

Why *Not* Measure That Trait? Alternative Criteria for Identifying Important Dispositions

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Identifying important dispositional concepts from among a potential array of thousands remains a crucial theoretical task for personality psychology. This analysis examines previous approaches to the reduction process (e.g., lexical, statistical) and suggests an alternative set of criteria based on the act frequency approach to personality. These alternative criteria include reference to the domains of acts encompassed by dispositional constructs, the uniqueness or nonredundancy of those domains, agreement about act-disposition linkages, agreement about within-category prototypicality status, degree of temporal stability, and magnitude of manifested performance base rate. It is argued that previous, more stringent, exclusion criteria have tended to remove from consideration important classes of acts about which the field is centrally concerned. Five empirical studies illustrate the application of these new criteria to a previously neglected dispositional construct: calculating. Discussion focuses on the implications of a more expansive view of the taxonomic task that faces personality psychology.

One of the most fundamental theoretical tasks in personality psychology is to identify a subset of *important* dispositions from among the array of thousands available or imaginable for special conceptual and empirical attention (Allport & Odbert, 1936; Buss, 1984a, Cattell, 1943; Goldberg, 1972, 1982; Norman, 1963). A central function of conceptual frameworks for personality is to establish explicit criteria for ordering dispositions by importance and priority. Without inclusion and exclusion criteria, personality research can appear directionless, with each investigator focusing on a favorite disposition or subset of dispositions. One form of this issue is vividly conveyed by Goldberg's (1972) well-known question: *Why measure that trait?*

Previous attempts to establish the relative importance of dispositional constructs have

been anchored in one of three rationales or some combination of them: theoretical derivation, statistical analysis (e.g., covariation captured by factor analysis), or lexical analysis. We review these previous approaches briefly, advance a series of distinctive criteria for dispositional selection that derive from the act frequency approach to personality (Buss & Craik, 1980, 1981, 1983a, 1983b, 1983c, 1984a), and elaborate a set of theoretical and empirical implications contingent upon this new rationale.

Identifying Significant Dispositions: Sources of Criteria

The selection of dispositional constructs deriving from theoretical assumptions is straightforward and requires little elaboration. Assessment of ego strength and defensive styles are as clearly justified from the psychoanalytic framework (Rapaport, 1959) as are the propensities to exchange love and status from a social interaction framework (Foa & Foa, 1974; Wiggins, 1979). However, most assessed dispositions are not explicitly derived from an encompassing and agreed-upon theory that designates the important classes of dispositions. Instead, constructs often seem to be selected for measurement in response to applied societal pressures (Goldberg, 1971,

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1972) or from key assumptions underlying statistical analysis or lexical analysis.

The statistical strategy for justifying particular trait assessments is exemplified by the work of Cattell (1950, 1957; Cattell & Kline, 1977), Eysenck (1947, 1957, 1977), and Guilford (1959, 1975). The core assumption of this approach is that dispositions that capture (e.g., through factor analysis or cluster analysis) the covariation among inventory items or peer ratings are of central importance. Cattell (1946) used cluster analysis to derive the most important surface traits and factor analysis of peer ratings of surface traits to yield primary personality factors that capture the covariation among surface traits. Eysenck (1947, 1953, 1977) employed factor analysis to extract orthogonal personality dimensions (extraversion, neuroticism, and, more recently, psychoticism) that summarize the covariation among ratings and among endorsements of inventory items. Disputes within statistical approaches often center on whether sufficient covariation actually exists (e.g., between sociability and impulsivity), on whether obtained covariation is high enough to justify collapsing two dispositions into one, and on the particulars of the statistical options available when employing factoring and clustering techniques (e.g., oblique vs. orthogonal factor rotation; see, e.g., Guilford, 1975; Eysenck, 1977).

One clear implication of using the statistical strategy for establishing dispositional importance is that traits that do not covary strongly with other traits in peer or self-ratings tend to be excluded from further consideration. Second, the distinctiveness of traits showing high covariation tends to be lost in the formulation of superordinate factors.

