A COMMON VOCABULARY FOR RESEARCH
ON COGNITIVE STRUCTURE

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The marketing community has recently been treated to a crisp dialogue on several issues pertinent to modeling the cognitive structure underlying consumer attitudes (3, 8, 23, 25). That such an exchange takes place is a sure sign of the maturity of the consumer research discipline; it is a refreshing contrast to the less critical doctrine of earlier years. Such dialogue among researchers carries great potential for purification of thought and rejuvenation of empirical inquiry. The topic area itself is one where consumer research may be emerging as a leader rather than a borrower. It would consequently be a shame if the legitimate controversies over measurement and meaning become bogged down in semantic confusion. However, a vocabulary problem has apparently crept into the reports and discussions. We cannot afford to be distracted by semantic misunderstandings. Perhaps an airing of the problem will lead to a consensus on meaning and the more substantive controversies can proceed with all parties equipped (if not necessarily motivated) to speak to each other.

The source of confusion is the term "attribute", which is widely used in discussing cognitive structure. Everyone presumably understands its meaning—except that usage implies two quite distinct referents. "Attribute" is often used as synonymous to the term "characteristic", as in "One of Colgate's attributes (characteristics) is a moderately high selling price." A second popular usage equates it with "dimension", as in "One of the attributes (dimensions) used in judging toothpaste is selling price." These are decidedly different aspects of cognitive structure. One predictable outcome of this
ambiguity is that researchers operating with different conceptual meanings of the term in mind become puzzled or frustrated by exchanges concerning "attributes" which seem illogical or unresolvable.

A psychological dimension refers to a continuum of characteristics (or traits, properties, outcomes, etc.). Each characteristic is a specific location along that continuum. Zajonc spells out this distinction clearly: "The components of cognitive structure are attributes. For purposes of analysis, it is assumed that a person perceives objects and events in terms of psychological dimensions. A psychological dimension is one's capacity to map consistently a set of responses onto a collection of stimuli that is itself ordered. A specific act of "perceiving" or "cognizing" a given object or event is regarded as involving the projection of the stimulus onto a set of psychological dimensions, and thereby attributing to it one value from each of these dimensions. These projected values, attributes, are the elements of cognitive structure under analysis. They are what is commonly understood by the traits, characteristics, qualities, etc. of the object, event, or concept, as the person perceives them." (27, p. 328)

That seems clear enough, but one has only to turn to the writings of another prominent cognitive psychologist to see how confusion can arise. According to William Scott, "Any characteristic assigned to an object is conceived as a segment of a differentiated attribute. An attribute is represented in the model as a line in multidimensional space, divided into segments corresponding to characteristics (categories of the attribute)
that a person recognizes. These segments may approach the size of points for attributes that are continuously and finely graded or, more commonly, they may represent coarser categories of the attribute."

(22, p. 262) Zajonc's attribute is Scott's characteristic, and Scott's attribute is Zajonc's dimension.

The same dichotomy of meaning permeates the consumer research literature on cognitive structure. For example, in their excellent review Wilkie and Pessemier (26) clearly identify "attribute" with "product characteristic" in describing the basic model which is the focal point for their discussion; later in reviewing issues surrounding the "attribute" component they begin to use the term to refer to dimensions. A less than exhaustive review of related research reports produces numerous examples of the mixed usage (e.g., 1, 2, 9, 13, 14, 18, 19). Interestingly, although the comment he coauthored contains the mixed usage (8), Fishbein's writing consistently avoids the term attribute at all, referring instead to consequences or outcomes (or, therefore, characteristics). Conversely, several researchers clearly intend "attribute" to signify a dimension. For example, Miller, Mazis, and Wright adopt this usage in reporting a study of the structural property "articulation" in relation to consumer information processing (15). Green and Carmone (11), Hughes (12), and Scott and Bennett (21) likewise equate attribute with dimension; factor analysis and multidimensional scaling do after all extract underlying dimensions rather than characteristics.

Equally as confusing is the tendency to mix characteristics and dimensions together operationally and to refer to both operationalizations with the common label attribute. For example, Talarzyk and his
associates (4, 24) described five "attributes" of orange juice, mouthwash, and toothpaste brands for their subjects. As operationally phrased, most of these were dimensions but three ("kill germs", "whitens teeth", "freshens mouth") were specific characteristics. Schendal, Wilkie, and McCann (20) described 20 "attributes" of shampoo and 17 of deodorant. Fourteen of these shampoo "attributes" wind up to be characteristics and six to be dimensions. Of the deodorant "attributes", ten must be interpreted as characteristics and ten as dimensions. In two reports of the structure of headache remedy attitudes (16, 17), eight of the nine stimuli referred to as attributes were dimensions, "dissolves fast" being the sole characteristic. And again, three reports concerning toothpaste brands label as attributes four stimuli representing dimensions and one representing a characteristic (5, 6, 7).

This note is not intended to specify whether one should use characteristics or dimensions in eliciting consumer responses for input into predictive models. It is merely to suggest that calling both by the same term results in ambiguous data interpretations and makes it difficult to resolve such ambiguities. For example, when talking about the "importance" or "weight" of an attribute, does one mean how important the dimension as a whole is (vis-a-vis other dimension) or how important a specific location along some dimension is (vis-a-vis other locations)? The weight a consumer attaches to a particular characteristic along some dimension (e.g., "moderately gentle to the eyes" or some location on a bipolar scale) and the weight he attaches to the entire dimension "gentleness to the eyes" cannot be considered equivalent. From a structural standpoint, these are different properties.
Both may have a legitimate role in structural models but treating them as equivalent will only obscure the issue.

It is not clear in the cases cited earlier whether the operational descriptions of the stimuli presented to the subjects mixed characteristics and dimensions together only in reporting the research or whether the subjects actually were presented with the mixture of stimuli. If the former is the case, only the readers are confused. If the latter is true, the subjects themselves probably joined in the confusion when asked to respond to both dimensions and characteristics on the same scales in the same instrument. This is obviously not a situation conducive to rigorous data interpretation. One solution to the ambiguity is to make a habit of requiring colleagues to specify what they mean when they toss the word attribute into the conversation or use it in writing. A less tedious method is to adopt a convention and adhere to it. I would like to suggest we adopt Zajonc's recommended usage. "Attribute" will refer to a specific characteristic, trait, quality, property or outcome associated with a particular object. When referring to the cognitive dimension composed of several specific characteristics, traits, qualities, etc., we will simply call it a "dimension". One interesting implication is that there could be no such thing as a "multidimensional product" with such usage; a single brand or product could only be described as "multi-attribute".

Semantic ambiguities may stem merely from oversight or, more seriously, from imprecision in thought. At the least, settling on a common vocabulary for structural research will enable us to close the communication gap. If greater theoretical or methodological rigor also results, so much the better.
REFERENCES


