On the Inherent Ambiguity of Traits and Other Mental Concepts

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The attribution of personality traits to other people is ubiquitous. What traits refer to and the processes by which they are inferred have been researched by personality and social psychologists for well over half a century (e.g., Asch, 1946; Heider, 1944). Yet, we have only the most rudimentary ideas about what trait terms refer to, how they are inferred, and what affects these meanings and inferences. This chapter explores two ideas that have been relatively neglected but are central to understanding the meaning of trait terms: (1) that most traits refer to others' minds—their goals, beliefs, desires, intentions, fears, aspirations, etc.—and (2) that trait and other mental terms are inherently ambiguous.

Classic attribution theories of trait inference address the kinds of information that promote inferring causes (traits or dispositions) about actors rather than situations. Jones and Davis (1965) focused on intentional actions, noting the importance of their social desirability and unique effects for inferring something about the actor. But they told us little about how intentional actions differ from mere (accidental) behaviors (see Malle, 2005). Kelley (1967) pointed to the covariation (over...
of behaviors' effects with the presence of the actor, rather than the behaviors' object or the situation, as the basis for inferring that something about the actor caused the effect. But he offered few suggestions on how we identify precisely what it is about the actor that caused the effect. Thus, we infer "it's something about Mary," but do not know what that "something" is. Reeder and Brewer (1979) suggested several schemata that govern inferences of traits in the ability and morality domains. But none of these theories or related research offers fine-grained characterizations of the kind of information used to produce particular trait inferences.

Classic personality theories and research, which treat traits as invariant properties of people that do not depend on their situations or circumstances, do not advance this problem either, because their basic data are the very inferences, observations, and self-reports we are trying to explain. In addition, Wright and Mischel (1987) provide strong evidence that traits are essentially conditional and depend for their meaning on particular contexts, either explicitly described or implicitly understood. That is, traits do exist, but they make no sense to treat traits as if they have meaning in isolation, out of context.

To complicate matters further, research over the past 20 years has shown that unconscious processes, including those that produce trait inferences, are at least as important as the conscious processes of person perception to which classic theories typically appeal (e.g., Hassin, Uleman, & Bargh, 2005; Nisbett & Ross, 1980; Uleman & Bargh, 1989). Furthermore, a small but growing body of research shows directly that conscious and unconscious trait inferences differ systematically from each other (Ham, 2004; Todorov, Gonzalez, Uleman, & Thaden, 2004; Uleman, 1999; Zárate, Uleman, & Voils, 2001).

So, it may be timely to speculate about what trait terms refer to and how their meaning relates to the psychological processes that produce trait inferences. I focus on the idea that trait terms are ambiguous (as are other mental concepts). I review some evidence for this claim and note a variety of ambiguities in traits' meanings. Then I mention two classes of knowledge structures in which trait concepts are important participants, and urge future research on them. These are (1) theories of mind and (2) abstract mental concepts based on metaphors from our bodily experience, our embodied cognitions.

TWO VIEWS OF PERSONALITY TRAITS

When you describe someone as "hard" or "warm" or "blue," what might you mean? What is the nature of the concept you are using? More specifically, do these terms refer to objective properties of the person that we could measure if we had the proper instruments, in the same way you can measure a piece of glass's hardness (on the Mohs scale), or its temperature (in degrees Celsius), or its color (in angstroms)? Or do these terms' meanings depend on the context in which they are used, with virtually every context imparting a different meaning? How does a hard (energetic) worker resemble a hard (stingy) paymaster, or a judge who is hard on (punitive toward) criminals, or a hard (obdurate, stubborn) opponent? The "warmth" of a lover and the "warmth" of a parent should be quite different in several ways. One's response to friends who are "a little blue" depends on whether you think that they feel sad or ribald. Descriptions of people may be inherently more ambiguous than descriptions of objects. In what ways might this be true?

