, we coded seven dummy variables to classify the different manipulation types: visual stimuli (VS), scrambled-sentence task (SST), reflective writing manipulations (RW), manipulations based on consumer identity framing (F), reading immersion manipulations (RI), manipulations based on environmental stimuli (EC), and mixed manipulations involving visual stimuli and reading materials (MM). We also coded six dummy variables to classify the reported dependent well-being variables from each study: subjective well-being (SWB), self-evaluations (SE), mental health indicators (MHI), self-development indicators (SDI), interpersonal well-being (IWB), and prosocial or pro-environmental attitudes and behaviors (PSE; see Table B in Supplementary Materials for a detailed account of the measures included in each category).

2.4 | Reliability checks

All studies were coded by the first author. The second author also coded 20% of the sample selected at random to ensure the inter-rater reliability of the coding scheme, and reviewed 20% of the excluded sample to review the application of the inclusion–exclusion criteria. The second author agreed on 100% on the excluded studies and the coding scheme (inter-rater reliability of Cohen's kappa = 1).

---

[2]Pre-test measures from Ashikali and Dittmar (2012) were not included.

2.5 | Statistical methods

Due to the different well-being measures used, we computed the standardized mean difference (δ) for comparing the effects of different samples. Hedges' g was used over Cohen's d to calculate the δ, as it has been suggested that Cohen's d has a slight bias, tending to overestimate the absolute value in small samples (Borenstein, Hedges, Higgins, & Rothstein, 2011). The correction factor Hedges' g (noted as J) was calculated for each study from the reported mean (M), SD, and sample size (n) of each group (1 = materialistic manipulation; 2 = control) applying the following formulas:

$$S_{within} = \sqrt{\frac{(n_2 - 1)S_1^2 + (n_2 - 2)S_2^2}{n_1 + n_2 - 2}}; \quad d = \frac{M_1 - M_2}{S_{within}};$$

$$V_d = \frac{n_1 + n_2}{n_1 n_2} + \frac{d^2}{2(n_1 + n_2)}; \quad SE_d = \sqrt{V_d}$$

Correction factor:

$$J = 1 - \frac{3}{4df - 1}; \quad g = \times d; \quad V_g = J^2 \times V_d; \quad SE_g = \sqrt{V_g}$$

For studies that collected categorical data (Goldberg & Gorn, 1978)[3]; Lamy et al., 2016; Moldes, 2019) and presented a frequency table or reported a χ^2 statistic from a 2 × 2 contingency table, we computed d from the data reported by using an effect size calculator (Wilson, 2001) to obtain d and V_d and then transformed it into Hedges' g (using the formulas reported above). Finally, we created a valence variable and assigned the value of 1 to measures in which higher scores reflected higher levels of well-being (e.g., life satisfaction scale) and −1 to measures in which lower scores meant higher well-being (e.g., self-discrepancy index). The final effect size used in the meta-analysis was obtained by multiplying the valence variable by the effect size initially obtained to correct and align the direction of the effect on the subsequent analyses.

3 | RESULTS

3.1 | Descriptive statistics

The sample contained 17 reports that included 27 independent samples with a total of 3,649 participants (see Table 1 and 2 for a detailed account of the studies). The proportional mean age was 18.62. Of the total sample, 66% were female, 30% of the data were collected in the UK (n = 1,095), 30% in China (n = 1,089), 12% in France (n = 432), 12% in Canada (n = 428), 9% in Germany (n = 330), 5% in the USA (n = 193), and 2% in Singapore (n = 82). Forty-four percent of the sample belonged to the general population, 43% were university students, and 13% were children.

The sample sizes of the included studies ranged from 50 to 487 participants (M = 135.14; SD = 97.47). The effect size estimates ranged from −3.60 to 0.13 (M = −0.49; SD = 0.51).

3.2 | Data analysis

The final data set consisted of 17 reports, containing 27 unique studies, contributing to a total of 62 effect sizes. We used random effect models, because data collected in social science is likely to have variable population parameters (Field & Gillett, 2010). As several studies provided multiple effect sizes, we performed multilevel meta-analyses with two levels (effect sizes at Level 1 and clustered within studies at Level 2) to overcome the violation of the effect size independence assumption and to avoid having a single study contributing several times to the overall effect size calculation (Field, 2015). The software used for the analyses was R with the package *metafor* and the function *rma.mv()* with restricted maximum-likelihood, because this estimation method has been recommended by several authors for performing multilevel meta-analyses (Assink & Wibbelink, 2016; Hox, 2010; Viechtbauer, 2010).

3.3 | Materialistic priming: Is it successful?

Out of the 17 reports included in the final sample, 10 included a manipulation check (either from the main study/ies or a preliminary pilot study) and reported the means, the SDs and number of participants of the materialistic measure split by condition. Therefore, we were able to calculate 11 effect sizes to perform a two-level meta-analysis (effect size at Level 1 clustered within reports at Level 2) on the effect of the manipulation on a dependent variable measuring materialism (see Figure A and Table B in Supplementary Materials for a detailed account of all the studies included). The overall effect between the control group and the materialistic-manipulated group on materialistic values was δ = 0.69, SE = 0.28, 95% confidence interval (CI) [0.14, 1.24], p < .05. However, studies within the sample were significantly heterogeneous, $Q(12)$ = 35.17, p < .001, indicating that the studies included did not share a common effect size. Further moderation tests revealed that there was no significant difference between the studies that used visual stimuli priming versus other types of primes, $F(1, 11)$ = 1.82, p = .176. However, there were significant differences between the studies that collected data in western nations (US, UK, and Germany) and samples from eastern countries (China and Singapore), $F(1, 11)$ = 7.79, p = .005, suggesting that materialistic manipulations were more effective at inducing a materialistic focus in eastern populations than in western ones.

3.4 | Materialism and well-being: Testing causation

Out of the 62 effect sizes included in the sample, we classified 42 as individual well-being and 20 as societal well-being (see Tables 1 and 2). We coded a dummy variable (1 = individual and 0 = societal) and carried

---

[3]For the purposes of the current study, we collapsed the different treatment groups (one- and two-day exposure) into one category.

TABLE 1 Experimental studies that have manipulated materialism and measured individual well-being

Study	N	Standardized mean difference	Materialistic manipulation	Control condition	Outcome (DV)	Country	Percent female	Average age	Population
Ashikali and Dittmar (2012)	72	−0.10	The treatment group was exposed to materialistic advertisement with thin models	The control group was exposed to nonmaterialistic advertisement with thin models	ASI (Cash & Labarge, 1996)	UK	100%	24.43	University students
*	*	0.13	*	*	SDI – body and appearance (Dittmar, 2009)	*	*	*	*
*	*	0.13	*	*	All SDI (Dittmar, 2009)	*	*	*	*
*	83	−0.60	The treatment group was exposed to materialistic advertisement without models	The control group was exposed to nonmaterialistic advertisement without models	ASI (Cash & Labarge, 1996)	*	*	*	*
*	*	−0.02	*	*	SDI – body and appearance (Dittmar, 2009)	*	*	*	*
*	*	−0.15	*	*	All SDI (Dittmar, 2009)	*	*	*	*
Bauer et al. (2012)	50	−0.56	Participants were exposed to 24 images of luxury goods and asked to rate their pleasantness	Participants were exposed to 24 images of natural scenes and asked to rate their pleasantness	PANAS - Depress affect (Watson, Clark, & Tellegen, 1988)	USA	56%	18.84	University students
Experiment 1									
*	*	−0.84	*	*	PANAS - Anxious affect (Watson et al., 1988)	*	*	*	*
*	*	−0.52	*	*	PANAS - Dissatisfaction with self (Watson et al., 1988)	*	*	*	*
*	*	−0.70	*	*	Hours allocated to social activities	*	*	*	*
Experiment 3	66	−0.47	Participants were given 30 words strings, each consistent of 5 words with materialistic concepts	Participants were given 30 words strings, each consistent of 5 words with general concepts	Social engagement (desire to be involved in self-indulgent social activities such as dinning out or going to the cinema)	USA	64%	19	University students
Experiment 4	77	−0.86	Participants were presented with a hypothetical scenario framed as "consumers"	Participants were presented with a hypothetical scenario framed as "citizens"	Trust in other people	USA	56%	34	General population
*	*	−0.55	*		Viewing other people as partners	*	*	*	*
Goldberg and Gorn (1978)	231	−0.66			Social engagement	Canada	NR	NR	Children

(Continues)

TABLE 1 (Continued)

