INTERFACE OF ALSTON'S CONCEPTUAL ANALYSIS OF TRAIT THEORY AND CATTELL'S MULTI-TRAIT THEORY OF PERSONALITY

A. R. Buss
University of Alberta

ABSTRACT

In a recent series of papers and articles, W. P. Alston has taken a close look at the conceptual structure of the term "trait." In applying Alston's conceptual distinctions to the substantive multi-trait theory of R. B. Cattell, it is argued that Alston has too narrow a view as to how the term "trait" is in fact used, and how it should be used. Contrary to Alston's point of view, it is argued that trait concepts are indeed theoretical constructs rather than simply being terms summarizing behavioral regularities. Notwithstanding the case made against Alston's characterization of trait concepts, it is pointed out that multi-trait theories can be improved by taking seriously some of the distinctions that he has made, although not for all the reasons that he has given.

INTRODUCTION

As is well known to those interested in personality, trait theory and trait concepts have recently been under severe attack from a variety of quarters. A somewhat novel, and quite valuable, critique of the usefulness of trait concepts has been offered by the philosopher William P. Alston. In a series of articles, Alston (1970, 1973, 1975, undated) has addressed himself to what trait theorists mean by the term "trait," and he has attempted to subject this concept to a rigorous conceptual analysis. In his attempt to lay bare the conceptual structure of trait concepts, Alston deals a severe blow to the theoretical value of traits -- though he does not necessarily deny their existence, breadth, or usefulness for making predictions in certain practical situations. For those psychologists who are interested in traits, and especially those interested in developing theories of individual differences in which trait concepts loom large in their basic theoretical language and structure, Alston's writings must be read, assimilated, and dealt with in a relatively sophisticated manner.

The purpose of the present article is three fold: (a) to assess and evaluate the extent to which R. B. Cattell's (e.g., Cattell, 1957, 1965, 1973; Cattell & Child, 1975) multi-trait theory of personality measures up to the criteria of an adequate personality theory -- theoretical criteria which are implicit, if not explicit, in Alston's writings; (b) to use Cattell's multi-trait theory of personality as a framework and a vehicle for criticizing, or, at the very least, modifying and extending, some of the distinctions Alston has made with respect to both traits and related dispositional concepts; and finally, (c) to follow through on the implications of some of the more positive aspects of Alston's ideas for multi-trait theories of personality.
ALSTON'S VIEW OF TRAIT CONCEPTS

Alston says several things about trait concepts, but it is instructive to first note what he is not claiming. He is not denying the existence of traits. Nor is he denying the predictive value of traits or that an adequate theory of personality should have trait concepts. He has made no statement affirming that present trait concepts are either too broad or too specific. And finally, he is not denying that traits may be useful for purposes of description. What Alston is saying is that he has grave doubts as to the theoretical value of trait concepts — stating that their conceptual structure precludes their having any real explanatory power with respect to behavioral events.

After reviewing several definitions of the term “trait” which have been offered by various trait psychologists, Alston comes to the conclusion that the general consensus would appear to be that a trait is “a tendency to react in a certain kind of way to a certain kind of situation” (Alston, undated, p. 2). However, Alston disagrees with the view that it is appropriate to interpret traits as personality dispositions in the sense that a person has a tendency to behave in a certain way in certain situations. According to Alston’s argument, it is inappropriate to conceive of a trait as a tendency to behave in a certain way in certain situations, since the notion of tendency allows for the possibility of interfering forces or “supratendencies” which may override the original tendency to behave. Traits are thought by Alston to be dispositions which are defined in terms of observed behavior frequencies which occur within a representative set of situations. That is to say, for the trait to exist, certain behaviors must be manifested across a representative set of situations. There is a one-to-one correspondence between certain behaviors in certain situations, and the inference that a trait does in fact exist. In contrast, a personality disposition which is interpreted as a tendency to behave in a certain way in certain situations, “presupposes a field or system of other dispositions of the same type such that what actually occurs . . . is determined not just by this tendency or any other one tendency, but by the resultant properties of the system” (Alston, undated, p. 9).