As a first approximation, there are two views of the meaning of personality traits. The first assumes that these meanings are clear and relatively invariant; the second does not. In one variant of this first view, traits describe distinct properties of people that can be inferred from their behavior, their talk, and their reactions to particular situations. They constitute the basic level of the fuzzy categories of personality (John, Hampson, & Goldberg, 1991). In another variant, trait terms function as behavior categories with a graded structure in which some behaviors are more prototypical of a trait than others (e.g., Buss & Craik, 1981). This view that trait terms (in isolation) have clear meanings allows them to be related to one another in relatively invariant ways, which may explain why factor analyses of trait ratings consistently yield the "Big Five" global factors—extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience—each of which subsumes other traits in a hierarchical structure. Some (e.g., John, 1990) think this reflects semantic structure, whereas others (McCrae & Costa, 1999) give these factors causal status in their "five-factor model of personality." In either case, the meanings of traits are clear and unique, and defined by their relationships to other traits and behaviors.

This view is probably also dominant in social psychology. Research on person perception, beginning with Asch's (1946) classic studies, has emphasized how people use behavioral, situational, and trait information to form trait impressions. Associative theories based on Anderson and Bower's (1973) human associative memory (HAM) model remain popular, with connected nodes usually representing persons, traits, and behaviors. More generally, trait concepts are taken as invariant and unanalyzed primitives in theories of impression formation (e.g., Wyer & Lambert, 1994). When "a trait concept" is "activated," the implication is that there is an "it" waiting in memory to be activated and applied. Trait meanings are not selected from multiple possibilities or computed.
new online. Even though Asch posited the context-dependent nature of trait meanings (i.e., senses), and this was clearly demonstrated almost 30 years later (Hamilton & Zanna, 1974), most research on person perception (see Gilbert, 1998) has largely ignored this context dependence.

The second view of personality trait terms is that they have multiple rather than single senses, and that context selects relevant senses, often without users’ conscious awareness. There are two lines of research on personality that support this view. First, exploratory factor analyses of trait ratings of individual targets rated repeatedly over many days (rather than ratings of many targets rated once) do not yield the familiar “Big Five” factor structure for most targets. Nesselroade and Molenaar (1999) found that less than a third of their targets showed the familiar five-factor pattern of trait covariation over time, and Borkenau and Ostendorf (1998) put that figure at 10%. In arguing that traits’ senses depend on context, Caprara and Cervone (2000, p. 79) put it this way: “The lexical items [traits] people use to describe personality can not be treated as if they are fixed elements of a periodic table.”

Second, Wright and Mischel (1987) looked at the empirical determinants of camp counselors’ judgments of how aggressive and withdrawn summer camp children were. They showed that these judgments reflected the children’s behavior in highly circumscribed situations. For example, “aggressiveness” referred to behavior in specific situations that taxed the child’s capacities to handle those situations (e.g., playing cooperatively with peers, or complying with adults’ requests), not their behavior in all or even most situations, and not behavior in the same kinds of situation for every child. Wright and Mischel (1988) showed further that counselors understood the conditional nature of their trait judgments. Open-ended descriptions of children (rather than ratings on context-free traits) “systematically linked specific categories of conditions (e.g., aversive interpersonal events) to specific categories of social behavior (e.g., aggressive acts)” (p. 454). That is, when they labeled a child as “aggressive,” they usually had contextual qualifiers in mind, such as “aggressive in that the child acts in X way when in Y contexts.”

While personality researchers have been documenting the polysemy (see note 1) of trait terms in descriptions of people, social psychologists have been exploring the ambiguity of behavior descriptions. Trope (1986; Trope & Gaunt, 1999) provided an elegant model and experimental data to show that situational contexts affect the trait-relevant meanings of behaviors. Crying at a funeral is understood differently from crying at a wedding (and each has distinct implications for the person’s personality). In addition, decades of research on priming and category accessibility in social cognition show that trait interpretations of behaviors can depend on contexts, including contexts that are logically irrelevant and even outside of awareness (see Higgins, 1996, for a review). Thus, the fictional Donald’s mountain climbing and kayaking the rapids can be interpreted as adventurous or reckless. How you interpret it depends on which trait construct is most accessible when you hear about Donald (Higgins, Rhodes, & Jones, 1977).