Study	N	Standardized mean difference	Materialistic manipulation	Control condition	Outcome (DV)	Country	Percent female	Average age	Population
*	*	−0.75	Children (ages between 4 and 5) watched a program without advertisement	Children (ages between 4 and 5) watched a program with a toy advertisement	Utilitarian motivation in social engagement	*	*	*	*
*	*	−0.72	*	*	Child–parent consensus	*	*	*	*
*	*	−0.56	*	*	Inferring social engagement with a parent	*	*	*	*
Jiang et al. (2014)	90	−0.68	Participants viewed two filler advertisements and four luxury advertisements	Participants viewed two filler advertisements and four nonluxury advertisements	Perception of social exclusion – self-developed for the study	China	71%	NR	University students
Experiment 2									
Experiment 3	92	−0.49	While waiting for the experiment, participants saw the screensaver of the computer playing four luxury fashion advertisements repeatedly	While waiting for the experiment, participants saw the screensaver of the computer playing four nonluxury fashion advertisements repeatedly	Satisfaction with life (Diener, Emmons, Larsen, & Griffin, 1985)	China	66%	NR	University students
Ku et al. (2014)	186	−0.35	Participants 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	The control condition first completed the achievement goals scales and then the materialistic prime	Achievement goals: Mastery: PALS (Midgley et al., 2000)	China	47.8%	11.28	Children
Study 3									
*	*	−0.31	*	*	Achievement goals: Performance approach: PALS (Midgley et al., 2000)	*	*	*	*
*	*	−0.55	*	*	Achievement goals: Performance avoidance: PALS (Midgley et al., 2000)	*	*	*	*
Study 4	84	−0.88	Children watched a video of a child from their age and gender in were their hobbies were shopping and gadgets. The child talked about getting cool stuff for its birthday	Children watched a video of a child were their hobbies were drawing and sports. The child talked about spending time with their friends in their birthday	Achievement goals: Task persistence: Amount of time spend working on the puzzle	UK	51.6%	10.52	Children

TABLE 1 (Continued)

Study	N	Standardized mean difference	Materialistic manipulation	Control condition	Outcome (DV)	Country	Percent female	Average age	Population
Ku, Wu, Lao, and Lam (2016)	93	−0.66	Participants were told to imagine that they were working in a fashion magazine and were shown 20 pictures of celebrities in their luxurious residence wearing designed clothes. They had to choose 3 pictures	Participants were presented with pictures of healthy party food for children	Overspending tendency	China	100%	19.16	University students
Study 3									
Ku and Zaroff (2014)	157	−0.21	In the extrinsic condition participants read three magazines that included beauty news, the latest consumer goods, electronic gadgets, and luxury holidays	Participants in the control condition viewed 20 pictures of neutral objects such as flowers, trees, or buildings	Retail therapy spending	China	100%	18.64	University students
Study 3									
Liang et al. (2016)	127	−0.02	Participants were presented with a scrambling sentence task in which 67% of the words were materialistic concepts (e.g, *expensive*)	Participants were presented with a scrambling sentence task replacing materialistic terms with mundane ones (e.g., instead of *expensive*, the word *accurate* was presented)	Chinese version of the self-esteem scale (Rosenberg, 1965)	China	80%	20.75	University students
Study 3									
Maggaß et al. (2018)	330	0.10	Participants were asked to reflect and write down unfulfilled materialistic goals	Participants were asked to reflect and write down unfulfilled nonmaterialistic goals	German version of the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)	Germany	72.4%	28.89	General population
Unpublished study									
Moldes (2018)	201	−0.10	Participants allocated to the extrinsic condition were asked to think about and describe how they felt in three situations in which money, appearance and popularity played an important role in their life	Participants in the intrinsic condition were asked to think about and describe how they felt in three situations in which learning a new skill, helping or supporting others and close personal relationships played an important role in their life	Satisfaction with life (Diener et al., 1985)	UK	83%	21.48	University students

(Continues)

TABLE 1 (Continued)

Study	N	Standardized mean difference	Materialistic manipulation	Control condition	Outcome (DV)	Country	Percent female	Average age	Population
PhD Thesis									
Moldes (2019)	209	−0.28	Participants in the materialistic condition were asked to rate six luxury advertisements on composition, originality, and likeability. Then, they were given a book review based on rags to riches story that highlighted the importance money and financial success and were asked four questions to test their reading comprehension	Participants in the control condition were asked to rate six abstract digital art pictures. Then, they were given a book review from a historical fiction novel and were asked four questions to test their reading comprehension	Satisfaction with life (Diener et al., 1985)	UK	70.4%	39.08	General population
Conference paper									
Nagpaul and Pang (2016)	82	−0.45	Participants were asked to rate the pleasantness of 19 pictures of luxury consumer goods such as electronics, cars, clothing, or accessories	Participants were asked to rate the pleasantness of 19 pictures of neutral objects such as utensils, furniture, or tools	Autonomy (La Guardia, Ryan, Couchman, & Deci, 2000)	China	68%	21.45	University students
Study 2									
*	*	0.10	*	*	Competence (La Guardia et al., 2000)	*	*	*	*
*	*	−0.33	*	*	Relatedness (La Guardia et al., 2000)	*	*	*	*
*	*	0.09	*	*	Positive affect PANAS (Watson et al., 1988)	*	*	*	*
*	*	−0.44	*	*	Negative affect PANAS (Watson et al., 1988)	*	*	*	*
*	*	−0.09	*	*	Subjective Vitality Scale (Ryan & Frederick, 1997)	*	*	*	*
Teng et al. (2016)	63	−0.84	Participants were exposed to print advertisement of luxury products (e.g., a luxury car, a luxury watch, or a luxury house)	Participants were exposed to print advertisement of lower budget consumer products (e.g., an economical car, a cheap watch, or a budget apartment)	Body surveillance: Objectified Body Consciousness Scale (McKinley & Hyde, 1996)	China	100%	21.08	University students

TABLE 1 (Continued)

Study	N	Standardized mean difference	Materialistic manipulation	Control condition	Outcome (DV)	Country	Percent female	Average age	Population
Experiment 1									
*	*	−0.60	*	*	Self-objectification scale (Noll & Fredrickson, 1998)	*	*	*	*
Zhang and Zhang (2016)	89	−0.57	Participants were recruited in front of a luxury shop and were facing a Prada window display during the interview	Participants in the control condition were facing an ordinary building during the interview	Relative depravation – 1 item	China	47%	24.79	General population
Study 1									
Study 2	72	−0.75	Participants viewed 12 pictures of luxury goods and 8 of neutral objects	Participants viewed 20 pictures of neutral objects such as flowers, trees, or buildings	Relative depravation – 2 items	China	58%	20.93	University students
*	*	−0.47	*	*	Positive mood (NR)	*	*	*	*
Study 3	120	−0.64	Participants viewed 12 pictures of luxury goods and 8 of neutral objects	Participants viewed 20 pictures of neutral objects such as flowers, trees, or buildings	Relative deprivation (Callan, Ellard, Shead, & Hodgins, 2008)	China	71%	20.70	University students
*	*	−0.19	*	*	Positive mood (NR)	*	*	*	*

ASI, appearance schemas inventory (Cash & Labarge, 1996); PALS, Patterns of Adaptive Learning Scale (Midgley et al., 2000); PANAS, Positive and Negative Affect Schedule (Watson et al., 1988); SDI, self-discrepancy index (Dittmar, 2009).

TABLE 2 Experimental studies that have manipulated materialism and measured societal well-being

Study	N	Standardized mean difference	Treatment Condition	Control condition	Well-being measure	Country	Percent female	Average age	Population
Bauer et al. (2012) Experiment 3	66	−0.50	Participants were given 30 words strings, each consistent of 5 words with materialistic concepts	Participants were given 30 words strings, each consistent of 5 words with general concepts	Competitiveness and desired to outdo other people adapted from the Contingencies of Self-Worth Scale (Crocker, Luhtanen, Cooper, & Bouvrette, 2003)	USA	64%	19	University students
*	*	−0.49	*	*	Prosocial engagement (desire to be involved in volunteering or student bodies)	*	*	*	*
Experiment 4	77	−0.47	Participants were presented with a hypothetical scenario framed as "consumers"	Participants were presented with a hypothetical scenario framed as "citizens"	Feelings of responsibility	USA	56%	34	General population
*	*	−0.28	*	*	Feelings of obligation	*	*	*	*
Chen (2015) PhD Thesis Experiment 1	54	−0.82	Participants were exposed to images of luxury products and were asked to describe their key features and rate them	Participants were exposed to images of nonluxury products and were asked to describe their key features and rate them	Prosocial tendency measured by SVO slider measure (Murphy, Ackermann, & Handgraaf, 2011)	Canada	64%	19	University students
*	*	−3.60	*	*	Amount of money allocated to others in the dictator game	*	*	*	*
Experiment 2	70	−0.32	Participants were exposed to images of luxury products and were asked to describe their key features and rate them	Participants were exposed to images of nonluxury products and were asked to describe their key features and rate them	Sustainability and cooperation orientations: Individual restrain measure from the Fish 4.0 computer simulation (Gifford & Gifford, 2000)	Canada	66%	21	University students
*	*	−0.44	*	*	Sustainability and cooperation orientations: Individual efficiency measure (Gifford & Gifford, 2000)	*	*	*	*
Experiment 3	73	−0.32	Participants were exposed to images of luxury products and were asked to describe their key features and rate them	Participants were exposed to images of nonluxury products and were asked to describe their key features and rate them	Attitude towards greed (Yamagishi & Sato, 1986)	Canada	80%	NR	University students
*	*	−0.25	*	*	Unethical decision making (Detert, Treviño, & Sweitzer, 2008)	*	*	*	*

