A proposed procedure for construct definition in marketing

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Abstract

Purpose – Latent constructs represent the building blocks of marketing theory. The purpose of this paper is to provide marketing researchers with a practical procedure for writing construct definitions.

Design/methodology/approach – The paper reviews important contributions to construct definition in the literature from marketing, management, psychology and the philosophy of science. The authors expound construct definition in both practical and theoretical spheres to motivate the proposed procedure.

Findings – A six-step procedure for construct definition and redefinition in marketing is developed. The proposed procedure addresses important aspects of definitions including the level of abstraction, scope, nomological relationships, explanatory and predictive power, ambiguity, vagueness, and preventing construct proliferation.

Research limitations/implications – While techniques for developing measures have received a great deal of attention, those for the earlier step of construct definition have not. Researchers will benefit from more precise definitions through improved model specification, better measures, and more reliable determination of the direction of causality. The role of the individual researcher's linguistic skill in construct definition must still be determined.

Practical implications – Marketing practitioners can also use the procedure to define latent constructs for which they must develop measures.

Originality/value – The literature on construct definition is fragmentary, scattered across disciplines and occasionally even arcane. It is further often descriptive of what a good definition looks like rather than prescriptive of how a good definition can be developed. The six steps are simple, broadly applicable, based on both theory and practical experience, consist of relatively few discrete steps, and feed directly into the modern measure development paradigm in marketing.

Keywords Construct definition, Nomological net, Ambiguity, Vagueness, Redefinition, Abstraction, Research, Marketing

Paper type General review

Introduction

Researchers have called into question the quality of construct definitions in marketing. MacKenzie (2003) suggested that poor construct conceptualization and definition plagues many manuscripts submitted for review. He noted the impossibility of accurately specifying theoretical relations between two constructs that lack precise meanings. Similarly, Summers (2001) argued that inadequate construct definition is a primary cause of rejection at marketing journals. Specifically, he notes poor definitions cause problems in measure development, causal direction specification between construct and measures, and the credibility of the resulting hypotheses. Further, Jarvis *et al.* (2003) indicated that the conceptualization and definition of constructs is a key factor in measurement model misspecification. In examining the empirical literature on the construct innovation, Harmancioglu *et al.* (2009) found that multiple definitions

have produced ambiguity of causal relations, incongruent empirical results, and difficulty in interpretation. Similarly, Francis (2007) argued that the measurement of internet retailing quality has been impaired by definitional concerns. Indeed, many otherwise well executed projects fail to have the impact they should due to poor construct definitions (Churchill, 1979).

Construct definition plays a foundational role in science (MacKenzie, 2003). The development of coherent, robust and generalizable theory requires a base of well-defined constructs (Summers, 2001). If researchers expend the necessary resources to properly define constructs during the early stages of the research project, this foundation will be strong and able to support expansive theories. Definitions prevent scientific discussion from devolving into babel. Social scientists face special problems in that their definitions often refer to unobservable concepts called latent constructs. Latent constructs allow researchers to analyze and discuss unobservable phenomenon in an organized manner (Edwards and Bagozzi, 2000). As latent constructs have no direct physical manifestation, being nothing more than an idea residing in the mind of the theorist, definition can be a difficult task indeed (Churchill, 1979). Thus, the process of construct definition is a critically important and complex task facing marketing researchers. However, some authors have suggested that researcher concentration on operationalization and statistical analysis have distracted attention from construct definition (Mowen and Voss, 2008, Rossiter, 2002).

We suggest herein that a contributing factor is the lack of an easy to understand and implementable construct definition process within the extant psychometric literature. For example, Churchill's (1979) instructions on construct definition are not very complete. Hunt (1991) and Teas and Palan (1997) suggested the use of formalized language in definitions to reduce ambiguity and vagueness. However, while the use of formalized language may facilitate some aspects of the construct definition effort, it introduces a number of problems that have prevented its widespread adoption (Williamson, 1994). Rejecting the psychometric paradigm, Rossiter (2002) suggested that being far more specific in regard to the time and place where the construct is applicable will aid in construct definition. However, this approach has been criticized (Diamantopoulos, 2005; Finn and Kayande, 2005). There also exist several somewhat arcane works on the proper definition of constructs from a philosophy of science perspective, but these do not present practical guidelines for construct definition (Bunge, 1967; Caws, 1959; Hempel, 1952).

We contribute to the literature in construct definition by proposing a six step process for developing latent construct definitions in marketing. Unlike Rossiter (2002), our approach is embedded in the psychometric approaches used by Churchill (1979), Gerbing and Anderson (1988), and Nunnally and Bernstein (1994). Accordingly, our process applies to constructs that will be measured reflectively because formative constructs are defined by their indicators (Diamantopoulos and Winklhofer, 2001). The proposed process is simple, broadly applicable, is based on the experience and practice of academic researchers, adheres to the construct definition principles set out in the philosophy of science literature, has a relatively few discrete steps, and if consistently applied will increase the quality of latent construct definitions in marketing. Our proposed process should assist researchers in better executing Churchill's (1979) first building block for developing better measures: construct definition.

The remainder of the paper is organized as follows. First we provide an overview of the literature regarding latent constructs and their definitions. Then we describe in detail our proposed six-step method of construct definition including an example. In so doing, we refer to the salient literature, which links our process to the long and deep development of academic thought as applied to construct definition. The construct materialism is used throughout the paper to illustrate the issues surrounding construct definition including an example applying the proposed process to redefining materialism. We conclude by summarizing the contributions of our approach to construct definition and discussing fruitful areas of future research.