Personality dispositions in which there is not a simple correspondence between the concept and observed behavior, that is, tendency dispositions, are, of necessity, defined by their place in a theory or their interrelationships with like constructs in a nomological net. Initially called desires or D concepts (Alston, 1973), and later purposive-cognitive or P-C concepts (Alston, 1975), such tendency dispositional concepts (e.g., abilities, needs, desires, motives, values, attitudes) have a conceptual structure such that they may function to explain behavior, in contrast to what Alston calls trait or T concepts. Trait or T concepts are thought by Alston to be dispositions defined in terms of situation-response or S-R frequencies. Thus, inferring the existence of a T concept (e.g., “domineering”) implies certain S-R frequencies, while P-C concepts, for example, “horsemanship” (an ability), or “need for achievement” (a need), or “bigotry” (an attitude), may exist, but, because of other P-C concepts operating in the personality system, may not necessarily, though they often do, give rise to their behavioral manifestations. One may be a bigot, yet not engage in bigoted type behavior. One may be an excellent rider, yet not engage in equestrian behavior, and so on.

Given the conceptual structure of T concepts, Alston argues that they are
useful for making one-to-one predictions, or in other words, meet the demands of predictive validity. But when it comes to construct validation, P-C concepts must be one’s choice, since these concepts demand that they be embedded in a nomological net. Thus it would seem that T concepts are mainly descriptive, predictive, and theoretically bankrupt — simply summarizing certain behavioral regularities in certain situations. One might say that T concepts are intervening variables and P-C concepts are hypothetical constructs, in the MacCorquodale and Meehl (1948) sense of these two terms. While Alston at one time argued that a theory should be constructed in terms of P-C rather than, or including, T concepts (Alston, 1973), more recently he seems to have tempered his original position. Thus Alston (1975) has stated that there are a small number of stylistic traits which cannot be explained in terms of P-C concepts, and that an adequate theory of personality will require both T and P-C concepts.

**CATTELL’S VIEW OF TRAITS**

Alston’s definition of traits in terms of S-R frequencies is advanced after he considers various definitions by leading trait psychologists — including Cattell. Over the last 40 some years, R. B. Cattell has developed what many would regard as one of the more sophisticated trait theories of personality in existence. Thus it would seem to be of value to examine Cattell’s notion of a trait within the context of the insightful perspective offered by Alston, and assess the extent to which Cattell’s theory is consistent with Alston’s view of traits and theoretical constructs. While Alston at one point simply states that Cattell’s definition of a trait conforms to his S-R frequency interpretation of T concepts (Alston, 1975, p. 20), at another place he attempts to spell out in some detail why this must be so (Alston, undated). Cattell defines a trait as “some relatively permanent and broad reaction tendency” (Cattell, 1965, p. 28). Most relevant in the present context is Alston’s (undated) argument that definitions which interpret trait dispositions as tendencies to behave in a certain way in certain situations, do not stand up under close scrutiny, since a “tendency interpretation” is not compatible with what Cattell really means by the term “trait.” As previously noted, Alston’s argument on this point is that a tendency to behave in a certain way implies that there exists the possibility that interfering or conflicting forces or tendencies may override the initial tendency. In other words, tendency dispositions are embedded within a system, and may thus exist without ever being activated. This “tendency interpretation” of traits is thought by Alston to be incompatible with what theorists such as Cattell are suppose to actually mean by a trait, namely, summarizing behavioral regularities or S-R frequencies which occur within a representative set of situations.

However, it is just possible that Cattell really meant what he said in defining a trait as a tendency disposition, and there is much in his theory of personality which would support such a view. Consider first the motivational domain, one of three major kinds of ‘traits’ with which Cattell has dealt. Motivational ‘traits,’ or dynamic structures, are thought by Cattell to be of two major types: sentiments, which are “dynamic structures, visible as common reaction patterns to parents, objects or social institutions, and upon which all people seem to have some degree of endowment” (Cattell & Child, 1975, p. 32, original emphasis); and ergs, each one of which is “An innate source of reactivity, such as is often
described as a drive, directed to a certain goal” (Cattell, 1965, p. 369). Now, in measuring sentiments and ergs, Cattell makes use of questionnaire items which, for the most part, all begin with either “I want” or “I like” (e.g., see Cattell, 1965, pp. 189-194; Cattell & Child, 1975, pp. 28-36). Thus identification of the major ‘trait’ dimensions in the motivation domain involves ‘traits’ which are dispositional tendencies and which, in principle, may not be activated or lead to the behavior in question in a particular individual in a certain situation — even if he/she has a high score on such a motivational ‘trait.’ Such motivational concepts must enter into a theoretical structure, field, or system of sorts in order to explain their interactions in affecting a particular behavioral outcome.