TABLE 2 (Continued)

Study	N	Standardized mean difference	Treatment Condition	Control condition	Well-being measure	Country	Percent female	Average age	Population
*	*	−0.12	*	*	Unethical behaviors measured in candy taken from a children's lab (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004)	*	*	*	*
Ku and Zaroff (2014)	157	−0.58	Participants in the extrinsic condition read three magazines that included beauty news, the latest consumer goods and electronic gadgets, and luxury holidays	Participants in the control condition read a collection of jokes, pictures of funny animals and people	Money donation to save the environment	China	100%	18.64	University students
Lamy et al. (2016) Experiment 1	80	−1.02	Environmental cue: participants were walking alone in the *Triangle d'Or* leaving a luxury shop	Participants in the control condition were walking alone in a residential street close to the *Triangle d'Or*	Help (1) or not help (0) of a confederate walking with a crutch that dropped a packet of candy and a bottle of water	France	50%	Appeared between 30 and 60 years old	General population
Experiment 2	112	−1.50	In the luxury store condition participants were walking alone in a street with exclusive jewelry and watch stores (*place Vendôme* in Paris)	Participants in the control condition were walking alone in a residential street close to the street with the jewelry and watch stores	Agree to stay (1) or not (0) with a confederate in the wheelchair, the other confederate goes to check if he/she left their phone in a café	France	50%	Appeared between 30 and 60 years old	General population
Experiment 3	360	−0.79	Participants in the luxury environmental cues condition were walking alone the *Avenue Montaige* which has highly exclusive luxury stores	Participants in the control condition were walking alone the lower part of the *Champs-Elysées* (between 150 m and 350 m from the closest luxury store)	Let their phone to call the confederate's mother (1) not lend their phone (0)	France	50%	Appeared between 30 and 60 years old	General population
Leyva (2018)	487	−0.22	Participants in the manipulation condition saw 12 images: 4 advertising of luxury products; 4 pictures of celebrities showing off expensive goods; 4 newspaper headlines of rags-to-riches stories	Participants in the control condition saw 12 neutral images: 4 advertising about the London Underground; 4 pictures of natural landscapes; 4 headlines about dinosaurs	Antiwelfare attitudes	UK	56%	32.28	General population
*	*	−0.20	*	*	Antiwelfare policy support	UK	*	*	General population

(Continues)

TABLE 2 (Continued)

Study	N	Standardized mean difference	Treatment Condition	Control condition	Well-being measure	Country	Percent female	Average age	Population
Liang et al. (2016)	127	−0.53	Participants were asked to complete a scrambling sentence task in which 67% of the words were related with materialistic concepts (e.g., expensive)	Participants were asked to complete a scrambling sentence task replacing materialistic terms with mundane ones (e.g., instead of expensive, the word accurate was presented)	Endorsement of business corruption	China	80%	20.75	University students
Moldes (2018) PhD Thesis	201	−0.35	Participants in the extrinsic condition were asked to think about and describe how they felt in three situations in which money, appearance, and popularity played an important role in their life	Participants in the intrinsic condition were asked to think about and describe how they felt in three situations in which learning a new skill, helping or supporting others and close personal relationships played an important role in their life	Prosocial spending choice	UK	83%	21.48	University students
Moldes (2019) Conference paper	209	−0.31	Participants in the extrinsic condition were asked to rate six luxury advertising on composition, originality, and likeability. Then, they were given a book review based on rags to riches stories that highlighted the importance money and financial success and were asked with four questions to test their reading comprehension	Participants in the control condition were asked to rate six pictures of abstract digital art on composition, originality, and likeability. Then, they were given a book review from a historical fiction novel and were asked four questions to test their reading comprehension	Prosocial spending choice	UK	70,4%	39.08	General Population

out two meta-analyses after splitting the data into individual and societal subsets, due to the conceptual differences between the constructs.

3.4.1 | Effects of priming materialism on individual well-being

A meta-analysis carried out on the individual well-being subset revealed that there was a significant overall difference in individual well-being between the control group and the group primed with materialism $\delta = -0.39$, $SE = 0.07$, 95% CI [−0.53, −0.25], $p < .001$. The test for heterogeneity was nonsignificant, $Q(41) = 17.86$, $p = .999$, suggesting that all effect sizes within the data set might be sharing a common effect size. The results showed a small-to-medium effect (Cohen, 1992) of materialism on individual well-being, indicating that participants in the materialistic groups reported significantly lower individual well-being than participants in the control groups (see Figure 2).

Outliers and influential observations
A preliminary examination of the distribution of the effect sizes revealed no noticeable potential outliers or extreme cases (see Figure B in Supplementary Materials). However, the plots displaying the leverage statistics (see Figures C and D in Supplementary Materials) revealed that three observations had Cook's distances and hat values noticeably higher than other values in the plot. A closer look at these studies indicated that all had used a reflective writing manipulation (Experiment 3 in Ku et al., 2014; Maggaß et al., 2018; Moldes, 2018)[4]. This indicates that there might be a methodological explanation for these observations differing from the rest of the observations in the sample, suggesting a possible moderation of the manipulation type.

3.4.2 | Effects of priming materialism on societal well-being

A second meta-analysis was performed on the societal subgroup. The overall effect between the control group and the materialistic-manipulated group on societal well-being was $\delta = -0.58$, $SE = 0.13$, 95% CI [−0.83, −0.33], $p < .0001$. However, studies within the sample were significantly heterogeneous, $Q(19) = 31.18$, $p = .039$, suggesting that the studies did not share a common effect size.

Outliers and influential observations
An examination of effect size distribution revealed one extreme case (Hedges' $g = -3.60$ in Chen, 2015) and one outlier (Hedges' $g = -1.50$ in Lamy et al., 2016; see Figure B in Supplementary Materials). Furthermore, the leverage plots revealed that the observation identified as an extreme case also appeared to be noticeably different from the others

(see Figures E and F in Supplementary Materials). Therefore, we repeated the meta-analysis on the societal subset without the identified extreme case. The results revealed a significant decrease in the overall effect $\delta = -0.45$, $SE = 0.10$, 95% CI [−0.64, −0.26], $p < .0001$, and showed that the studies within the sample were nonsignificantly heterogeneous, $Q(18) = 9.21$, $p = .955$, suggesting that they now shared a common effect size. We then repeated the meta-analyses without the observation identified as a possible outlier. The results revealed a small decrease in the overall effect, $\delta = -0.41$, $SE = 0.10\%$, and 95% CI [−0.60, −0.21], $p < .001$, and nonsignificant heterogeneity, $Q(17) = 4.82$, $p = .998$. These results suggested that the extreme case and the removed outlier were influencing the overall results and, therefore, the results without them are more robust (see Figure 3). The overall effect of $\delta = -0.41$ suggests a small-to-medium effect (Cohen, 1992) of materialism on societal well-being, indicating that participants in the materialistic groups reported significantly lower scores on the societal well-being indicators than participants in the control groups.

3.5 | Moderation analyses

Several potential methodological and theoretical moderators were coded in the sample, including type of manipulation performed, type of individual well-being measure collected, type of population tested, percentage of female participants in the sample, and country in which the data were collected. We performed a series of moderation analyses aiming to identify different factors that might create discrepancies on the strength of the effects of priming materialism on well-being. These analyses were carried out to compare our results with prior meta-analytic work looking at correlational studies that found several moderation effects such as type of well-being measure, gender, or age (Dittmar et al., 2014). Also, we performed moderation analyses due to the differences found between populations on the strength of the effect of priming materialism at activating a materialistic focus, and given the lack of moderation analyses on the experimental work published.

Type of materialistic manipulation. After removing the extreme score and outliers identified in the previous analyses, there were five types of materialistic manipulations: visual stimuli manipulations ($k = 14$), scrambled-sentence tasks ($k = 2$), reflective writing ($k = 3$), framing manipulations ($k = 1$), manipulations based on environmental cues ($k = 4$), and mixed manipulations ($k = 3$). To perform a moderation analysis with a categorical variable with more than two levels, a dummy coded variable for each category is needed (as they are mutually exclusive) to be able to compare each group against a reference group in the sample (Assink & Wibbelink, 2016). However, due to the small number of effect sizes in some of the categories, we decided to perform a moderation analysis with the full sample (including both individual and societal well-being)[5]. We tested the moderation effect of the visual stimuli manipulations on the effect size against the other

---

[4]A second meta-analysis without the observations that were identified as noticeably different in the leverage analyses (Experiment 3 in Ku et al., 2014; Maggaß et al., 2018; Moldes, 2018) revealed a slight increase in the overall effect size obtained in the initial analysis: $\delta = -0.43$, $SE = 0.08$, 95% CI [−0.59, −0.27], $p < .001$, and $Q(36) = 14.81$, $p = .999$.

