

## The Relationship Between Materialism and Personal Well-Being: A Meta-Analysis

Helga Dittmar, Rod Bond, and Megan Hurst  
University of Sussex

Tim Kasser  
Knox College

This meta-analysis investigates the relationship between individuals' materialistic orientation and their personal well-being. Theoretical approaches in psychology agree that prioritizing money and associated aims is negatively associated with individuals' well-being but differ in their implications for whether this is invariably the case. To address these and other questions, we examined 753 effect sizes from 259 independent samples. Materialism was associated with significantly lower well-being for the most widely used, multifaceted measures (materialist values and beliefs,  $r = -.19$ ,  $\rho = -.24$ ; relative importance of materialist goals,  $r = -.16$ ,  $\rho = -.21$ ), more than for measures assessing emphasis on money alone ( $r_s = -.08$  to  $-.11$ ,  $\rho_s = -.09$  to  $-.14$ ). The relationship also depended on type of well-being outcome, with largest effects for risky health and consumer behaviors and for negative self-appraisals ( $r_s = -.28$  to  $-.44$ ,  $\rho_s = -.32$  to  $-.53$ ) and weakest effects for life satisfaction and negative affect ( $r_s = -.13$  to  $-.15$ ,  $\rho_s = -.17$  to  $-.18$ ). Moderator analyses revealed that the strength of the effect depended on certain demographic factors (gender and age), on value context (study/work environments that support materialistic values and cultures that emphasize affective autonomy), and on cultural economic indicators (economic growth and wealth differentials). Mediation analyses suggested that the negative link may be explained by poor psychological need satisfaction. We discuss implications for the measurement of materialist values and the need for theoretical and empirical advances to explore underlying processes, which likely will require more experimental, longitudinal, and developmental research.

*Keywords:* materialism, meta-analysis, personal well-being, values, consumer behaviors

“Oh what a void there is in things.”

—Persius

Every day, thousands of advertisements tell us that people are happy, worthwhile, and successful to the extent that they have money, possessions, and the right image (Dittmar, 2008; Kasser & Kanner, 2004). Yet numerous philosophic and religious perspectives across both time and culture have suggested that focusing one's life around the acquisition of money, possessions, and status saps one's spirit and undermines one's quality of life (see Belk, 1983; Elgin, 1993, for reviews). Psychoanalytic (Freud, 1908/1959; Horney, 1937) and humanistic/existential (Fromm, 1976; Maslow, 1954; Rogers, 1961) theorists have tended to agree with this critique of materialism, but it was not until the mid-1980s and early 1990s that consumer researchers (Belk, 1984; Richins & Dawson, 1992) and psychologists (Kasser & Ryan, 1993) began to explore empirically whether well-being is negatively associated with a strong focus on materialistic aims. These

early studies found that U.S. respondents report less happiness and life satisfaction, lower levels of vitality and self-actualization, and more depression, anxiety, and general psychopathology to the extent that they believe that the acquisition of money and possessions is important and key to happiness and success in life.

Since these early studies, dozens more have replicated and extended the finding that materialism is negatively associated with personal well-being. Such results have been documented with a variety of measures of materialism, ranging from Likert-type surveys (Richins, 2004a) to measures of relative goal importance (Kasser & Ryan, 1996) to projective measures (Chaplin & John, 2007) to reaction times (Schmuck, 2001; Solberg, Diener, & Robinson, 2004). In addition to the well-being outcomes cited above, a variety of other constructs have been associated with materialism, including self-esteem (Ryan et al., 1999), dysfunctional consumer behaviors (Dittmar, 2005a, 2005b), physical health problems (Niemiec, Ryan, & Deci, 2009), positive and negative affect (Christopher & Schlenker, 2004), and interviewer diagnoses of psychopathology (P. Cohen & Cohen, 1996). Findings have also been replicated in varying populations, including children as young as 10 years (Kasser, 2005) and adults into their 80s (Sheldon & Kasser, 2001), and individuals living in North America (Richins & Dawson, 1992), Western Europe (Dittmar, 2005b), former Soviet bloc nations (Ryan et al. 1999), the Middle East (Speck & Roy, 2008), and Asia (Wong, Rindfleisch, & Burroughs, 2003). Studies conducted across time show that increases

Helga Dittmar, Rod Bond, and Megan Hurst, School of Psychology, University of Sussex; Tim Kasser, Department of Psychology, Knox College.

Correspondence concerning this article should be addressed to Helga Dittmar, School of Psychology, University of Sussex, Pevensey 1 2B5, Brighton, England, United Kingdom BN1 9QH. E-mail: [h.e.dittmar@sussex.ac.uk](mailto:h.e.dittmar@sussex.ac.uk)

in psychopathology and decreases in well-being are associated with stronger endorsement of materialism by U.S. adolescents (Twenge et al., 2010) and Norwegian citizens (Hellevik, 2003).

To our knowledge, there has been no recent, systematic, empirical review of this growing literature. The only meta-analysis we are aware of, examining life satisfaction and materialism, was conducted more than 2 decades ago using only seven samples (Wright & Larsen, 1993), and the most comprehensive review of the literature (Kasser, 2002) was not quantitative and is more than a decade old at this point. Given the large number of studies (some unpublished) that have been conducted since these earlier reviews and the variety of effect sizes reported (with raw correlations between materialism and well-being in single studies ranging from positive, such as .38, Sirgy et al., 1998, to strongly negative, such as  $-.67$ , Dittmar & Kapur, 2011; Kasser & Ryan, 1996), a meta-analysis is timely, topical, and useful for providing information that allows researchers to estimate empirically the strength, direction, and consistency of the reported negative relationship between materialism and well-being. A second reason for conducting a meta-analysis now is that materialism appears to be on the rise among young people (Twenge et al., 2010) at the same time that personal well-being in economically developed countries is becoming an important policy concern (e.g., see the website of the All-Party Parliamentary Group on Wellbeing Economics, <http://parliamentarywellbeinggroup.org.uk>). Thus, a meta-analysis may help clarify the potential worth of developing interventions, educational practices, and policies designed to diminish people's focus on the acquisition of money and possessions. A final reason for conducting a meta-analysis is that several questions remain open in the materialism literature for which meta-analytic techniques are particularly well placed to provide answers. We now turn to these methodological and theoretical questions.

### Does the Negative Relationship Depend on the Types of Materialism and Well-Being Measures Used?

#### Materialism Measures

In line with past work (Dittmar, 2008; Kasser & Kanner, 2004; Richins, 2004b; Sirgy, 1998), we define materialism for the purposes of this meta-analysis as *individual differences in people's long-term endorsement of values, goals, and associated beliefs that center on the importance of acquiring money and possessions that convey status*. Thus, the current meta-analysis does not include assessments regarding (a) philosophical materialism (i.e., the belief that physical laws concerning matter can answer most questions), (b) beliefs about the goals that a society (as opposed to an individual person) should pursue (as captured, e.g., by Inglehart's, 1981, 1997, materialist and postmaterialist values), (c) attitudes toward budgeting money or money as good or bad in general (e.g., Tang, Kim, & Tang, 2002), (d) measures of purchases made with the intention of acquiring material possessions (as opposed to obtaining experiences; Carter & Gilovich, 2012; Van Boven & Gilovich, 2003), or (e) measures of power values (which are primarily concerned with having dominance and status over other people; Schwartz, 1992; see Kasser & Ahuvia, 2002, for discussion of this latter distinction). The measures that fit our definition and are included in the meta-analysis vary in some respects but, generally speaking, follow one of two broad methodological approaches (see Table 1). The first approach uses Likert-type scales to

assess agreement with statements representing materialist values, beliefs, and behaviors. Some scales measure solely the significance an individual attaches to being wealthy (Georgellis, Tsitsianis, & Yin, 2009), whereas others assess beliefs associated with money (Tang, Tang, & Luna-Arocas, 2005) or personality traits linked to material possessions (Belk, 1984). Researchers have also developed scales to measure different facets of materialism, such as the Material Values Scale (MVS; Richins, 2004a; Richins & Dawson, 1992), which is widely used in consumer research and psychology. The MVS assesses the centrality of material goods in a person's life, as well as beliefs about improved success and happiness resulting from such acquisitions. The second methodological approach assesses the importance people place on goals for wealth and possessions. This includes single- and multiple-item ratings of wealth, income, or money as a goal, either by itself (Nickerson, Schwarz, Diener, & Kahneman, 2003) or together with closely linked goals (see Grouzet et al., 2005). A prominent example is the Aspiration Index (AI), which has been used to measure the goal of financial success (e.g., Kasser & Ryan, 1993) as well as a broader set of materialist, or *extrinsic*, goals that include image and fame as well as financial success (e.g., Kasser & Ryan, 1996). Such goal measures can yield two different types of materialism assessments: *absolute* measures, reflecting participants' ratings of the importance of materialistic goals, or *relative* measures, assessing how important materialistic goals are in comparison to a variety of other types of goal, such as personal relationships, community involvement, or spirituality. Thus, in both approaches, measures range from single items purely assessing the significance of money, wealth, or income to more complex assessments that reflect multifaceted materialism conceptualizations.

We made two general types of predictions regarding how well-being would relate to different types of materialism measures. First, we expected that multifaceted measures, assessing a broader array of beliefs and goals associated with money and possessions, would be more strongly related to well-being outcomes than would more simple measures using an item or two about money and possessions. This prediction is informed by typical standards for adequate test construction: Reliable and valid measures sample multiple items from the universe of possible items relevant to the construct. In addition, we draw on reviews suggesting that an exclusive focus on the acquisition of money and possessions alone may not capture the full meaning of materialism (Dittmar, 2008; Fournier & Richins, 1991; Kasser, 2002). Our second hypothesis was that those goal measures that use relative assessments of materialism's importance to the individual would be more strongly related to well-being than would those that use absolute assessments. Our rationale here was that value researchers have long insisted (Rokeach, 1973) and empirically confirmed (Grouzet et al., 2005; Maio, Pakizeh, Cheung, & Rees, 2009; Schwartz, 1992) that any particular value or goal exists within a broader system of values and goals, so that optimal assessment involves measuring the importance of a particular goal, such as materialism, relative to other goals in that system.

#### Personal Well-Being Measures

The extant literature reveals that materialism is associated with a wide array of different kinds of well-being. Our review of the literature led us to create four broad categories of well-being constructs that have been empirically related to materialism (see

Table 1  
*Categorization of Materialism Measures*

Category	Definition and representative measures
Endorsement of Likert-type scale items	
Value of having money and possessions	<p><i>Definition:</i> Single item or brief measure assessing the value attached to having money and possessions only.</p> <p><i>Representative measures:</i> Single item (Robak, Chiffrieller, &amp; Zappone, 2007), <i>important factor</i> in Money Ethic Scale (Tang, 1992).</p> <p><i>Representative items:</i> “How important do you think money will be in your life?”; “I value money very highly.”</p>
Beliefs related to money and wealth	<p><i>Definition:</i> A mixture of scales or selected subscales assessing beliefs related to money and wealth<sup>a</sup> that broadly address status (e.g., power, prestige, achievement, reputation, popularity).</p> <p><i>Representative measures:</i> <i>Achievement, power, respect, and success</i> factors in Love of Money and Money Ethic Scale (Mitchell &amp; Mickel, 1999; Tang, 1992); <i>Materialism Scale</i> (Ward &amp; Wackman, 1971); <i>tycoon type</i> in Money Over Mind Questionnaire (Forman, 1987).</p> <p><i>Representative items:</i> “Money represents one’s achievement,” “Money is a symbol of success,” “People judge others by the things they own.”</p>
Materialist values and beliefs	<p><i>Definition:</i> Scales that assess three interrelated components of materialism—the centrality of material possessions and wealth in a person’s life, beliefs that they are a good way to judge the success of self and others, and beliefs that their acquisition increases happiness.</p> <p><i>Representative measures:</i> <i>Material Values Scale</i> (Richins, 2004a; Richins &amp; Dawson, 1992), <i>Youth Materialism Scale</i> (M. E. Goldberg, Gorn, Peracchio, &amp; Bamossy, 2003).</p> <p><i>Representative items:</i> “I like a lot of luxury in my life,” “I admire people who own expensive homes, cars, and clothes,” “I would be happier if I had more money to buy more things for myself.”</p>
Materialist personality traits	<p><i>Definition:</i> Scales that measure indicators of personality traits and behaviors linked to a materialist orientation (such as possessiveness, nongenerosity, envy, or accumulating goods).</p> <p><i>Representative measure:</i> Belk Materialism Scale (Belk, 1984; Ger &amp; Belk, 1996).</p> <p><i>Representative items:</i> “I worry about people taking my possessions,” “I don’t like to lend things, even to good friends,” “When friends have things I cannot afford it bothers me.”</p>
Importance ratings	
Importance of having money and possessions (absolute, i.e., by itself)	<p><i>Definition:</i> Single- and multiple-item measures of the importance of money, possessions, or financial success only.</p> <p><i>Representative measures:</i> Single item (see Nickerson, Schwarz, Diener, &amp; Kahneman, 2003), <i>financial success</i> in the Aspirations Index scored for absolute importance (Kasser &amp; Ryan, 1993, 1996).</p> <p><i>Representative items:</i> “The importance to you personally of being very well off financially,” “to have many expensive possessions.”</p>
Importance of having money and possessions (relative, i.e., compared to other goals)	<p><i>Definition:</i> Measures of the strength of financial success relative to intrinsic goals (e.g., relationships, community contribution, personal growth).</p> <p><i>Representative measures:</i> <i>Financial success</i> in the Aspirations Index (Kasser &amp; Ryan, 1993, 1996) scored for relative importance, <i>relative importance of financial success</i> compared to four other life goals (Srivastava, Locke, &amp; Bartol, 2001).</p> <p><i>Representative items:</i> See above for financial success; <i>intrinsic goals</i> “to have deep enduring relationships,” “helping others,” “to know and accept who I really am.”</p>
Importance of materialist goals (absolute, i.e., by themselves)	<p><i>Definition:</i> Importance of a set of goals that include money, income, and material possessions, as well as closely related goals.</p> <p><i>Representative measures:</i> <i>Extrinsic work values</i> (Vansteenkiste et al., 2007); <i>extrinsic work orientation</i> (Malka &amp; Chatman, 2003); <i>adolescents’ future goals</i> for money, power, and image (Casas, Gonzales, Figuer, &amp; Coenders, 2004).</p> <p><i>Representative items:</i> “Good pay,” “having the material possessions and lifestyle you desire,” “own image (appearance).”</p>
Importance of materialist goals (relative, i.e., compared to other goals)	<p><i>Definition:</i> Measures of the strength of extrinsic goals (financial success, fame, image) relative to intrinsic goals (e.g., relationships, community contribution, personal growth).</p> <p><i>Representative measures:</i> <i>Financial success, fame, and image</i> in the Aspirations Index (Kasser &amp; Ryan, 1993, 1996; Ryan et al., 1999) scored for relative importance; <i>Guiding Principles Scale</i> (Kasser &amp; Ryan, 1996).</p> <p><i>Representative items:</i> See absolute and relative importance of money above for financial success and intrinsic goals; “to be admired by lots of different people” (fame), “to keep up with fashions in hair and clothing” (image).</p>

<sup>a</sup> A minority of scales also include items assessing the value of having money and possessions.

Table 2). The first category is *subjective well-being* (SWB; Diener & Oishi, 2005), which encompasses one's cognitive appraisals of overall life satisfaction and satisfaction with different life domains (Diener, Suh, Lucas, & Smith, 1999), one's emotional appraisals of happiness, and the frequency with which one experiences positive versus negative emotions (i.e., affect balance; Bradburn, 1969). Although these SWB components are theoretically distinct and can therefore be analyzed separately, they are often examined

as a composite measure, given that they usually positively correlate with one another (Diener et al., 1999). The second category concerns *self-appraisals*, or individuals' positive and negative views of themselves. Positive self-appraisals that have been associated with materialism include constructs such as self-esteem (Ryan et al., 1999), positive self-concept (Leikes, Gingras, Philippe, Koestner, & Fang, 2010), and self-actualization (Kasser & Ryan, 1993), which generally involve liking and accepting oneself.

Table 2  
*Categorization of Well-Being Measures*

Category	Definition and representative measures
Subjective well-being	
Life satisfaction	<i>Definition:</i> Measures that assess satisfaction with life overall. <i>Representative measures:</i> SWLS (Diener, Emmons, Larsen, & Griffin, 1985), 15-item quality of life measure (Flanagan, 1978), life satisfaction scale for children (Huebner, 1994), Purpose in Life Test (Crumbaugh & Maholick, 1981), 3-item life satisfaction measure used in U.S. General Social Survey (Easterlin, 2001), single-item measures of life satisfaction and of happiness.
Negative affect	<i>Definition:</i> Measures that assess how much negative affect the individual experiences in his/her life. <i>Representative measures:</i> PANAS–Negative Affect (D. Watson, Tellegen, & Clark, 1988), negative mood rating, emotional stability versus neuroticism scale of the Comrey Personality Scales (Comrey, 1987).
Positive affect	<i>Definition:</i> Measures that assess how much positive affect the individual experiences in his/her life. <i>Representative measures:</i> PANAS–Positive Affect (D. Watson et al., 1988), fun and enjoyment (Andrews & Withey, 1976).
Composite subjective well-being	<i>Definition:</i> Measures that assess an individual's overall subjective well-being either by a single measure or by combining measures. <i>Representative measures:</i> Personal Well-Being Index (Cummins, 1998), Personal Well-Being Scale (Ryff & Keyes, 1995), SWLS and PANAS, SWLS and Affect Balance Scale (Bradburn, 1969), PANAS and Self-Concept Scale (Anderman, 2002).
Self-appraisals	
Positive	<i>Definition:</i> Measures that assess positive self-evaluation. <i>Representative measures:</i> Rosenberg's Self-Esteem Scale (Rosenberg, 1965), Index of Self-Actualisation (Jones & Crandall, 1986).
Negative	<i>Definition:</i> Measures that assess negative self-evaluation. <i>Representative measures:</i> Self-Doubt Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 2000), Self-Discrepancy Index (Dittmar, 2005a, 2000b), Self-Ambivalence Measure (Bhar & Kyrios, 2007).
DSM Axis I	
Anxiety	<i>Definition:</i> Measures that assess anxiety. <i>Representative measures:</i> State–Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970), Hopkins Symptom Checklist–Anxiety Symptoms (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974), Beck Anxiety Inventory (Beck & Steer, 1993), Social Interaction Anxiety Scale (Mattick & Clarke, 1998).
Depression	<i>Definition:</i> Measures that assess depression. <i>Representative measures:</i> Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), Center for Epidemiological Studies–Depression Inventory (Radloff, 1977), Depression scale from Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995), depression factor from Rubinstein scale (Rubinstein, 1981).
Compulsive buying	<i>Definition:</i> Measures that assess propensity to purchase goods excessively. <i>Representative measures:</i> Compulsive buying scale (Faber & O'Guinn, 1992), Compulsive Buying Scale (D'Astous, Maltais, & Roberge, 1990), Impulsive Buying Tendency Scale (Verplanken & Herabadi, 2001), 20-item spending tendency scale (J. J. Watson, 1998).
Other DSM Axis I	<i>Definition:</i> Measures that assess DSM Axis I symptoms other than anxiety, depression, or compulsive buying. <i>Representative measures:</i> Children's Global Assessment Scale (Shaffer et al., 1983), Adolescent Community Mental Health Interview (Ikle, Lipp, Butters, & Ciarlo, 1983), Mental Health Index (Veit & Ware, 1983), Diagnostic Interview for Children and Adolescents–Oppositional and Conduct Disorders (Herjanic & Reich, 1982), Internalizing Negative Emotionality Scale (Miller, 2009), Strengths and Difficulties Questionnaire (Goodman, 1997).
Health and physical risk	
Physical health	<i>Definition:</i> Measures that assess an individual's overall state of physical health. <i>Representative measures:</i> Somatic Symptoms Checklist (Klonowicz, 2001), Emmons's 9-item measure of physical health (Emmons, 1991), single-item ratings of physical health.
Risk behaviors	<i>Definition:</i> Measures that assess the frequency with which the individual uses tobacco, alcohol, or drugs. <i>Representative measures:</i> Risk Behaviour Index–5 items on tobacco, alcohol, and drug use (Williams, Cox, Hedberg, & Deci, 2000); Personal Involvement Index–items on alcohol, tobacco, and drug use (Zaichkowsky, 1994); Risky Behavior Questionnaire for Adolescents (Auerbach et al., 2009); single items concerning tobacco, alcohol, and drug use.