Overview of construct definition

Consider the construct materialism. In Table I we have summarized the various definitions put forward for materialism and other constructs with definitions that appear to be similar to definitions of materialism. A cursory inspection of Table I indicates little consensus has emerged within the field as to what materialism is. For example, there is heterogeneity with respect to the object of materialism with some authors indicating possessions (Moschis and Churchill, 1978; Belk, 1985; Richins, 1987, Richins and Dawson, 1990, 1992), others indicating acquisition (Micken and Roberts, 1999; Richins, 2004; Bristol and Mangleburg, 2005), others indicating money (Moschis and Churchill, 1978; Brand and Greenberg, 1994), and still others indicating psychological objectives such as control (Belk, 1985), certainty (Micken and Roberts, 1999), or coping (Chang and Arkin, 2002). While almost all of the definitions suggest a means to an end conceptualization of materialism, the construct definitions differ substantially on what the end goal is. Some of the instrumental reasons are as different as personal happiness (Moschis and Churchill, 1978) and societal welfare (Moschis and Churchill, 1978; Tashchian *et al.*, 1984). Some of the included constructs seem to be polar opposites of materialism, for example the cultural estrangement construct (Durand and Lambert, 1985). Two of the listed constructs deal with social prestige (Lichtenstein *et al.*, 1993; Flynn *et al.*, 1996) which mirror items included in materialism scales such as "People judge others by things they own" from the Moschis and Churchill (1978) scale. The overall picture is one of disarray and confusion.

Churchill (1979) blames differing definitions of similar phenomena for preventing the accumulation of knowledge and synthesis of what is known. More recently, Giese and Cote (2000) argue that multiple definitions harm research progress in three ways: idiosyncratic choice of definitions by researchers, development of measures, and comparing results across studies. We believe that a major contributing force to the confusion surrounding materialism is the absence of a definitional process accessible to practicing researchers. Logically, the definition of latent constructs must precede the development of measures, measurement, and empirical analysis of a phenomenon (Nunnally and Bernstein, 1994). This is because accurate observation is not possible without a solid construct definition; researchers would simply not know what they were trying to observe (Caws, 1959). Accordingly, the focus of this paper is confined to Churchill's (1979) first step in measure development, namely construct definition.

A latent construct is an abstract, unobservable representation of a phenomenon (Edwards and Bagozzi, 2000). Put another way, latent constructs exist only in the mind of the theorist and do not have a physical manifestation (Nunnally and Bernstein, 1994). This is true of constructs typically used in the currently dominant psychometric

Authors/Year	Construct	Definition
Moschis and Churchill (1978)	Materialism	... orientations emphasizing possessions and money for personal happiness and social progress
Inglehart (1981)	Materialism-Post Materialism	... gives top priority to physical sustenance and safety, while post materialism emphasizes belonging, self-expression and the quality of life
Tashchian *et al.* (1984)	Belief in material growth	... place a high value on material comforts and conveniences, value economic effort, and may view actions taken for the common good working against them
Durand and Lambert (1985)	Cultural estrangement	... pertains to a dislike for many of the trappings of a culture, particularly those that mirror the tastes and values of the masses. Complaints that advertising ... overemphasizes immediate consumption and gratification... and that it results in disproportionate consumption of scarce natural resources by the "haves" in the world...
Belk (1985)	Materialism	The importance a consumer attaches to worldly possessions. At the highest levels of materialism, such possessions assume a central place in a person's life and are believed to provide the greatest sources of satisfaction and dissatisfaction
	Possesiveness	... the inclination and tendency to retain control or ownership of one's possessions
	Nongenerosity	... an unwillingness to give possessions or share possessions with others
	Envy	... the displeasure and ill will at the superiority of another person in happiness, success, reputation, or the possession of anything desirable
Richins (1987)	Materialism	... the idea that goods are a means to happiness; that satisfaction in life is not achieved by religious contemplation of social interaction, or a simple life, but by possessions and interaction with goods
Richins and Dawson (1990, 1992)	Materialism	... a set of centrally held beliefs about the importance of possessions in one's life
	Materialism-centrality dimension	... the degree to which a person believes that buying and owning things are important in his or her life
	Materialism-happiness dimension	... the degree to which a person believes the number and quality of a person's possessions are necessary to achieve happiness in life
	Materialism-success dimension	... the degree to which a person believes that the number and quality of a person's possessions are indicator of his or her success
Lichtenstein *et al.* (1993)	Prestige sensitivity	... consumer's belief that buying the most expensive brands is a positive experience for him or her and that it impresses others

(continued)

Table I.
Definitions of
materialism and related
constructs

Authors/Year	Construct	Definition
Brand and Greenberg (1994)	Materialism-student	... the degree to which a person is oriented toward having and spending money
Flynn *et al.* (1996)	Status donsumption	... the tendency to purchase goods and services for the social prestige they give to their users
Micken and Roberts (1999)	Materialism	... materialists are searching for certainty and need to chase away feelings of ambiguity... focused on acquiring possessions to fix their personal identity
Chang and Arkin (2002)	Materialism	... a coping mechanism for consumers to deal with feelings of uncertainty about the self or about uncertainty regarding norms in the society
Richins (2004)	Materialism	... the importance ascribed to ownership and acquisition of material goods in achieving major life goals or desired states
Bristol and Mangleburg (2005)	Materialism	... a value in which individuals view things and the acquisition of material objects as the pathway to personal happiness

Table I.

paradigm built around the work of Cronbach, Churchill, Nunnally, Peter, Anderson and Gerbing and a host of other authors. Some may find it difficult to abstractly represent phenomena through common definitions as they feel the researcher, "...has no independent method for evaluating the closeness of the theory to reality" (Peter, 1992). The steps outlined herein for construct definition are essentially invariant under different world views, so long as the researcher holds that unobservable phenomena exist and that they can be abstractly defined.