[5]A moderation analysis comparing individual versus societal well-being effects revealed nonsignificant differences between subsets, $F(1, 58) = 0.03$, $p = .871$.
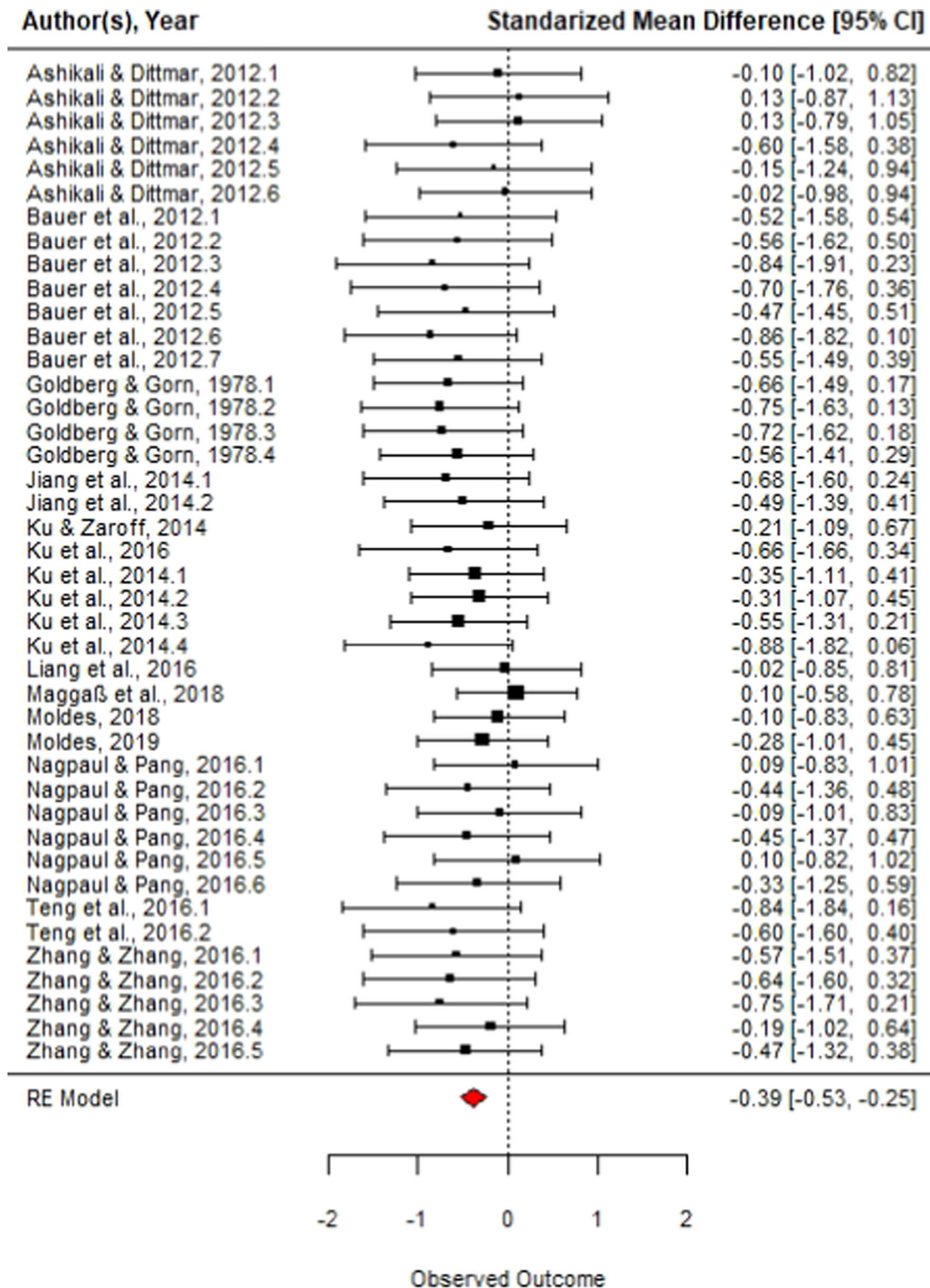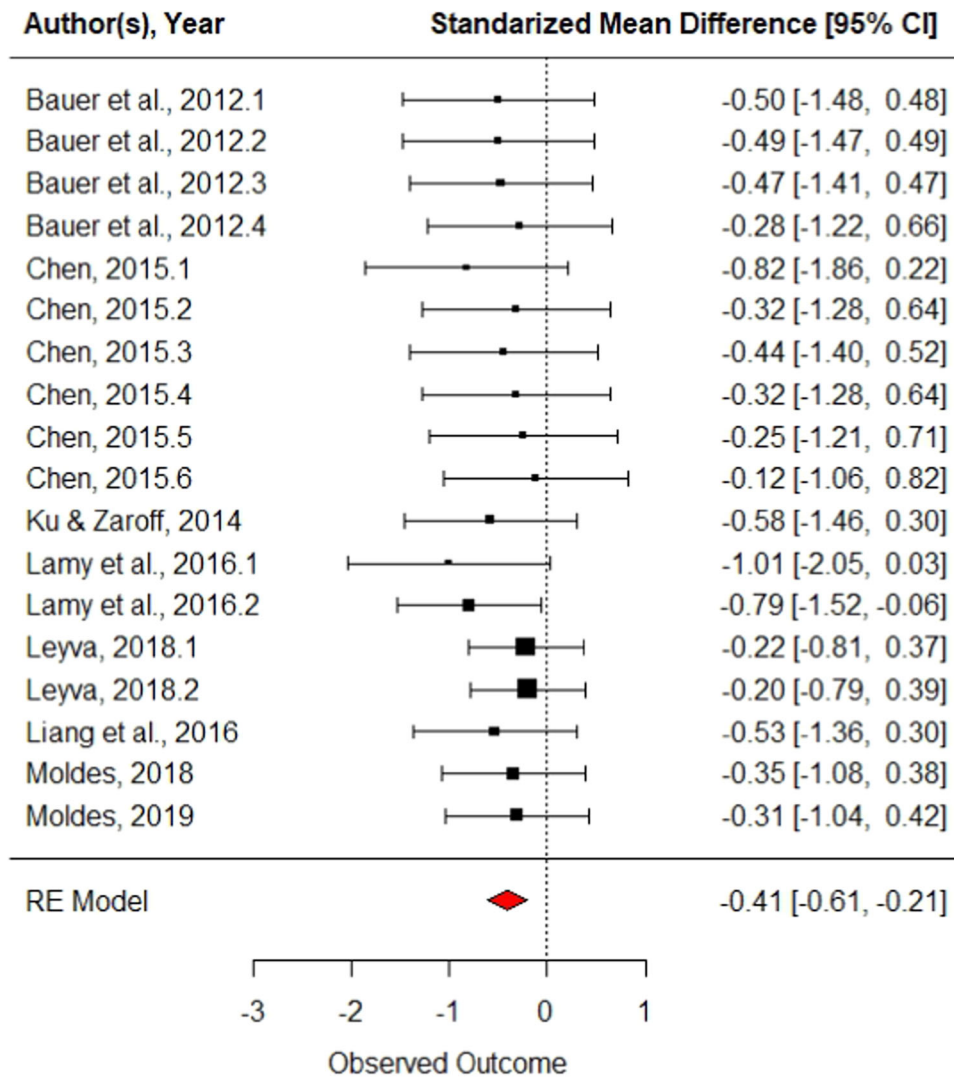
FIGURE 2 Forest plot displaying the standardized mean differences (Hedges' *g*) on individual well-being between treatment (exposed to materialistic cues) and control groups. Two-level meta-analytic random effect model (effect size at Level 1 clustered within studies at Level 2) conducted with a restricted maximum-likelihood estimation method. Overall effect $\delta = -0.39$, $SE = 0.07$, 95% CI [−0.53, −0.25], $p < .001$. The test for heterogeneity was nonsignificant, $Q(41) = 17.86$, $p = .999$. Extremities of horizontal bars denote 95% CI and the size of the square is directly proportional to study's sample size. The diamond at the foot of the plot represents the overall effect. Studies are ordered alphabetically by author [Color figure can be viewed at wileyonlinelibrary.com]

FIGURE 3 Forest plot displaying the standardized mean differences (Hedges' g) on societal well-being between treatment (exposed to materialistic cues) and control groups. Two-level meta-analytic random effect model (effect size at Level 1 clustered within studies at Level 2) conducted with a restricted maximum-likelihood estimation method. Overall effect $\delta = -0.41$, $SE = 0.10$, and 95% CI [−0.60, −0.21], $p < .001$. The test for heterogeneity was nonsignificant, $Q(17) = 4.82$, $p = .998$. One extreme score and one outlier have been removed. Extremities of horizontal bars denote 95% CI and the size of the square is directly proportional to study's sample size. The diamond at the foot of the plot represents the overall effect. Studies are ordered alphabetically by author [Color figure can be viewed at wileyonlinelibrary.com]

manipulation types by introducing a dummy variable in the model (coded as 1 = studies presented materialistic visual stimuli and 0 = other types of manipulation). The results revealed nonsignificant moderation effects, $F(1, 58) = 0.25$, $p = .620$, suggesting that the effect sizes obtained by studies that performed a visual manipulation did not significantly differ from the effect sizes in studies using other priming materials. Given the observations from the leverage statistics, we tested the possible moderation of writing manipulations against the other manipulations, $F(1, 58) = 1.15$, $p = .283$, revealing nonsignificant effects.[6]