Should there still be any doubt as to the kind of concepts Cattell’s motivational ‘traits’ are, one need only consider his somewhat formal model of conflict. As Alston (1973) notes, tendency, or P-C dispositions, must deal with the problem of conflict, since by their very conceptual structure they will give rise to such a state in so far as there are inconsistent or conflicting tendencies within a single individual. Cattell’s conflict model (Cattell, 1965, pp. 218-236; Cattell & Child, 1975, pp. 88-95) explicitly recognizes that certain tendencies may override others, and thus inhibit, for example, a certain course of action.

Within the motivational domain, the basic factor equation, or what Cattell calls the specification equation, specifies an attitude in terms of factor loadings and factor scores, where the factors are the various dynamic structures of sentiment and erg ‘traits.’ In this way, an attitude, which itself is a tendency disposition, may serve to satisfy, to varying degrees, several motives. The latter interpretation of the basic factor equation is also contained in Cattell’s dynamic lattice, where attitudes are thought to subsidiate to sentiments, which, in turn, subsidiate to ergs. If we consider that situation where the motivational factor scores and factor loadings are unique for a particular individual, that is, P-technique (e.g., Cattell, 1957) derived motive factors, an index of the conflict generated by a particular attitude involves summing the negative factor loadings. To the extent that the sum of the negative factor loadings is greater than the sum of the positive factor loadings, then, according to Cattell (1957, 1965), that particular attitude will not result in overt behavior, since that action would, if carried out, have greater negative than positive affect for the individual. Thus, it is the particular dynamic structures and their role (weights) considered in toto, or as a system, which determines whether particular behavior will or will not occur. Admittedly, structural equations such as that used by Cattell have certain limitations and assumptions (i.e., compensatory in nature, or assume additivity of the components; interpretation of negative weights is not as straightforward as one might desire), yet they can still be considered as a field, system, or theoretical structure which specifies, or determines, individual differences in the behavioral outcome.

No doubt Alston would agree that Cattell’s ‘traits’ in the motivational domain may be interpreted as tendency dispositions, and, as a result, would call them P-C concepts, or at the very least, P-C like concepts, rather than trait or T concepts. However, what justification does Alston have in saying Cattell’s definition of a trait as a “reaction tendency” cannot really be taken at face value, and that by the term “trait,” Cattell really means a dispositional concept which is given an S-R frequency interpretation? In considering what Cattell calls the
motive or dynamic 'traits,' it is apparent that they have the conceptual structure of tendency dispositions, or what Alston calls P-C concepts. What about the remaining two domains which Cattell has explored? Cattell (1971) has discussed at some length several cognitive processes as inferred by factor analysis. There seems little doubt that 'traits' from the abilities domain would also fall into the category of tendency dispositions or P-C concepts. The temperament domain would be the only area in which one could expect to find what Alston calls S-R frequency or T concepts, although even here, Alston admits (personal communication), many of Cattell's temperament traits are really more like P-C rather than T dispositions. Thus, in terms of sheer number, most of Cattell's personality traits are tendency dispositions, and it would seem that his definition of traits as "reaction tendencies" is more correct than in error, as opposed to what Alston would have one believe.

What is suggested here is that, while the two major distinctions made by Alston with respect to personality dispositional concepts seem extremely useful, perhaps he has inadvertently misrepresented what the more sophisticated trait theorists (e.g., Cattell) actually do mean by the term "trait" in their theoretical practice. The solution to this problem appears to involve two basic steps: first, the acceptance of Alston's conceptual distinctions involving two different kinds of personality dispositional constructs, but not his terminology; and, second, affirming the use of the term "personality traits" in a broad rather than narrow sense, that is, the acceptance of Cattell's position that his personality theory deals with, not just the temperament domain or T concepts, but with three different trait domains. The latter entails that Cattell's definition of a trait as a "reaction tendency" will need to be modified to accommodate some of his traits in the temperament domain.