*Note.* DSM = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; American Psychiatric Association, 2000); PANAS = Positive Affect/Negative Affect Scale; SWLS = Satisfaction With Life Scale.

Negative self-appraisals include constructs such as self-doubt (Chang & Arkin, 2002), self-ambivalence (R. O. Frost, Kyrios, McCarthy, & Matthews, 2007), and self-discrepancies (Dittmar, 2005b), which generally reflect dissatisfaction with oneself or a belief that one is failing to live up to important self-standards. The third category of well-being constructs includes those that assess mental ill-health. We focused here on measures relevant to the *Diagnostic and Statistical Manual of Mental Disorder's* (4th ed., text rev. [DSM-IV-TR]; American Psychiatric Association, 2000<sup>1</sup>) Axis I emotion-based disorders. Many materialism studies include assessments of depression and anxiety, two of the most common types of emotional problems (e.g., Burroughs & Rindfleisch, 2002; Kasser & Ryan, 1993; Sheldon, 2009; Ryan et al., 1999). A further disorder of interest to materialism researchers has been compulsive buying, which entails a dysfunctional relationship to consumer goods characterized by loss of control over buying behavior, preoccupation with thoughts about buying, and the continuation of excessive buying and spending despite harmful consequences (Dittmar, 2004, 2005a, 2005b; R. O. Frost et al., 2007; Roberts & Manolis, 2012). We also included in this third category *other DSM Axis I* measures that concern general levels of psychopathology and mental health functioning not specific to any particular DSM disorder. Our fourth category reflects measures relevant to one's *physical health*. These include assessments of different somatic symptoms, such as headaches and stomachaches, as well as measures of how often individuals engage in different types of health risk behaviors, such as smoking cigarettes, drinking alcohol, or using drugs (P. Cohen & Cohen, 1996; Vansteenkiste, Duriez, Simons, & Soenens, 2006; Williams, Cox, Hedberg, & Deci, 2000).

In contrast to our hypotheses regarding how strongly different materialism measures would relate to well-being, we made no specific hypotheses about how strongly different well-being measures would relate to materialism. To our knowledge, no theoretical statements have been made that would suggest reasons for expecting materialism to relate more strongly to one type of well-being outcome than to another. Instead, most of the theoretical explanations for the negative relationships between materialism and well-being postulate processes that would likely result in lowered levels of well-being across a broad band of outcomes. Consider three different explanations, none of which are mutually exclusive.

One account suggests that materialism leads to *negative self-appraisals* in response to advertising and consumer culture messages that emphasize material wealth (Dittmar, 2008; Richins, 1991; Sirgy, 1998). When people oriented toward money, expensive goods, and image attend to the advertising messages in consumer culture, they are frequently exposed to messages suggesting that they are insufficient in one way or another. This can lead both to negative self-evaluations resulting from upward social comparisons (Collins, 1996; Richins, 1994) and to increased discrepancies between one's current and ideal selves (Halliwell & Dittmar, 2006; E. T. Higgins, 1987). For example, one experimental study found that, compared to less materialistic women, women with strong materialistic values reported larger self-discrepancies after viewing advertisements containing models with expensive goods (Ashikali & Dittmar, 2012). In turn, self-discrepancies have been linked empirically to negative affect and symptoms of depression and anxiety (E. T. Higgins, 1987) and identified alongside mate-

rialism as a predictor of excessive buying of consumer goods (Dittmar, 2005a). Furthermore, some people may express these unpleasant states via somatic means or try to cope with low mood and self-discrepancies through self-medication efforts, such as the use of alcohol and drugs, or excessive buying and spending (Benson, 2000). Thus, if materialism makes people vulnerable to negative self-appraisals in response to advertising messages, which can express themselves in different types of lowered personal well-being, then it is plausible that materialism is associated with a wide range of well-being outcomes.

A second account suggests that materialism is symptomatic of an underlying feeling of *psychological insecurity* (Kasser, 2002). Studies show that people who grow up with cold, controlling mothers (Kasser, Ryan, Zax, & Sameroff, 1995), whose parents divorce (Rindfleisch, Burroughs, & Denton, 1997), or who were raised in economically difficult situations (Kasser et al., 1995) tend to place a higher value on materialism. Additionally, experimental studies show that manipulations of self-doubt and uncertainty (Chang & Arkin, 2002), of mortality salience (Kasser & Sheldon, 2000), and of relational and economic insecurity (Sheldon & Kasser, 2008) each lead to an increased focus on materialistic strivings. Thus, if materialism is a type of culturally sanctioned coping strategy that some people use in order to attempt to deal with their feelings of insecurity (Kasser, Ryan, Couchman, & Sheldon, 2004) and if feelings of insecurity reflect themselves via diverse types of well-being (including anxiety, lowered life satisfaction, and less happiness), then we would again expect that materialism is related to a broad array of well-being outcomes.

A third account, derived from *self-determination theory* (SDT), suggests that the pursuit of materialistic values and goals leads individuals to create a lifestyle and to have experiences that crowd out other, more satisfying experiences in life, thereby undermining the satisfaction of psychological needs that are essential for psychological thriving (Deci & Ryan, 2000; Kasser, 2002). Indeed, data show that high levels of materialism are associated with relatively poor satisfaction of psychological needs for competence, autonomy, and relatedness (Kasser, 2002) and that such associations account empirically for the negative relations between materialism and well-being (Kasser et al., 2014; Niemiec et al., 2009). Thus, if materialism interferes with one's sense of being an efficacious person, having choices in one's life, and enjoying high quality interpersonal relationships, we would again predict that materialism relates negatively to a broad array of well-being outcomes.

Thus, our hypothesis was that materialism would relate negatively to a variety of types of well-being constructs. We remained interested, however, in whether some types of well-being would be more closely related to materialism than others.

### Does the Negative Relationship Depend on Characteristics of the Participants?

Enough variation exists in the demographic characteristics of samples in this meta-analysis to allow us to test whether such

<sup>1</sup> Our categorization scheme was informed by this version of the *DSM*, rather than the new, fifth, version published in 2013.

characteristics affect the size of the association between materialism and well-being. Although, to our knowledge, there is little by way of single studies suggesting such effects, one study found relatively weak associations between materialism and well-being in subsamples of Russian females (Ryan et al., 1999). We therefore examined whether age, gender, ethnicity, and education moderate the link between materialism and well-being but made no specific hypotheses.

Clear debate does exist, however, about whether the association between materialism and well-being is moderated by two other demographic factors: participants' professional expertise and income. Regarding professional expertise, power and achievement values have been found to be associated positively with SWB among Israeli business students, but not among psychology students (Sagiv & Schwartz, 2000). These findings have been interpreted as consistent with a *person–environment value congruence* hypothesis, which holds that SWB is enhanced when a person's values match the dominant priorities of the surrounding environment because such a match provides opportunities to express one's values, diminishes the frequency of receiving external sanctions due to failures to conform, and reduces the experience of internal conflict that might arise from value incongruence. In contrast, other studies that assessed materialism directly, rather than via power and achievement values, found that negative associations between materialism and well-being also occur among business students and entrepreneurs (e.g., Kasser & Ahuvia, 2002; Srivastava, Locke, & Bartol, 2001; Vansteenkiste et al., 2006). These latter results suggest that materialism is problematic for people's well-being even when their professional environment supports goals for profit making. Such results are also consistent with SDT accounts reviewed above (Deci & Ryan, 2004; Kasser, 2002), which suggest that the pursuit of materialistic aims undermines the satisfaction of the psychological needs necessary for the well-being of any person, regardless of his or her profession or area of study. In the current meta-analysis, we therefore coded the proportion of individuals in each sample who were studying or practicing a profession that could be understood as supportive of materialistic ambitions; doing so allowed us to explore this demographic factor as a potential moderator.

Competing hypotheses can also be derived concerning the possibility of moderation by *personal income*. First, materialism may not be so detrimental for well-being if one is wealthy. Such a hypothesis seems consistent with cognitive-behavioral and goal-attainment approaches (e.g., Bandura, 1977; Locke & Latham, 1990; Oishi, Diener, Lucas, & Suh, 1999; Seligman, 1991), which propose that well-being improves when one attains rewards and fulfils the goals one has set. As such, people of a relatively high income would be in a better position to fulfil their material desires than would poorer individuals. Some evidence supports this viewpoint among U.S. (Nickerson et al., 2003) and Icelandic (Garðarsdóttir, 2006) adults. Second, materialism may not be so detrimental for well-being if one is poor. Such a hypothesis seems consistent with Maslovian perspectives (Maslow, 1954) suggesting that needs for safety and security must be satisfied (perhaps through materialistic goals) before one can focus on other, higher level needs. Research does show that economic stress increases one's focus on financial success goals (P. Cohen & Cohen, 1996; Kasser et al., 1995; Sheldon & Kasser, 1998) and shifts the meaning of materialistic goals, making money more akin to issues of health and

safety than to popularity and image (Grouzet et al., 2005). Therefore, for poorer people, materialistic strivings may concern the satisfaction of basic deficiency needs (see also Bilsky & Schwartz, 1994), and thus, a strong focus on them may not be as damaging as it is for wealthier people, for whom materialism is about more superficial, extrinsic (Kasser & Ryan, 1996) concerns. One study that supports this possibility reported a negative relationship for Japanese and U.S. respondents, but not for Thai respondents (i.e., those in a poorer, developing economy; Wong et al., 2003). A third possibility would suggest no moderation by income. Such a hypothesis would be consistent with SDT (Deci & Ryan, 2000), which, again, suggests that well-being depends largely on the satisfaction of needs for autonomy, competence, and relatedness: Thus, wealthy and poor alike would have diminished well-being to the extent that they focus on materialism. Some evidence supports this viewpoint, as no interaction between wealth and income was detected in a relatively heterogeneous sample of U.S. adults (Kasser & Ryan, 1996). Given these mixed results, this meta-analysis coded the actual wealth of participants, when available, in order to examine its potential moderating influence on the relationship between materialism and well-being.

### Does the Negative Relationship Depend on Characteristics of the Participants' Society?

As noted above, studies examining the associations between materialism and well-being have been conducted in a relatively wide array of nations. This allowed us to examine whether various economic and cultural characteristics of the society participants live in affect the size and direction of the relation between materialism and well-being.

### Economic Indicators

Economic conditions and organization of countries seem to hold particular potential as moderators, given their special relevance to the variable of materialism. We examined three types of economic indicators.

First, to ascertain an overall sense of the economic wealth of a nation, we obtained data on its gross domestic product (GDP) per capita and its annual growth in GDP.<sup>2</sup> Countries with relatively high levels of material deprivation would be likely to lead materialistic individuals to experience high levels of frustration of their desires, whereas wealthy nations with high economic growth would provide numerous opportunities to fulfil one's materialistic goals. Thus, one hypothesis consistent with a goal-attainment perspective is that the negative association of materialism and well-being may be smaller (or nonexistent) among those living in a more affluent country than those living in a less affluent country. On the other hand, individuals in wealthy mass-consumer societies are more frequently exposed to consumer culture messages profiling materialistic values and goals; according to the consumer culture values impact model (Dittmar et al., 2013), this is likely to

<sup>2</sup> There is a substantial literature on the relationship between country wealth and well-being, which shows that individuals in richer countries report higher well-being (e.g., Diener, Diener, & Diener, 1995). Here we are concerned only with country wealth as a potential moderator of the materialism-well-being link.

create frequent self-discrepancies of the kinds described above (see Dittmar, 2007, 2008). As also noted above, goals for financial success may have a different psychological meaning in poorer nations, being connected with safety and health more strongly than with image and status (Grouzet et al., 2005). Such reflections would suggest that the negative association of materialism and well-being may be smaller (or nonexistent) among those living in a less affluent country than those living in a more affluent country.

A second set of indicators concerns the distribution of wealth in a country, rather than level of wealth per se. Greater income inequalities, measured by the GINI index (World Bank, n.d.), appear to be associated with many social and personal costs (Wilkinson & Pickett, 2009) and would be likely to make status differences, unequal opportunities, and social comparisons with the wealth of others particularly salient to individuals who prioritize materialistic aims. For these reasons, a materialistic orientation may be particularly problematic for the well-being of individuals who live in countries with greater income inequalities, given that in such nations, far more individuals tend to be at the bottom of the pyramid than at the top. However, recent research (Ordabayeva & Chandon, 2011) suggests that two different processes may be at work when bottom-tier consumers find themselves in a context characterized by inequality of material possessions or income: While a focus on social comparison processes and greater perceived possession gaps may decrease satisfaction, a focus on the reduced opportunities for actual position gains derived from status-enhancing consumption may have the opposite effect.

The third set of economic indicators concerns the economic organization of a country. Some nations have more regulated economic systems in which the government is involved in managing the economy and influencing the decisions and options available to consumers, laborers, and the private sector, whereas other nations follow a more free-market approach in which such decisions are turned over to the invisible hand of competition among these players, with little interference from government (Hall & Gingerich, 2004). Past research suggests that values for money, power, achievement, and status tend to be higher among citizens living in nations that organize their economies in more deregulated, free-market ways (Kasser, 2011a; Schwartz, 2007). Thus, it would seem that predictions derived from goal-attainment and person-environment value congruence perspectives would suggest that materialism's negative association with well-being would be diminished in nations whose economies are particularly deregulated (see, e.g., Locke, 2007), as such individuals would experience fewer roadblocks in their attempts to maximize profits and acquire possessions. On the other hand, living in such deregulated economic environments may lead to greater internalization of materialistic values, accompanied by a greater suppression of other, healthier, intrinsic values (see Kasser, Cohn, Kanner, & Ryan, 2007). As such, materialism may be more strongly negatively related to people's well-being in such nations.

### Cultural Values

Just as individuals have values and goals, psychologists and others have conceived of values as existing also at the cultural level (Hofstede, 2001; Schwartz, 1999; P. B. Smith & Schwartz, 1997). Such approaches assess the extent to which citizens in a nation care about certain sets of aims and then aggregate individual

data to obtain estimates reflecting a particular nation's orientation toward particular values. We examine eight such cultural values as potential moderators of the relationship between well-being and materialism. The first concerns how much citizens in different countries prize the acquisition of money and possessions (World Values Survey, 2005), thereby giving some indication of a society-level endorsement of materialist values. The other seven were derived from the substantial cross-cultural research of Schwartz (1999, 2006; see also Ralston et al., 2011) and included harmony (unity with nature and a world at peace), embeddedness (social relationships, ingroup solidarity, and emphasis on group goals), hierarchy (status differentiation, authority, and obligations), mastery (personal goals and dynamic self-assertion), affective autonomy (pursuit of pleasure and an exciting life), intellectual autonomy (independent pursuit of one's own ideas and intellectual directions), and, last, egalitarianism (social justice and equality). Schwartz (2007) found that nations with more neo-liberal, free-market economic organizations also tend to prioritize hierarchy, mastery, and embeddedness values and place less focus on harmony, egalitarianism, and intellectual autonomy values. Thus, following this logic, an *environmental congruence* hypothesis would suggest that materialism's negative association with well-being should be relatively diminished in nations more focused on materialism, mastery, and hierarchy, given the relative support such cultural values would provide for a personal focus on materialism. On the other hand, as suggested above, to the extent such values are dominant in one's society, they may make the pursuit of materialistic values all the worse for well-being by diminishing people's need satisfaction.

### What Is the Process Through Which Materialism Relates to Lower Well-Being?

A final, more exploratory issue we addressed concerns mediational variables that may explain the negative association between materialism and well-being. We consider these analyses exploratory because relatively few studies have examined such mediational processes and because some potential explanations have not received sufficient empirical attention so they could not be included in this set of analyses for comparative purposes.

Despite these limitations, sufficient data were available to explore two mediational hypotheses. The first, described earlier, derives from SDT (Deci & Ryan, 2000; Kasser, 2002), which suggests that people who prioritize materialistic aims experience lower satisfaction of their needs for autonomy, competence, and relatedness because their concerns with money, possessions, and image crowd out pursuits likely to lead to greater well-being in the long run; this *low need satisfaction* thus accounts for the lower well-being reported by materialistic individuals. The second approach (e.g., Sirgy, 1998) suggests that people who prioritize materialistic aims experience lower satisfaction in the financial realm of their lives, given that one can always make more money or have nicer possessions and given that there is usually someone wealthier to whom one can upwardly compare. This *low financial satisfaction* is then thought to spill over into satisfaction with other domains of one's life, thereby diminishing well-being more generally. This type of approach, sometimes called the escalation hypothesis, encompasses further mechanisms, in addition to financial satisfaction, such as acclimatization and the *hedonic treadmill*,

where the thrill of buying and owning new things wears off quickly and larger and more frequent purchases become necessary to appease materialists' appetite for positive stimulation through acquisition (Dunn, Gilbert, & Wilson, 2011). However, sufficient studies were available only to test the financial satisfaction component.

## Summary

This meta-analysis addresses numerous questions about the association between materialism and personal well-being. We aim to establish an estimate of the size and direction of the association between materialism and well-being, both with and without correcting for the reliability of measures. We examine whether the magnitude of the association depends on particular features of how materialism is assessed, expecting that multifaceted measures and relative assessments of materialistic values yield stronger associations than less complex measures or absolute assessments of materialistic values. We expect that materialism relates negatively to a wide array of well-being outcomes but are interested in potential variation in the size of such associations. We seek to determine whether person-level and society-level variables moderate the size of the association between materialism and well-being, so as to test competing hypotheses about the conditions under which this relationship may obtain. Finally, we conduct exploratory analyses to examine two proposed mediators of the negative relationship between materialism and well-being.

## Method

### Literature Search and Inclusion Criteria

We used four strategies to locate reports of relevant studies. First, we searched the online databases PsycINFO, Web of Knowledge, and Index to Theses by pairing a set of materialism search terms with a set of well-being search terms. The Boolean OR operator was used for terms within a set, and the AND operator was used for terms between the two sets. Examples of materialism search terms are *materialism*, *material values*, and *financial success*, and examples of well-being search terms are *happiness*, *well-being*, and *life satisfaction* (see the Appendix for a full list of sets of search terms). Second, we conducted ancestor searches by scrutinizing the reference lists of review articles and reports we had located. Third, we carried out a descendancy search by checking for articles citing key papers<sup>3</sup> in the area (e.g., Kasser & Ryan, 1993; Richins & Dawson, 1992) using Web of Knowledge. Fourth, we wrote to 20 researchers who are well published in the materialism area, requesting that they provide us with any unpublished work they had conducted concerning materialism and well-being. We included work reported in any language. Databases were searched up to June 1, 2013.

Initially, we included not only correlational but also experimental and longitudinal studies in our search. Due to the small number of noncorrelational studies, experimental reports<sup>4</sup> were excluded, as were studies using implicit measures.<sup>5</sup> For the few longitudinal studies we identified,<sup>6</sup> only correlations reported at the first data collection point were included so as to maintain comparability with other samples. We return to these research gaps, as well as the paucity of research on children under 12 years, in the Discussion.

In order to be included in this meta-analysis, the report or data set had to include at least one study in which there were measures of both materialism and well-being and in which the zero-order correlation between these measures either was reported directly, could be obtained (from authors), or could be derived (see Lipsey & Wilson, 2001). Given that this meta-analysis defines materialism as *individual differences in people's long-term endorsement of values, goals, and associated beliefs that center on the importance of acquiring money and possessions that convey status*, we excluded studies examining beliefs about philosophical materialism or the goals a society should pursue, attitudes to budgeting money or material purchases, or values for power (as detailed in the introduction). Regarding well-being measures, we included assessments of (a) SWB (e.g., life satisfaction, positive and negative emotions), (b) positive or negative self-appraisals (e.g., self-esteem, self-discrepancies), (c) constructs relevant to DSM Axis I disorders (e.g., anxiety, depression, compulsive buying), and (d) indicators of physical health and health risk behaviors (e.g., somatic symptoms; substance misuse).<sup>7</sup> Further details are given below under Coding of Materialism and Well-Being Measures.