3.5.1 | Type of individual well-being measure

Within the individual well-being subset, there were five different types of measure: subjective well-being ($k = 8$), self-evaluations ($k = 12$), mental health indicators ($k = 5$), self-development indicators ($k = 4$), and interpersonal well-being ($k = 13$). We selected self-evaluations as a reference

---

[6]We created a variable indicating whether the study reported a manipulation check (1 = yes; 0 = no) and run a meta-analysis with only the subset that reported a manipulation check. The

results revealed an effect size of $\delta = -0.30$, $SE = 0.09$, 95% CI [−0.47, −0.12], $p = .001$, and $Q(21) = 8.25$, $p = .994$. Furthermore, we run a moderation analysis comparing the effect sizes of studies that included a manipulation check and studies that did not. The results revealed nonsignificant effects, $F(1, 58) = 2.10$, $p = .147$, suggesting that the effect sizes obtained by the studies that reported a manipulation check did not significantly differ from the studies that did not include a manipulation check.

category to compare against the other categories because—drawing on the negative self-appraisal theoretical framework—we would expect that if the effects of materialistic primes on well-being were driven by individuals' lower self-assessments, self-evaluations might present stronger effects than other individual well-being measures. Moreover, self-evaluations were found by previous meta-analytic work on correlational research to produce higher effect sizes than other measures (Dittmar et al., 2014). The omnibus test for moderation effects concluded that there were nonsignificant moderation effects linked to the type of individual well-being measure, taking self-evaluations as a reference category, $F(4, 37) = 5.59$, $p = .231$. However, the regression coefficient of the dummy variable coded for interpersonal well-being showed a significant effect, $t(37) = -2.04$, $p = .041$, indicating that the effect sizes in the interpersonal well-being group were significantly higher than the effect sizes in the reference category of self-evaluations.

3.5.2 | Gender

The results of testing the percentage of females in the sample as a moderator on the full sample (excluding outliers and extreme cases) suggested that there were nonsignificant effects $F(1, 54) = 1.94$, $p = .164$.

3.5.3 | Type of population

We identified three categories within the sample: studies that collected a general population sample ($k = 4$), studies that recruited university students ($k = 19$) and studies that collected data from children ($k = 3$). Therefore, we created two dummy variables (one coding $1 =$ university students and $0 =$ nonuniversity students; and another coding $1 =$ children, $0 =$ nonchildren). We used the category "general population" as a reference in the moderation analysis and introduced the dummy coded variables as moderators. The results indicated nonsignificant differences between the effects observed in the general population samples and the other samples, $F(2, 57) = 1.67$, $p = .433$.

3.5.4 | Country

Given the diversity of population samples and the moderation found on the previous section, we decided to test the moderator "origin of the sample" by creating a variable that indicated whether the data were collected in a western country (UK, France, Germany, Canada, and USA; accounting for 68% of the sample) or eastern one (China and Singapore). The results from the moderation test suggested no differences between the effect sizes collected from eastern and western countries, $F(1, 58) = 0.01$, $p = .936$.

3.6 | Publication bias

The funnel plot of the studies included in the final sample used for the individual and societal meta-analyses (see Figure 4) displays a roughly symmetric distribution of the effect sizes, ordered in a funnel-like shape, suggesting the absence of publication bias and heterogeneity in the sample.

4 | DISCUSSION

The present research is the first systematic review of experimental research that has looked at the causal effects of materialism on individual and societal well-being. The results from the analyses provide empirical evidence indicating that materialistic cues *cause* lower individual and societal well-being. These findings suggest that the promotion of materialistic messages through media and advertising not only has negative consequences for the personal well-being of individuals, but also for the welfare of society as a whole. This study constitutes an important step forward in the examination of the effects of consumer-oriented economies on the well-being of individuals and social groups, as most empirical evidence presented by prior work has been based on correlational studies. In fact, the use of experimental methodologies when studying well-being is rare,
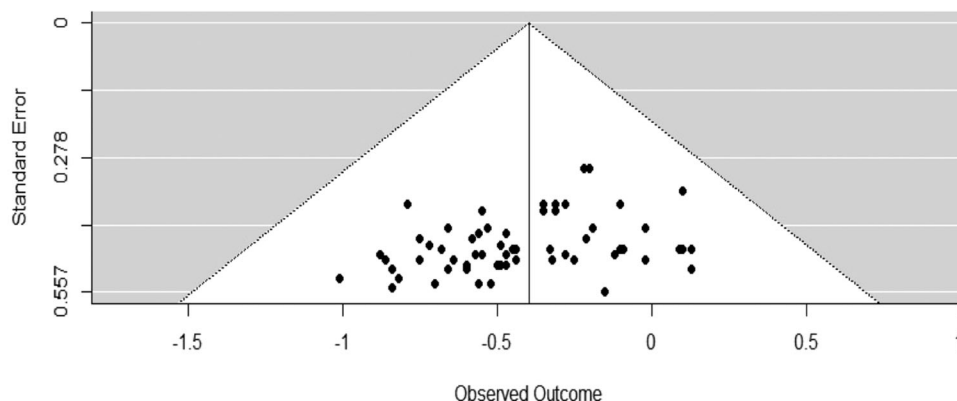

FIGURE 4 Funnel plot displaying the observed effect sizes on the x-axis against the standard error for the meta-analysis combining individual and societal well-being. The vertical line in the middle indicates the model estimate, $\delta = -0.40$, $SE = 0.06$, and 95% CI [−0.51, −0.21], $p < .001$. The white space within the diagonal lines show the expected 95% confidence intervals around the summary estimate. One extreme score and one outlier have been removed

meaning the causal mechanisms in well-being are currently unknown (Oishi, 2012). Therefore, further research in this area will help deepen our knowledge of the impact that environmental factors such as materialistic cues have on individual and societal well-being.

The results of the moderation analyses provide some preliminary signs suggesting that materialistic cues might have a stronger negative impact on certain well-being domains. Materialistic cues were found to have higher effects on interpersonal well-being measures than on self-evaluation indicators. This finding suggest that materialistic environments might have higher detrimental effects on establishing and developing relationships with others than on one's individual self-esteem. However, given the limited number of studies in each category, this finding should be interpreted with caution. Overall, the results of the moderation analyses provide limited insight into the specific mechanisms or individual characteristics enabling or inhibiting the causal effects of materialistic cues on well-being. That said, the sample size may have lacked the statistical power to detect significant moderation effects. Therefore, further research should examine the mechanisms that enable or inhibit the negative effects of materialistic cues on individual and societal well-being for developing strategies and/or interventions aiming to reduce the adverse effects of environmentally induced materialism. Furthermore, it is worth noting that 37% of the studies included in this meta-analysis were underpowered. As a result, given that the typical effect size was $\delta = -0.39$ for individual and $\delta = -0.41$ for societal well-being, we recommend future researchers to recruit at least 82 participants per condition for individual well-being and 75 for societal well-being to achieve the suggested power of 80%.[7]

The moderation effect of socioeconomic status on the relationship between materialism and well-being has been left unexplored in the current report, because there was limited information regarding the participants' background in the literature. Therefore, we would encourage researchers to collect and publish further demographic data and background information on their participants, including socioeconomic status, education level, and information on different cultural backgrounds included in the samples. This data would not only enable researchers to perform moderation analyses to understand the self and the perceived social norm gap but would also help to track the diversity of the samples collected in the literature.

Furthermore, our research corroborates a direct link between exposure to a materialistic cue and an increase in situational materialistic focus that, subsequently, and after continuous and frequent exposure, could lead to a chronic materialistic disposition. These findings expand prior research on materialism, which suggested that frequent and prolonged exposure to materialistic messages increases dispositional materialistic orientations (e.g., Chan et al., 2006) as the short-term effects of exposure to a materialistic message on a materialistic focus had not been previously established by past correlational and longitudinal research. Interestingly, moderation analyses looking at the effectiveness of materialistic primes suggest that

eastern populations experience stronger effects than western populations. However, this finding—along with the results of other moderation analyses performed on the materialistic prime—should be interpreted with caution, given the limited number of studies that reported a manipulation check. Nevertheless, it could suggest cross-cultural differences perhaps due to distinct levels of exposure or adaptation effects.