The result of the above two proposals is that one arrives at a more adequate representation as to how major trait theorists such as Cattell are using the term "trait," and in fact, takes Cattell's position a step further in terms of clarity. That is to say, if one accepts the notion that Cattell's personality theory deals with traits from the three domains of abilities, temperament, and motivation, then what Alston calls T and P-C concepts become two different kinds of traits. "Trait" is thus the generic concept, and S-R frequency dispositions and tendency dispositions are both traits, but traits of a different conceptual structure. In adopting the latter position, it would be necessary to define a trait such that it could accommodate the two kinds of personality dispositional concepts as outlined by Alston. Thus Cattell's definition of a trait as a "relatively permanent and broad reaction tendency" would need to be reformulated so as to accommodate S-R frequency dispositions in addition to tendency dispositions. Such a definition might be that a trait is a dispositional property of the organism, implying that such a dispositional property may refer to a value on a dimension of individual differences which may be either a S-R frequency disposition, or a tendency disposition.

The above view involves more than a mere arbitrary decision on what to call something, since by the term "trait" people such as Cattell do not mean to exclusively refer to either low-powered descriptive T concepts, or to theoretically potent P-C constructs. Rather, by the term "trait," Cattell refers to both of what Alston calls T and P-C personality dispositions. Adopting the present refor-
mulation of trait concepts has the advantage of avoiding what may be a danger inherent in Alston’s position, namely, erroneously generalizing from the notion of theoretically weak T concepts, or in Alston’s terminology, trait concepts, to the view that, what are called trait theories, such as Cattell’s, are really weak theories. Such a conclusion is certainly not warranted to the extent that Alston’s traits or T concepts play a relatively minor role in Cattell’s trait theory in comparison to tendency dispositions. One need only be familiar with Cattell’s structured learning theory, investment theory of trait pattern generation, and the theory of conflict, adjustment, and dynamic calculus, to realize how important tendency dispositions are in Cattell’s trait theory of personality.

It should also be noted that within Cattell’s theoretical structure, even his T or S-R frequency concepts play a much more important theoretical role than one would infer from Alston’s description of such concepts. In Alston’s characterization of T concepts, one gets the strong impression that such traits are of value only for predicting on a one-to-one basis, that is, from a specific trait to specific kinds of behavior (where by the term “specific” I leave open the generality or breadth of the trait). Alston’s arguments against the theoretical value of T concepts places a heavy burden on the notion that T concepts seem to be of value only on an individual basis, and that they cannot be used within any system, field, or theoretical structure which is related to behavior. Such a view of T or S-R frequency concepts is by no means necessary, and it certainly is not characteristic of Cattell’s traits in the temperament domain. Thus Cattell’s specification equation, which specifies individual differences in behavior as an additive function of weighted factor scores, may make use of traits within a particular domain (e.g., temperament), or may involve traits from the three domains in its more ambitious form. The important point, then, is that Cattell’s basic theoretical model, the specification equation, employs what Alston calls T or S-R frequency dispositions in a field or system type model. For Cattell, the particular behavior that lines up with a particular temperament trait is probably of least interest to him — especially since he employs factorial validation rather than empirical or criterion validation procedures. Cattell’s entire theory of personality pivots around the conceptually important notion that behavior is multi-dimensional and multi-determined, that is, a multi-dimensional situation (factor loadings), and individual differences in behavior are the outcome of a system or field of forces or influences. Cattell’s conception of the role of T or S-R frequency dispositions is clearly the antithesis of Alston’s view. In Cattell’s use of T or S-R frequency concepts, they do meet at least some of the more stringent theoretical criteria which Alston states only P-C or tendency concepts can satisfy. The generality of Alston’s position with respect to the nontheoretical value of T or S-R frequency concepts is seriously in doubt in examining more sophisticated substantive trait theory such as that developed by Cattell.

Cattell’s multi-trait theory of personality is a multi-level trait theory. In each of the separate trait domains, extensive use is made of higher-order factors. Especially in the abilities domain (Cattell, 1971), higher-order factors are burdened by carrying much of the theoretical weight. In a recent discussion of higher-order factors in the temperament domain, Cattell (1973, pp. 102-142) clearly states his position as to the nature of higher-order temperament traits: “For the present a second order can best be considered some influence that affects several primaries at once” (Cattell, 1973, p. 103). According to this view,
higher-order factors are deeper in the nomological net (Royce, 1963), and thus further removed from the data or observations. One may then consider the hierarchical structure of the temperament domain as a theoretical structure, network, or system of sorts, where, just as observed individual differences in behavior may be specified in terms of a structural equation involving primary or first-order factors, the same can be done for the scores on the primary factors in terms of the second-order factors, and so on up the hierarchy. In Alston's terms, only the first-order temperament factors could be T or S-R frequency traits, since they are directly tied to behavior. The higher-order temperament factors would be higher-order dispositional concepts, and, more specifically, would be dispositions to T or S-R frequency dispositional constructs. Thus, whereas Alston (1973) goes to some length to elaborate what essentially is a hierarchical theoretical structure for P-C or tendency dispositions, that is, higher-order dispositions which are dispositions to the tendency dispositions, he fails to acknowledge a similar need of theoretical complexity for T or S-R dispositions. However, Cattell's hierarchical view of the temperament domain clearly indicates that higher-order dispositions to T or S-R frequency dispositions are conceptually possible and empirically demonstrable, and clearly place T or S-R frequency dispositions within a theoretical structure of sorts.