There are different types of definitions. Generally, definitions may be classified as real or nominal. Real definitions attempt to capture the essential nature of the construct, while nominal definitions on the other hand, compare the phenomena to a known or previously defined entity (Hempel, 1952). Researchers use nominal definitions for constructs (Hunt, 1991).

Hunt (1991) states that a nominal definition marries the thing named (i.e. the definiendum) with an expression (i.e. the definiens). The rule of replacement holds that the definition must be capable of replacing the defined term in a statement without affecting whether the statement is true or false (Hunt, 1991). Also, the following four factors should be considered during construct definition:

(1) all the objects that are members of the construct's class, that is the construct's denotation;

(2) all of the properties that an object must have to be included in the denotation, that is the construct's intension;

(3) all possible objects denoted by the construct, that is the construct's extension; and

(4) all properties that elements in the denotation have in common, that is the construct's connotation (Caws, 1965; Teas and Palan, 1997).

When defining observable objects or processes, there is some limitation on the number of definitions a particular entity may take on. There are many different types of rocks, but the general definitions of an object like a rock will be limited in number, typically to one definition. In marketing however, the number of definitions for a particular phenomena are really only limited by our imaginations (see Table I). Multiple definitions for what is essentially the same construct may create serious road blocks for the advancement of research programs (MacKenzie, 2003). This illustrates the principle of conservatism in definitions where multiple definitions of the same object should be avoided to prevent overlap and confusion (Wacker, 2008). As discussed above, the field's experience in defining materialism seems to offend the principle of conservatism.

The many articles written on measure development and vetting since Churchill (1979) have directed the attention of marketing scholars, reviewers, and editors to the process of scale development. As a result, the scale development process has become quite detailed and even complex (e.g. Gerbing and Anderson, 1988; Mowen and Voss, 2008). However, the tremendous effort researchers currently spend vetting and improving measures may have a higher yield if a more comprehensive approach is taken in step one. Current tools for measure development and assessment have outpaced the procedures and processes employed in defining constructs (Mowen and Voss, 2008). Accordingly, improving the definition of latent constructs may be a productive use of the researcher's time (Wacker, 2004).

Since the publication of Churchill's (1979) scale development guidelines, the development of the first step of construct definition has been modest. Churchill's (1979, p. 67) initial directions for the construct definition step were quite limited considering what was known at the time (Bunge, 1967; Hempel, 1952). He only admonished researchers to say "what is and what is not included in the domain" of the construct, and to "consult the literature" to prevent construct proliferation. Thus, Churchill does not provide a practical process for defining a construct.

Since Churchill (1979), some researchers have suggested the use of formal language for marketing constructs instead of natural language (Hunt, 1991; Teas and Palan, 1997). Natural languages are English, Chinese, French, etc. They suffer from the possibility of infinite regress where each word used in a definition must be further defined itself. Formal language consists of primitive terms (with established common meaning that requires no further terms to define) and terms derived from primitives. There is a reasonable argument for formal language and it may be that formal language is superior in theory (Hunt, 1991). While formal language does reduce the imprecision inherent in natural language, it also introduces other problems.

One is the difficulty of translation from natural language to formal language and back again for use by practitioners, a transformation that must result in changes in meaning and loss of information (Williamson, 1994). Also, if marketing researchers did agree on and adopt a formal language, they might become walled off from disciplines that did not adopt the same formal language. Marketing lacks a central body to police the naming and definition of constructs as there are in astronomy for naming heavenly bodies (International Astronomical Union) or botany for naming species (International Association of Plant Taxonomy). These issues have prevented the wide spread adoption in marketing of complete definition by formal language, though it might be

argued that marketing scholars are slowly accumulating the primitive terms and common understanding required to implement the use of formal language.

Another possible route lies in narrowing the scope of the definition (Rossiter, 2002). Rossiter (2002) suggests that constructs should be defined by all the components of an object (a perceptual rather than a physical object), all the attributes of the object, and the rater entity evaluating the object. Such an extensive specification certainly has its advantages in clarifying what is being defined. But like formalized language, it creates problems that have limited its application.

First, the C-OAR-SE system does not mesh with the currently dominant paradigm in marketing. Rossiter (2005, p. 25) wrote, " Churchill's, 1979 title referred to his procedure as a paradigm and I intend C-OAR-SE as a paradigm, too" and in Rossiter (2002, p. 308), "...the COAR-SE procedure is grounded in rationalism rather than empiricism......There is no empirical test – beyond expert agreement – that can prove that C-OAR-SE produces scales that are more valid than those produced by the traditional procedure". As of March 26, 2010, few of the 102 Social Sciences Citation Index citations of Rossiter (2002) use the C-OAR-SE procedure to define constructs; a majority cite the paper only in reference to formative versus reflective measures (Gilmore and McMullan, 2009; Francis, 2009).

Second, the use of C-OAR-SE would require the elimination of many existing constructs in marketing and the development of myriad replacements. For instance, service quality would be replaced by potentially hundreds of constructs such as (using Rossiter's notation of capital letters) IBM'S SERVICE QUALITY AS PERCEIVED BY IBM'S MANAGERS and IBM'S SERVICE QUALITY AS PERCEIVED BY CUSTOMERS. These replacements would be neither comparable with past studies that used service quality, nor easily comparable across new studies. As noted by Finn and Kayande (2005, p. 18), " ...this would effectively eliminate the basis for cumulating the findings of studies necessary to obtain generalized knowledge about marketing constructs".