As shown in Figure 1, our database searches generated 1,380 reports. We rejected 1,049 on a reading of the abstracts and rejected a further 195 on a close reading of the report, resulting in 136 eligible reports. We wrote to 12 authors for additional data (typically because zero-order correlations had not been reported), and five authors responded; 17 of the studies we obtained from this process were excluded because appropriate statistics were not available. In addition, four of the 20 researchers whom we contacted responded with unpublished data, yielding a further 32 studies. Thus, 151 reports met our eligibility criteria.

### Coding of Studies

For each report, we coded (a) type of publication (e.g., book, journal article, thesis) and (b) year of publication. For each study, we

<sup>3</sup> The top 10 cited articles on the correlational link between materialism and well-being over the past 30 years that fit our definition of a materialistic value orientation are Belk (1984); Burroughs and Rindfleisch (2002); Kasser and Ryan (1993, 1996); Ryan et al. (1999); Richins (2004a); Richins and Dawson (1992); Rindfleisch, Burroughs, and Denton (1997); Sirgy (1998); and Srivastava, Locke, and Bartol (2001).

<sup>4</sup> A small number of experiments manipulated materialism and observed the impact on well-being (Bauer, Wilkie, Kim, & Bodenhausen, 2012; Kasser et al., 2014) or manipulated aspects of well-being and observed the impact on state materialism (Chang & Arkin, 2002; Chaplin & John, 2007; Sheldon & Kasser, 2008; Lambert, Fincham, Stillman, & Dean, 2009; Solberg, Diener, & Robinson, 2004). A separate, small-scale meta-analysis on these experimental effects is underway (Moldes, Dittmar, Bond, Hurst, & Kasser, 2014).

<sup>5</sup> One study involved an adaptation of the implicit association test (Solberg et al., 2004), one used reaction times (Schmuck, 2001), and another two entailed collages later coded for materialistic themes (Chaplin & John, 2007; Park & John, 2010). All reported moderate to strong correlations between materialism and well-being.

<sup>6</sup> These are Auerbach et al. (2009, 2011), Kasser et al. (2014), Malka and Chatman (2003), Nickerson et al. (2003), Niemiec et al. (2009), and Sheldon (2005a, 2009).

<sup>7</sup> Our search also included other areas of well-being—interpersonal, financial, performance, and environmental (Hurst, Dittmar, Bond, & Kasser, 2013)—and the search terms used are detailed in the Appendix. The results of these additional searches are not considered in this article.



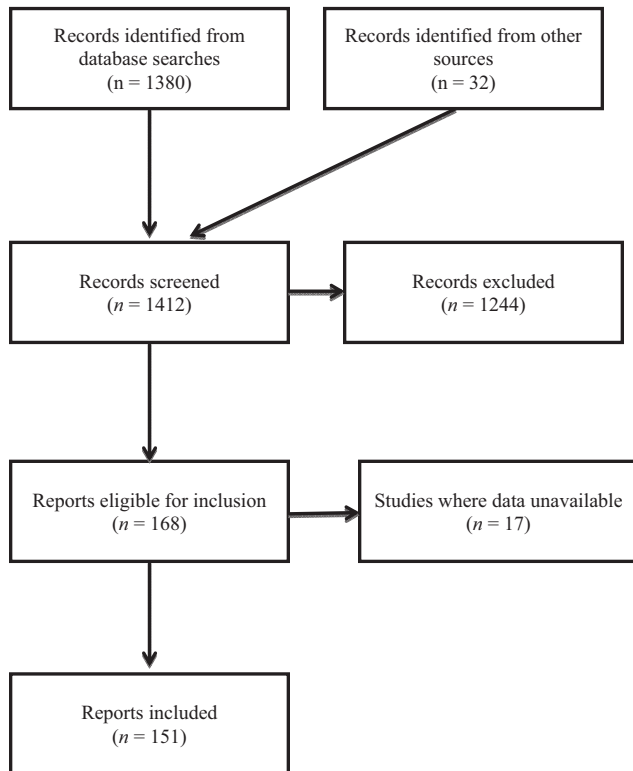


Figure 1. Literature search diagram. This diagram was constructed according to American Psychological Association Meta-Analysis Reporting Standards (MARS).

recorded type of data collection method (e.g., questionnaire, face-to-face interview, telephone interview). For each independent sample, we recorded (a) sample size, (b) country in which data were collected, (c) percent female respondents, (d) mean age (or age range), (e) average income, (f) percent White, (g) percent who did not complete high school or the national equivalent, (h) percent in higher education, and (i) percent of respondents who study a subject or work in an occupation that is supportive of materialism (i.e., business, marketing, or economics).

We included in this meta-analysis each correlation between a measure of materialism and a measure of well-being for each independent sample reported. When necessary, correlations were reverse-scored so that a negative correlation always indicated that higher materialism was associated with lower well-being. For each effect size, we also recorded (a) type of materialism measure, (b) type of well-being measure, (c) reliability of materialism measure, and (d) reliability of well-being measure.

### Coding of Materialism and Well-Being Measures

In addition to the primary coding, we coded measures of materialism and measures of well-being into broader categories. The initial 143 distinct measures of materialism were grouped into eight categories, four using Likert-type scales and four using importance ratings (see Table 1). The initial 497 distinct measures of personal well-being were grouped into 12 categories, falling into four overarching cate-

gories: SWB, self-appraisals, DSM Axis 1, and health and physical risk (see Table 2).

To check the reliability of our coding procedure, a 20% subsample of all reports (selected according to a random number generator) was coded by two independent raters. With respect to all factual information, such as recording the year of publication or data collection method, no disagreements occurred. For the materialism and well-being measures, we coded both overarching categories and main categories and then calculated interrater reliability coefficients, weighted for severity of disagreement (J. Cohen, 1968).<sup>8</sup> The central findings for materialism were that raters obtained perfect agreement when coding measures, so that  $k_w = 1.00$  for agreement about both the broad method used for materialism measures (Likert-scale or importance rating) and the specific category (e.g., materialist values and beliefs, importance of materialist goals [relative]). With respect to well-being measures, interrater reliability was equally excellent, again for both the four broad categories and the 12 categories of outcomes ( $k_w = 1.00$ ).

### Coding of Additional Variables

We also derived from, or added to, the primary coding several other variables to test as potential moderators. From the type of publication, we coded whether the report was published or unpublished.<sup>9</sup> In terms of participant characteristics, we coded the proportion of individuals in each sample working in a profession or studying a subject likely to support materialist values (such as business or marketing). For economic variables, such as income, it is important to ensure that measures are comparable across different countries and different years. As such, personal income and household income for countries other than the United States were converted to U.S. dollars using purchasing power parity data for the year in which a study was conducted (World Bank, n.d.); these values were then converted to 2005 prices (the median publication year for the sample) using the GDP Deflator (World Bank, n.d.).

We coded a number of economic characteristics of the country in which a study was conducted: (a) GDP per capita, converted as just described; (b) GDP percentage growth (World Bank, n.d.); and (c) the GINI coefficient, a measure of income inequality (World Bank, n.d.). We also recorded the Economic Freedom Index (Heritage Foundation, 2011), a measure that averages numerous components of economic freedom, such as freedom of trade and investment, tax burden, and government expenditure. Finally, we used two sources to characterize the prevailing cultural values in a country. The first was a measure of how much the acquisition of personal wealth is valued, where we used a country's citizens' mean agreement with the statement that it is important for a person to be rich and have a lot of money and expensive things (World Values Survey, 2005). Second, we drew on the work of Schwartz (1992, 1999, 2007), coding each country's scores on the cultural values of harmony, hierarchy, em-

<sup>8</sup> Disagreements between overarching categories were double-weighted compared to disagreements within an overarching category. Disagreements were also recorded in terms of the individual measures, such as the nine-, 15-, or 18-item version of the MVS, yielding less than 2% of disagreements.

<sup>9</sup> Journal articles, books, and book chapters were coded as *published*, whereas conference papers and dissertations, as well as unpublished manuscripts and data sets, were coded as *unpublished*.

beddedness, mastery, affective autonomy, intellectual autonomy, and egalitarianism.<sup>10</sup>

## Data Analysis Overview

We used the Hedges-Olkin method (Borenstein, Hedges, Higgins, & Rothstein, 2009; Shadish & Haddock, 2009) for the meta-analysis, in which correlations are transformed to Fisher's  $z$  to stabilize the variance, and followed Hafdahl's (2009, 2010; Hafdahl & Williams, 2009) recommendation to use an integral  $z$ -to- $r$  transformation for converting our results back to the  $r$  metric. We decided to fit random-effects models, treating our studies as a sample from a wider population, using a restricted maximum-likelihood estimator (Viechtbauer, 2005) and adjustment to standard errors (Knapp & Hartung, 2003). We report both effect sizes that are not ( $r$ ) and are ( $\rho$ ) corrected for the reliabilities of the measurement scales used (Borenstein et al., 2009).<sup>11</sup> A number of reports contained multiple effect sizes, particularly those that measured more than one well-being outcome, and we used methods of elimination and aggregation to ensure *independent effect sizes* (details of which are given when analyses are described in Results). Unless indicated otherwise, all analyses used the metafor package (Viechtbauer, 2010), within the R statistical computing environment (R Core Team, 2013).

## Results

### Description of Data Set

In total, we used 151 reports that included 175 separate studies<sup>12</sup> that, in turn, provided 258 samples.<sup>13</sup> Characteristics of these 258 samples are given in Table 3. In terms of the type of report included, it can be seen that 32% (83 of the 258 samples) came from unpublished sources, a high percentage. Thus, we were successful in sampling the grey literature (Rothstein & Hopewell, 2009), thereby increasing our confidence that the results are not affected unduly by publication bias (see Ferguson & Brannick, 2012; Rothstein & Bushman, 2012; see also final section of Results). Information about year of publication indicates how much the materialism and well-being literature has burgeoned as a research topic since 2000, with the overwhelming majority of reports (90%) published between 2000 and 2013. Data are mostly derived from questionnaires administered with the researcher present (57%), and the reliability of both materialism and well-being measures exceeds .80 on average. Median sample size is just over 200, with slightly more female than male participants (median proportion female = 57%) and predominantly participants of White ethnicity (85%). Median age is 24 years, and the large majority of reports (86%) use adult samples, with just over half of these being students in higher education. We found that just over a third of the reports used participants studying or working in economics, business, or marketing (when such information was reported). Details of participants' annual personal income or household income were only provided for a few samples; average personal income was just over \$30,000 per annum, and household income was \$52,000 per annum (after adjustments described in the Method section). With respect to country of data collection, we were able to include studies from every populated continent, although half of all studies were carried out in North America.

### Size and Direction of the Correlation Between Materialism and Well-Being

**Effect-level meta-analysis.** From these 258 samples, we coded a total of 749 effects, that is, correlations between a measure of materialism and a measure of well-being. When graphed, the different sizes of the correlations across these 749 effects reveal an approximately normal distribution (skewness = 0.10,  $SE = 0.09$ ; kurtosis = 1.25,  $SE = 0.18$ ). The mean size of the correlation between materialism and well-being =  $-.15$ , the median =  $-.15$ , the 25th percentile =  $-.24$ , and the 75th percentile =  $-.05$ . When we correct the correlation for the reliability of the measures, the average effect is somewhat larger,  $M = -.19$ . Thus, taken over a wide range of different measures of well-being and of materialism, we found a modest but definite negative relationship between materialism and well-being. In short, the more strongly individuals endorse materialistic values, the poorer their personal well-being.

**Sample-level meta-analysis.** The effect-level analysis just reported suffers from the problem of nonindependence of effects, given that a number of correlates of materialism were often reported for a single sample. Thus, it is necessary to conduct analyses choosing a single effect from each sample. We used both aggregation and elimination strategies whenever more than one correlation was available for a sample to obtain *one single correlation for each sample* between a measure of materialism and one of well-being (see later sections for details).

Within a particular study, multiple materialism measures were quite rare, whereas multiple well-being measures were more common. To choose the materialism measure, we used an elimination strategy; specifically, where possible, we selected a version of either the MVS (Richins, 2004a; Richins & Dawson, 1992) or the AI (Kasser & Ryan, 1996), as these two measures each have strong psychometric properties, have been widely validated, and have strong theoretical rationales for their construction. Thus, whenever either the MVS or AI was among those materialism measures used in the sample, an effect for that measure was selected.<sup>14</sup>

For each sample that reported an effect with more than one measure of personal well-being, we used a combination of elimination and aggregation strategies. When a sample had more than one of the 12

<sup>10</sup> We are grateful to Shalom Schwartz (personal communication, February 28, 2011) for providing country scores on each of these value dimensions based on data gathered with the 56–57 item Schwartz value survey between 1988 and 2007.

<sup>11</sup> Reliabilities are reported for about half of the data sets; for the other half, we imputed, where available, reliability coefficients based on those reported in the literature. For single-item measures, we imputed .57 (see Wanous, Reichers, & Hudy, 1997).

<sup>12</sup> One hundred twenty-nine reports involved one study, 16 involved two, five involved three, and one involved five.

<sup>13</sup> One hundred thirty-nine studies produced one sample, 23 produced two samples, six produced three samples, 11 produced four samples, one produced five samples, and one produced six samples.

<sup>14</sup> For 10 samples, we selected effects involving the MVS over other materialism measures; for five samples, we chose the AI. Seven samples included both measures, and here, we selected randomly. Four samples with multiple materialism measures did not include either the MVS or the AI: for two, we selected a money-related belief measure, and for the other two, we chose absolute importance of money ratings. Eighteen samples had more than one materialism measure that fell into the same category; here, we selected the measure we judged best represented the category. The deletion of effects when samples had multiple materialism measures reduced the total number of effects from 749 to 604.

Table 3  
*Sample Characteristics (k = 258 Unless Otherwise Indicated)*

Characteristic	<i>n</i>
Report characteristics	
Type of publication	
Journal article	165
Book chapter	9
Conference paper	1
Unpublished paper	21
Dissertation	31
Data set	31
Year of publication	
1980–1989	1
1990–1999	25
2000–2009	179
2010–2013	53
Study characteristics	
Design	
Correlational	235
Comparison of intact groups	5
Longitudinal	18
Data collection method	
Questionnaire—researcher present	146
Face-to-face interview	17
Postal questionnaire	72
Online survey	23
Sample size	
<i>Mdn</i> = 207	
Range: 25–10,907	
Reliability of materialism measure	
<i>Mdn</i> = .81	
Range: .30–.93	
Reliability of well-being measure	
<i>Mdn</i> = .85	
Range: .45–.95	
Participant characteristics	
Proportion female ( <i>k</i> = 230)	
<i>Mdn</i> = .57	
Average age ( <i>k</i> = 176)	
<i>Mdn</i> = 24	
Range: 10–75	
Age group	
18 years and under	31
Over 18 years	222
Both over and under 18	5
Proportion White ethnicity ( <i>k</i> = 59)	
<i>Mdn</i> = 85.0%	
Range: 24.4%–100%	
Whether in higher education	
All in higher education	129
General population	95
Under 18 years old	34
Proportion studying business, economics, or marketing ( <i>k</i> = 39)	
None	23
Half	2
All	14
Personal income U.S.\$ ( <i>k</i> = 27)	
<i>Mdn</i> = \$30.4k	
Range: \$3.4k–\$80.0k	
Household income U.S.\$ ( <i>k</i> = 19)	
<i>Mdn</i> = \$52.0k	
Range: \$0.5k–\$290k	
Region in which study conducted	
North America	129
South America	4
Western Europe	55
Southern Europe	10
Eastern Europe	19
Asia	21
Middle East	4
Australasia	10
Africa	1
Worldwide	5

types of well-being outcome described in Table 2, our criterion for selection was to choose whichever outcome had the smallest frequency of effects, so as to ensure that each type of well-being outcome was well represented in our meta-analysis; in this way, we protected those types of outcomes that were less frequently observed in our sample of studies. We used aggregation when a sample had several measures of outcomes within the same category (e.g., several measures of life satisfaction).

Table 4 gives details of the effect sizes and characteristics of the resulting 258 independent samples that were retained after selecting the materialism and well-being measures using the criteria just described; those effect sizes that were aggregated are listed separately, together with the category of materialism or well-being measure. For the final set of independent effect sizes, we obtained a mean effect size of  $-.15$ , with a 95% confidence interval (CI) from  $-.18$  to  $-.13$ . The narrow width of this interval, especially given the greater stringency of this analysis, helps to increase our confidence that materialism is indeed linked to significantly lower personal well-being. When examining the extent to which effect sizes vary, the test for heterogeneity proved highly significant ( $Q_E = 4,114.36$ ,  $df = 257$ ,  $p < .001$ ); furthermore, the  $I^2$  statistic (J. P. T. Higgins & Thompson, 2002), which quantifies the proportion of total variability that is estimated as arising from variability in the population effects (as distinct from sampling error, the other source of variability), is  $= 94.62\%$ , indicating that variability in effect size is substantial and the major source of variation in the data. Corresponding results for the analysis of these 258 correlations after correcting for reliability are somewhat stronger ( $\rho = -.19$ , 95% CI [ $-.21$ ,  $-.17$ ],  $Q_E = 4,092.03$ ,  $df = 257$ ,  $p < .001$ ,  $I^2 = 94.02\%$ ). The 80% credibility interval for  $\rho$ , ranging from  $-.45$  to  $.10$ , is also indicative of the wide range in effect sizes.

In sum, overall, there is a significant but modest negative relationship between materialism and personal well-being, but there is also considerable heterogeneity in the size of this negative relationship. Thus, it becomes crucial to investigate factors that may moderate the size of this effect, and it is this issue that we address in the following sections.

### Testing Moderation by Type of Materialism and Well-Being Measure

We first examined whether the type of materialism measure and the type of well-being measure used by researchers moderate the size of the relationship between materialism and well-being reported in our 258 independent samples. We did so by conducting an analysis in which factors representing the eight types of materialism measures and the 12 types of well-being measures were included in the model, thereby allowing us to examine the effect of one factor while controlling for the other and vice versa.<sup>15</sup> The analysis shows that both the type of materialism measure,  $F(7, 237) = 3.45$ ,  $p < .001$ , and the

<sup>15</sup> Our first step was to examine outliers, computing several indices of how much each study deviated from the average, and look at the effect of deleting that study on the results (Viechtbauer & Cheung, 2010). Two studies reported significant positive relationships between materialism and well-being (Izdenczyova, 2009; Wong et al., 2003, Thailand sample), had large studentized residuals (2.40 and 4.70, respectively), and had other influence statistics that exceeded thresholds suggested by Viechtbauer and Cheung (2010). We decided, therefore, to eliminate these two samples and base our remaining analyses on 256 samples.