Overall, our systematic review suggests that there is a need for further behavioral studies and more research on younger populations (children and adolescents), as well as research looking at the effects of materialism on the social and interpersonal aspects of well-being. Moreover, the current research on societal well-being is scarce and the development of this study area could provide experimental support to prior correlational work at the society level that links economic and material inequality with lower societal well-being (Wilkinson & Pickett, 2010). Also, the effect of materialistic cues on ethical and unethical decision making has been identified as an underdeveloped area in the literature. In addition, further research should investigate the causal link between well-being and materialism, as there are a number of studies that have hinted at a possible bidirectional relationship between the two variables (Chang & Arkin, 2002; Chaplin & John, 2007; Lambert et al., 2009; Liu, Zhao, & Liu, 2018). Furthermore, given that the use of experimental methodologies in the materialism-well-being literature is relatively new, the data does not go back far enough to test for generational effects that could help us deepen our understanding of the effect of societal changes on well-being.

Finally, given the need to make research more replicable and transparent, we would encourage authors to share their manipulation materials. This practice would help future researchers to effectively select or design their own materials and would enable and encourage replication studies. Moreover, this would facilitate comparisons between different manipulations (and control materials) in terms of message(s) displayed, medium used (e.g., images, text, and audio), length of the stimuli, presentation order and so on, for further examination of theoretical and methodological questions around priming effects. Along the same lines, we would also invite researchers to include and publish manipulation checks in their articles, because this data would facilitate further effect size comparisons across stimuli and samples. Nevertheless, we acknowledge that certain research designs (e.g., experiments conducted in a public setting as in Lamy et al., 2016) do not enable the collection of a manipulation check, and that explicit self-reported scales on materialism (e.g., Richins, 2004) might not be able to capture implicit changes that occur at a subconscious level after an exposure to a subtle materialistic prime (Gawronski & LeBel, 2008).

5 | CONCLUSION

Materialistic cues *cause* lower individual and societal well-being. However, there is a need for further research to determine the mechanisms that enable or inhibit the negative effects of materialism

---

[7]Calculations of power were performed with G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007).

on the different aspects of individual and societal well-being as this will help in the development of strategies that could minimize its effects. Overall, these findings call for a reflection on the social discourses around consumption and wealth—promoted through media and advertising—that contain an implicit association with positive affective states, high self-esteem, and social recognition, or portray unattainable ideals, since environmental materialistic cues do in fact have negative effects on the well-being of both society and its individual members.

ACKNOWLEDGMENT

DATA AVAILABILITY STATEMENT

The data and supplementary materials for this report are available on its Open Science Framework page (https://osf.io/kcs5d/).

ORCID

Olaya Moldes http://orcid.org/0000-0002-5790-6634
Lisbeth Ku https://orcid.org/0000-0002-7334-5910

REFERENCES

References marked with an asterisk indicate studies included in the meta-analyses.

*Ashikali, E., & Dittmar, H. (2012). The effect of priming materialism on women's responses to thin-ideal media. *British Journal of Social Psychology*, *51*(4), 514–533. https://doi.org/10.1111/j.2044-8309.2011.02020.x

Assink, M., & Wibbelink, C. J. M. (2016). Fitting three-level meta-analytic models in R: A step-by-step tutorial. *The Quantitative Methods for Psychology*, *12*(3), 154–174. https://doi.org/10.20982/tqmp.12.3.p154

Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle. In Harry T. Reis & Charles M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 311–344). New York, NY: Cambridge University Press. https://doi.org/10.1017/cbo9780511996481.017

*Bauer, M. A., Wilkie, J. E. B., Kim, J. K., & Bodenhausen, G. V. (2012). Cuing consumerism. *Psychological Science*, *23*(5), 517–523. https://doi.org/10.1177/0956797611429579

Belk, R. W. (1984). Three scales to measure construct related to materialism: Reliability, validity, and relationships to measures of happiness. *Advances in Consumer Research*, *11*, 291–297.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2011). *Introduction to Meta-Analysis*. Cornwall, UK: John Wiley & Sons. https://doi.org/10.1002/9780470743386

Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research*, *74*(2), 349–368. https://doi.org/10.1007/s11205-004-8207-8

Burroughs, J. E., & Rindfleisch, A. (2002). Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research*, *29*(3), 348–370. https://doi.org/10.1086/344429

Callan, M. J., Ellard, J. H., Will Shead, N., & Hodgins, D. C. (2008). Gambling as a search for justice: Examining the role of personal relative deprivation in gambling urges and gambling behavior. *Personality and Social Psychology Bulletin*, *34*(11), 1514–1529. https://doi.org/10.1177/0146167208322956

Campbell, W. K., Bonacci, A. M., Shelton, J., Exline, J. J., & Bushman, B. J. (2004). Psychological entitlement: Interpersonal consequences and validation of a self-report measure. *Journal of Personality Assessment*, *83*(1), 29–45. https://doi.org/10.1207/s15327752jpa8301_04

Cash, T. F., & Labarge, A. S. (1996). Development of the appearance schemas inventory: A new cognitive body-image assessment. *Cognitive Therapy and Research*, *20*(1), 37–50. https://doi.org/10.1007/bf02229242

Chan, K., Zhang, H., & Wang, I. (2006). Materialism among adolescents in urban China. *Young Consumers*, *7*(2), 64–77. https://doi.org/10.1108/17473610610701510

Chan, R., & Joseph, S. (2000). Dimensions of personality, domains of aspiration, and subjective well-being. *Personality and Individual Differences*, *28*(2), 347–354. https://doi.org/10.1016/s0191-8869(99)00103-8

Chang, L., & Arkin, R. M. (2002). Materialism as an attempt to cope with uncertainty. *Psychology and Marketing*, *19*(5), 389–406. https://doi.org/10.1002/mar.10016

Chaplin, L. N., & John, D. R. (2007). Growing up in a material world: Age differences in materialism in children and adolescents. *Journal of Consumer Research*, *34*(4), 480–493. https://doi.org/10.1086/518546

*Chen, A. (2015). *The implicit link of luxury and self-interest: The influence of luxury objects on social motivation and cooperative behaviours*. (Doctoral thesis [PhD]). University of Victoria, British Columbia, Canada.

Chia, S. C. (2010). How social influence mediates media effects on adolescents' materialism. *Communication Research*, *37*(3), 400–419. https://doi.org/10.1177/0093650210362463

Christopher, A. N., Lasane, T. P., Troisi, J. D., & Park, L. E. (2007). Materialism, defensive and assertive self-presentational tactics, and life satisfaction. *Journal of Social and Clinical Psychology*, *26*, 1145–1162. https://doi.org/10.1521/jscp.2007.26.10.1145

Cohen, J. (1992). A power primer. *Psychological bulletin*, *112*(1), 155–159. https://doi.org/10.1037/0033-2909.112.1.155

Collins, R. L. (1996). For better or worse: The impact of upward social comparison on self-evaluations. *Psychological Bulletin*, *119*(1), 51–69. https://doi.org/10.1037/0033-2909.119.1.51

Crocker, J., Luhtanen, R. K., Cooper, M. L., & Bouvrette, A. (2003). Contingencies of self-worth in college students: Theory and measurement. *Journal of Personality and Social Psychology*, *85*(5), 894–908. https://doi.org/10.1037/0022-3514.85.5.894

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Detert, J. R., Treviño, L. K., & Sweitzer, V. L. (2008). Moral disengagement in ethical decision making: A study of antecedents and outcomes. *Journal of Applied Psychology*, *93*(2), 374–391. https://doi.org/10.1037/0021-9010.93.2.374

Diener, E., & Biswas-Diener, R. (2002). Will money increase subjective well-being? A literature review and guide to needed research. *Social Indicators Research*, *57*(2), 119–169. https://doi.org/10.1023/A:1014411319119

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Dittmar, H. (2005). Compulsive buying – a growing concern? An examination of gender, age, and endorsement of materialistic values as predictors. *British Journal of Social Psychology*, *96*(4), 467–491. https://doi.org/10.1348/000712605X53533

Dittmar, H. (2008). *Consumer culture, identity and well-being: The search for the 'good life' and 'body perfect'*. New York, NY: Psychology Press. https://doi.org/10.4324/9780203496305

Dittmar, H. (2009). How do 'Body Perfect' ideals in the media have a negative impact on body image and behaviors? Factors and processes related to self and identity. *Journal of Social and Clinical Psychology*, *28*(1), 1–8. https://doi.org/10.1521/jscp.2009.28.1.1

Dittmar, H., Bond, R., Hurst, M., & Kasser, T. (2014). The relationship between materialism and personal well-being: A meta-analysis. *Journal of Personality and Social Psychology*, 107(5), 879–924. https://doi.org/10.1037/a0037409

Dittmar, H., & Kapur, P. (2011). Consumerism and well-being in India and the UK: Identity projection and emotion regulation as underlying psychological processes. *Psychological Studies*, 56(1), 71–85. https://doi.org/10.1007/s12646-011-0065-2

Donnelly, G. E., Ksendzova, M., Howell, R. T., Vohs, K. D., & Baumeister, R. F. (2016). Buying to blunt negative feelings: Materialistic escape from the self. *Review of General Psychology*, 20(3), 272–316. https://doi.org/10.1037/gpr0000078

Duriez, B., Vansteenkiste, M., Soenens, B., & De Witte, H. (2007). The social costs of extrinsic relative to intrinsic goal pursuits: Their relation with social dominance and racial and ethnic prejudice. *Journal of Personality*, 75(4), 757–782. https://doi.org/10.1111/j.1467-6494.2007.00456.x