Third, the C-OAR-SE system has been criticized on theoretical grounds. Diamantopoulos (2005, p. 5) stated that the "C" step misconstrues issues of abstraction, the "O" step confounds denotation and connotation of the object, and as to including the rater "R" as part of the construct concludes that "the rater entity will clearly affect what measurements will be obtained but should not alter which construct is being measured". Thus, the appropriateness of the C-OAR-SE paradigm for marketing research is questionable.

Fourth, C-OAR-SE fails to address known problems of definition from the practitioner and the philosophy of science literature. These include among others: imprecise words and grammar, ambiguity, vagueness, construct overlap, construct proliferation, and definitions written in terms of antecedents and consequents; the process outlined herein specifically targets these problems. Rejecting standard psychometric analyzes, the C-OAR-SE system gives a leading role to experts in defining and validating constructs. In contrast, the process proposed herein uses experts as an advisory review to double check and improve the proposed definition prior to collecting data and conducting psychometric analysis to empirically validate the construct.

To summarize, the process outlined herein embraces the dominant scale development paradigm, guides rather than dictates as to level of abstraction,

addresses known problems of definition from the philosophy of science literature, and uses experts as sounding boards not creators of definitions. We have summarized the strengths and weaknesses of the proposed method, the C-OAR-SE method, the current paradigm, and the formalized language approach in Table II. C-OAR-SE and the formalized language approach take a revolutionary rather than evolutionary approach, thus inadvertently injecting new shortcomings into the construct conceptualization process (Diamantopoulos, 2005; Finn and Kayande, 2005). The process proposed here is meant to improve the current paradigm rather than supplant it by addressing the shortcomings of construct conceptualization and definition.

Within the current psychometric approach, the advice written since Churchill (1979) consists either of what not to do (rather than what to do) or of the properties of a good construct definition. Examples of the former include Sutton and Staw (1995), Summers (2001), and MacKenzie (2003). Specifically, Sutton and Staw (1995) argued that lists of constructs do not equal theory while Summers (2001) and MacKenzie (2003) warned against two types of inadequate construct definitions:

(1) defining the construct in terms of its antecedents or outcomes; or

(2) defining the construct through examples.

Many of the definitions of materialism (Table I), through the focus on the instrumental nature of the construct, seem to have included the consequences of materialism within the definition of materialism. That is, if materialism leads to personal happiness, social prestige, or an improved sense of security or control, these relationships should be tested by theory rather than made axiomatic by definition.

An example of discussing the properties of a good definition is MacKenzie (2003, p. 325) who suggested that a construct definition, "...should (a) specify the construct's conceptual theme, (b) in unambiguous terms, (c) in a manner that is consistent with prior research, and that (d) clearly distinguishes it from related constructs." Another example of the latter is Teas and Palan (1997) who hold that the ultimate criteria for assessing the quality of a construct definition is the theoretical meaningfulness of the construct derived from assessing the intension, extension, denotation, and connotation of the construct definition. These properties of a good definition set out an important goal, but do not offer guidance in how to achieve that goal. Marketing theorists would be well served by a simple, easily implemented, construct definition development process aimed at improving the quality of latent construct definition in marketing.

Summary
While the definition of latent constructs is the foundation of social science, since it is these constructs that are the building blocks of theory (Nunnally and Bernstein, 1994), the extant literature on construct definition does not provide a simple, easily implementable process for developing definitions. We believe that this omission has led to a hodgepodge of closely related constructs and construct definitions which cause confusion and hold back the exploration of important marketing phenomena. Table I is an example of the confusion that can result from inadequate attention to construct definition.

A successful process of construct definition should exhibit several characteristics if we are to create sound definitions and constructs that exhibit conceptual construct discrimination. First, the process needs to ground the proposed construct in the extant

Definitional process	Authors	Main strengths	Main weaknesses
Current paradigm	Churchill (1979) Gerbing and Anderson (1988) Nunnally and Bernstein (1994)	1. Wide use provides common platform for construct development in marketing 2) Long period of development to resolve problems	1) Very extensive development of later steps of measure development 2) Describes properties of good construct definitions, but not a process for construct definition
Formalized language	Hunt (1991) Teas and Palan (1997)	1) Could reduce ambiguity and vagueness	1) May not be attainable in practice 2) Loss of information in translation between formal and natural language 3) Formal language for marketing does not exist 4) Marketing could become walled off from other disciplines by using a formal language
C-OAR-SE	Rossiter (2002)	1) Could reduce ambiguity and vagueness 2) Can be used with both formative and reflective measures	1) New paradigm that is incompatible with current paradigm 2) Dictates the level of abstraction thus offending the principle of conservatism in construct definition 3) Leads to construct proliferation and results in loss of generalisability 4) Rejects psychometrics, relies on expert judges 5) Relies on researcher's linguistic skills but lacks advice on how to improve such skills 6) Lacks detailed advice on countering many known problems of definition such as vagueness
Proposed six-step process	Current authors	1) Reduces ambiguity and vagueness 2) Embraces current paradigm 3) Addressess the imbalance between conceptualization and empirical validation 4) Counters many known problems of construct definition 5) Stepwise or programmatic process that facilitates writing definitions	1) Relies on the researcher's linguistic skills, such as selecting precise words and grammar, but provides advice on how to improve such skills 2) Relies on the researcher's judgment, such as selection of the level of abstraction

Table II.
Strength and weaknesses
of alternative construct
definition processes

literature (Churchill, 1979). This helps discourage construct duplication and overlap. Second, the process needs to consider the long-stream of knowledge, both in marketing and in the philosophy of science, developed about construct definition. This helps ensure that the proposed definition is tested by its intension, extension, denotation, and connotation (Teas and Palan, 1997). Third, the process needs to feed directly into the existing paradigm for measure development. In the next section, we propose such a process for developing latent constructs definitions that will assist researchers in improving the quality of their definitions.