Table 4  
*Studies Included in the Meta-Analysis: Effect Sizes and Study Characteristics*

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Agarwal (2003)	240	-.14	-.18	Money	SWLS	Journal article	India	48	Over 18	Student		
Auerbach, McWhinnie, Goldfinger, Abela, & Yao (2009)	406	-.30	-.34	AI-ext	RBQ-A	Journal article	China	50	16.2	School	Average household income = \$3.1k	
Auerbach et al. (2011)												
Canada	255	-.04	-.04	AI	CES-D	Journal article	Canada	57	14.48	School		79.5
China	405	-.15	-.16	AI	CES-D	Journal article	China	50	16.18	School		
Baller (2011)	487	-.22	-.28	AI	LS	Thesis	U.S.A.	74	Over 18	Student		82.3
Belk (1984)	338	-.18	-.31	BMS	LS	Journal article	U.S.A.	33	Over 18	General		
Bertran, Casas & Gonzalez (2009)	5,140	.04	.06	Casas	Happy PWB	Conference paper	Spain	50	Under 12	School		
Bottomley, Nairn, Kasser, Ferguson, & Ormrod (2010)	142	.08	.10	CO	RSE	Journal article	U.S.A.	100	Under 12	School		90
Brdar (2006)	439	-.04	-.05	AI-FS	BPNS-competence	Journal article	Hungary	55	19.0	Student		
	★	-.08	-.10	AI-FS	BPNS-autonomy							
Brown & Kasser (2005)												
Study 1	206	-.22	-.35	Mat	Happy	Journal article	U.S.A.	44	14.2	School		96
Study 2	400	-.31	-.41	AI	Affect Balance	Journal article	U.S.A.	66	43.7	General	Average individual income = \$33.9k; 77% attended higher education; all completed high school or equivalent	91
Buijzen & Valkenburg (2003)	360	-.03	-.04	CM	LSC	Journal article	Netherlands	51	10.0	School	63% attended higher education; 12% did not complete high school or equivalent	
Burroughs & Rindfleisch (2002)	373	-.18	-.20	MVS-18	DASS	Journal article	U.S.A.	52	47.0	General	Average household income = \$52k; 48% attended higher education	85
Carver & Baird (1998)	246	-.31	-.45	AI-reg	ISA	Journal article	U.S.A.		Over 18	Student		
Casas, Figuer, Gonzalez, & Malo (2007)												
Child sample	1,618	.08	.11	Casas	PWB	Journal article	Spain	53	14.0	School		
Parent sample	723	.05	.08	Casas parent	PWB	Journal article	Spain		Over 18	School		

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Casas, Gonzalez, Figuer, & Coenders (2004)	968	.01	.02	Casas	LS	Journal article	Spain	51	14.0	School		
Chan & Joseph (2000)	107	-.21	-.31	AI-FS	ISA	Journal article	U.K.	1	26.5	Student		
Chang & Arkin (2002)	416	-.19	-.24	MVS-18	SD	Journal article	U.S.A.		Over 18	Student		
Christopher, Drummond, Jones, Marek, & Theriault (2006)	204	-.28	-.33	MVS-18	SD	Journal article	U.S.A.	69	24.9	General		
Christopher, Kuo, Abraham, Noel, & Linz (2004)	159	-.22	-.28	MVS-18	PANAS-Negative Affect	Journal article	U.S.A.	53	Over 18	Student		
Christopher, Lasane, Troisi, & Park (2007)	277	-.20	-.24	MVS-18	SWLS	Journal article	U.S.A.	64	18.8	Student		
Christopher, Saliba, & Deadmarsh (2009)	440	-.35	-.42	MVS-18	PANAS-Negative Affect	Journal article	U.S.A.	52	39.0	General		
Christopher & Schlenker (2004)	297	-.15	-.18	MVS-18	PANAS-Negative Affect	Journal article	U.S.A.	56	Over 18	Student		
Coenders, Casas, Figuer, & González (2005)												
Brazilian sample	765	.04	.06	Money	LS	Journal article	Brazil	49	13.9	School		
Indian sample	1,066	.02	.04	Money	LS	Journal article	India	49	13.9	School		
Norwegian sample	823	.01	.01	Money	LS	Journal article	Norway	49	13.9	School		
South African sample	781	.03	.05	Money	LS	Journal article	South Africa	49	13.9	School		
Spanish sample	3,050	.01	.01	Money	LS	Journal article	Spain	49	13.9	School		
Dik, Sargent, & Steger (2008)	225	-.06	-.07	MCS	MLQ	Journal article	U.S.A.	81	19.5	Student		86
Dittmar (2005a)												
Study 1	330	-.42	-.48	MVS-18	CBS	Journal article	U.K.	73	39.5	General	Average individual income = \$28.8k	
Study 2	250	-.49	-.59	MVS-18	CBS	Journal article	U.K.	53	34.2	General	Average individual income = \$14.4k	95
Study 3	195	-.31	-.38	MVS-18	CBS	Journal article	U.K.	52	Under 12	School		
Dittmar (2005b)												
Study 2	239	-.39	-.45	MVS-18	SDI	Journal article	U.K.	100	39.2	General		
Study 3 females	58	-.28	-.32	MVS-18	SDI	Journal article	U.K.	100	22.2	Student		
Study 3 males	68	.09	.10	MVS-18	SDI	Journal article	U.K.	0	21.8	Student		

(table continues)

Table 4 (continued)

Study	<i>N</i> <sup>a</sup>	<i>r</i>	$\rho^b$	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Dittmar & Kapur (2010)												
Older Indian sample	109	-.61	-.71	MVS-15	CBS + 4 items	Unpublished MS	India	53	33.9	General	Average individual income = \$3.4k	
Older U.K. sample	127	-.34	-.41	MVS-15	CBS + 4 items	Unpublished MS	U.K.	50	31.1	General	Average individual income = \$25.1k	
Younger Indian sample	109	-.67	-.78	MVS-15	CBS + 4 items	Unpublished MS	India	53	33.9	General	Average individual income = \$30.4k	
Younger U.K. sample	127	-.47	-.57	MVS-15	CBS + 4 items	Unpublished MS	U.K.	50	31.1	General	Average individual income = \$25.1k	
Dittmar, Long, & Bond (2007)	126	-.43	-.47	MVS-15	CBS	Journal article	U.K.	46	21.9	Student		99
Donnelly, Iyer, & Howell (2012)	201	-.33	-.41	MVS-15	CB	Journal article	U.S.A.	66	34.93	General		71.8
Felix & Garza (2012)	339	-.22	-.26	MVS-9	SWLS	Journal article	Mexico	100	18.7	Student		
Flouri (2004)	2,218	-.22	-.29	Mat Value	SDQ	Journal article	U.K.	45	Under 12	School		62
Froh, Emmons, Card, Bono, & Wilson	1,035	-.06	-.07	MVS-15	CES-D	Journal article	U.S.A.	49	15.67	School		64.7
K. M. Frost & Frost (2000)												
Romanian sample	217	-.12	-.17	AI-FS	SWLS	Journal article	Romania	56	21.5	Student		
U.S. sample	201	-.17	-.21	AI-FS	SWLS	Journal article	U.S.A.	43	Over 18	Student		
R. O. Frost, Kyrios, McCarthy, & Matthews (2007)	127	-.40	-.48	MVS-18	SAM	Journal article	U.S.A.	1	Over 18	Student		
Furnham & Okamura (1999)	277	-.08	-.13	Tycoon	Rubinstein	Journal article	U.K.	51	35.8	General	Average individual income = \$12.3k; 9.4% attended higher education; 10% did not complete high school or equivalent	
Galand, Boudrenghien, & Rose (2012)	333	-.20	-.24	AI-intabs	LS-15	Journal article	Belgium	58	41	General		
Gařarsdóttir (2006)												
Study 1 Icelandic sample	146	-.28	-.34	MVS-18	SWLS + 2 affect items	Thesis	Iceland	71	24.7	Student		
Study 1 U.K. sample	145	-.16	-.19	MVS-18	SWLS + 2 affect items	Thesis	U.K.	64	24.2	Student		
Study 2 Icelandic sample	968	.01	.01	AI	LS	Thesis	Iceland	50	44.1	General		
Study 2 U.K. sample	1,000	-.02	-.03	AI	LS	Thesis	U.K.	56	42.1	General		

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Study 3 Icelandic sample	476	-.26	-.30	MVS-18	SWLS + PANAS	Thesis	Iceland	75	38.0	General	Average individual income = \$52.0k	
Study 3 U.K. sample	223	-.16	-.18	MVS-18	SWLS + PANAS	Thesis	U.K.	62	33.7	General	Average individual income = \$43.1k	
<i>Gardarsdóttir, Dittmar, &amp; Aspinall (2009)</i>												
Study 1 Iceland sample	139	-.24	-.28	AI-FS	SWLS + 2 affect items	Journal article	Iceland	73	24.8	Student		
Study 1 U.K. sample	145	-.11	-.13	AI-FS	SWLS + 2 affect items	Journal article	U.K.	64	24.2	Student		
Study 2	261	-.16	-.19	AI-FS	SWLS + 2 affect items	Journal article	U.K.	57	38.9	General	Average individual income = \$55.5k	
<i>Georgellis, Tsitsianis, &amp; Yin (2009)</i>												
Scandinavian sample 2002	6,834	-.14	-.24	ESS	LS	Journal article	Scandinavia		Over 18	General		
Scandinavian sample 2004	6,835	-.13	-.22	ESS	LS	Journal article	Scandinavia		Over 18	General		
Southern European sample 2002	3,804	.24	.42	ESS	LS	Journal article	Southern Europe		Over 18	General		
Southern European sample 2004	3,804	.17	.30	ESS	LS	Journal article	Southern Europe		Over 18	General		
Western European sample 2002	10,907	-.14	-.25	ESS	LS	Journal article	Western Europe		Over 18	General		
Southern European sample 2002	10,907	-.14	-.25	ESS	LS	Journal article	Western Europe		Over 18	General		
<i>Giacalone &amp; Jurkiewicz (2004)</i>	111	-.10	-.12	R-MPMI	PILT	Journal article	U.S.A.	56	Over 18	Student		
<i>Giacomantonio, Mannetti, &amp; Pierro (2013)</i>	370	-.27	-.36	MVS-18	PANAS-Negative Affect	Journal article	Italy	57	Over 18	General	31.9	
<i>M. E. Goldberg, Gorn, Peracchio, &amp; Bamossy (2003)</i>	547	-.03	-.05	YMS	PHappy	Journal article	U.S.A.	52	11.5	School		
<i>Gomez, Alleman, &amp; Grob (2012)</i>												
Young adults	251	-.49	-.58	GI-I	SWB	Journal article	Germany	42	19.2	Student		
Middle-age adults	242	-.20	-.24	GI-I	SWB	Journal article	Germany	67	47.49	General		
Older adults	225	-.38	-.45	GI-I	SWB	Journal article	Germany	74	75.05	General		
<i>Gornik-Durose &amp; Janiec (2010)</i>	247	-.16	-.18	MVS-18	SWLS	Unpublished MS	Poland	73	23.3	Student		
<i>Howell (2010)</i>	2,884	-.34	-.39	MVS-18	IBTS-cognitive	Unpublished MS	U.S.A.	74	Over 18	General		54
	★	-.51	-.60	MVS-18	IBTS-affective							

MATERIALISM AND WELL-BEING

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Hudders & Pandelaere (2012)	2,206	-.02	-.03	MVS-15	PANAS-Positive Affect	Journal article	U.S.A.	50	40.02	General		
Izdenczyová (2009)	234	.32	.40	PVQ40	SEHP	Journal article	Czech Republic	90	21.1	Student		
Jankovic (2006)												
Croatian economics students	143	-.30	-.37	MVS-18	SWLS + 2 affect items	Thesis	Croatia	84	20.8	Student		
Croatian psychology students	36	-.35	-.43	MVS-18	SWLS + 2 affect items	Thesis	Croatia	84	20.8	Student		
German economics students	44	-.40	-.48	MVS-18	SWLS + 2 affect items	Thesis	Germany	75	21.8	Student		
German psychology students	75	-.23	-.28	MVS-18	SWLS + 2 affect items	Thesis	Germany	75	21.8	Student		
Study 2 Croatian sample	100	-.27	-.31	MVS-18	SWLS + ABS	Thesis	Croatia	77	23.9	Student		99
Study 2 New Zealand sample	72	-.25	-.30	AI-reg	SWLS + ABS	Thesis	New Zealand	67	21.3	Student		
Study 2 U.K. sample	100	-.42	-.48	AI-reg	SWLS + ABS	Thesis	U.K.	72	20.0	Student		92
Study 4 Croatian sample	169	-.27	-.33	MVS-9	SWLS + 2 affect items	Thesis	Croatia	72	33.3	General	Average individual income = \$11.1k	
Study 4 U.K. sample	158	-.12	-.14	MVS-9	SWLS + 2 affect items	Thesis	U.K.	59	30.6	General	Average individual income = \$34.5k	
U.K. economics students	59	-.07	-.09	MVS-18	SWLS + 2 affect items	Thesis	U.K.	60	21.5	Student		
U.K. psychology students	157	-.22	-.29	MVS-18	SWLS + 2 affect items	Thesis	U.K.	60	21.5	Student		
Kashdan & Breen (2007)	144	-.28	-.31	MVS-15	SIAS	Journal article	U.S.A.	79	23.8	Student		54
Kasser (2005)	206	-.11	-.18	MVS-8	Cigarette use	Journal article	U.S.A.	44	14.2	School		96
	★	-.15	-.24	MVS-8	Alcohol use							
Kasser & Ahuvia (2002)	92	-.20	-.25	MVS-18	Physical health	Journal article	Singapore	72	21.1	Student		
Kasser et al. (2014)												
Study 4 adults	92	-.11	-.13	AI-ext	PANAS-Negative affect	Journal article	U.S.A.	83	45.6	General	51% family income > \$100,000	96
Study 4 adolescents	92	-.15	-.17	AI-ext	HSC-anxiety	Journal article	U.S.A.	50	12.4	Under 18	51% family income > \$100,000	96
Kasser & Ryan (1993)												
Study 1	118	-.47	-.67	AI-reg	ISA	Journal article	U.S.A.	64	Over 18	Student		71
Study 2	117	-.24	-.29	AI-reg	CES-D	Journal article	U.S.A.	67	Over 18	Student		72
Study 3	140	-.49	-.59	AI-reg	CGAS	Journal article	U.S.A.	47	18.0	General	21% did not complete high school or equivalent	67



Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Kasser & Ryan (1996) Study 1	★	-.31	-.40	AI-reg	CMHI-social productivity							
	★	-.47	-.60	AI-reg	DICA							
Study 2	100	-.29	-.35	AI-reg	CES-D	Journal article	U.S.A.	76	38.0	General	Average household income = \$35k	93
Kasser & Ryan (2001) Student Sample A	177	-.30	-.35	AI-reg	CES-D	Journal article	U.S.A.	56	Over 18	Student		67
Student Sample B	120	-.36	-.51	AI	Well-being	Book chapter	U.S.A.	49	Over 18	Student		77
Khanna & Kasser (2010) Danish sample	261	-.36	-.51	AI	Drug use	Book chapter	U.S.A.	59	Over 18	Student		89
Indian sample	48	-.18	-.21	AI-ext	HSC-anxiety	Unpublished MS	Denmark	65	24.4	Student		
U.S. sample	50	-.20	-.23	AI-ext	HSC-anxiety	Unpublished MS	India	58	19.1	Student		
Kim, Kasser, & Lee (2003) South Korean sample	46	-.17	-.20	AI-ext	HSC-anxiety	Unpublished MS	U.S.A.	67	19.9	Student		
U.S. sample	328	-.11	-.14	AI	HSC-anxiety	Journal article	South Korea	53	Over 18	Student		
Klonowicz, Cieslak, & Elias (2004)	215	-.12	-.15	AI	HSC-anxiety	Journal article	U.S.A.	57	Over 18	Student		
Komlósi, Sándor, Márk, Éva, & Dóra (2006)	1,221	-.12	-.16	Extrinsic	SSC	Journal article	Poland	58	47.9	General		
Ku (2009) Middle-age group	537	-.14	-.16	AI-ext	BDI	Journal article	Hungary	68	Over 16	General		
Oldest age group	102	-.68	-.87	YMS	CBS	Thesis	Hong Kong	43	14.2	School		
Youngest age group	97	-.70	-.84	YMS	CBS	Thesis	Hong Kong	58	17.7	School		
Kwak, Zinkhan, & French (2001)	98	-.02	-.03	YMS	SLSS + 2 affect scores	Thesis	Hong Kong	51	9.6	School		
	★	-.26	-.29	MVS-18	PII-alcohol	Journal article	U.S.A.	53	Over 18	Student		
	★	-.11	-.12	MVS-18	PII-tobacco							
	★	.00	.00	MVS-18	PII-drug							
	★	-.10	-.15	MVS-18	Alcohol use							
	★	-.07	-.10	MVS-18	Tobacco use							
La Barbera & Gurhan (1997)	★	-.04	-.06	MVS-18	Drug Use Index							
	241	.06	.11	WW	CSWB	Journal article	U.S.A.	54	36.9	General	Average household income = \$40k; 27% attended higher education	
Lekes, Gingras, Philippe, Koestner, & Fang (2010) Chinese sample	515	.13	.16	AI-ext	PANAS + SCS	Journal article	China	56	15.2	School		
U.S. sample	567	-.05	-.06	AI-ext	PANAS + SCS	Journal article	U.S.A.	48	14.2	School		

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Luna-Arocas & Tang (2004)	311	-.09	-.11	MES-Success	LS-2	Journal article	U.S.A. & Spain	46	42.7	General	Average individual income = \$40.3k	
Malka & Chatman (2003)	124	.00	.00	ExtWork	SWLS + PANAS	Journal article	U.S.A.	47	28.0	Student	Average individual income = \$80.0k	
Manolis & Roberts (2012)	1,329	-.06	-.08	YMS	CB + CBS	Journal article	U.S.A.	42	14.7	School		51
Manriquez (2010) Chilean sample	259	-.17	-.18	AI-ext	CES-D	Thesis	Chile	53	34.7	General	100% attended higher education	
U.K. sample	949	.06	.07	AI-ext	CES-D	Thesis	U.K.	59	44.6	General	Average individual income = \$40.3k; 100% attended higher education	
Martos & Kopp (2012)	4,841	-.34	-.40	AI-14-I	WHO-5	Journal article	Hungary	58.8	48.3	General		
Miller (2009) Study 1	839	-.18	-.27	MVS/IPIP	INE	Thesis	U.S.A.	63	19.8	Student		
Study 3	603	-.17	-.26	MVS/IPIP	INE	Thesis	U.S.A.	57	64.6	General		
Mueller, Claes, et al. (2011) Male	124	-.46	-.59	MVS-11	CB	Journal article	Germany & Belgium	0	22.9	Student		
Female	286	-.35	-.45	MVS-11	CB	Journal article	Germany & Belgium	100	22.9	Student		
Mueller, Mitchell, et al. (2011) ★	387	-.38	-.42	MVS-11	Internet use	Journal article	U.S.A.		38.8	Student		
		-.45	-.51	MVS-11	CB							
Nickerson, Schwartz, Diener, & Kahneman (2003) \$0.5k average household income	25	-.28	-.49	Money	Health	Journal article	U.S.A.	56	18.0	Student	Average household income = \$0.5k	
\$5.5k average household income	53	.10	.18	Money	Health	Journal article	U.S.A.	51	18.0	Student	Average household income = \$5.5k	87
\$15k average household income	184	-.14	-.25	Money	Health	Journal article	U.S.A.	56	18.2	Student	Average household income = \$15k	
\$25k average household income	366	-.09	-.16	Money	Health	Journal article	U.S.A.	60	18.1	Student	Average household income = \$25k	
\$40k average household income	1,353	.00	.00	Money	Health	Journal article	U.S.A.	59	18.1	Student	Average household income = \$40k	
\$62.5k average household income	2,309	.04	.07	Money	Health	Journal article	U.S.A.	54	18.1	Student	Average household income = \$62.5k	
\$87.5k average household income	1,951	.02	.04	Money	Health	Journal article	U.S.A.	52	18.1	Student	Average household income = \$87.5k	90

Table 4 (continued)

Study	<i>N</i> <sup>a</sup>	<i>r</i>	$\rho^b$	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
\$125k average household income	2,057	.04	.07	Money	Health	Journal article	U.S.A.	50	18.1	Student	Average household income = \$125k	92
\$175k average household income	937	-.03	-.05	Money	Health	Journal article	U.S.A.	52	18.0	Student	Average household income = \$175k	93
\$290k average household income	1,430	.08	.14	Money	Health	Journal article	U.S.A.	50	18.0	Student	Average household income = \$290k	92
Niemiec, Ryan, & Deci (2009)	147	-.11	-.13	AI-FS	STAI-6	Journal article	U.S.A.	70	Over 18	Student		80
Norris, Lambert, DeWall, & Fincham (2012)	61	-.22	-.23	MVS-18	AA	Journal article	U.S.A.	82	Over 18	Student		
Norris & Larsen (2011)	101	-.28	-.33	MVS-18	SWLS	Journal article	U.S.A.	64	20.6	Student		87
Oprea, Buijzen, van Reijmersdal, & Valkenburg (2011)	965	-.28	-.33	MSC-18	LD	Journal article	Netherlands	50	8-11	School		
Otero-López, & Villardefrancos (2013)	667	-.51	-.57	MSC-18	GABS	Journal article	Spain	100	38.4	General		
Otero-López, Villardefrancos, Castro, & Santiago (2011)	469	-.58	-.64	MSC-18	GABS	Journal article	Spain	100	37.3	General		
Pepper, Jackson, & Uzzell (2009)	260	-.37	-.46	MVS-15	Frugal	Journal article	U.K.	65	50.0	General	Average individual income = \$50.8k; 59% attended higher education	
Pham, Yap, & Dowling (2012)	118	-.44	-.54	MSC-18	CB	Journal article	Australia	62	27.2	General		
Piko & Keresztes (2006)	1,109	-.24	-.32	AI-ext	Physical activity	Journal article	Hungary	60	16.5	School		
Pinquart, Silbereisen, & Frohlich (2009)	334	.08	.12	TP	PILT	Journal article	Germany	42	54.4	General		
Reeves, Baker, & Truluck (2012)												
Male	63	-.29	-.34	MVS-18	SCC	Journal article	U.S.A.	0		General		
	★	-.07	-.08	MVS-18	RSE							
Female	106	-.24	-.28	MVS-18	SCC	Journal article	U.S.A.	100		General		
	★	-.19	-.22	MVS-18	RSE							
Richins (2010)	295	-.20	-.29	MVS-9	Happy	Unpublished MS	U.S.A.	53	Over 18	General	53% not completed high school or equivalent	