Historically, lexical analysis (e.g., Allport & Odbert, 1936; Goldberg, 1972, 1982; Norman, 1963; but also Cattell, 1943, 1946) has been an important basis for ordering dispositions by priority. The key assumption underlying lexical analysis is that the importance of a disposition is afforded by its probability of occurrence in the natural language. Occurrence probability can take the form of synonym frequency within the same language, such as multiple words for *snow* in Eskimo dialects signify cultural significance (Goldberg, 1972); or, occurrence probability can take

the form of relative incidence of a given dispositional construct in *different* languages. Within lexical approaches, frequency counts of either sort would form suitable operational criteria for ordering dispositions by importance.

Some researchers have serially combined the lexical and statistical rationales. Cattell (1946, 1950, 1957), for example, reduced a previously abridged set of 4,504 trait-descriptive adjectives (Allport & Odbert, 1936) to a set of 171 synonym clusters (often containing an opposite or antonym cluster) by eliminating those considered to be synonym duplications. Cluster and factor analyses of peer ratings were subsequently used to reduce further this set to 36 "surface traits" and then to 16 primary factors and four second-order factors. Eysenck employed a similar serial strategy, initially with a set of 39 ratings (Eysenck, 1944, 1947), and later with inventory items (Eysenck, 1953). Tupes and Christal (cited in Wiggins, 1973) and Norman (1963) advanced five dimensions based on factor analyses of peer ratings of previously winnowed dispositional terms. Thus, empirical covariation has frequently been employed after lexical reduction has taken place.

Perhaps because the array of thousands of dispositional terms commands an urgent search for reduction and simplification, less attention has been paid within these previous strategies to the basic phenomena to which these dispositional terms may refer. That is, the presumptive purpose of the winnowing process is to establish some minimal set of concepts that can capture, describe, or in some way account for the important phenomena about which the field of personality is concerned. Trait-descriptive terms are not ends themselves. Rather, they acquire significance only by the phenomena to which they refer. But what are these phenomena?

Gough (1968), Eysenck (1953), and Norman (1963) stand out as providing explicit treatments of the phenomena to which their selected dispositional constructs refer. By the term *folk concepts*, Gough (1968) referred to aspects of interpersonal behavior that are to be found in all cultures and societies that arise from social interaction. The set of 18 folk concepts assessed by the California Psychological Inventory (Gough, 1964) are in-

tended, singly or in combination, to forecast what individuals will say or do in specified contexts and how they will be seen and described by others.

Eysenck's reference phenomena for traits are the empirical covariations among specific behaviors. And Norman (1963) linked dispositional terms to phenomena in the following way:

Attempts to construct taxonomies of personality characteristics have ordinarily taken as an initial data base some set of perceptible variations in performance and appearance between persons or within individuals over time and varying situations. . . . The argument in its essential form has been that perceptible differences between persons in their characteristic manner of behaving or changes over time and situations of single individuals in these regards have become codified as a subset of the descriptive predicates of the natural language in the course of its development. (p. 574)

Thus, for Norman, dispositional terms refer to both performance and appearance, but not solely in their reference to interindividual differences among persons. Variations over time and situations of single individuals, according to Norman, may also be central phenomena to which dispositional terms refer.

Unfortunately, rather stringent selection and winnowing procedures have become widely accepted criteria. These criteria are related only obliquely to the performance phenomena from which dispositional terms can be considered to have evolved. Attention to issues such as the breadth of the phenomena encompassed by dispositional terms, cultural consensus about act-disposition linkage, performance base rates, and the consistency with which dispositional performance is manifested over time can serve as additional and central, but heretofore relatively neglected, selection criteria for differentiating the important from the trivial in the dispositional domain. The act frequency conception of dispositions (Buss & Craik, 1980, 1981, 1983a, 1983b, 1983c, 1984a) advances a series of distinctive criteria related to these issues for designating the degree to which various dispositional constructs are worthy of theoretical and empirical attention.