Social psychologists have not neglected the polysemy of trait terms, either. Considerable research has shown how people unknowingly exploit polysemy to maintain self-serving positive self-concepts. Most people believe they are better than average on a wide range of attributes. Dunning, Meyerowitz, and Holzberg (1989) showed that this “better-than-average” effect holds only for polysemous traits, that is, those with many behavioral indicators. Thus, most people report they are above-average on creativity, but they define it in different and self-serving ways (e.g., in the sense of musical or narrative or scientific creativity, depending on which talents they have). The “better-than-average” effect does not occur for unambiguous traits such as “punctual.” Dunning and Cohen (1992) showed that on continuous traits and abilities high scorers set higher criteria for judging another’s performance as “good” than low scorers. And Dunning and McElwee (1995) showed that people who rate themselves high on a trait (e.g., dominant) define it more in terms of positive behaviors than those who score low. Accordingly, experimentally varying the salience of positive versus negative behavioral senses of a trait affects people’s self-ratings on that trait.

Thus, traits (and behaviors) have many senses. These multiple senses are not usually problematic because contexts disambiguate them. But are the cases cited above exceptional? Is there any evidence suggesting that traits (and behaviors) are more ambiguous than other concepts? Interestingly, there is. And this evidence points to a variety of types of ambiguities.

ARE TRAITS, MENTAL EVENTS, AND BEHAVIORS PARTICULARLY AMBIGUOUS CONCEPTS?

In reviewing evidence on this question, several kinds of ambiguity emerge. What I will call boundary ambiguity concerns how clearly entities are distinguished from their parts and their subordinate categories. Physical objects (such as apples or cars) are more distinct or bounded than activities (such as going to a movie or to a restaurant) or mental events (such as thinking or dreaming). Rips and Estin (1998) compared objects, scripted activities, and mental events in several ways. All of the comparisons suggested that objects are the most distinctive or bounded.
Ambiguous Traits

adjectives' meanings show a high degree of what I will call *combinatorial ambiguity*.

Murphy and Andrew (1993) make a strong case that the meanings of many or most adjective-noun phrases are computed online rather than prestored. Traits are adjectives, and all 14 of the adjectives used in two of their studies could be used as traits. Indeed, illustrating the combinatorial ambiguity of trait adjectives, Kunda, Sinclair, and Griffin (1997) found that occupational stereotypes of actors changed the behavioral meanings of trait terms. For example, the combination of "aggressive" and "construction worker" implied physical aggression to their participants, whereas "aggressive lawyer" implied verbal aggression.

Many traits are also ambiguous in the sense that they can refer to, and be implied by, a wide range of very different behaviors. In this sense, creative is a relatively ambiguous trait and punctual is a relatively unambiguous trait. Such *referential ambiguity* is clearly documented, and its implications are developed in the research by Dunning and his colleagues described above.

Finally (but not exhaustively), behaviors show *valence ambiguity* in that they often imply traits of opposite valence. “Donald spent a great amount of his time in search of what he liked to call excitement. He had already climbed Mt. McKinley, shot the Colorado rapids in a kayak, driven in a demolition derby, and piloted a jet-powered boat—without knowing very much about boats. He had risked injury, and even death, a number of times” can imply that Donald is either adventurous (positive) or reckless (negative) (Higgins et al., 1977). This same classic study and many subsequent ones have described Donald’s other behavior in ways that can be interpreted as independent or aloof, and as persistent or stubborn. Trait inferences from behavior may even require resolution of behaviors’ valence ambiguity more often than not, because Cruse (1965) found that evaluations of English trait terms have a bimodal distribution, making neutral traits rare.

In short, behavior descriptions and mental action terms are more ambiguous than terms for objects in at least one way, and trait and behavior descriptions are ambiguous in other ways too. Yet, the meanings of all of these words are readily and adequately disambiguated in most daily discourse. There appears to be no “best” or “true” interpretation of trait terms independent of the (syntactic, semantic, and pragmatic) context in which they are used.

Trait terms can be used to describe act frequencies for individuals (Buss & Craik, 1981) or the goals of those acts (Read, Jones, & Miller, 1990). Borkenau (1990) provided evidence that traits represent ideals rather than central tendencies, “conveying information on the aptitude of persons for [attaining] several [of their own] goals” (p. 394) rather
than their typical behaviors. Thus, people may be “helpful” in the sense that they just gave assistance, or frequently give assistance, or chronically want to give assistance, or are capable of giving assistance. Of course, particular forms of assistance depend on the circumstances and the person’s other characteristics, making the multiple meanings of helpful innumerable if not infinite.