CONCLUSION: IMPLICATIONS OF ALSTON’S ANALYSIS FOR MULTI-TRAIT THEORIES OF PERSONALITY

In spite of the previous arguments to the contrary, there remains a residual uneasiness related to the notion that Alston's basic point may still be valid, but not for all the reasons he would have one believe. Thus, in explaining temperament behavior, Alston appears to be correct when he argues that P-C concepts should be employed whenever possible, since T concepts simply summarize behavioral regularities. Invoking higher-order T dispositional concepts or factors to "explain" primary T concepts or factors, leaves one wanting for something more in the way of explanatory "punch." P-C or tendency dispositions arranged in a nomological net would seem to be more satisfying in this regard. Thus, in terms of multi-trait theories of personality such as Cattell's, the T traits should probably serve less as "explainers" and more as "that to be explained." In terms of the specification equation, this implies that a T concept would be on the left hand side — specified by an additive function of weighted P-C concepts, or what I would call P-C traits.

In light of Alston's position as to the value of P-C concepts arranged in a nomological net for explaining some behavior, it is difficult not to conclude that a hierarchical model or structure of a particular domain (e.g., Royce, 1973) does not provide the best means for generating a nomological net, that is, constructs which stand in certain interrelationships the purpose of which is to explain some observable. The main point here is that, while a hierarchical structure of traits or factors may be of some value in characterizing the major constructs and their interrelationship in a particular domain, it becomes apparent that such a model will not be adequate for explaining behavior. For the latter, a nomological net involving constructs or traits from various domains, and of varying levels or orders, is required, where the construct interrelationships are not defined operationally by, say, a factor analysis. Thus, in working through Alston's ideas vis-a-vis multi-trait theories of personality, one comes to a conclusion which has often
been stated by factor analysts, but which has also tended to be ignored and violated. That is to say, while factor analysis may provide the means for identifying useful theoretical constructs, it is not of value in developing theoretical structures or nomological nets which explain behavior.

It is in the above sense, then, that hierarchical factor structures, as operationally derived from a factor analysis, are, at the very best, low-level theoretical structures. However, generating hierarchical factor structures not defined operationally by a factor analysis, but derived on the basis of some theory to explain some behavior, is probably where trait psychologists should begin to expend their theoretical efforts. Such hierarchies would differ from traditional factor structures in the following ways: They would be inverted, or in other words, tree structures, with the apex of the hierarchy, representing the behavior to be explained, now at the bottom; they would involve traits from different domains; and finally, the levels would be determined according to the level of disposition in Alston's sense (e.g., disposition to a disposition) which may or may not correspond to the level of a trait defined in higher-order factor analyses.

In conclusion, it should be noted that Alston has provided multi-trait theorists the stimulus and occasion to reflect upon the nature of their basic unit of analysis in theory construction. In considering Alston's distinctions in the context of Cattell's multi-trait theory of personality, it has been argued that the theoretical value of trait concepts remains largely intact. However, multi-trait theorists can certainly improve their theoretical practice if they take heed of some of the things which Alston has said.

NOTES

I would like to thank W. P. Alston for his useful comments on an earlier draft of this article. Requests for reprints should be sent to Allan R. Buss, who is now in the Department of Psychology, University of Calgary, Calgary, Alberta, Canada T2N 1N4.

1. It should be noted in passing that Alston's notion of P-C concepts is slightly more complicated than simply being a tendency to behave in a certain way. Thus a P-C concept is really a disposition to a tendency to behave, or a disposition to dispositions to tendencies to behave, or what may be called a second-order dispositional concept.

REFERENCES