A proposed construct definition method

We propose a six-step process for developing latent construct definitions. The six steps are:

(1) write the preliminary definition;

(2) consult the literature and build the nomological network;

(3) assess the value added;

(4) refine the definition;

(5) expert judging process; and

(6) adjust definition and iterate.

Figure 1 provides a flow chart of the process. The proposed process is simple, broadly applicable, is based on the experience and practice of academic researchers, adheres to the construct definition principles set out in the philosophy of science literature, and is composed of relatively few discrete steps.
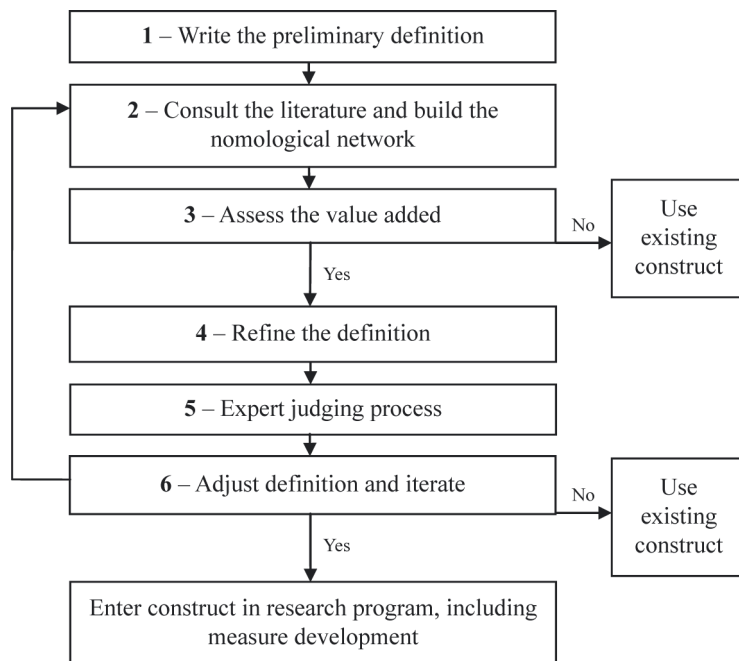

Figure 1.
Flow chart of construct definition process

Step one – write the preliminary definition
Abstracting from observation is the first step in construct formation. The more indirect the method of observation required to "see" the construct, the more abstract the construct (Achinstein, 1968). Abstraction resembles a ladder. Specific cases lie at the base of the ladder. The first rung of the ladder holds our perceptions of the world abstracted from specific cases. Each rung becomes less specific as higher rungs generalize to larger sets of cases (Zaltman *et al.*, 1973). As the concept broadens with each rung, the wider scope makes precision of definition and accuracy of measurement more difficult. This is because the level of abstraction affects our ability to form correspondence rules, which specify relationships between constructs and observational terms, with higher levels of abstraction presenting greater difficulties (Ryan and O'Shaughnessy, 1980).

Researchers should consciously match construct definitions and measures to the research purpose with an understanding of the implications. A middle level of abstraction may be helpful in overcoming the context specific nature of marketing research questions without making constructs so broad as to lack applicability to specific situations (Osigweh, 1989). Hence, if the construct "service quality" will meet the needs of the researcher, it may be preferable to the more abstract construct "quality". An alternative approach would be to develop constructs at multiple levels of abstraction (see Mowen and Voss, 2008).

For all constructs, regardless of the level of abstraction and consistent with both domain sampling theory and the philosophy of science literature, the domain of the construct must be carefully specified as to what is and what is not included (Bunge, 1967; Churchill, 1979; Teas and Palan, 1997). Ideally, instead of long lists of objects, most definitions should contain decision rules for determining which objects are included in the domain of the construct and which are not. Indicating (via decision rules) which objects do not belong in the set facilitates the identification of the construct's boundaries. Concept stretching, which is enlarging the construct's domain to contain more and more cases for *ad hoc* uses, can also be limited by these decision rules (Osigweh, 1989). As an example, in selecting a definition for internal marketing Tortosa *et al.* (2009, p. 1437) chose "the richest and most integrating definition"; this decision will capture a broad domain but may increase ambiguity and vagueness via expanded borders with other constructs. Definitions should represent the domain of the phenomenon yet must be parsimonious (Bacharach, 1989). Researchers should be continuously aware that construct definition is the foundation on which their empirical measures will be built.

To execute step one, consider the phenomena in light of personal experience and knowledge of past research. This is a narrow examination that broadens later. Refraining from immediate reference to the literature allows maximal creative freedom, yet to prevent the formation of emotional and intellectual bonds with your new idea name it "proposed construct _____". A preliminary nominal definition of the proposed construct that meets the rule of replacement should be developed (i.e. the definition can replace the construct in a sentence). The researcher should write decision rules that make clear what is included and what is not included. A written analysis should be prepared that delimits what is and is not included in the construct. Assess the construct's level of abstraction by considering its context specificity as suggested in Mowen and Voss(2008). Audit the wording of the proposed definition to eliminate phrases that refer to, or suggest relationships to, potential antecedents or consequents (see Figure 2).