People prefer trait descriptions over goal descriptions when they are forming impressions or predicting future behavior, but goals are preferred when memorizing someone’s acts or empathizing with them (Hoffman, Mischel, & Baer, 1984; Hoffman, Mischel, & Mazze, 1981). Traits can describe people or merely their behaviors (Todorov & Uleman, 2002), or even become incidentally associated with other people and objects (Brown & Bassili, 2001; Skowonski, Carlston, Mae, & Crawford, 1998), depending on the conditions under which traits are initially inferred from behaviors. Traits can provide interpretations of ambiguous acts, so that traits and act descriptions are assimilated, as when Donald’s acts are interpreted as reckless after the concept of reckless has been activated in an apparently unrelated context (Higgins et al., 1977). Or traits can provide standards or ideals against which ambiguous acts are judged, so that traits and acts are contrasted, as when first explicitly describing reckless Erik makes Donald seem not so reckless but adventurous instead (Stapel & Koomen, 2001), again depending on the other conditions under which Donald’s traits are initially inferred. Traits can describe temporary states or enduring characteristics, depending on one’s beliefs about traits’ malleability (Dweck, 1999).

Of course, this does not mean that trait terms can mean anything. But it does mean that traits are polysemous and ambiguous in other multiple ways. As Murphy and Andrew (1993) suggest, most of these meanings are probably computed online. So, rather than trying to discover traits “true meaning,” it seems more productive to ask what classes of knowledge give traits their meanings in particular situations.

TWO INTERESTING CLASSES OF KNOWLEDGE THAT DISAMBIGUATE TRAIT TERMS

Virtually any knowledge can disambiguate trait terms in the right circumstance, but two classes of knowledge seem particularly interesting and relevant. One is knowledge of people’s mental states, based on theories of mind. At least one anthropologist (D’Andrade, 1987) and many developmental psychologists (e.g., Wellman, 1990, p. 115) include traits as higher-order constructs in their treatments of theory of mind. Idson and Mischel (2001) showed that, even though simple trait terms are most common in undergraduates’ descriptions of most people most of the time, when the targets are better known and important to the judges, they are less likely to use traits. Instead, they use more “cognitive-affectional mediating units” (CAUs). These include affects (moods and feelings), beliefs, competencies, encodings (interpretations and categorizations), expectancies, goals, needs, and values—that is, components of theory of mind. This suggests that when you know someone well you reach behind the inherent polysemy of traits to the (often situated) mental states that underlie them. It also suggests that traits are theory-based concepts (Murphy, 2002) in which theory of mind plays a large part.

Several social psychologists have elaborated on the ways that theory of mind is central to how we perceive and understand others in trait terms. As Reeder (Reeder & Trafimow, Chapter 7, this volume; Reeder, Kumar, Hessen-Mclnnis, & Trafimow, 2002), Read (1987; Read & Miller, Chapter 8, this volume), and Ames (Chapter 10, this volume; 2004) attest, the idea that theory of mind underlies most trait inferences is not novel. What is novel is my suggestion that the complexity and context sensitivity of any such theory must result in giving the apparently simple inferences from it (e.g., traits) many different meanings.

I use “theory” loosely, as many psychologists do. But if one takes “theory” seriously, one might ask what kind of rigorously predictive theory can accommodate the polysemy, ambiguity, and context sensitivity described above. Kunda and Thagard (1996; see also Thagard & Kunda, 1998) describe a parallel constraint satisfaction model that is computationally tractable and can simulate many well-known phenomena in person perception. These include shifts in the meanings of behaviors and traits as a function of contexts, judgments of explanations’ coherence, and reasoning about one person by forming an analogy with someone else.