The Act Frequency Approach to Identifying Significant Dispositions

The act frequency approach views dispositions as cognitive categories of acts that

serve to summarize general trends in behavior. To say that Stuart is calculating, from the act frequency perspective, means that he has displayed a high frequency of calculating acts over a designated period of observation. Dispositions capture descriptive regularities in conduct. They are viewed as neither causing nor explaining their manifestations, although dispositional summaries serve as appropriate predictors of future trends in conduct and have considerable potency in determining various life outcomes (Buss & Craik, 1983a).

Acts are the basic constituent elements of the world of human conduct, as objects are of the inanimate world. Dispositional constructs offer one fundamental system for categorizing acts by partitioning and granting conceptual order to the everyday stream of conduct. As natural cultural constructs subsuming temporally dispersed arrays of acts, dispositional categories can be analyzed in terms of their cognitive properties.

Two cognitive features warrant emphasis. First, dispositional categories are treated as *fuzzy sets* (Zadeh, Fu, Tanaka, & Shimura, 1975) in that category boundaries are not sharply demarcated and one category blends into adjacent categories. In this view, category membership is continuous or probabilistic rather than discrete. Second, not all act members within a given dispositional category possess equal status within it. Rosch and her colleagues (Rosch, 1975; Rosch & Mervis, 1975; Rosch, Simpson, & Miller, 1976) conceptualized the differing status of cognitive category members in terms of the notion of *prototypicality* (clearest cases, best examples, instances par excellence). Thus, dispositional categories are composed of acts that differ in their within-category status from highly central or prototypical to progressively more peripheral until the fuzzy borders are reached and adjoining categories are entered.

The act frequency conception of dispositions generates a series of distinctive and conceptually interrelated criteria for ordering dispositions by the degree to which they are worthy of theoretical and empirical attention. The criteria are described below. Theoretical implications contingent upon them follow. These criteria are linked and sequential within a programmatic treatment of dispositions from the act frequency approach. They are

based on comparative analysis of the internal and manifested structure of dispositions (Buss & Craik, 1983a).

1. *Does the disposition represent a clear, meaningful, and reasonably sized category of acts?* This initial criterion concerns the ease with which nominators can recall specific manifestations that fall within the category boundaries of a given disposition. Dispositions for which few or no acts can be retrieved are viewed, within this framework, as less important than are those for which many act exemplars can be retrieved. This attribute of dispositional constructs has been referred to previously as *category volume* (Buss & Craik, 1983a) and refers to the number as well as the range of acts *cognitively available* for each dispositional category. The index bears a conceptual affinity to Hampson's (1982) concept of trait imaginability.

This attribute of dispositional categories clearly varies with certain features of the instructional set, as well as with characteristics of nominators such as age and education. Definitive procedures for assessing category volume have yet to be established (see Buss & Craik, 1983a, for suggested operationalizations, such as number of acts generated per unit of time). It is clear from preliminary nomination studies, however, that for dispositions such as extraversion and dominance, panels of nominators can produce hundreds of act exemplars, whereas for the disposition of aloofness, a panel of experts had to be enlisted in order to reach even 100 (suggesting that lower priority be given to this disposition).

2. *Does the disposition possess distinctive-ness?* This criterion invokes category distinctiveness in the selection process. If two categories are sufficiently overlapping in the prototypical acts they contain, only one would be needed by the principle of parsimony. However, categories that show relatively few distinctive prototypical act members that are not subsumed in other categories might warrant inclusion in a taxonomy of dispositions based on other criteria.

3. *Are judgments about act membership and act prototypicality consensual for the disposition?* This criterion calls for relative consensus in category placement of acts. Reliability of prototypicality judgments is needed. Two procedures have been employed,

although additional prototypicality indices are available (Buss & Craik, 1981). The reliability of composite ratings on prototypicality should be sufficient to identify specific acts as more or less prototypical. This procedure operates within the context of the array of acts previously and independently nominated as belonging to a given category. A second procedure used to operationalize the criterion is a multiple-dispositional sorting procedure (Buss & Craik, 1984b) in which randomly ordered, previously nominated acts are presented serially to judges for categorization within a set of dispositional constructs. Multiple placement is permitted. The percentage of judges who place a given act in a given dispositional category serves as one quantitative index of the degree of agreement. In studies conducted thus far, these two indices (prototypicality judgments within category and the multiple-sort index of percentage of judges who place an act in the category) are highly correlated (ranging from .63 to .85 across dispositional constructs), suggesting that consensus about the dispositional status of acts is not method specific. Further details about the prototypicality and multiple-sorting procedures are given below under Studies 2 and 3.