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Richins & Dawson (1992)												
Study 3	235	-.12	-.15	MVS-18	RSE	Journal article	U.S.A.		Over 18	General		
Study 4	205	-.34	-.49	MVS-18	LS-fun	Journal article	U.S.A.		Over 18	General		
Rindsfleisch, Burroughs, & Wong (2009)	314	-.37	-.41	MVS-9	SD	Journal article	U.S.A.	49	49.0	General	Average household income = \$59.6k; 41% attended higher education	
Robak, Chiffrieller, & Zappone (2007)	157	-.15	-.21	Money	PANAS-Negative Affect	Journal article	U.S.A.	64	21.4	Student		73
Roberts, Manolis, & Tanner (2003)												
Divorced sample	174	-.40	-.50	MVS-11	CBS	Journal article	U.S.A.	49	13.7	School		81
Nondivorced sample	494	-.53	-.67	MVS-11	CBS	Journal article	U.S.A.	49	13.7	School		81
Romero, Gomez-Fraguela, & Villar (2012)	583	-.30	-.36	AI-int	PANAS-Positive Affect	Journal article	Spain	71	34.65	General		
Rose (2007)	238	-.34	-.42	MVS-15	CB	Journal article	U.S.A.	62	20.0	Student		77
Ryan et al. (1999)												
Female Russian sample	103	-.03	-.03	AI	CES-D	Journal article	Russia	100	Over 18	Student		
Female U.S. sample	69	-.16	-.18	AI	CES-D	Journal article	U.S.A.	100	Over 18	Student		
Male Russian sample	80	-.16	-.18	AI	CES-D	Journal article	Russia	0	Over 18	Student		
Male U.S. sample	47	-.34	-.37	AI	CES-D	Journal article	U.S.A.	0	Over 18	Student		
Sardžoska & Tang (2009)												
Sample from private organizations	208	-.05	-.06	LOM	GSS-LS	Journal article	Macedonia	54	34.9	General	Average individual income = \$4.7k	
Sample from public organizations	307	-.03	-.04	LOM	GSS-LS	Journal article	Macedonia	57	41.5	General	Average individual income = \$3.4k	
Saunders & Munro (2000)												
Study 1	302	-.19	-.22	MVS-18	BAI	Journal article	Australia	75	23.0	Student		
Study 2	87	-.22	-.25	MVS-18	BDI	Journal article	Australia	62	27.7	Student		
Study 3	80	-.17	-.20	MVS-18	Comrey	Journal article	Australia	65	26.8	Student		
Schmuck (2001)												
Sample C	76	.06	.07	AI	HSC-anxiety	Book chapter	Germany	71	18.3			
General population sample	61	-.19	-.22	AI	HSC-anxiety	Book chapter	Germany	61	47.4	General		
Student Sample A	40	-.32	-.37	AI	CES-D	Book chapter	Germany	75	23.3	Student		
Student Sample B	150	.00	.00	AI	HSC-anxiety	Book chapter	Germany	60	21.7	Student		
Schmuck, Kasser, & Ryan (2000)	83	-.11	-.13	AI	CES-D	Journal article	Germany	61	Over 18	Student		

Table 4 (continued)

Study	N <sup>a</sup>	r	$\rho^b$	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/educational background	% White
Sheldon (1998)	221	.19	.24	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	67	Over 18	Student		
Sheldon (2000a)												
Fall: nursing students	38	.03	.04	AI	ISA	Unpublished raw data	U.S.A.		Over 18	Student		
Fall: law students	236	–.07	–.09	AI	BDI	Unpublished raw data	U.S.A.	45	Over 18	Student		
Sheldon (2000b)	175	–.20	–.25	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	61	20.1	Student		
Sheldon (2000c)	279	–.15	–.19	AI	SWLS + PANAS	Unpublished raw data	U.S.A.	62	20.8	Student		88
Sheldon (2001a)												
Arkansas law students	133	–.21	–.32	AI	ISA	Unpublished raw data	U.S.A.		Over 18	Student		
Florida law students	162	–.10	–.16	AI	ISA	Unpublished raw data	U.S.A.		Over 18	Student		
Nursing students	66	.03	.04	AI	ISA	Unpublished raw data	U.S.A.		Over 18	Student		
Sheldon (2001b)	127	–.14	–.18	AI	PANAS–Positive Affect	Unpublished raw data	U.S.A.	56	Over 18	Student		
Sheldon (2001c)	234	–.03	–.04	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	51	Over 18	Student		
Sheldon (2001d)	198	–.06	–.08	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	61	Over 18	Student		83
Sheldon (2001e)	99	.03	.04	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.		Over 18	Student		
Sheldon (2002a)	334	–.20	–.26	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	62	Over 18	Student		85
Sheldon (2002b)	447	–.21	–.27	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	57	Over 18	Student		84
Sheldon (2002c)	255	–.10	–.13	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	49	Over 18	Student		
Sheldon (2002d)	64	–.16	–.21	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.		Over 18	Student		
Sheldon (2002e)	173	–.09	–.11	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	61	Over 18	Student		

MATERIALISM AND WELL-BEING

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	$\rho^b$	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/educational background	% White
Sheldon (2002f)	279	-.11	-.14	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	52	Over 18	Student		
Sheldon (2004a)	48	-.07	-.09	AI	SWLS	Unpublished raw data	U.S.A.	44	20.1	Student		
Sheldon (2004b)	163	-.17	-.22	AI	SWLS	Unpublished raw data	U.S.A.	46	26.5	Student		
Sheldon (2004c)	323	-.17	-.21	AI	SWLS + PANAS	Unpublished raw data	U.S.A.	61	Over 18	Student		85
Sheldon (2005a)	109	-.14	-.18	AI-ext	RK	Journal article	U.S.A.	83	Over 18	Student		
Sheldon (2005b)	79	.00	.00	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	53	Over 18	Student		81
	★	-.12	-.16	AI	PANAS–Negative Affect							
Sheldon (2006a)	213	.20	.26	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	63	Over 18	Student		
Sheldon (2006b)	112	-.11	-.14	AI	SWLS	Unpublished raw data	U.S.A.		Over 18	Student		
Sheldon (2006c)	153	-.12	-.16	AI	SWLS	Unpublished raw data	U.S.A.	31	Over 18	Student		
Sheldon (2006d)	64	-.09	-.11	AI	SWLS	Unpublished raw data	U.S.A.	26	Over 18	Student		88
Sheldon (2007a)	183	-.03	-.04	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	31	Over 18	Student		
Sheldon (2007b)	343	-.05	-.06	AI	SWLS + PANAS	Unpublished raw data	U.S.A.	50	Over 18	Student		87
Sheldon (2007c)	140	-.04	-.05	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	40	25.3	Student		78
Sheldon (2009)	335	-.20	-.26	AI	PANAS–Negative Affect	Unpublished raw data	U.S.A.	57	21.3	Student		80
Sheldon (2010)	2,121	-.06	-.08	AI	BDI	Unpublished raw data	U.S.A.		Over 18	General		
Sheldon & Kasser (1998)	154	-.10	-.14	IO	SWLS + PANAS + CES-D	Journal article	U.S.A.	73	2.0	Student		
Shrum, Lee, Burroughs, & Rindfleisch (2011)	314	-.30	-.35	MVS-15	SWLS	Journal article	U.S.A.	57	51.0	General		
Sirgy (2007) Australian sample	107	-.21	-.24	IM	LS scale	Unpublished MS	Australia	55	39.4	General		
	★	-.18	-.25	IM	LS							

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Bosnian sample	301	.10	.11	IM	LS scale	Unpublished MS	Bosnia and Herzegovina	60	36.4	General		
	★	.07	.10	IM	LS							
Egyptian sample	149	.10	.11	IM	LS scale	Unpublished MS	Egypt	64	33.4	General		
	★	.03	.03	IM	LS							
German sample	146	.41	.46	IM	LS scale	Unpublished MS	Germany		Over 18	General		
	★	.19	.27	IM	LS							
South Korean sample	148	-.04	-.05	IM	LS scale	Unpublished MS	South Korea	70	49.3	General		
	★	-.06	-.08	IM	LS							
Turkish sample	150	-.17	-.20	IM	LS scale	Unpublished MS	Turkey	51	35.1	General		
	★	-.12	-.17	IM	LS							
U.S. sample	163	-.23	-.27	IM	LS scale	Unpublished MS	U.S.A.		Over 18	General		
	★	-.03	-.05	IM	LS							
Sirgy (2010)												
U.S. Sample A	330	-.17	-.23	IM	Health	Unpublished MS	U.S.A.		Over 18	Student		
U.S. sample B	123	-.05	-.07	IM	LS	Unpublished MS	U.S.A.	42	22.7	Student		
	★	-.02	-.03	IM	SWLS							
	★	-.01	-.01	IM	LS scale							
Sirgy et al. (2013)	1,185	-.16	-.18	MVS-M	LPES	Journal article	U.S.A.	69	39.7	General		
	★	-.00	-.00	MVS-M	S-SOL							
Sirgy et al. (1998)												
Australian sample	249	-.17	-.26	MVS-ad	Standard of living	Journal article	Australia	50	29.6	General		
	★	-.16	-.28	MVS-ad	Standard of living							
	★	-.21	-.29	MVS-ad	LS scale							
Canadian sample	180	-.08	-.12	MVS-ad	Standard of living	Journal article	Canada	24	45.6	General		
	★	-.07	-.12	MVS-ad	Standard of living							
	★	.38	.56	MVS-ad	LS scale							
Chinese sample	191	.13	.30	MVS-ad	Standard of living	Journal article	China	54	32.9	General		
	★	.01	.03	MVS-ad	Standard of living							
	★	-.17	-.35	MVS-ad	LS scale							
Turkish sample	139	-.28	-.44	MVS-ad	Standard of living	Journal article	Turkey	57	32.3	General		
	★	.04	.07	MVS-ad	Standard of living							
	★	-.20	-.28	MVS-ad	LS scale							
U.S. general population sample	233	-.18	-.24	MVS-ad	Standard of living	Journal article	U.S.A.	40	48.0	General		
	★	-.23	-.37	MVS-ad	Standard of living							
	★	-.35	-.43	MVS-ad	LS scale							

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
U.S. student sample	234	-.07	-.11	MVS-ad	Standard of living	Journal article	U.S.A.	57	22.0	Student		
	★	-.14	-.24	MVS-ad	Standard of living							
	★	-.22	-.32	MVS-ad	LS scale							
J. M. Smith (2011) Solberg, Diener, & Robinson (2004)	1,204	-.06	-.07	MV-HV	CES-D	Thesis	U.S.A.	58	48.7	General		93.3
Study 1	219	-.21	-.29	BMS	SWLS	Book chapter	U.S.A.		Over 18	Student		
Study 2	156	-.27	-.37	BMS	SWLS	Book chapter	U.S.A.		Over 18	General		
Study 3	7,150	-.14	-.20	Money	SWLS	Book chapter	Pooled samples worldwide		Over 18	Student		
Study 5	95	-.23	-.27	MVS-18	PANAS-Negative Affect	Book chapter	U.S.A.		Over 18	General		
	★	-.32	-.39	MVS-18	Palm-negative							
Study 6	112	-.23	-.28	Money-R	Palm-positive	Book chapter	U.S.A.		Over 18	General		
Speck & Roy (2008) Chinese and Indian sample	182	-.19	-.26	MVS-9	Standard of living	Journal article	China & India	66	21.5	Student		
	★	-.22	-.29	MVS-9	LS scale							
Eastern European sample	236	-.08	-.12	MVS-9	LS scale	Journal article	Eastern Europe (Croatia, Poland, Slovakia)	68	21.5	Student		
	★	.04	.06	MVS-9	Standard of living							
Latin American sample	213	-.02	-.03	MVS-9	Standard of living	Journal article	Latin America (Argentina, Chile, Mexico)	68	22.1	Student		
	★	-.28	-.37	MVS-9	LS scale							
Middle Eastern sample	300	.09	.12	MVS-9	Standard of living	Journal article	Middle East (Lebanon, Turkey, United Arab Emirates)	55	22.4	Student		
	★	-.11	-.16	MVS-9	LS scale							
Western European sample	280	.05	.07	MVS-9	Standard of living	Journal article	U.S.A. and New Zealand	58	22.5	Student		
	★	-.31	-.42	MVS-9	LS scale							
Srivastava, Locke, & Bartol (2001)												
Study 2	266	-.11	-.12	Money-R	MHI	Journal article	U.S.A.	56	23.0	Student		
Study 3	145	-.21	-.24	Money-R	MHI	Journal article	U.S.A.	81	44.0	General		



Table 4 (continued)

Study	<i>N</i> <sup>a</sup>	<i>r</i>	$\rho^b$	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Stevens, Constantinescu, & Butuceanu (2011)	64	-.38	-.49	AI-IW	SWLS	Journal article	U.S.A.	54	19.9	General		
Tang (1995)	123	.00	.00	MES-Success	RSE	Journal article	U.S.A.		27.9	General	Average individual income = \$16.4k	
Tang (2007)	458	-.03	-.04	MES-Success	QOL	Journal article	U.S.A.	49	29.9	General	Average individual income = \$25.0k	
Tang & Gilbert (1995)	155	.08	.10	MES-Achievement	RSE	Journal article	U.S.A.	81	36.5	General	Average individual income = \$17.0k	
Tang & Smith-Brandon (2001)	484	.16	.21	MES-Power	RSE	Journal article	U.S.A.	95	31.9	General	Average individual income = \$7.3k	24
Tang, Tang, & Luna-Arocas (2005)	564	.11	.16	MES-Power	NSQ-self-esteem	Journal article	U.S.A.	66	23.5	Student	Average individual income = \$9.3k	78
	★	.10	.13	MES-Power	NSQ-self-actualization							
Vander Veer (2009)	37	-.07	-.08	MVS-15	SWLS	Thesis	U.S.A.	70	20.1	Student		81
Vansteenkiste, Duriez, Simons, & Soenens (2006)	248	-.36	-.44	AI-ext	Substance use	Journal article	Belgium	70	Over 18	Student		
Vansteenkiste et al. (2007)	885	-.05	-.08	VKWork	LS	Journal article	Belgium	47	40.0	General	Average individual income = \$33.7k; 46% attended higher education; 11% did not complete high school or equivalent	
	★	-.09	-.15	VKWork	Happy							
Warchol (2008)												
Danish sample	51	-.17	-.21	MVS-18	SWLS	Thesis	Denmark	49	33.4	General	86% middle class	
Polish sample	54	-.07	-.08	MVS-18	SWLS	Thesis	Poland	52	32.6	General	91% middle class	
Wasser (2011)	71	-.42	-.51	MVS-18	RSE	Thesis	U.S.A.	75	49	General	\$10,000	79
J. J. Watson (1998)	285	-.21	-.28	MVS-18	Spending	Journal article	New Zealand	45	Over 18	Student		
J. J. Watson (2003)	176	-.43	-.49	MVS-18	Spending	Journal article	U.S.A.	59	Over 18	General	Average individual income = \$57.5k; 41% attended higher education; 3% did not complete high school or equivalent	
Weaver, Moschis, & Davis (2011)	129	-.52	-.61	MVS-18	SWLS	Journal article	Australia	41	20-27	General		

(table continues)

Table 4 (continued)

Study	N <sup>a</sup>	r	ρ <sup>b</sup>	Materialism measure	Outcome measure	Type of publication	Country	% female	Average age/age group (years)	Population	Average income/ educational background	% White
Williams, Cox, Hedberg, & Deci (2000), Study 1	141	-.17	-.27	GPS	Smoker	Journal article	U.S.A.	52	16.1	School	Average household income = \$55k	87
Wong, Rindfleisch, & Burroughs (2003) Study 1 U.S. sample	★283	-.21	-.30	AI-reg	RBI							
Study 1 Thailand sample	200	-.21	-.25	MVS-18	SWLS	Journal article	U.S.A.	59	43.0	General		
Study 1 Singapore sample	200	.48	.74	MVS-18	SWLS	Journal article	Thailand	50	35.0	General		
Study 1 Japan sample	200	.01	.01	MVS-18	SWLS	Journal article	Singapore	50	34.0	General		
Study 1 South Korea sample	105	-.31	-.41	MVS-18	SWLS	Journal article	Japan	49	29.0	General		
Study 2 U.S. sample	119	.17	.20	MVS-18	SWLS	Journal article	South Korea	47	38.0	General		
Study 2 Thailand sample	126	-.32	-.37	MVS-Int	SWLS	Journal article	U.S.A.	54	35.0	General		
Study 2 Japan sample	150	.09	.12	MVS-Int	SWLS	Journal article	Thailand	50	37.0	General		
Yamaguchi & Halberstadt (2012)	116	-.38	-.46	MVS-Int	SWLS	Journal article	Japan	65	36.0	General		
Yang (2007)	97	-.23	-.26	AIII-extabs	CES-D	Journal article	New Zealand	89	2.4	Student		
	239	-.19	-.22	MVS-6	SWLS	Thesis	U.S.A.	51	40.9	General	Average household income = \$62.5k; 68% attended higher education	93