Evans, L., Maio, G. R., Corner, A., Hodgetts, C. J., Ahmed, S., & Hahn, U. (2013). Self-interest and pro-environmental behaviour. *Nature Climate Change*, 3(2), 122–125. https://doi.org/10.1038/nclimate1662

Faul, F., Erdfelder, E., Lang, A. -G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. https://doi.org/10.3758/bf03193146

Felix, R., & Garza, M. R. (2012). Rethinking worldly possessions: The relationship between materialism and body appearance for female consumers in an emerging economy. *Psychology & Marketing*, 29, 980–994. https://doi.org/10.1002/mar.20579

Field, A. P. (2015). Dread returns to mega-silly one. *Health Psychology Review*, 9(1), 15–20. https://doi.org/10.1080/17437199.2013.879198

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, 63(3), 665–694. https://doi.org/10.1348/000711010x502733

Gawronski, B., & LeBel, E. P. (2008). Understanding patterns of attitude change: When implicit measures show change, but explicit measures do not. *Journal of Experimental Social Psychology*, 44, 1355–1361. https://doi.org/10.1016/j.jesp.2008.04.005

Ger, G., & Belk, R. W. (1996). Cross-cultural differences in materialism. *Journal of Economic Psychology*, 17, 55–77. https://doi.org/10.1016/0167-4870(95)00035-6

Gifford, J., & Gifford, R. (2000). FISH 3: A microworld for studying social dilemmas and resource management. *Behavior Research Methods, Instruments, & Computers*, 32(3), 417–422. https://doi.org/10.3758/bf03200810

*Goldberg, M. E., & Gorn, G. J. (1978). Some unintended consequences of TV advertising to children. *Journal of Consumer Research*, 5(1), 22. https://doi.org/10.1086/208710

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41–54. https://doi.org/10.1023/b:joba.0000007455.08539.94

Grouzet, F. M. E., Kasser, T., Ahuvia, A., Dols, J. M. F., Kim, Y., Lau, S., ... Sheldon, K. M. (2005). The structure of goal contents across 15 cultures. *Journal of Personality and Social Psychology*, 89(5), 800–816. https://doi.org/10.1037/0022-3514.89.5.800

Gąsiorowska, A., Zaleśkiewicz, T., & Kesebir, P. (2018). Money as an existential anxiety buffer: Exposure to money prevents mortality reminders from leading to increased death thoughts. *Journal of Experimental Social Psychology*, 79, 394–409. https://doi.org/10.1016/j.jesp.2018.09.004

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319–340. https://doi.org/10.1037/0033-295x.94.3.319

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications*. New York, NY: Routledge. https://doi.org/10.4324/9780203852279

Hurst, M., Dittmar, H., Bond, R., & Kasser, T. (2013). The relationship between materialistic values and environmental attitudes and behaviors: A meta-analysis. *Journal of Environmental Psychology*, 36, 257–269. https://doi.org/10.1016/j.jenvp.2013.09.003

*Jiang, M., Gao, D. G., Huang, R., DeWall, C. N., & Zhou, X. (2014). The devil wears Prada: Advertisements of luxury brands evoke feelings of social exclusion. *Asian Journal of Social Psychology*, 17(4), 245–254. https://doi.org/10.1111/ajsp.12069

Kasser, T. (2005). Frugality, generosity, and materialism in children and adolescents. In K. A. Moore & L. H. Lippman (Eds.), *What do children need to flourish? Conceptualizing and measuring indicators of positive development* (3, pp. 357–373). Boston, MA: Springer.

Kasser, T. (2016). Materialistic values and goals. *Annual Review of Psychology*, 67(1), 489–514. https://doi.org/10.1146/annurev-psych-122414-033344

Kasser, T., Rosenblum, K. L., Sameroff, A. J., Deci, E. L., Niemiec, C. P., Ryan, R. M., ... Hawks, S. (2014). Changes in materialism, changes in psychological well-being: Evidence from three longitudinal studies and an intervention experiment. *Motivation and Emotion*, 38(1), 1–22. https://doi.org/10.1007/s11031-013-9371-4

Kasser, T., & Ryan, R. M. (1993). A dark side of the american dream: Correlates of financial success as a central life aspiration. *Journal of Personality and Social Psychology*, 65(2), 410–422. https://doi.org/10.1037/0022-3514.65.2.410

Kasser, T., & Ryan, R. M. (1996). Further examining the American dream: Differential correlates of intrinsic and extrinsic goals. *Personality and Social Psychology Bulletin*, 22(3), 280–287. https://doi.org/10.1177/0146167296223006

Kasser, T., Ryan, R. M., Couchman, C. E., & Sheldon, K. M. (2004). Materialistic values: Their causes and consequences. In T. Kasser & A. D. Kanner (Eds.), *Psychology and consumer culture: The struggle for a good life in a materialistic world* (pp. 11–28). Washington, DC: American Psychological Association. https://doi.org/10.1037/10658-002

Keyes, C. L. M. (1998). Social well-being. *Social Psychology Quarterly*, 61(2), 121–140. https://doi.org/10.2307/2787065

Kim, Y., Kasser, T., & Lee, H. (2003). Self-concept, aspirations, and well-being in South Korea and the United States. *Journal of Social Psychology*, 143, 277–290. https://doi.org/10.1080/00224540309598445

Kitayama, S., & Markus, H. R. (2000). The pursuit of happiness and the realization of sympathy: Cultural patterns of self, social relations, and well-being. In E. Diener & E. M. Suh (Eds.), *Culture and subjective well-being* (pp. 113–160). Cambridge, MA: MIT Press.

*Ku, L., Dittmar, H., & Banerjee, R. (2014). To have or to learn? The effects of materialism on British and Chinese children's learning. *Journal of Personality and Social Psychology*, 106(5), 803–821. https://doi.org/10.1037/a0036038

*Ku, L., Wu, A. M. S., Lao, A. K. P., & Lam, K. I. N. (2016). "We want the world and we want it now": Materialism, time perspectives and problem spending tendency of Chinese. *International Journal of Psychology*, 53(5), 356–364. https://doi.org/10.1002/ijop.12391

*Ku, L., & Zaroff, C. (2014). How far is your money from your mouth? The effects of intrinsic relative to extrinsic values on willingness to pay and protect the environment. *Journal of Environmental Psychology*, 40, 472–483. https://doi.org/10.1016/j.jenvp.2014.10.008

Kuznets, S. (1934). *National Income, 1929-1932*. Senate Document No. 124, 73rd Congress, 2nd Session.

La Ferle, C., & Chan, K. (2008). Determinants for materialism among adolescents in Singapore. *Young Consumers*, 9(3), 201–214. https://doi.org/10.1108/17473610810901633

La Guardia, J. G., Ryan, R. M., Couchman, C. E., & Deci, E. L. (2000). Within-person variation in security of attachment: A self-determination theory perspective on attachment, need fulfillment, and well-being.

Journal of Personality and Social Psychology, *79*(3), 367–384. https://doi.org/10.1037/0022-3514.79.3.367

Lambert, N. M., Fincham, F. D., Stillman, T. F., & Dean, L. R. (2009). More gratitude, less materialism: The mediating role of life satisfaction. *Journal of Positive Psychology*, *4*(1), 32–42. https://doi.org/10.1080/17439760802216311

*Lamy, L., Guéguen, N., Fischer-Lokou, J., & Guegan, J. (2016). "Wrong place to get help": A field experiment on luxury stores and helping behavior. *Social Influence*, *11*(2), 130–139. https://doi.org/10.1080/15534510.2016.1160839

Lee, J., Ko, E., & Megehee, C. M. (2015). Social benefits of brand logos in presentation of self in cross and same gender influence contexts. *Journal of Business Research*, *68*(6), 1341–1349. https://doi.org/10.1016/j.jbusres.2014.12.004

*Leyva, R. (2018). Experimental insights into the socio-cognitive effects of viewing materialistic media messages on welfare support. *Media Psychology*, *22*, 1–25. https://doi.org/10.1080/15213269.2018.1484769

Li, J., Lu, M., Xia, T., & Guo, Y. (2018). Materialism as compensation for self-esteem among lower-class students. *Personality and Individual Differences*, *131*, 191–196. https://doi.org/10.1016/j.paid.2018.04.038

*Liang, Y., Liu, L., Tan, X., Huang, Z., Dang, J., & Zheng, W. (2016). The effect of self-esteem on corrupt intention: The mediating role of materialism. *Frontiers in Psychology*, *7*, 1063. https://doi.org/10.3389/fpsyg.2016.01063

Liu, Y., Zhao, X., & Liu, Y. (2018). Stress and unethical consumer attitudes: The mediating role of construal level and materialism. *Personality and Individual Differences*, *135*, 85–91.

*Maggaß, A. L., Hamm, K., & Ozimek, P. (2018). *Materialism, materialistic goals, and Facebook use: A priming study*. Unpublished Manuscript, Ruhr University of Bochum, Germany.