Redefining materialism, an application of the proposed process. We describe our application of step one toward developing an improved definition of materialism. Such a redefinition seems justified since all of the existing definitions either include a consequence of materialism or focus on objects other than tangible goods. The proposed definition seems to hold promise, but caution is warranted pending scale development, validation, and empirical examination of theoretical models.

In step one, we worded an initial definition: the value placed on possessing tangible products. The inclusionary rules included a focus on possessing tangible products while self-focused, other-focused, and socially-focused goals were specifically excluded. Also, the exclusionary rules declared that materialism is neither a personality trait nor an attitude. Rather, materialism is a belief, value, or importance rating. Accordingly, materialism is more malleable than personality traits such as agreeableness. In our conceptualization, materialism is an abstract construct and we expect possessing tangible products will be valued differently across situations and contexts. Thus, the initial wording omits language addressing why possessing tangible products is highly valued or what goals individuals may have.

Step two – consult the literature and build the nomological network

Cronbach and Meehl (1955) argued that constructs take on an "implicit definition" from their placement within the nomological network. "We will be able to say 'what anxiety is' when we know all of the laws involving it; meanwhile, since we are in the process of discovering these laws, we do not yet know precisely what anxiety is" (Cronbach and Meehl, 1955, p. 294). By insisting the definition be examined within the intended nomological network, the process takes into account the tension between stipulated nominal definitions and the implicit definitions made by theory.

In step two, the researcher broadens the search by consulting the literature to draw the relevant nomological network. He/she should examine literature from all sub-fields and disciplines that might reasonably contain pertinent constructs. For instance, Calof and Wright (2008) noted the practitioner view, academic view, and the inter-disciplinary view in examining the construct competitive intelligence. Harmancioglu *et al.* (2009) searched the marketing, management, and engineering literature when looking at innovation; they also took strong consideration of the surrounding nomological net. If practical, solicit colleagues to make suggestions (see Figure 3).

The construct should now be compared to other constructs in the network in terms of its stability, fertility, and changeability. Stability is the volatility that is inherent in a construct (Davis, 1985). A personality construct might be relatively stable while a mood construct would be much more volatile. The more relationships a construct has with other constructs in the network the more fertile it is (Davis, 1985). The most fertile constructs will likely be key mediating variables in most conceptual models that operate in the network. Changeability refers to how easy it is to change the observed

Figure 2.
Construct definition process: Step One

> Write the preliminary definition
> 1) Write proposed name and definition
> 2) Write what is/is not included
> 3) Assess level of abstraction
> 4) Audit for antecedents or consequences

values taken on a valid measure of the construct (Davis, 1985). For example, mood is not only quite volatile it is also easily influenced by other factors. Noting these characteristics of constructs will aid in building the nomological net.

The most relevant constructs in the network with respect to the proposed construct should then be further analyzed. Similarity of the proposed construct to existing constructs, the stability, fertility, and changeability of the constructs, and the likelihood that the existing construct will be included in the initial conceptual model or in the measure development process for the proposed construct (e.g. discriminant validity or nomological validity tests) determines relevance. Definitions of similar constructs could be content analyzed to get a holistic view of the constructs in the network. Researchers could enter the definitions in a column of a spreadsheet and then use other columns to highlight overlapping terms in the definitions.

Redefining materialism. Step two was quite detailed. We developed two distinct nomological networks. The first was based on the existing materialism literature and included those constructs that have been investigated as antecedents and consequences of materialism. In this network we identified 19 antecedents that we grouped into five main classes:

(1) money;

(2) social;

(3) self;

(4) family; and

(5) instrumental beliefs.

We also identified 23 consequences that were grouped into four main classes:

(1) consumption;

(2) social;

(3) self; and

(4) family.

The second one was broader and included other values-type constructs that could be related to materialism (e.g. need for uniqueness, frugality, and hedonism). In this network we identified twelve potentially related constructs. We examined the definitions of each construct to determine relatedness. For example, a definition for hedonism (O'Shaughnessy and O'Shaughnessy, 2002, p. 524) suggested that the "meaning of life is discovered through consumption" which seems to clearly be related to materialism (Table I). We concluded that seven of the twelve constructs had definitions that implied a relation to materialism. However, all seven appear to be distinct constructs.

Consult the literature and build the nomological network
  1) Draw a model of the network
  2) Place proposed construct in network
  3) Assess stability, fertility, changeability
  4) Analyze relevant constructs' definition

Figure 3.
Construct definition
process: Step Two

Based on our detailed analysis of both nomological networks we concluded that materialism is fertile (it is related to a large number of other constructs), while it is more malleable than a personality trait or strongly held attitude we concluded that materialism is non-volatile and not readily changed (i.e. must be changed through persuasion or experience). With respect to discriminant validity, we were most concerned with voluntary simplicity which by definition could be viewed as perfectly negatively correlated to materialism, that is, low materialism. However, our initial hypothesis is that materialism is a value or belief while voluntary simplicity is a set of behaviors. Thus, materialism should be a negatively related antecedent of voluntary simplicity.

Step three – assess the value added
McKenzie (2003), Churchill (1979) and others have stated that constructs should be defined with regard to existing thought. Lewis (1970) points out some relevant questions. What is the history of the terms and the common meaning they currently have among users of the language? What is to be done with terms of rejected theories? What number of small changes adds up to requiring redefinition? Do we redefine in terms of the old theory or the new? Regrettably, Lewis (1970) does not provide answers, but researchers should be aware of the potential pitfalls of definition or redefinition and use judgment that reflects concern for the discipline as a whole and not just the project at hand.