*Note.* Variables have been scored so that materialism and positive well-being are high scores, and therefore, a negative correlation indicates that higher materialism is associated with poorer well-being. We selected one type of outcome measure per sample, providing the data used for the analyses reported in Tables 5 and 6. ρ = correlation corrected for reliability of the materialism measure and the outcome measure. *Key to materialism measures:* AI = Aspiration Index (Kasser & Ryan, 1993); AI-14-E = Aspiration Index Extrinsic 14 items, shortened version of Kasser, Ryan, Zax, and Sameroff (1995); AI-14-I = Aspiration Index Intrinsic 14 items, shortened version of Kasser et al. (1995); AI-ext = AI relative importance of extrinsic goals; AI-extabs = AI importance of extrinsic goals; AI-intabs = AI importance of intrinsic goals; AI-FS = AI relative importance of financial success; AI-int = AI relative importance of intrinsic goals; AI-IW = AI importance of wealth (Stevens et al., 2011); AI-reg = AI regression measure; BMS = Belk (1984) Materialism Scale; Casas = Casas, Gonzalez, Figuer, and Coenders (2004) materialism measure—value attached to money, power, and own image; Casas parent = Casas materialism measure for parents to report on their children; CM = Churchill and Moschis (1979) 5-item scale for children; CO = 5-item Consumer Orientation Scale (Schor, 2004); ESS = European Social Survey, importance to be rich and own expensive things; Extrinsic = ratings of extrinsic goals based on AI; ExtWork = extrinsic work motivation; GI-E = Goal Importance Extrinsic (Gomez et al., 2012); GI-I = Goal Importance Intrinsic (Gomez et al., 2012); GPS = Guiding Principles Scale (Kasser & Ryan, 1996); GPS-money = money as guiding principle; IM = 9-item measure of instrumental materialism (Sirgy, 2007); IO = intrinsic orientation, ratings of intrinsic goals minus ratings of extrinsic goals; LOM = Love of Money scale (Mitchell & Mickel, 1999); Mat = 4-item materialism measure; MatVal (adapt.) = adapted Richins (1987), 7 items; MatVal = Material values, 5 items (Richins, 1987); MCS = Materialistic Career Strivings; MES-Achievement = Achievement subscale of the Money Ethic Scale (Tang, 1992); MES-Power = Power subscale of the 30-item Money Ethic Scale (Tang, 1992); MES-Success = Success subscale of the shortened 12-item Money Ethic Scale (Tang, 1995); Money = single item rating importance of money; Money-R = importance of money relative to other goals; MSC-18 = Material Values Scale for children, 18 items (Opree et al., 2011); MV-HV = Materialist Values–Humanism Values derived from Rokeach (1973) and Value Survey (Bengston, Biblarz, & Roberts, 2002); MVS-18 = Materialistic Values Scale (MVS), 18 items (Richins & Dawson, 1992); MVS-6 = 6-item MVS; MVS-8 = 8-item MVS; MVS-9 = MVS cut to 9 items; MVS-11 = MVS cut to 11 items; MVS-15 = MVS cut to 15 items (Richins, 2004a); MVS/IPIP = items from MVS and from International Personality Item Pool (L. R. Goldberg et al., 2006); MVS-Int = 15-item interrogative version of MVS (Wong, Rindfleisch, & Burroughs, 2003); MVS-M = modified version of Richins and Dawson (1992), 9 items (Sirgy et al., 2013); PVQ40 = extrinsic values from Portrait Values Questionnaire (Schwartz, 2000); R-MPMI = Revised Materialist–Postmaterialist Index; TP = materialistic goal importance—financial wellness (Thompson & Pitts, 1994); Tycoon = tycoon type from Forman’s (1987) Mind Over Money questionnaire; VKWork = value attached to 4 extrinsic work goals: good pay, good job security, not too much pressure, generous holiday (Vansteenkiste et al., 2007); WW = Ward and Wackman (1971) materialism measure; YMS = Youth Materialism Scale (M. E. Goldberg, Gorn, Peracchio, & Bamossy, 2003). *Key to outcome measures:* AA = Adult Attachment: Avoidance Insecure Attachment (Fraley, Walley, & Brennan, 2000); ABS = Affect Balance Scale (Bradburn, 1969); Affect Balance = 9-item scale (Diener & Emmons, 1985); Alcohol use = single-item measure; BAI = Beck Anxiety Inventory (Beck & Steer, 1993); BDI = Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961); BMSLSS = Brief Multidimensional Students Life Satisfaction Scale (Seligson, Huebner, & Valois, 2003); BPNS = Basic Psychological Needs Scale (Deci & Ryan, 2004); CB = compulsive buying scale (Faber & O’Guinn, 1992); CBS = Compulsive Buying Scale (D’Astous, Maltais, & Roberge, 1990); CES-D = Center for Epidemiological Studies—Depression Inventory (Radloff, 1977); CGAS = Children’s Global Assessment Scale (Shaffer et al., 1983); CMHI = Adolescent Community Mental Health Interview—social productivity (Ikle, Lipp, Butters, & Ciarlo, 1983); Comrey = emotional stability versus neuroticism scale of

the Comrey Personality Scales (Comrey, 1987); CSWB = stress factor of the A. Campbell, Converse, and Rodgers (1976) subjective well-being scale; CSES = Core Self-Evaluation Scale (Judge, Erez, Bono, & Thoresen, 2003); ECR = Experience in Close Relationship (Anxiety Subscale; Norris et al., 2012); DASS = depression scale from Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995); DICA = Diagnostic Interview for Children and Adolescents—oppositional and conduct disorders (Herjanic & Reich, 1982); Drug Use Index = 4 items on tobacco, alcohol, marijuana and hard drug use; Drug use = single-item measure; Frugal = 6-item frugal purchasing scale; EWB = Eudaimonic Well-Being (SL + Psychological WB + Subjective vitality; Yamaguchi & Halberstadt, 2012); GABS = German Addictive Buying Scale (Scherhorn, Reisch, & Raab, 1990); GSS-LS = 3-item life satisfaction measure used in U.S. General Social Survey (Easterlin, 2001); Happiness = single-item happiness rating; Health = single-item rating of health; HSC-anxiety = Hopkins Symptom Checklist—anxiety symptoms (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974); IBTS = Impulsive Buying Tendency Scale (Verplanken & Herabadi, 2001); INE = Internalizing Negative Emotionality scale—5-item scale including items from IPPP; ISA = Index of Self-Actualisation (Jones & Crandall, 1986); LD = Life Dissatisfaction (adapted from Huebner, 1994); LPEs = Life Perception, Evaluation & Satisfaction (A. Campbell et al., 1976); LS = single-item rating of life satisfaction; LS-fun = Life Satisfaction—fun and enjoyment (Andrews & Withey, 1976); LS-2 = 2-item rating of life satisfaction; LS-15 = satisfaction with life, 15 items, based on Diener, Emmons, Larsen, and Griffin (1985) and Baruffol and Thilmany (1993), used in Galand, Boudreghien, and Rose (2012); LSC = life satisfaction scale for children (Huebner, 1994); MASC = Multidimensional Anxiety Scale for Children (March et al., 1997); MHI = Mental Health Index (Veit & Ware, 1983); MLQ = 3-item Presence of Meaning subscale of the Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2004); NSQ = Need Satisfaction Questionnaire (Porter, 1961); Palm = mood ratings 5 times per day for 1 week; PA + LS - NA = Positive Affect + Life Satisfaction - Negative Affect (Romero et al., 2012); PANAS = Positive Affect/Negative Affect Scale (D. Watson, Tellegen & Clark, 1998); PHappy = parent's single-item rating of child's happiness; Physical Activity = divided into active versus less active in response to question on how much physical activity in last 3 months; Physical health = adapted from Emmons's (1991) 9-item measure; PHQ-8 = Patient Health Questionnaire Depression Scale (Kroenke et al., 2009); PHQ-9 = Patient Health Questionnaire Depression Scale (Pfizer) used in Mueller, Mitchell, et al. (2011); PII = Personal Involvement Index (Zaitchkowsky, 1994); PILT = Purpose in Life Test (Crumbaugh & Maholick, 1981); PSOT = perceived socioeconomic status (Sirgy et al., 1998); PWB = Personal Well-Being Index (Cummins, 1998); QOL = 15-item quality of life measure (Flanagan, 1978); RBI = Risk Behaviour Index—5 items on tobacco, alcohol, and drug use; RBQ-A = Risky Behavior Questionnaire for Adolescents (Auerbach et al., 2009); RK = personal well-being scale (Ryff & Keyes, 1995); RSE-adapted = Rosenberg Self-Esteem Scale adapted for children, 20 items; RSE = Rosenberg's Self-Esteem Scale (Rosenberg, 1965); Rubinstein = depression factor from Rubinstein (1981) scale; SAM = Self-Ambivalence Measure (Bhar & Kyrios, 2007); SCC = Self-Concept Clarity (J. D. Campbell et al., 1996); SCS = Anderman's (2002) 6-item self-concept scale; SD = Self-Doubt Scale (Oleson, Poehlmann, Yost, Lynch, & Arkin, 2000); SDI = Self-Discrepancy Index (Dittmar, 2005b); SDQ = Strengths and Difficulties Questionnaire (Goodman, 1997); SEHP = Czech Emotional Habitual Well-Being Scale (Dzuka & Dalbert, 2002); SIAS = Social Interaction Anxiety Scale (Mattick & Clarke, 1998); SILSS = Student Life Satisfaction Scale (reference from Ku, 2009); Smoker = whether or not respondents had smoked more than 100 cigarettes in their life; Spending = 20-item spending tendency scale; SSC = Somatic Symptoms Checklist (Klonowicz, 2001); STAI-6 = 6 items from State-Trait Anxiety Inventory (Spielberger, Gorsuch, & Lushene, 1970); Standard of living = single item; Substance use = 5-item scale concerning cigarette, alcohol and drug use; SVS = Subjective Vitality Scale (Ryan & Frederick, 1997); SWLS = Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985); S-SOL = Satisfaction with standard of living (Ogden & Venkat, 2001); SWB = SWLS + Berne Questionnaire of Well-Being (Grob, 1995); Tobacco use = single-item measure; Well-being = ISA + SVS + CES-D + STAI/HSC; WHO-5 = 5-item version of the WHO (Bech, Staehr-Johansen, & Gudex, 1996).

<sup>a</sup> Rows with a star (★) in this column record effect sizes using a different outcome measure. Where samples have more than one measure, effect sizes are aggregated to ensure that the analysis is based on independent measures.

<sup>b</sup> Correlation corrected for reliability of the materialism measure and the outcome measure.

type of personal well-being measure,  $F(11, 237) = 9.67, p < .001$ , moderate the size of the effect. Table 5 reports the estimated effects for the materialism measures, and Table 6 reports the estimated effects for the well-being measures; both tables include estimates based both on the raw correlations and on the correlations corrected for reliability. Because the model includes both materialism measures and well-being measures as factors (represented by a set of dummy variables), we had to hold one type of measure constant in order to provide specific estimates for all types of the other measure; for example, to provide estimates of the effects due to each materialism measure, we had to hold constant the well-being measure. Thus, Table 5 gives predicted values for the materialism measures that would be obtained using composite SWB outcomes, and Table 6 gives predicted values for the well-being outcomes that would be obtained using material values and beliefs as the materialism measure.

Regarding the materialism measures, Table 5 shows that all predicted effects are negative and that, for all measures except money-related beliefs, the 95% CI does not include zero, and the effect is therefore significantly different from zero. The effect size for materialist personality traits is largest, but this effect is based on a small  $k$  (3), and this measure is used less widely and may have some limitations.<sup>16</sup> Material values and beliefs have the next highest effect size, followed closely by three goal-type measures, importance of money (relative), materialist goals, and materialist goals (relative). Relatively weak effects are notable for both value of money and importance of money, as well as for money-related beliefs. Examination of the effects corrected for reliability (i.e.,  $\rho$ ) suggests that the differential size of these effects is not likely to be due to different levels of internal reliability of the materialism measures. With regard to our hypotheses, it appears that multifaceted measures tended to have stronger effects than did simpler measures, although importance of money (relative) was reasonably strong. Furthermore, relative importance measures tended to have stronger effects than did absolute importance measures, although materialist goals absolute and relative were approximately equivalent in their effect sizes.

Regarding the well-being measures (see Table 6), all of the effects are negative and significant (i.e., none of the 95% CIs contains zero). Thus, as expected, materialism was linked to significantly lower well-being across all categories examined. Small to moderate negative correlations were observed between materialism and a diverse array of well-being outcomes, including measures of SWB, affective experience, positive self-appraisal, DSM Axis 1 disorders, and physical health. Largest effects emerged for personal well-being outcomes in the categories of negative self-appraisal, health risk behaviors, and, especially, compulsive buying. We develop implications of these findings in the Discussion.

In order to conduct the analyses reported in Tables 5 and 6, we discarded many effects so as to control for type of well-being outcome when examining differences between different measures of materialism and to control for type of materialism measure when examining differences between different well-being measures. In order to maximize the number of effects included in each analysis, we next constructed separate data sets for each of the 12 types of outcome so that we could run separate analyses controlling for type of materialism measure. Such analyses are useful in discerning where differences between effect sizes may be larger.

For these analyses, we selected measures of materialist values and beliefs and of materialist goals (relative), as they encompass the most widely used materialism measures in personality, consumer, health, and clinical psychology, as well as in marketing research; these measures are also well validated, possess well-established psychometric qualities, provide multifaceted assessments of materialism that are theoretically grounded, and encompass fully our definition of a materialist value orientation. In Table 7, we present a comparison of three sets of effect sizes, predicting the size of the correlations for the 12 well-being outcomes with (a) all materialism measures averaged (i.e., overall), (b) material values and beliefs measures, and (c) relative importance ratings of materialist (extrinsic) goals. The results in Table 7, where we use a larger amount of the data for each well-being outcome, are similar to those already reported with respect to differences in effect size between different well-being outcomes, showing that effects are strongest for negative self, physical risk, and compulsive buying. What is new and important for the purposes of this meta-analysis is the demonstration that the use of these multifaceted, widely used measures of a materialist value orientation leads to generally larger effect sizes compared to the effects found for materialism measures overall, reflecting the fact that some of the other measures have smaller or nonsignificant effects.

Although both type of materialism measure and type of outcome are significant moderators of effect size, the analyses conducted thus far show that considerable heterogeneity remains in the size of the effect. Specifically, the analyses reported in Tables 5 and 6 found significant residual heterogeneity, reflected in the 80% credibility intervals for  $\rho$  being considerably wide, typically a difference in correlation of .3 to .4. Likewise, for the separate analyses of each type of outcome reported in Table 7, residual heterogeneity tests are significant for 10 of the 12 categories of well-being outcome. Clearly, then, there remains a need to look for other moderators of the size of effect.

### Testing Moderation by Study, Participant, and Society Characteristics

In order to investigate other possible moderators of the effect sizes reported above, the following analyses used the four broad categories of well-being (SWB, self-appraisals, DSM Axis 1, and health and physical risk) as a basis of reconstructing the data set so that effects were aggregated when a sample had multiple measures within one of these categories, and effects were eliminated when a sample had measures across these broad categories. Our criterion was to retain effects in the SWB category whenever available.<sup>17</sup> The large majority of effects ( $k = 211$ ) involve SWB, with the

<sup>16</sup> While Belk's (1984) work on materialism was nothing short of pioneering, the materialism scale he developed at the time has not been used widely ( $k = 22$  of 749 effects). Furthermore, due to the measure's emphasis on negative emotional states (particularly envy), it may be confounded in part with negative emotionality, thus potentially leading to correlations between this scale and well-being outcomes that may be somewhat inflated, particularly regarding affect-based measures (see Solberg et al., 2004).

<sup>17</sup> All but three samples with multiple well-being measures had effects in the SWB category. For these remaining three samples, the choice was between retaining effects in the self-appraisal or DSM Axis 1 categories, and we selected the former.

Table 5  
Effect Size by Type of Materialism Measure

Measure	n	k	r	95% CI for r		ρ	80% credibility interval for ρ	
				LL	UL		LL	UL
Value of money	50,398	8	-.11	-.21	-.00	-.14	-.35	.09
Money-related beliefs	6,768	24	-.07	-.15	.01	-.08	-.29	.14
Materialist traits	784	3	-.28	-.43	-.12	-.39	-.58	-.15
Materialist values and beliefs	31,844	102	-.19	-.25	-.14	-.24	-.43	-.03
Importance of money	23,608	30	-.08	-.15	-.00	-.09	-.30	.13
Importance of money (relative)	3,454	10	-.16	-.25	-.06	-.18	-.38	.04
Materialist goals	16,030	13	-.16	-.23	-.09	-.19	-.39	.02
Materialist goals (relative)	13,971	66	-.16	-.22	-.10	-.21	-.40	.01

Note. The values for r and ρ and their respective confidence and credibility intervals are the predicted values from the model in which both type of materialism measure and type of personal well-being are entered as factors and where we chose to use the composite subjective well-being measure as the reference measure for comparing the different types of materialism measure. CI = confidence interval; LL = lower limit; UL = upper limit.

remainder involving DSM Axis 1 (k = 24), self-appraisals (k = 15), and health and physical risk (k = 6). We controlled for both type of materialism measure and type of well-being outcome in all the following moderator analyses.

**Study characteristics.** The first set of moderators we examined concerned study characteristics (see Table 8). In view of the large number of unpublished studies we located, it is interesting to note that there is no significant difference in effect size between published and unpublished studies. Year of publication did not moderate the effect either, indicating no significant trend over time. For type of data collection, however, studies that used a face-to-face interview, rather than a questionnaire, obtained significantly smaller effects.

**Participant characteristics.** The second set of moderators we examined concerned characteristics of the research participants. As can be seen in Table 9, most of these were not significant. Eth-

nicity, education, and whether the sample was exclusively students or drawn from a general population had no significant moderating effects, neither for analyses using r nor ρ. Furthermore, neither the personal income nor household income of participants significantly moderated the size of the link between materialism and well-being.

Three significant moderation effects did emerge. First, there was a significant effect for gender composition, such that the effect size was larger the greater the proportion of women in the sample. The predicted effect for a sample with all women was -.24, whereas for a sample with all men, it was -.09. Second, a significant effect was observed for age group: Those over 18 years had a slightly larger effect than those under 18. This result parallels the marginally significant effect for the average age of the sample: Effects were slightly larger for older participants. Third, working in a profession or studying a subject that supports a materialist orien-

Table 6  
Effect Size by Type of Outcome Measure

Measure	n	k	r	95% CI for r		ρ	80% credibility interval for ρ	
				LL	UL		LL	UL
Subjective well-being								
Life satisfaction	74,216	75	-.13	-.18	-.09	-.17	-.37	.04
Negative affect	4,749	24	-.15	-.21	-.08	-.18	-.37	.04
Positive affect	9,686	9	-.23	-.31	-.14	-.30	-.48	.06
Composite	13,479	34	-.19	-.25	-.14	-.24	-.43	-.03
Self-appraisals								
Positive self	3,648	18	-.17	-.24	-.09	-.22	-.42	-.01
Negative self	1,426	7	-.28	-.37	-.18	-.32	-.51	-.11
DSM Axis I								
Anxiety	1,659	12	-.17	-.26	-.07	-.19	-.39	.03
Depression	8,651	22	-.19	-.25	-.12	-.22	-.41	-.01
Compulsive buying	9,792	26	-.44	-.48	-.39	-.53	-.67	-.36
Other DSM Axis I	4,272	7	-.16	-.26	-.06	-.21	-.41	.01
Health and physical risk								
Physical health	12,549	14	-.15	-.23	-.06	-.19	-.39	.03
Risk behaviors	2,730	8	-.29	-.38	-.19	-.39	-.56	-.18

Note. The values for r and ρ and their respective confidence and credibility intervals are the predicted values from the model in which both type of materialism measure and type of personal well-being are entered as factors and where we chose to use materialist values and beliefs as the reference category of materialism measure for comparing the different types of outcome measure. CI = confidence interval; DSM = Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; American Psychiatric Association, 2000); LL = lower limit; UL = upper limit.

Table 7  
Effect Size by Type of Outcome Using Separate Analyses for Each Outcome

Measure	Averaged across measures			Materialist values and beliefs			Materialist goals (relative)			$F^b$	$Q^b$
	$k$	$r$	95% CI	$k$	$r$	95% CI	$k$	$r$	95% CI		
Subjective well-being											
Life satisfaction	147	-.10	[-.13, -.08]	47	-.15	[-.19, -.12]	41	-.14	[-.18, -.10]	4.21** (7)	2257.24**
Negative affect	46	-.13	[-.16, -.09]	10	-.23	[-.29, -.16]	30	-.10	[-.14, -.06]	3.26** (4)	143.37**
Positive affect	73	-.11	[-.17, -.05]	18	-.11	[-.17, -.05]	44	-.12	[-.16, -.08]	2.17† (6)	296.48**
Composite	57	-.16	[-.19, -.12]	17	-.19	[-.25, -.12]	24	-.17	[-.22, -.11]	<1 (4)	316.08**
Self-appraisals											
Positive self	54	-.19	[-.24, -.14]	10	-.20	[-.29, -.10]	35	-.26	[-.31, -.21]	7.42** (5)	240.01**
Negative self	7	-.27	[-.41, -.13]	7	-.27	[-.41, -.13]	0	—	—	— (1)	21.99**
DSM Axis 1											
Anxiety <sup>a</sup>	25	-.15	[-.20, -.10]	7	-.23	[-.30, -.16]	14	-.14	[-.20, -.08]	5.82** (3)	34.33*
Depression	27	-.14	[-.19, -.10]	7	-.19	[-.27, -.11]	13	-.14	[-.21, -.07]	<1 (4)	78.08**
Compulsive buying	30	-.43	[-.49, -.38]	31	-.41	[-.48, -.35]	0	—	—	— (1)	362.28**
Other DSM 1 <sup>a</sup>	7	-.15	[-.25, .06]	4	-.20	[-.24, -.17]	1	.11	[-.08, .30]	10.37* (3)	2.71
Health and physical risk											
Health	28	-.10	[-.16, -.05]	3	-.21	[-.32, -.10]	11	-.19	[-.26, -.11]	6.11** (4)	78.90**
Physical risk <sup>a</sup>	8	-.25	[-.32, -.17]	2	-.12	[-.30, -.07]	4	-.27	[-.37, -.17]	2.12 (3)	9.31

Note. CI = confidence interval; DSM = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., text rev.; American Psychiatric Association, 2000);  $F$  = the test for the differences between types of materialism measure;  $Q$  = test for residual heterogeneity.