4. *Does the act trend for the disposition, based on a multiple-act composite of highly prototypical acts, show stability over time?* Stability over time may be viewed as the sine qua non of dispositions. If persons are not inclined or disposed to behave in certain ways over time, we could dispense with dispositional concepts. From this perspective, dispositions that show high temporal stability are more important than act categories that fail to serve this basic summarizing function for characterizing persons and their actions. *Transient or easily altered dispositions* are less likely to carry potency in affecting life outcomes (L data), observer judgments (O data), or self-concept (S data) than are highly stable dispositions.

This criterion places central importance on stability of act trends. Stability of single acts or same-act repetition is not required, nor is a high interact correlation within a dispositional category (Buss & Craik, 1984a). Instead, a multiple-act criterion, representing the sum of diverse acts within a category,

should show reasonably high temporal stability if it is to be deemed worthy of theoretical and empirical attention as a dispositional construct.

These four criteria suggest that a dispositional construct is worthy of theoretical and research attention if it serves in a reasonably unambiguous fashion as a cognitive category for a reasonable range of topographically dissimilar acts that show some degree of distinctiveness. Agreement within a culture about the dispositional status of acts is required to establish dispositions as important cognitive categories. And act trends, based on multiple-act composites of highly prototypical acts, should show stability over time. Several additional criteria are less central but may warrant consideration in separating more from less significant dispositions.

5. *Do individuals show marked differences in manifested act trends for a given disposition?* This criterion invokes the range of interindividual differences and is only relevant for taxonomies of dispositions that take interindividual differences as the central mode of dispositional analysis. Thus, dispositions that show little interindividual variability in manifested prototypical acts would be less important, from the individual difference perspective, than would dispositions showing larger individual differences.

6. *Do act trends, based on diverse acts from a dispositional category, show a reasonable base rate of manifested occurrence?* Dispositional constructs that entail act-trend indices showing very low base rates of manifested prototypical acts might be deemed less noteworthy than those evidencing high base rates. As Wiggins (1973) pointed out, however, low base-rate dispositions (e.g., courageousness, aggressiveness) "may be precisely those which are of greatest interest" (p. 325). Furthermore, current knowledge of dispositional base rates in the context of everyday action is very limited and inadequate. Thus, the base-rate criterion should not be applied automatically for excluding dispositions.

In sum, the act frequency approach to personality provides a set of distinctive criteria for ordering dispositions by relative importance. The criteria are explicit, and empirical operations are provided for each. Some of these criteria may have been implicit within

various factor-analytic and lexical approaches to the reduction process—a point that is considered in the final section. Several important theoretical implications follow from the application of this set of criteria for establishing the relative importance of dispositions.

The first and most consequential implication of the criteria derived from the act frequency approach is that they are almost surely more lenient and inclusive than those driven by past efforts to designate the relatively more important dispositions for theoretical and empirical attention. Our position is that these prior criteria have been altogether too restrictive and have unduly simplified this problem in the analysis of personality. In a sense, the proposed criteria amount to a bill of rights for dispositional concepts. Why banish from consideration such dispositions as autocratic, frivolous, or praising when we do not yet understand their internal structure and do not know for what domains of acts they serve as categorical constructs?

An ancillary implication is that a formidable naturalistic undertaking has been neglected by the field of personality thus far. That is, previous efforts to identify the significant or most important dispositions have sought to bypass systematic direct examination of the many dispositional constructs that are meaningful and distinctive concepts in everyday discourse. Clearly, the prospect of careful study of the nature of thousands of constructs understandably motivates an urgent search for simplifying structure. But the formulation of dispositional concepts from the act frequency perspective may grant attention to many more of them than most other conceptions of personality theory have allowed. Hundreds of dispositional concepts may meet reasonable criteria for citizenship in the realm of important facets of personality.