Different authors have mentioned clarity, description, understanding, explanation, prediction, and control as important goals of constructs and the associated theory (Bunge, 1996; Zaltman *et al.*, 1973). We focus on explanation and prediction as the others are likely precursors or extensions of these two. Also, researchers have long lamented that the *ad hoc* expansion of the number of constructs prevents the accumulation and synthesis of knowledge and any method of development should guard against this (Churchill, 1979).

Step three asks that the researcher consider the literature in marketing and other disciplines with the eye of a reviewer rather than a creator. Be alert for constructs that are more or less abstract but otherwise similar, and for constructs outside the researcher's usual literature. Decide if the proposed construct has the potential to provide greater explanatory or predictive power than the existing similar constructs (see Figure 4). If it does not, use an existing construct. If it shows promise, continue to Step 4.

Redefining materialism. In step three we concluded the proposed definition added value over existing definitions by reducing vagueness and ambiguity. This is important because step two determined that materialism is a key mediating variable in many consumption behaviors. The proposed definition improves on existing definitions by omitting antecedents and consequences from the definition.

Step four – refine the definition
Good construct definition requires finding ways to fight ambiguity and vagueness (Bunge, 1967). Hempel (1952) argues that definitional ambiguity and vagueness arise from both the lack of determinant meanings for words and the lack of uniformity of

Figure 4.
Construct definition process: Step Three

Assess the value added
Does the construct add explanatory or predictive power?

meaning across persons (these are some of the evils formal language would hopefully eliminate). Philosophers of science do not believe that ambiguity and vagueness can be completely eliminated but efforts at reduction yield large dividends (Van Deemter, 2010).

Ambiguity means failing to limit the definition to one concept, i.e. inadvertently including parts of other concepts, typically through poor choice of terms (Teas and Palan, 1997). Reducing ambiguity requires selecting precise terms. The fewer terms shared between definitions of similar constructs, the less ambiguous the definition becomes, i.e. the definition should be maximally unique (Wacker, 2004, 2008). Wacker (2004) suggests using more specific nouns, compound nouns, adjectives and adverbs. Note that he cautions against the use of connective terms like "and" and "or" because of their potential multiple meanings. Definition parsimony refers to a preference for shorter definitions (Wacker, 2008). The more phrases and sentences a definition contains the harder it is to be certain if the conditions of all the sentence parts or entire sentences must obtain simultaneously or if they are separable.

Vagueness exists to the extent that the cases referred to by the construct are at least partially indefinite (Teas and Palan, 1997). Vague terms imply multiple meanings, which prevents the development of meaningful measures. Better decision rules within the definition for case classification can reduce vagueness. Wacker (2004) suggests using individual terms that are specific and to embed them in a grammatical structure that is at once concise and precise. Bunge (1996, p. 60) advocates constructs which display precision but admits that constructs may be "born untidy" then gain precision through use and refinement.

One type of imprecision stems from terms that imply a matter of degree but then fail to state what degrees would be expected. Rapidly, long, and tall are examples (Black, 1937). A certain amount of vagueness is unavoidable, with some naming vagueness as a necessary adaptation to prevent the hopeless cluttering of expressions with attempts at hyper-precision (Williamson, 1994). To do otherwise, the entirety of the construct's nomological net would have to be known precisely as well, for as knowledge of other constructs increases it changes the understanding of the focal construct (Cronbach and Meehl, 1955; Papineau, 1996). The implication is that we must always soldier on without perfectly precise definitions while being willing to improve definitions as the knowledge in an area increases.

In step four, the researcher attempts to make the definition clear and unambiguous (Belnap, 1993). Recheck the decision rules for what should and should not be included. Omit terms used to define any antecedent or consequent and links between constructs that properly belong in the theory rather than the definition. Remove any unnecessary words, phrases, or sentences. Be cautious if conjunctions (and, or, but, etc.) are used. Use compound nouns, adjectives and adverbs to make words precise (see Figure 5). Take care in building equations as Bunge (1996, p. 61) warns against the fake precision