<sup>a</sup> Tau is estimated at zero, and therefore, a direct  $z$ -to- $r$  transformation is used rather than an integral transformation. <sup>b</sup> The degrees of freedom in the numerator and denominator of the  $F$  ratio vary depending on the number of types of materialism measure included in the analysis. At most, there are eight types, but for some analyses, fewer types were represented. The number of types of materialism ( $p$ ) is indicated in parentheses. The degrees of freedom for the numerator are  $p - 1$  and for the denominator are  $k - p$ . Degrees of freedom for the  $Q$  statistic are the same as for the denominator of the  $F$  statistic. †  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

tation (such as business, economics, or marketing) significantly moderated the strength of the relationship between materialism and well-being. The direction of the finding is consistent with the prediction made by the person–environment congruence hypothesis: The larger the proportion of the sample working in an educational or occupational environment that is likely to support a materialist value orientation, the weaker the link between individuals' materialist value orientation and lower personal well-being. For example, the predicted effect for a sample in which none of the participants worked in such an environment was  $-.19$ , while the effect was smaller, though still negative at  $-.12$ , if all participants worked in such an environment.

Thus, it appears that the negative association between well-being and materialism is robust across most demographic characteristics of participants. However, the link between materialism and lower personal well-being was still negative, but weaker, when the sample was younger, included a larger proportion of males, and included more individuals who study or work in an environment supportive of materialist values.

**Society characteristics.** We examined two sets of potential country-level moderators of the materialism–well-being association: economic conditions and cultural values.

We investigated four economic indicators: GDP, growth in GDP, the GINI index (which assesses wealth inequality), and the Economic Freedom Index (a measure of how deregulated—i.e., free-market—a nation's economy is). We recorded data on each for the year in which the study was published and then converted as described above. Table 10 presents the results of these moderator analyses. The size of the association between materialism and well-being was not significantly moderated by the country's wealth as indicated by GDP or by the extent to which a country's

institutions reflect a free-market economy. Significant moderation effects did emerge for the other two economic indicators.<sup>18</sup> Contrary to predictions, countries that had greater wealth inequalities showed smaller effects than countries that were more equal; for example, the predicted effect for Denmark (which has the smallest GINI index in our sample) was  $-.20$ , whereas that for South Africa (which has the highest GINI index in our sample) was  $-.12$ . Similarly, countries with high growth in GDP had smaller effects than did those with slower growth; for example, the predicted effect for India in 2010 (which had high economic growth) was  $-.14$ , whereas for the United States (which had slower growth) it was  $-.20$ . Thus, it seems that the negative relationship between materialism and well-being is greater in countries that show a combination of having a more equal income distribution and slower economic growth, although it is still negative in unequal countries with faster economic growth.

Finally, we carried out two sets of analyses with regard to cultural-level values. First, we examined cultural-level materialism via a country's mean agreement with the statement that it is important to be rich, have a lot of money, and own expensive things (World Values Survey, 2005). Second, we examined the seven sets of values that Schwartz (1992) identified as representing

<sup>18</sup> Country economic indicators are correlated, and when all four indicators are entered simultaneously in a metaregression, the effect for the GINI index is positive and of a similar magnitude to that when it is entered alone but no longer reaches significance ( $b = .003$ ,  $t(226) = 1.53$ ,  $ns$ ). The effect of growth, however, remains significant ( $b = .011$ ,  $t(226) = 2.39$ ,  $p = .018$ , and the effects of GDP ( $b = .003$ ,  $t(228) = 0.14$ ,  $ns$ ), and of the Economic Freedom Index ( $b = -.03$ ,  $t = -0.41$ ,  $ns$ ) remain not significant.

Table 8  
*Study Characteristics as Moderators of Effect Size*

Moderator	<i>k</i>	Estimate	<i>SE</i>	<i>t</i> ( <i>df</i> = <i>k</i> - 12)	95% CI		<i>Q<sub>E</sub></i> ( <i>df</i> = <i>k</i> - 12)	Estimate for $\rho$
					LL	UL		
Year of publication	257	-.003	.002	-1.24	-.007	.002	2,569.37**	-.002
How data were collected <sup>a</sup>	248						2,328.27**	
Postal questionnaire vs. questionnaire with the researcher present		-.03	.02	-1.21	-.07	.02		-.04
Interview vs. questionnaire with the researcher present		.09	.04	2.02*	.00	.18		.11 <sup>†</sup>
Online survey vs. questionnaire with the researcher present		-.05	.03	-1.63	-.12	.01		-.06
Published vs. unpublished	257	.02	.02	1.02	-.02	.07	2,561.23**	.04

*Note.* Analyses also include the type of materialism measure and type of outcome measure in the model. Estimate = parameter estimate when *r*, transformed to Fisher's *z*, is used as the dependent variable. Estimate for  $\rho$  = parameter estimate when  $\rho$ , transformed to Fisher's *z*, is used as the dependent variable. CI = confidence interval; LL = lower limit; UL = upper limit.

<sup>a</sup> Overall,  $F(3, 232) = 3.15, p < .05$ . For this variable, *questionnaire with the researcher present* was used as the reference category with which the other data collection methods were compared.

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ .

the core dimensions along which cultures vary (see Table 11). Country-level materialism had no moderating effect, and only one cultural value moderated the effect: affective autonomy. Negative correlations were noted for countries both high and low on this cultural value, but the correlations were stronger in nations high on the pursuit of pleasure and an exciting life. For example, in Denmark (which scores high in affective autonomy), the predicted correlation is  $-.21$ , whereas for Egypt (which scores low in affective autonomy), the predicted correlation is  $-.09$ .

Taken together, these analyses of culture-level moderators show, again, that correlations are negative between materialism and well-being in most cultural contexts. The size of the effect is, however, moderated to some extent by economic context and one type of cultural value. Interpretations and implications of these findings are developed in the Discussion.

### Testing Two Mediation Hypotheses

We next examine processes through which high levels of materialism might be associated with low levels of well-being. To this end, we carried out multivariate meta-analyses for mediational hypotheses (Becker, 2009; Cheung & Chan, 2005, 2009). This entailed locating samples that included the relevant mediator, in addition to measures of materialism and of well-being, and then recording the correlations between all three of these variables; when more than one matrix could be obtained from a particular sample, we averaged the correlations. Next, these correlation matrices were pooled using a fixed-effects model,<sup>19</sup> an estimate of the pooled matrix and its asymptotic covariance matrix was obtained, and then a structural equation model was fitted where materialism and each proposed mediator were modeled as predictors of well-being (using the R package metaSEM; Cheung, 2011).

The general form of the mediation models tested has path  $\alpha$  as the direct path from materialism to the mediator, path  $\beta$  as the path from the mediator to well-being, path  $\tau$  as the direct effect of materialism on well-being when the mediator is also in the equation, and finally,  $\tau'$  as the path that represents the simple correlation between materialism and well-being. The analyses presented in Table 12 show these four statistics, as well as the Sobel's test statistics we computed. Table

12 also includes tests for homogeneity of the correlation matrices, namely, the chi-square test and two fit indices, the comparative fit index (CFI; Bentler, 1990) and the root-mean-square error of approximation (RMSEA; Steiger & Lind, 1980).

**Need satisfaction.** As noted in the introduction, one explanation of the negative relationship between materialism and well-being is that the pursuit of materialistic values and goals creates (and signals) a lifestyle in which people have relatively poor satisfaction of basic psychological needs for relatedness, competence, and autonomy (Deci & Ryan, 2000; Kasser, 2002), needs whose satisfaction is seen as a prerequisite for well-being to occur. We therefore identified studies in which satisfaction of at least one of these needs was directly assessed; in addition, for autonomy need satisfaction, we included reversed correlations of the extent to which people pursued extrinsic or introjected motives for pursuing materialistic values (e.g., Dittmar & Kapur, 2011), given the long tradition in SDT suggesting that such motives interfere with the satisfaction of the need for autonomy.

The results regarding homogeneity were mixed. For each of the three proposed mediators, the significant chi-square test suggested rejecting the homogeneity hypothesis, but the CFI and RMSEA statistics suggested that the model does not deviate too much from a model of homogeneity and that therefore the synthesized matrix

<sup>19</sup> In addition to the fixed-effects models reported in this section, we also tried to fit a random-effects model for each of the potential mediators. The analysis using a random-effects model for relatedness gave similar results to the fixed model ( $\chi^2 = 386.25, df = 44, p < .001$ ;  $\alpha = -.18, p < .01, \beta = .42, p < .01, \tau = -.04, p < .05, \tau' = -.12, p < .01$ , Sobel  $z = -5.50, p < .01$ ). Furthermore, as occurred in the fixed-effects model for financial satisfaction, the random-effects model for this mediator indicated that the heterogeneity of the correlation matrices is such that further analysis would not be appropriate ( $\chi^2 = 1,678.46, df = 39, p < .001$ ). For analyses involving the potential mediators of autonomy and of competence, however, we encountered problems. For autonomy, the solution did not converge, and for competence, the expected covariance matrix was not positive definite. For both of these analyses, the number of studies is relatively small ( $k_s = 10$  and 9) compared to the number of studies available for relatedness ( $k = 23$ ); this difference in power may account for the difficulty in replicating the fixed-effects results (Borenstein et al., 2009).

Table 9  
Participant Characteristics as Moderators of Effect Size

Moderator	k	Estimate	SE	t (df = k - 12)	95% CI		Q <sub>E</sub> (df = k - 12)	Estimate for ρ
					LL	UL		
Proportion female	228	-.15	.06	-2.67**	-.26	-.04	1,577.68**	-.16*
Mean age	174	.001	.001	-1.69†	-.01	.01	1,033.41**	-.002
Age group (under vs. over 18)	247	-.03	.01	-2.17*	-.05	-.02	2,469.47**	-.03†
Participants in HE vs. general population sample	217	.01	.02	1.01	-.03	.05	1,437.99**	.02
Proportion White <sup>a</sup>	61	-.21	.14	-1.47	-.49	.08	396.04**	-.29
Proportion of those in materialist profession/study <sup>a</sup>	38	.07	.03	2.31*	.01	.14	39.31	.08
Personal income adjusted (\$k)	26	-.25	.17	-1.49	-.59	.10	227.59**	-.30
Household income adjusted (\$k)	20	.09	.05	1.56	-.03	.21	142.25**	.13†

Note. Analyses also include the type of materialism measure and type of outcome measure in the model. Estimate = parameter estimate when *r*, transformed to Fisher's *z*, is used as the dependent variable. Estimate for ρ = parameter estimate when ρ, transformed to Fisher's *z*, is used as the dependent variable. CI = confidence interval; LL = lower limit; UL = upper limit; HE = higher education.

<sup>a</sup> There are too few studies to include type of materialism measure as a control variable, and therefore, this analysis controls only for type of outcome measure.

† *p* < .10. \* *p* < .05. \*\* *p* < .01.

is an aggregate of similar rather than very different correlations. Therefore, we conducted the next phase of the analysis and examined α, β, and τ values for the mediational hypotheses. Small, but significant, negative relationships were observed between materialism and the satisfaction of needs for competence, relatedness, and autonomy. Moderate positive relationships between satisfaction of each of these needs and well-being were also observed. For all three needs, the Sobel's test of the indirect effect was significant, and τ, the direct effect of materialism on well-being after controlling for need satisfaction, is substantially reduced when compared to τ'. Even so, of the direct paths, τ, each remained significant, suggesting that fulfilment of each need partially, but not fully, mediates the relationship between well-being and materialism. Thus, these results are consistent with SDT's hypothesis that poor need satisfaction may mediate the negative association between materialism and well-being.

**Financial satisfaction.** A second line of explanation as to why materialism may be negatively associated with well-being is that people who strongly value materialist aims are likely to be dissatisfied with their financial circumstances and that this dissatisfaction generalizes to their overall life satisfaction, thereby resulting in poorer well-being (e.g., Sirgy, 1998). To test this hypothesis, we examined studies that included measures of materialism, well-being, and financial (dis)satisfaction. The fit statistics in Table 12

show, however, that the correlation matrices between these three measures were quite heterogeneous; indeed, for each of the three relationships, the correlations varied from moderately positive to moderately negative in roughly equal proportion. In such a circumstance, an analysis of the synthesized correlation matrix is inappropriate because no typical pattern of relationships is observed (Becker, 2009). We conclude that there is little support for the proposal that the negative link between materialism and well-being is mediated by financial dissatisfaction.

**Testing the Specter of Publication Bias**

Given that meta-analysis relies mainly on the published literature to locate relevant studies, any biases in the selection of studies for publication will be reflected in the set of studies included in the meta-analysis. If studies with weak or nonsignificant findings tend not to be published, then they will typically not be included in the meta-analytic sample, biasing it toward studies with larger and significant effects (Rothstein, Sutton, & Borenstein, 2005; Rothstein, Sutton, Borenstein, & Rhodes, 2006); thus, any effect reported may be overestimated. Although it is impossible to demonstrate conclusively, there are several reasons why we believe that publication bias has not significantly affected this meta-analysis.

Table 10  
Measures of Country Wealth Inequality, Wealth, Economic Growth, and Economic Freedom as Moderators of Effect Size

Moderator	k	Estimate	SE	t (df = k - 12)	95% CI		Q <sub>E</sub> (df = k - 12)	Estimate for ρ
					LL	UL		
GINI index	250	.004	.002	2.04*	.001	.007	2,165.74**	.005*
GDP adjusted	245	-.008	.007	-1.24	-.022	-.002	2,089.89**	-.014
GDP percent growth	238	.012	.004	2.66*	.003	.020	1,324.47**	.014*
Economic Freedom Index	239	-.04	.066	-0.63	-.17	.09	1,571.71**	-.04

Note. All analyses also include the type of materialism measure and type of outcome measure in the model, except for those involving personal income and household income (where the degrees of freedom for the *t* statistic are *k* - 2. Estimate = parameter estimate when *r*, transformed to Fisher's *z*, is used as the dependent variable. Estimate for ρ = parameter estimate when ρ, transformed to Fisher's *z*, is used as the dependent variable. CI = confidence interval; LL = lower limit; UL = upper limit; GDP = gross domestic product.

\* *p* < .05. \*\* *p* < .01.



Table 11  
Country-Level Values as Moderators of Effect Size

Moderator	<i>k</i>	Estimate	SE	<i>t</i> ( <i>df</i> = <i>k</i> - 12)	95% CI		<i>Q<sub>E</sub></i> ( <i>df</i> = <i>k</i> - 12)	Estimate for $\rho$
					LL	UL		
Country materialism	214	-.01	.03	-0.15	-.07	.06	1,112.07**	-.01
Embeddedness	250	.03	.04	0.73	-.05	.12	2,530.39**	.05
Intellectual autonomy	250	-.02	.04	-0.57	-.10	.05	2,531.49**	-.03
Affective autonomy	250	-.07	.03	-2.07**	-.13	-.00	2,291.39**	-.10*
Egalitarianism	250	.03	.05	0.67	-.06	-.12	2,198.93**	-.04
Mastery	250	-.01	.08	-0.13	-.16	.14	2,491.00**	-.08
Hierarchy	250	.01	.03	0.34	-.05	.07	2,505.72**	.01
Harmony	250	-.00	.03	-0.08	-.06	.05	2,478.16**	.00

Note. Analyses also include the type of materialism measure and type of outcome measure in the model. Estimate = parameter estimate when *r*, transformed to Fisher's *z*, is used as the dependent variable. Estimate for  $\rho$  = parameter estimate when  $\rho$ , transformed to Fisher's *z*, is used as the dependent variable. CI = confidence interval; LL = lower limit; UL = upper limit.

\*  $p < .05$ . \*\*  $p < .01$ .

First, we were successful in locating a significant number of unpublished studies, such that 32% of our samples were from unpublished sources. Second, analyses reported above revealed that whether a study was published or unpublished did not significantly moderate the size of the negative relationship between materialism and well-being. Third, we applied a number of quantitative tests designed to assess the potential impact of unpublished work, all of which suggested our sample was not biased.

Specifically, we first used the method of funnel plot asymmetry (Becker, 2005), which examines whether a relationship exists between effect sizes and the sample size or some other indicator of a study's precision (e.g., variance). The rank correlation between standard error and effect size (Begg & Mazumdar, 1994) was  $-.08$  and not significant. We also used the superior regression method (Egger, Smith, Schneider, & Minder, 1997; Sterne & Egger, 2005; Sterne, Gavaghan, & Egger, 2000), which includes type of materialism measure and type of well-being measure as moderators; here, the regression test was significant ( $t = -3.61$ ,  $p < .01$ ), suggesting some tendency for studies with larger standard errors to have more negative effects. Another approach we used was Duval and Tweedie's trim-and-fill method (Duval, 2005; Duval & Tweedie, 2000a, 2000b), which also takes asymmetry in the funnel plot as its starting point; here, we found that no studies were trimmed in the first phase of the analysis, implying that there was not sufficient asymmetry to raise concerns about potential bias.

Finally, we used selection methods (Hedges & Vevea, 2005; Sutton, 2009; Vevea & Hedges, 1995; Vevea & Woods, 2005), which can incorporate other moderators in the model (which the trim-and-fill method cannot). With this approach, one assumes that whether or not a study is included in a sample of studies depends on some characteristic of the study, such as its *p* value. For example, an extreme form of selection would be one in which all studies where  $p < .05$  are included and all those where  $p > .05$  are excluded. In this example, then, one can specify weights that represent the probability that a study with a certain *p* value will be included in the sample (e.g., 1 for  $p < .05$  and 0 for  $p > .05$ ). However, in practice, it is likely that a more differentiated weight function obtains across the range of *p* values. Given the need for larger samples than we had available to use maximum-likelihood methods for estimation (Vevea & Hedges, 1995), we used a more recent approach (Vevea & Woods, 2005) whereby different weight

functions are specified and then the model is estimated under each weight function. If one's estimates vary appreciably with different plausible models, then publication bias may be a serious concern, but if they do not vary appreciably, then one can be more confident that estimates are not appreciably affected. We applied the same four different weight functions in our analyses as were used by Vevea and Woods (2005). *Moderate one-tailed selection* assumes a very high likelihood that significant findings in the expected direction will be included (e.g., negative correlations will be reported) but that there is a .50 probability of including nonsignificant findings or findings in the opposite, positive direction. In *severe one-tailed selection*, this probability is assumed to be as low as .10. Similarly, in *moderate two-tailed selection*, the probability of including a nonsignificant finding (in either direction) drops as low as .60; in *severe two-tailed selection*, it drops as low as .25. The results are presented in Table 13, where the first column reprints the unadjusted estimates of the relationship between materialism and well-being (see Tables 5 and 6), and the next four columns provide the adjusted estimates for moderate and severe one- and two-tailed selection models, respectively. By and large, these estimates are very similar to the unadjusted estimates. That is, most of the adjusted estimates do not differ from the unadjusted estimate by more than .02, and the rare larger differences are insufficient to alter our conclusions substantially.<sup>20</sup>

In conclusion, then, given the large percentage of unpublished studies included in this meta-analysis, the lack of difference between the size of effect for published compared to unpublished studies, the estimates provided by the funnel plot asymmetry method, the application of the trim-and-fill procedure, and the evaluation of different selection models, it seems reasonably safe to conclude that publication bias did not affect the general conclusion that materialism is significantly associated with lower personal well-being.

<sup>20</sup> We also conducted a sensitivity analysis, not reported here to keep the length of the article manageable, which showed that results remain essentially the same when the analyses reported in Tables 5 and 6 are rerun without the large bulk of unpublished studies (i.e., those kindly supplied to us by Kennon M. Sheldon).