The dispositional term *calculating*, for example, won a place among the 4,504 "real" or personal traits in Allport and Odbert's (1936, p. 52) influential listing of 17,953 trait names. Calculating lost its standing, however, in Cattell's (1943) reduction of the 4,504 personal traits to a set of 171, primarily through the grouping of synonyms. It is not clear into which synonym sector of the personality sphere calculating disappeared; the

closest adjective clusters appear to be *clever* (33), *evasive* (58), and *planful* (124), but these do not seem to capture the essence of this dispositional construct. Even on a later expanded listing of the 171 trait continua giving representative synonyms (Cattell, 1946), calculating remained among the missing. In a further reduction of the 171 to 35 established clusters (Cattell, 1946, p. 295), the closest clusters seem to be *intelligent-analytical* (which includes the disposition *clever*), *hard*, *cynical*, and *facile*, *foppish*, *affected* (which includes the term *flattering*). When a set of 125 terms from the Cattell list was supplemented and developed into the widely used 300-item Gough Adjective Check List (Gough, 1960; Gough & Heilbrun, 1965, 1980), the banishment of calculating did not end.

The Significance of *Calculating*: An Illustration

Recently, the dispositional concept of *calculating* returned from exile in Wiggins's circumplex model of interpersonal behavior (Wiggins, 1979, 1980). Does calculating deserve this new-found status when faced with the successive hurdles posed by the act frequency approach? Does the dispositional category of calculating represent a clear and meaningful category of acts that are reasonably diverse? Do raters show agreement on act centrality within the category? Does calculating display unique prototypical acts, a range of individual differences, stability over time, and a reasonable base rate? A series of five studies examined these issues.

Study 1: Act Nominations

Panels of university undergraduates were asked to nominate acts that, in their view, belong in the category of calculating by recalling the acts their most calculating friends and acquaintances had performed that reflect or exemplify the category (see Buss & Craik, 1980, 1981, for a more detailed description of this procedure). Participants had no trouble nominating calculating acts. The number of calculating act nominations was comparable to those from other, more frequently studied dispositional categories such as dominance,

gregariousness, and quarrelsomeness. Nominated acts were topographically distinct, suggesting a fairly broad category; for example, "I made a friend in order to obtain a favor," "I asked innocent questions, intending to use the information against someone," "I flattered a person to get ahead," "I drove an expensive car to impress my friends," and so on.

Although these nominations are reasonably diverse, the limitations of using only university undergraduates should be noted. It may be expected that this procedure is a conservative exercise in the sense that much of the subtlety and artistry of calculating may be missed by this restricted sample. Enlisting the services of experts and astute observers of social life may be necessary to capture the more subtle nuances in manifestations of calculating. And as noted earlier, the number and quality of the nominations is likely to vary with background variables such as age, education, and socioeconomic status. In applying this criterion, a more systematic approach to the nomination and selection procedure for acts is required than the one used in this study. Nonetheless, the topographic distinctiveness of the acts nominated serves to illustrate at least part of the range of exemplars encompassed by this previously neglected dispositional concept.

In addition, these nominations clearly illustrate that acts, within the act frequency approach, are *interpreted* acts in that they involve elements of context, style, and inferences about intentionality (e.g., The act "I tricked a friend into giving me personal information" entails an element of inference about intention in order to assess performance). Acts are not viewed as "actones" (Murray, 1938) nor as acts in Fiske's (1978) restricted sense of physical, motor, and vocal actions.

Study 2: Composite Consensus of Prototypicality Judgments

Do members of our culture show agreement about acts within the category of calculating? A panel of 18 judges, none of whom had participated in the first study, independently rated the relative centrality of 100 previously nominated acts within the category of calculating. The alpha reliability of the

composite for these prototypicality judgments for this panel of 18 judges was +.95, and the mean between-rater correlation was +.49, suggesting that even small panels can generate a reliable consensus on the prototypicality of act members in a given category. Table 1 shows three sets of acts that vary along the prototypicality continuum: (a) the seven highest rated calculating acts, (b) seven acts from the intermediate region of the continuum, and (c) the seven acts that received the lowest mean ratings for calculating. The means, standard deviations, and ranks for each act are also shown in Table 1.