A second class of knowledge is described by Lakoff and Johnson (1999). They suggest that abstract concepts (such as time, causality, the mind, the self, and morality) are largely metaphorical and based on concrete experience. For example, time is like a material resource such as money. You can spend time, save time, owe time, waste time, invest time, etc. Spatial experience provides other metaphors for time, with the future “in front of you” and the past “behind you.” We move through time, and time passes us by. These last two metaphors are especially interesting because they can produce conflicting interpretations. If someone wants to move next week’s meeting scheduled for Wednesday “ahead two days,” and you are “moving through time,” you’re likely to think they want to move the meeting to Friday. But if you think of time

Ambiguous Traits

261
"moving past you," you're likely to think they want to move the meeting to Monday. Boroditsky and Ramscar (2002) showed that thinking about spatial experience one way or the other can prime which metaphor is used to interpret such temporally ambiguous messages and, importantly, that the process is asymmetric. Thinking about time in one way or the other does not prime interpretations of spatially ambiguous messages.

Lakoff and Johnson (1999) are not the only ones to suggest that abstract concepts, including mental ones such as mind and self, derive from experience-based metaphors (e.g., Abelson, 1986). But their elaboration of this idea is especially provocative because it shows that (1) several metaphors may be used to understand the same abstract concept, and (2) these may be inconsistent with one another and even contradictory, as in the example above. Traits are certainly abstract mental concepts, often understood metaphorically. An angry person may be like a bomb (about to blow up, with a short fuse) or a tea kettle (simmering, boiling over, letting off steam). A smart person’s mind may be like a knife (sharp, able to cut to the core of an issue) or an encyclopedia ("containing" a lot of authoritative knowledge, serious, "heavy") or a trap (quick to grasp knowledge, slow to relinquish it).

This emphasis on thinking of metaphors as based in physical experience, rather than merely in symbolic (verbal) knowledge, is very compatible with recent work on "embodied cognition." This work suggests that, rather than being represented exclusively in an amodal symbol system, knowledge is also represented "as partial simulations of sensory, motor, and introspective states" (Barsalou, Niedenthal, Barbey, & Ruppert, 2003, p. 44). Evidence for embodied cognition comes from research in cognitive, social, and developmental psychology, and Barsalou's (1999) theory of perceptual symbol systems provides a theoretical framework for integrating it. Although there is no research yet on the role of embodied cognition in trait inference and trait interpretation, it is clear that embodied cognition plays a role in comprehending social acts, even when they are only presented verbally (Richardson, Spivey, Barsalou, & McRae, 2003). In two studies, Richardson and colleagues (2003) found that, as predicted, comprehension of short auditory sentences containing verbs associated with horizontal or vertical image schemata (e.g., push or respect, respectively) differentially affected the subsequent processing of visual stimuli along those two spatial axes. That is, the comprehension of many action verbs (e.g., pull, hunt, show, float, walk) entails activating spatial schemata.

In short, our theories and future research on person knowledge and how it is processed can only be enriched by taking more explicit account of the ambiguity of trait terms and other mental concepts, and the kinds of knowledge structures that help disambiguate them.

**Ambiguous Traits**

**ACKNOWLEDGMENTS**

Work on this chapter was supported by Grant No. MH-069842 from the National Institutes of Health to James S. Uleman. Portions of this chapter were presented at the 2004 Werkmeister Conference: Folk Concepts: Philosophical and Psychological Perspectives, Tallahassee, Florida, January 18, 2004. I wish to thank participants in the Other Minds Conference in Eugene, Oregon, and participants in the Werkmeister Conference in Tallahassee for their comments and suggestions, especially philosophers Jonathan Adler (CUNY Graduate Center), Lynne Rudder Baker (University of Massachusetts, Amherst), John Doris (University of California, Santa Cruz), and Kirk Ludwig (University of Florida, Gainesville).

**NOTE**

1. Words can be ambiguous in many ways, one of which is polysemy. Polysemy refers to the multiple senses that one word (lexeme) or lexical unit can take, all of which share some core meaning. Polysemy differs from homonymy, in which the same lexical form refers to different families of meanings (e.g., "bank" as a financial institution or the boundary of a river), which are often listed separately in a dictionary. Thus the "hard" trait examples seem to share an underlying meaning of imperviousness, whereas "blue" has two different meanings. See Cruse (1986) for a much more nuanced and interesting discussion.

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Ambiguous Traits


Ambiguous Traits