Table 12  
*Analysis of Mediators*

Mediator	<i>k</i>	$\chi^2$ ( <i>df</i> )	CFI	RMSEA	$\alpha$	$\beta$	$\tau$	$\tau'$	Sobel <i>z</i>
Need satisfaction									
Competence	10	132.39 (23)	.91	.08	-.14**	.44**	-.07**	-.13**	-11.54**
Relatedness	23	389.52 (44)	.84	.11	-.15**	.47**	-.03*	-.10**	-16.89**
Autonomy	9	123.48 (20)	.93	.08	-.17**	.47**	-.06**	-.14**	-14.30**
Money									
Financial satisfaction	22	1,155.64 (39)	.14	.31					

*Note.* All chi-square statistics and all parameter estimates are significantly different from zero at  $p < .01$ . Paths are not reported for financial satisfaction since the heterogeneity of the correlation matrices is such that an overall analysis would not be appropriate. Sobel *z* is the Sobel test for the significance of the indirect path from  $\alpha$  to  $\beta$ . CFI = comparative fit index; RMSEA = root-mean-square error of approximation;  $\alpha$  = path from materialism to mediator;  $\beta$  = path from mediator to well-being;  $\tau$  = path from materialism to well-being;  $\tau'$  = correlation between materialism and well-being.

\*  $p < .05$ . \*\*  $p < .01$ .

## Discussion

This meta-analysis examined how materialism relates to personal well-being. Results showed that materialism correlates significantly and negatively with well-being: Overall, the average effect size was  $-.15$  and, when measures were adjusted for reliability,  $-.19$ . That said, effect sizes differed depending on a number of factors, which we now review.

### The Assessment of Materialism

As predicted, the way in which materialism was measured affected the size of the association reported between materialism and well-being. Generally speaking, briefer measures of materialism that focused primarily on the desire for money or financial success were relatively weak predictors of well-being (effect sizes from  $-.07$  to  $-.14$ ). In contrast, measures with a broader scope, like materialist values and beliefs and materialist goals (relative), correlated more strongly with well-being (effect sizes from  $-.16$  to  $-.24$ ). The one exception to this pattern concerned importance of money (relative), which correlated somewhat more strongly with well-being than the other money-only measures.<sup>21</sup> Conceptually, these findings suggest that while the desire for money and possessions is, in itself, negatively associated with well-being, the strength of this association increases when the assessment of materialism includes related concepts, such as the value placed on image and status, the beliefs that money is a sign of success and necessary for happiness, and the traits of nongenerosity and envy. Another, complementary way of looking at this is that factors not directly related to money as such may be especially important for well-being, contributing to the findings of generally larger effect sizes for multifaceted compared to money-only measures. It thus appears that materialism may be best conceived of as a cluster of beliefs and values (see Burroughs & Rindfleisch, 2002; Grouzet et al., 2005; Richins, 2004a) rather than a mere desire for money and material goods. Assessing this broader set of beliefs and values appears to provide a better understanding, and consequent operationalization, of the underlying construct of materialism, thereby increasing the size of observed relations with well-being.

Mixed results were obtained concerning our hypotheses regarding absolute versus relative assessments of materialism. When only money-related goals were assessed, absolute measures were clearly more weakly related to well-being than were relative measures (effect size differences  $\geq .08$ ). Surprisingly, however, when

the broader array of materialist goals was assessed (i.e., image and status were included), little difference was notable between absolute and relative measures in their correlations with well-being ( $\leq .03$ ). Given the research and theory showing that goals and values exist not in isolation but in systems (Grouzet et al., 2005; Rokeach, 1973; Schwartz, 1992) and given the slightly stronger results for relative over absolute measures, our findings suggest that more accurate assessment of the importance of materialistic goals in a person's life is likely achieved by using relative measures. This may be the case because relative measures indirectly assess the deprioritization of other types of values, a dynamic that typically occurs when people focus on materialistic strivings. If the values that are crowded out are those that facilitate people's well-being (e.g., intrinsic values of self-acceptance, affiliation, and community feeling; Kasser & Ryan, 1996), then the size of materialism's correlation with lower well-being may also increase.

In sum, the results suggest that researchers interested in identifying fully the strength of the correlation of materialism with well-being outcomes would do well to use (a) operationalizations that assess *materialist values and beliefs* and *importance of materialist goals*, as these assess a cluster of materialistic beliefs that are broader than just the desire for money per se and (b) indices that assess the prioritization of *materialistic goals relative to other goals*. Furthermore, these results also suggest that the average effect size between materialism and well-being reported here likely underestimates the size of the relationship that would have occurred if materialism had been more adequately measured across the samples studied.

### The Assessment of Well-Being

We also examined whether the association between materialism and well-being varied as a function of the type of well-being researchers had studied. The negative association was significant for all 12 categories of well-being we examined. Thus, as predicted, the negative association between materialism and well-being expresses itself not in specific forms of psychopathology and ill-being but rather across multiple aspects of people's lives. Such

<sup>21</sup> The results for correlations corrected for reliability demonstrate that the differences between types of measures are not due to generally higher reliability of broadband measures compared to brief measures composed of only a few items.

Table 13  
*Effect Sizes by Type of Materialism Measure and Type of Well-Being for Different Selection Methods*

Measure	Unadjusted estimate	Moderate one-tailed selection	Severe one-tailed selection	Moderate two-tailed selection	Severe two-tailed selection
Type of materialism measure					
Value of money	0.11	0.13	0.23	0.10	0.10
Money-related beliefs	0.07	0.09	0.20	0.06	0.06
Materialist traits	0.28	0.29	0.33	0.27	0.26
Materialist values and beliefs	0.20	0.21	0.29	0.18	0.17
Importance of money	0.08	0.10	0.21	0.07	0.07
Importance of money (relative)	0.16	0.18	0.26	0.15	0.13
Materialist goals	0.16	0.18	0.26	0.15	0.15
Materialist goals (relative)	0.16	0.18	0.27	0.15	0.14
Type of outcome measure					
Life satisfaction	0.13	0.16	0.25	0.13	0.12
Negative affect	0.15	0.17	0.25	0.14	0.13
Positive affect	0.23	0.24	0.30	0.23	0.22
Composite	0.19	0.21	0.29	0.18	0.17
Positive self	0.17	0.19	0.27	0.16	0.14
Negative self	0.28	0.29	0.33	0.27	0.26
Anxiety	0.17	0.19	0.27	0.16	0.14
Depression	0.19	0.20	0.28	0.18	0.16
Compulsive buying	0.44	0.44	0.45	0.44	0.44
Other DSM Axis I	0.16	0.18	0.26	0.15	0.14
Physical health	0.15	0.17	0.26	0.14	0.13
Risk behaviors	0.29	0.30	0.33	0.28	0.27
Variance component	.013	.014	.027	.013	.014

Note. The weights corresponding to the four different selection methods can be found in *Vevea and Woods (2005, Table 1, p. 435)*. *DSM = Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; American Psychiatric Association, 2000)*.

a finding is consistent with the kinds of explanations that have been provided for this negative correlation, whereby higher materialism is associated with personal discrepancies (Dittmar, 2008; Richins, 2004b; Sirgy, 1998), feelings of insecurity (Kasser, 2002), and poor psychological need satisfaction (Deci & Ryan, 2000; Kasser, 2002), psychological factors that themselves have general, rather than specific, relationships with well-being outcomes.

That said, it is worth noting that some well-being outcomes were negatively associated with materialism more strongly than were others. Correlations tended to be strongest for compulsive buying ( $r = -.44$ ,  $\rho = -.53$ ), a finding that is quite sensible given that both materialism and compulsive buying concern a person's relationship with material goods and money. Interestingly, the next strongest effect was with engagement in activities that pose a risk to physical health ( $r = -.29$ ,  $\rho = -.39$ ), such as smoking or drinking alcohol; notably, many such risk activities are also consumption based and often have compulsive features (see Black, 2007). The fact that the next strongest effect is for negative self-appraisals ( $r = -.28$ ,  $\rho = -.32$ ) is interesting, given the accounts that link materialism to personal discrepancies and insecurity (Dittmar, 2008; Kasser, 2002; Richins, 2004b) and clinical evidence suggesting that compulsive consumption is often used as a form of self-medication to relieve negative self- and affective states (e.g., Benson, 2000; Faber, 2004). This array of findings suggests the potential fruitfulness of further research on materialism as associated with consumption-based, maladaptive attempts to deal with self-discrepancies or identity deficits (see Dittmar, 2011; Dittmar et al., 2013; Kasser, 2002). This possible account is supported by experimental evidence that consumption tendencies increase after self-discrepancies are primed, but only in those with a materialistic value orientation (Dittmar & Bond, 2010).

More modest associations were noted for life satisfaction, positive and negative affect, positive self-appraisals, anxiety, depression, and physical health. Although we had not predicted such a pattern of differentially sized correlations, it may be that these forms of well-being are less affected by the discrepancy and identity deficits just described but have negative relationships with materialism via other processes.

### Moderating Factors: Study, Participant, and Cultural Features

We also examined 25 potential moderators of the negative association between materialism and well-being. Most of these were not significant (see Tables 8–11). Specifically, the size of the association between materialism and well-being was not affected by (a) study characteristics such as year of publication, whether the data were collected by questionnaire versus postal survey or online survey, and whether the study was published or unpublished; (b) participant characteristics such as the percentage of the sample in higher education versus the general population, the percentage of the sample who were White versus non-White, and the participants' adjusted personal and household income; and (c) economic and cultural characteristics such as the participants' culture's adjusted GDP, level of economic freedom, materialism, and standing on six cultural values. This pattern of findings suggests that the negative association between materialism and well-being is rather robust.

Seven factors were found to be significant moderators. Before turning to discussion of these, we remind readers that no moderator was found that caused the association between materialism and well-being to be positive; instead, in every case, the effect was less

strongly negative. This finding again attests to the robustness of the negative association between materialism and well-being but does suggest that certain factors can weaken that association somewhat, although not remove it.

The only study feature we found that significantly moderated the size of the relationship between materialism and well-being was whether the measures were assessed via questionnaire or an interview. The latter method yielded somewhat weaker effects. Perhaps participants in an interview setting may be less willing to report high scores on materialism or low scores on well-being; thus, it is possible that social desirability effects are involved in weakening the relationship between these variables (see [Mick, 1996](#)).

Age of participants also moderated the size of the effect, such that the materialism–well-being link is more negative in individuals ages 18 years or above than in those under 18. Perhaps materialist values are more malleable in youth, and as they become more internalized and thus more stable during the transition into young adulthood (e.g., [Dittmar et al., 2013](#)), effect sizes increase. That said, there is a paucity of studies of materialism with younger samples, so future research is needed to determine whether this effect would still hold if the meta-analysis had included more studies with youth under 18. Gender composition of samples also affected the size of correlations found, such that the link between materialism and lower well-being is stronger when women make up a greater the proportion of the respondents. Perhaps this is a result of the relatively strong place of appearance and image concerns in women's values, self-identity, and sense of self-worth compared to men's (e.g., [Dittmar, 2008](#)). Another possibility is that men, who traditionally are viewed as the breadwinners, do not suffer quite as much as women do when they focus on materialist goals because this is more socially acceptable, consistent with the environment-congruence hypothesis.

Before moving to cultural features, it is particularly interesting to note that neither personal income nor household income affected the size of the negative association between materialism and well-being. Such a finding stands in contrast to goal-attainment hypotheses but is consistent with SDT accounts suggesting that this link occurs regardless of individuals' economic standing or wealth. That said, the range of personal and household income levels sampled in the studies we analyzed was rather restricted and may be insufficient to test goal-attainment hypotheses adequately; after all, studies of materialism have rarely, if ever, included data from multimillionaires or from homeless poor individuals.

As noted above, no significant moderation effects emerged for GDP or the Economic Freedom Index. Goal-attainment theories suggest that well-being is higher to the extent people succeed in the goals that are important to them and thus would seemingly predict that the negative association with materialism would be weaker (or nonexistent) if one lived in wealthy, economically free nations where it is (relatively) easier to succeed at one's goals than in poorer nations with economies more regulated by the government. No support was found for this perspective but rather for the SDT-derived prediction of no moderation. The negative association of materialism and well-being was, however, found to be moderated by a nation's rate of economic growth and also level of inequality, such that the effect is stronger when there is less inequality and slower growth. In the era when most of the studies in this meta-analysis were conducted, equality was higher and

economic growth was slower in economically developed countries compared to economically developing countries, where inequality is generally endemic and economic growth has been stronger. Thus, one explanation of this finding is that people living in more equal, slower growing nations are actually in more economically developed nations where they are more frequently exposed to consumerist messages via advertising, media, the government, and their peers, leading to a stronger internalization of materialism. The consumer culture values impact model ([Dittmar et al., 2013](#)) would predict that such cultures could create stronger negative discrepancies and more frequent opportunities for compulsive consumption, thus increasing the size of the effect in such cultures. Future research is clearly needed to explore that possibility.

Finally, when examining the value context in which individuals live, two significant moderation effects are noteworthy. At the proximal environmental level of one's study or work environment, the correlation between materialism and well-being was less (although still) negative in samples composed of many individuals studying or working in business and law environments. Such findings are consistent with the environmental congruence hypothesis and suggest that there may be some protective factor inherent in being in environments of individuals who are pursuing similar aims in life. At the level of cultural values, findings were opposite,<sup>22</sup> as stronger negative well-being effects emerged for citizens living in countries that emphasize pleasure and an exciting life, aims quite consistent with materialism (see [Grouzet et al., 2005](#)). At the cultural level, then, it appears that while a strong concern with acquisition and possessions is consistently associated with low levels of well-being across various cultures, this effect is amplified when people live in cultural settings that are more hedonistically oriented. Such a finding is again consistent with the idea that frequent exposure to consumer culture's ideologies and institutions may work to undermine the well-being of those who internalize that ideology and frequently interact with those institutions ([Dittmar, 2007, 2008](#); [Dittmar et al., 2013](#); [Kasser et al., 2007](#); [Richins, 1991](#)). That said, it is important to note once again that the results showed that people who live in cultures that are less focused on pleasure also experience lower levels of well-being when they strongly concern themselves with materialistic values; as such, there are likely additional, more basic psychological (i.e., noncultural) reasons for this consistently negative correlation.

### Mediational Tests

We used multivariate meta-analysis to examine two different sets of explanations for the negative associations between materialism and well-being. Supportive evidence was not forthcoming for the proposal that materialism is associated with dissatisfaction in the financial realm that generalizes to influence other aspects of well-being ([Sirgy, 1998](#)). However, analyses were consistent with a need-based explanation for this negative association ([Deci & Ryan, 2000](#); [Kasser, 2002](#)), suggesting that well-being is fostered by high levels of satisfaction of psychological needs for autonomy, competence, and relatedness but that materialism is associated with low levels of satisfaction of these needs. Consistent with this hypothesis, materialism was consistently associated with lower

<sup>22</sup> Such opposition between individual- versus cultural-level findings is not uncommon (see [P. B. Smith & Schwartz, 1997](#)).

satisfaction of each of these three needs, and the size of the association between materialism and well-being was diminished significantly after controlling for the effect of each of these needs. However, these correlational findings cannot address causality; only future research can examine whether it is, indeed, the endorsement of materialistic values that lowers need satisfaction or whether thwarted need satisfaction may motivate people to embrace materialism as a possible solution.

### Implications, Limitations, and Future Directions

Some of these findings reviewed above are not very consistent with and even actively contradict hypotheses generated from environmental congruence and goal-attainment perspectives; even when some support was attained for these theories through significant moderator effects, no evidence that correlations became nil or positive was forthcoming from these analyses. The pattern of findings is, however, by and large consistent with an SDT perspective on the negative associations between materialism and well-being (Deci & Ryan, 2000; Kasser, 2002). Specifically, this perspective would explicitly predict (a) that materialism is best conceived as a broader array of beliefs and values, not just a concern with money; (b) that relative assessments of goals would be more strongly related to well-being than would absolute assessments; (c) that materialism would be negatively associated with a broad array of well-being outcomes; (d) that the negative association would hold across most demographic, economic, or cultural characteristics; and (e) that need satisfaction would mediate the relationship between materialism and well-being.

Furthermore, with the exception of weaker links in study and work environments that support materialistic values, significant moderation findings are not necessarily at odds with an SDT perspective. Indeed, while SDT may not explicitly predict it, the theory would seem to have no quarrel with the finding that frequent opportunities to pursue wealth and pleasure enhance the negative association between materialism and well-being; such a finding would be sensible for SDT since it would suggest that such materialistic opportunities and cultural settings more deeply entrench individuals in lifestyles and experiences that detract from need satisfaction. This particular aspect of our findings may benefit from further theory development, either from SDT or other, broadly complementary theoretical perspectives, such as models reviewed in this article that focus on consumer culture values and self-discrepancies (e.g., Dittmar et al., 2013) or psychological insecurity (Kasser, 2002), to develop specific hypotheses concerning factors that may explain the pattern of moderation results reported here.

A clear weakness of the broader literature on materialism and thus of this meta-analysis is that effects derive almost entirely from cross-sectional, correlational studies in which both materialism and well-being measures were assessed via self-report surveys. Studies that use indirect measures were too few to be included in our analysis, but as they generally report effects  $> .30$ , the addition of such measures seems a promising avenue for future research (Chaplin & John, 2007; Solberg et al., 2004). We found few longitudinal studies, yet more longitudinal research is essential to determining whether changes in materialism result in changes in well-being or vice versa (see Kasser et al., 2014); multiwave longitudinal research is especially important for investigating pos-

sible mediating mechanisms (Cole & Maxwell, 2003). Likewise, there is a comparative dearth of experimental studies, which are necessary to establish whether materialism is a cause of lower well-being or vice versa, or whether there is a bidirectional relationship. As noted above, the lack of research on children under 12 is also noteworthy, as study of this population with longitudinal and experimental investigations may help shed light on both questions of causality and the developmental processes that link materialism to lower well-being (see Dittmar et al., 2013; Easterbrook, Wright, Dittmar, & Banerjee, 2014). Thus, while it is clear that there is a negative link between materialism and well-being, longitudinal, experimental, and developmental research is needed to generate sufficient studies to use meta-analytic techniques to investigate (a) if changes in materialism are related to changes in well-being; (b) if materialism causes lower well-being, lower well-being causes materialism, or if there are bidirectional trajectories over time; and (c) if the psychological need satisfaction explanation for the association between materialism and well-being would benefit from being complemented by further mediating mechanisms.

### Conclusion

This meta-analysis demonstrates a clear, consistent negative association between a broad array of types of personal well-being and people's belief in and prioritization of materialistic pursuits in life. Although more research is needed in order to understand the underlying processes better, the results of this meta-analysis suggest that the negative association is robust over a number of demographic, participant, and cultural factors. Although some variables do diminish materialism's negative association with well-being, we found no evidence of positive associations between materialism and well-being, as correlations by and large remained negative. Finally, analyses showing that low levels of satisfaction of needs for autonomy, competence, and relatedness mediate the materialism-well-being correlation suggest that something inherent in a materialistic attitude and lifestyle—whether as an antecedent or consequence of need satisfaction—interferes with the ability of people to live in ways that make them happy and healthy. Such findings are consistent not only with SDT (Deci & Ryan, 2000; Kasser, 2002) but also with the variety of spiritual and religious traditions that have questioned and critiqued the value of materialism since the beginning of recorded history. They also suggest that interventions and policies aimed at reducing the endorsement of materialistic values are timely and may lead to long-term well-being benefits for people across the globe (see, e.g., Kasser, 2011b).

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## Appendix

### Search Terms Used for Online Database Study Retrieval

Materialism	Well-being				
	Personal	Interpersonal	Societal	Financial	Performance
Materialism	Subjective well-being	Relationship quality	Environmental behaviour	Spending	Work performance
Financial success	Well-being	Relationship conflict	Environment	Debt	School achievement
Extrinsic goals	Anxiety	Machiavellianism	Helping behaviour	Saving	School motivation
Materialistic values	Happiness	Antisocial behaviour	Altruism	Financial behaviour	Performance
Material values	Affect	Egotism	Altruistic behaviour	Financial satisfaction	Competence
Materialistic aspirations	Depression	Competitiveness	Voluntary work	Pay satisfaction	Work efficiency
Financial aspirations	Life satisfaction	Co-operation	Volunteering	Consumer competence	Motivation at work
Financial goals	Risky behaviour			Risky financial behaviour	
Love of money	Risk			Consumer behaviour	
	Physical health				
	Compulsive buying				
	Excessive spending				

*Note.* U.S. spelling variations were also used. Although our focus is on personal well-being, we searched for articles that looked at broader categories of well-being but selected only those concerned with personal well-being for the analyses reported in the current article.

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