Study 3: Multiple-Dispositional Act Sorting

One limitation of the single-disposition prototypicality procedure is that it cannot be used to evaluate whether a given disposition contains prototypical acts not encompassed by other dispositional categories. Nor does it yield an estimate of whether members of a culture agree about which acts belong to which categories. Finally, it could be argued

that the low prototypical acts are simply "garbage acts" that entered through idiosyncratic interpretation in the nomination procedure. To address these issues, a multiple-dispositional sorting and rating task was carried out with 20 undergraduate participants (see Buss & Craik, 1984b, for a complete description). Acts from eight dispositional categories (100 per category) drawn from the Wiggins (1979, 1980) circumplex model of interpersonal behavior were sorted into the category or categories within which they were perceived to belong. Multiple-category placement was permitted, and judges were encouraged to employ additional categories of their own if those provided were deemed to be inadequate or incomplete. Table 2 shows the percentage of judges who placed each of the 21 calculating acts varying in prototypicality into each of the eight categories.

Examination of Table 2 shows that the percentage of judges placing each act in the calculating category corresponds closely to the prototypicality ratings (correlation between the two indices across the 100 calcu-

Table 1
Calculating Acts Differing in Prototypicality

<i>M</i>	<i>SD</i>	Rank	Calculating act
6.47	0.61	(1)	I made a friend in order to obtain a favor.
6.47	0.77	(2)	I asked "innocent" questions, intending to use the information against someone.
6.42	0.77	(3)	I pretended I was hurt to get someone to do me a favor.
6.42	0.90	(4)	I tricked a friend into giving me personal information.
5.95	1.13	(5)	I flattered a person in order to get ahead.
5.90	1.29	(6)	I pretended to be sick at work, knowing that I would not be there the next day.
5.68	1.67	(7)	I made others feel guilty to get what I wanted.
4.11	1.79	(47)	I drove an expensive car to impress my friends.
4.00	1.83	(48)	I borrowed my friend's sports car and pretended that it was mine.
3.95	1.75	(49)	I planned in advance what I would talk about on my date.
3.90	1.66	(50)	I wore sexy clothes to impress someone.
3.63	2.14	(51)	I threatened someone to get my own way.
3.63	1.83	(52)	I prepared answers in advance to questions that my partner's parents might ask me.
3.58	1.61	(53)	I called someone "lazy" when she did not want to do something that I asked her to do.
1.74	1.33	(94)	I forgot to pay back the small sum of money.
1.63	0.83	(95)	I borrowed a book from a friend and never returned it.
1.63	0.83	(96)	I did not listen to another's personal problems.
1.63	0.96	(97)	I spoke loudly and boastfully in public.
1.37	0.68	(98)	I changed my mind about someone several times.
1.26	0.56	(99)	I did not fulfill my promise to someone.
1.21	0.42	(100)	I squinted when speaking to my friend.

Note. The top seven acts are those that received the highest prototypicality ratings; those in the middle section received intermediate ratings; those at the bottom received the lowest prototypicality ratings. Thus, the number in parentheses refers to the rank each act received derived from the mean prototypicality ratings.

lating acts is .82). The top seven acts have a mean placement of 96%, the middle seven have a mean placement of 80%, and the lowest seven have a mean placement of 29%. For the top and middle seven acts, the calculating category receives a higher percentage of placements than any of the remaining seven categories. In contrast, only three of the lowest seven received the highest placement in the category for calculating, with the remaining four acts receiving higher placements in the categories of dominance (2), quarrelsomeness (1), and submissiveness (1).

It is noteworthy that a minimum of 25% of the sample perceived some relevance for the disposition of calculating even for the lowest rated calculating acts used in this

study. That is, even the least prototypically calculating acts were not totally idiosyncratic. In addition, the categories of dominance and quarrelsomeness receive relatively high placements for the seven least prototypical acts. This finding lends support to the Wiggins circumplex model because calculating falls between dominance and quarrelsomeness on the model.