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Refine the definition
    1) Examine ambiguity and vagueness
    2) Double check proposed boundaries
    3) Identify terms used in other constructs
    4) Edit the proposed definition
```

Figure 5.
Construct definition
process: Step Four

of "pseudoquantitation" in which constructs ill formed in concept, dimensions, and units are given false precision by use in equations.

Redefining materialism. In step four we determined the initial wording might be deficient because it lacks a subject. We therefore proposed new wording: the value an individual places on possessing tangible products.

Step five – expert judging process

Whether the object of appraisal is a film, the result of a livestock breeding program, or a peer reviewed paper, when humans evaluate the merit of their creative efforts an outside judge is frequently employed. Summers (2001, p. 407) argued that peer review of research projects could begin prior to data collection, "It is difficult for most researchers to conceptualize a tight research project without interacting with others, if for no other reason than that it is difficult for people to evaluate their own work". Others can assess our proposed construct definition from a different, less emotionally attached viewpoint.

Expert judges are employed elsewhere in research. The use of expert judges by marketing scholars in vetting items for scale development has a long history (Sweeney and Soutar, 2001). One of the main objectives in that case is to establish validity, essentially demonstrating that the items makes sense to people knowledgeable in the area. Hardesty and Bearden (2004, p. 106) empirically tested the effects of expert judging of items: "Notably, the present findings support the important ability of expert judges to enhance eventual scale reliability and hence, subsequent validity". We believe that expert judges should act as sounding boards in construct definition as well.

Step five involves asking at least two domain experts in the specific substantive area of the construct to peer review the definition. Using experts from the research methods domain or business may be very appropriate depending on the construct under study (Diamantopoulos, 2005) (see Figure 6). Peer reviewers should be provided with the proposed construct, its proposed definition, and the diagram of the nomological network along with definitions for all the included constructs with proper citations. Reviewers should assess the proposed construct and its definition relative to those of the most similar constructs in the network. Reviewers should assess the clarity of the definition and the extent to which the proposed construct adds to the explanatory and predictive ability within the domain.

Redefining materialism. In step five we asked two doctoral candidates (appropriate for an example but not actual use) to peer review the definition and our background analysis. One of the two judges suggested that adding the subject was unnecessary because it was implied. Neither judge raised serious concerns regarding the definition.

Step six – adjust definition and iterate:

After incorporating information obtained from the domain experts in step five; step six presents two decision hurdles for the proposed construct. The first hurdle addresses the question: Can the construct's clarity, explanatory power or predictive power be

Figure 6.
Construct definition
process: Step Five

Expert judging process
    Two domain experts review the proposed
    definition and its nomological network
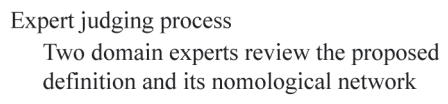
improved through further refinement? If so, then the path is to iterate the process by returning to step two and progressing down through step six. Thus, the refined construct definition is audited to see if the changes made to the proposed construct have made it more like the relevant constructs already identified or if the definition now resembles any other existing constructs. The proposed construct's position in the nomological network should be reconsidered and changes should be made to the proposed antecedents and consequences. The drawing of the nomological network should be revised and any necessary clarifications should be made. Re-examine the definition for vagueness and ambiguity and ask two experts to review the revised material.

If further iterations are unlikely to improve the definition, then the second hurdle addresses the question: Does the construct add explanatory or predictive power? (See Figure 7.) If the definition fails this test, then an existing construct should be used to prevent construct proliferation. On the other hand, if it has passed step six the vetted construct should now be included in the research program. Now the development of a measure can begin (Churchill, 1979; Gerbing and Anderson, 1988; Mowen and Voss, 2008).

Redefining materialism. In step six we concluded that the proposed redefinition holds promise and should move into the scale development phase with a goal of eventual empirical testing.

Discussion and implications

The proposed six step program of construct definition is simple and consists of a small number of discrete actions. In view of the powerful electronic tools that are now available to communicate and access the literature, the program can be accomplished from the researcher's office in a few days. Obtaining the opinions of at least two other experts in the domain does present a modest encumbrance. However, we consider this a very necessary tool to provide objective guidance on the value added by the proposed construct.

The proposed program is also broadly applicable. The steps outlined can be applied to all areas within marketing. It might be more difficult when multiple new constructs emerge in the same project, which would presumably be situated in some sparse portion of an extant nomological network. Fortunately this is not common in practice and even when it does occur the same steps would apply.

Another potentially useful case is redefinition of existing constructs. There is no reason why the program is not applicable here as well and there may be a number of constructs in use that could benefit from a careful reevaluation, particularly if substantial knowledge creation has occurred since the construct's inception. The proposed process for construct definition is flexible and takes the difficulties of definition and redefinition into account by alternately encouraging the use of sound existing constructs and yet permitting definition or redefinition to continue if the facts warrant action.

```
Adjust definition and iterate
    If needed, iterate step 2 thru step 6
    Does the construct add explanatory or predictive power?
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Figure 7.
Construct definition
process: Step Six

Academics should note that none of the arguments presented concerning definitions should shield patently unclear definitions from revision. Arguments that demonstrate the ambiguity and vagueness of an existing construct must be made when a lack of clarity is asserted. When clarity problems truly exist, such arguments are easily made by pointing out specific, nontrivial (and hopefully multiple) cases where the definition fails to serve.

The standards set forth in the philosophy of science literature are adhered to as well. The marketing and management literatures cited herein draw heavily on the philosophy of science literature. Hempel, Bunge and other philosophers are liberally referenced by those attempting to find their way through the difficult linguistic tangles of construct definition. Consequently, the advice in the practicing researcher literature largely adheres to the principles set forth by these philosophers. The definition process we propose attempts to integrate these and other insights into practical construct definition. The proposed program unfolds stepwise. The programmatic nature makes it easier to follow and execute. It also facilitates finding where mistakes may have occurred in the process of definition. This may be particularly useful when researchers are working together in defining constructs as it provides a common map for the journey.

Limitations and future research

Perhaps the most striking thing about construct definition in marketing is the amount of judgment, careful observation and balancing of goals required on the part of the researcher. Operating at the interface of the humanities and science, construct definition requires us to resolve the sometimes differing operational imperatives of these disciplines. This bestows the act of construct definition with the characteristics of an art as much as those of a science. Giving clear, unambiguous, and universally correct procedures for construct definition is as difficult as construct definition itself. However, by distilling what is presently known about construct definition into practical guidance for marketing researchers, the proposed process of construct definition will contribute to better construct definition in marketing. Future research to discern the role of the individual researcher's linguistic skill in construct definition versus the contribution of a regularized process would give direction to efforts on improving construct definitions.

It might be possible to specify more elaborate processes of construct definition based on arguments within the philosophy of science literature. The overburden represented by added steps must be weighed against the gain. Here we have chosen to err on the side of usability as the few prior efforts at establishing a common process of construct definition have not become widely used at least in part due to the complexity of applying the otherwise meritorious recommendations. Extended practical research on the exact nature of vague and ambiguous words and grammar in definitions could provide even more specific operational guidelines for researchers as they define constructs.

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