Maio, G. R., Pakizeh, A., Cheung, W. Y., & Rees, K. J. (2009). Changing, priming, and acting on values: Effects via motivational relations in a circular model. *Journal of Personality and Social Psychology*, *97*(4), 699–715. https://doi.org/10.1037/a0016420

Maslow, A. H. (1954). *Motivation and personality*. New York, NY: Harper & Row.

McKinley, N. M., & Hyde, J. S. (1996). The objectified body consciousness scale. *Psychology of Women Quarterly*, *20*(2), 181–215. https://doi.org/10.1111/j.1471-6402.1996.tb00467.x

Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., & Urdan, T. (2000). *Manual for the patterns of adaptive learning scales*. Ann Arbor, MI: University of Michigan.

Mitchell, T. R., & Mickel, A. E. (1999). The meaning of money: An individual difference perspective. *Academy of Management Review*, *24*, 568–578. https://doi.org/10.2307/259143

*Moldes, O. (2018). *Spending money on well-being: Identity and motivation processes involved in the association of well-being with material and experiential consumer products.* (Doctoral thesis [PhD]), University of Sussex, Brighton, United Kingdom.

*Moldes, O. (2019). The role of goal orientations on pro-social vs. pro-self spending choices. In K. Cutright, J. Alvarez Mourey, & R. Peres (Eds.), *AMA Summer Academic Conference Proceedings* Volume 30 (S&C-17). Chicago, US: American Marketing Association. Retrieved from: https://www.ama.org/wp-content/uploads/2019/11/2019-Summer-AMA-Proceedings.pdf

Moldes, O., Banerjee, R., Easterbrook, M. J., Harris, P. R., & Dittmar, H. (2019). Identity changes and well-being gains of spending money on material and experiential consumer products. *Journal of Economic Psychology*, *72*, 229–244. https://doi.org/10.1016/j.joep.2019.04.003

Murphy, R. O., Ackermann, K. A., & Handgraaf, M. (2011). Measuring social value orientation. *Judgment and Decision Making*, *6*(8), 771–781. https://doi.org/10.2139/ssrn.1804189

*Nagpaul, T., & Pang, J. S. (2016). Materialism lowers well-being: The mediating role of the need for autonomy - correlational and experimental evidence. *Asian Journal of Social Psychology*, *20*(1), 11–21. https://doi.org/10.1111/ajsp.12159

Noll, S. M., & Fredrickson, B. L. (1998). A mediational model linking self-objectification, body shame, and disordered eating. *Psychology of Women Quarterly*, *22*(4), 623–636. https://doi.org/10.1111/j.1471-6402.1998.tb00181.x

O'Guinn, T. C., & Shrum, L. J. (1997). The role of television in the construction of consumer reality. *Journal of Consumer Research*, *23*(4), 278–294. https://doi.org/10.1086/209483

Oishi, S. (2012). Individual and societal well-being. In K. Deaux & M. Snyder (Eds.), *The oxford handbook of personality and social psychology* (pp. 597–622). New York, NY: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195398991.013.0024

Ozimek, P., & Förster, J. (2017). The impact of self-regulatory states and traits on Facebook use: Priming materialism and social comparisons. *Computers in Human Behavior*, *71*, 418–427. https://doi.org/10.1016/j.chb.2017.01.056

Pham, T. H., Yap, K., & Dowling, N. A. (2012). The impact of financial management practices and financial attitudes on the relationship between materialism and compulsive buying. *Journal of Economic Psychology*, *33*, 461–470. https://doi.org/10.1016/j.joep.2011.12.007

Richins, M. L. (1987). Media, materialism, and human happiness. In M. Wallendorf & P. Anderson (Eds.), *NA - Advances in Consumer Research* (pp. 352–356). Provo, UT: Association for Consumer Research.

Richins, M. L. (1995). Social comparison, advertising, and consumer Discontent. *American Behavioral Scientist*, *38*(4), 593–607. https://doi.org/10.1177/0002764295038004009

Richins, M. L. (2004). The material values scale: Measurement properties and development of a short form. *Journal of Consumer Research*, *31*(1), 209–219. https://doi.org/10.1086/383436

Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research*, *19*(3), 303–316. https://doi.org/10.1086/209304

Rosenberg, M. (1965). Rosenberg self-esteem scale (RSE). *Acceptance and commitment therapy. measures package*, *61*(52).

Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, *52*(1), 141–166. https://doi.org/10.1146/annurev.psych.52.1.141

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: subjective vitality as a dynamic reflection of well-being. *Journal of Personality*, *65*(3), 529–565. https://doi.org/10.1111/j.1467-6494.1997.tb00326.x

Saunders, S., & Munro, D. (2000). The construction and validation of a consumer orientation questionnaire (SCOI) designed to measure Fromm's (1955) "marketing character" in Australia. *Social Behavior and Personality*, *28*, 219–240. https://doi.org/10.2224/sbp.2000.28.3.219141-166

Schmuck, P. (2001). Intrinsic and extrinsic life goals preferences as measured via inventories and via priming methodologies: Mean differences and relations with well-being. In P. Schmuck & K. M. Sheldon (Eds.), *Life goals and well-being: Towards a positive psychology of human striving* (pp. 132–147). Ashland, OH: Hogrefe & Huber.

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries, *Advances in Experimental Social Psychology* (25, pp. 1–65). Cambridge, MA: Academic Press. https://doi.org/10.1016/s0065-2601(08)60281-6

Sheldon, K. M., Ryan, R. M., Deci, E. L., & Kasser, T. (2004). The independent effects of goal contents and motives on well-being: It's both what you pursue and why you pursue it. *Personality and Social Psychology Bulletin*, *30*(4), 475–486. https://doi.org/10.1177/0146167203261883

Shrum, L. J., Burroughs, J. E., & Rindfleisch, A. (2005). Television's cultivation of material values. *Journal of Consumer Research*, *32*(3), 473–479. https://doi.org/10.1086/497559

Sirgy, M. J., Gurel-Atay, E., Webb, D., Cicic, M., Husic, M., Ekici, A., ... Johar, J. S. (2012). Linking advertising, materialism, and life satisfaction. *Social Indicators Research*, 107(1), 79–101. https://doi.org/10.1007/s11205-011-9829-2

Srivastava, A., Locke, E. A., & Bartol, K. M. (2001). Money and subjective well-being: It's not the money, it's the motives. *Journal of Personality and Social Psychology*, 80, 959–971. https://doi.org/10.1037/0022-3514.80.6.959

Tang, T. L. P. (1992). The meaning of money revisited. *Journal of Organizational Behavior*, 13, 197–202. https://doi.org/10.1002/job.4030130209

*Teng, F., Poon, K. -T., Zhang, H., Chen, Z., Yang, Y., & Wang, X. (2016). Situational cuing of materialism triggers self-objectification among women (but not men): The moderating role of self-concept clarity. *Personality and Individual Differences*, 97, 220–228. https://doi.org/10.1016/j.paid.2016.03.066

Vansteenkiste, M., Matos, L., Lens, W., & Soenens, B. (2007). Understanding the impact of intrinsic versus extrinsic goal framing on exercise performance: The conflicting role of task and ego involvement. *Psychology of Sport and Exercise*, 8(5), 771–794. https://doi.org/10.1016/j.psychsport.2006.04.006

Viechtbauer, W. (2010). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, 36(3), 1–48. https://doi.org/10.18637/jss.v036.i03

Wang, X., & Krumhuber, E. G. (2017). The love of money results in objectification. *British Journal of Social Psychology*, 56(2), 354–372. https://doi.org/10.1111/bjso.12158

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54(6), 1063–1070. https://doi.org/10.1037/0022-3514.54.6.1063

Wilkinson, R., & Pickett, K. (2010). *The spirit level: Why equality is better for everyone*. London, UK: Penguin.

Wilson, D. B. (2001). *Practical meta-analysis effect size calculator*. Retrieved from https://campbellcollaboration.org/escalc/html/EffectSizeCalculator-Home.php

World Bank. (2017). *Household final consumption expenditure* [World Bank national accounts data, and OECD National Accounts data files]. Retrieved from https://data.worldbank.org/indicator/NE.CON.PETC

Wright, N. D., & Larsen, V. (1993). Materialism and life satisfaction: A meta analysis. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 6, 158–165.

Yamagishi, T., & Sato, K. (1986). Motivational bases of the public goods problem. *Journal of Personality and Social Psychology*, 50(1), 67–73. https://doi.org/10.1037/0022-3514.50.1.671.67

*Zhang, H., & Zhang, W. (2016). Materialistic cues boosts personal relative deprivation. *Frontiers in Psychology*, 7, 1236. https://doi.org/10.3389/fpsyg.2016.0123

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

How to cite this article: Moldes O, Ku L. Materialistic cues make us miserable: A meta-analysis of the experimental evidence for the effects of materialism on individual and societal well-being. *Psychol Mark*. 2020;37:1396–1419. https://doi.org/10.1002/mar.21387