These results from the multiple-dispositional sort study may be summarized as follows. First, the majority of initially rated prototypically calculating acts have their highest frequency of placement in the calculating category, suggesting that there are relatively distinct prototypical acts within the calculating category that are not encompassed

Table 2
Multiple-Dispositional Categorization of Calculating Acts

Prototypicality	Agree	Calc	Dom	Extr	Ingen	Intro	Quar	Sub
High								
(1)	05	100	15	15	10	00	05	00
(2)	00	95	35	00	10	00	05	00
(3)	00	100	25	00	15	00	05	05
(4)	00	100	40	00	10	00	00	00
(5)	05	95	15	10	05	00	00	05
(6)	00	85	00	00	05	00	10	05
(7)	00	95	40	00	05	15	40	00
<i>M</i>	01	96	24	04	08	02	09	02
Medium								
(47)	00	65	25	45	05	00	05	25
(48)	00	86	20	20	05	10	00	00
(49)	80	90	15	10	00	35	00	00
(50)	10	70	15	60	05	00	00	15
(51)	00	75	55	05	05	00	65	00
(52)	10	95	15	05	05	05	00	10
(53)	00	80	55	05	00	00	75	00
<i>M</i>	14	80	29	21	04	07	21	07
Low								
(94)	00	25	20	00	15	10	20	00
(95)	05	30	30	00	05	05	35	00
(96)	00	30	50	00	00	25	25	00
(97)	00	25	65	60	00	00	30	00
(98)	05	25	00	05	05	10	10	45
(99)	00	40	20	00	10	10	40	00
(100)	00	25	15	00	00	50	15	15
<i>M</i>	01	29	29	09	05	16	25	09

Note. Agree = agreeable; Calc = calculating; Dom = dominant; Extr = extraverted; Ingen = ingenuous; Intro = introverted; Quar = quarrelsome; Sub = submissive.

by at least the other seven dispositions included in the multiple-sort task. Furthermore, the high consensus for the categorization of individual acts suggests that panels of judges can agree adequately on the acts that belong to each of the dispositional categories under study (see Buss & Craik, 1984b, for a complete report on these data).

A central issue here is the distinctiveness or nonredundancy of the calculating category when compared with other dispositional categories. Clearly, this multiple-sort task does not establish discriminability from all other dispositional categories (e.g., synonymically closer constructs). Instead, it merely establishes distinctiveness from the seven other circumplex categories included in this study. Future studies could fruitfully examine just how distinctive calculating is from presumably more synonymous dispositions such as shrewd, clever, or manipulative.

Study 4: Calculating—Assessing Act Performance

The three studies described above address central criteria for importance with reference to the status of dispositions as natural cognitive categories with acts as members. Additional criteria are generated by examining the disposition as manifested in conduct. Three manifested components are examined here: degree of temporal stability of act trends based on multiple-act composites of highly prototypical calculating acts, range of inter-individual differences, and base rates of performance.

A study of 93 married couples (186 participants) assessed (among other dispositions) manifestations of calculating through two data sources: retrospective self-reports for a 3-month period and retrospective spouse-observer reports for a 3-month period. Table 3 shows the base rates for each of the 21 calculating acts for the two data sources separately.

Table 3, showing the sample base rates of each act for each data source, suggests that the proportion of this sample performing any specific calculating act ranges from a low of 1% or 2% (self- and observer-data sources) to a high of 66% and 41%. Considering that these 21 acts undoubtedly represent only a small sample of the domain of calculating

Table 3
Base Rates for Assessed Act Performance

Prototypicality	Data source	
	Self-report	Spouse-report
High		
(1)	12	14
(2)	13	07
(3)	17	20
(4)	12	09
(5)	25	17
(6)	12	10
(7)	29	28
<i>M</i>	17	15
Medium		
(47)	02	01
(48)	01	02
(49)	07	06
(50)	26	25
(51)	25	17
(52)	18	21
(53)	40	34
<i>M</i>	16	15
Low		
(94)	34	20
(95)	24	14
(96)	35	20
(97)	22	14
(98)	64	43
(99)	66	41
(100)	18	15
<i>M</i>	38	24

acts and perhaps not the most subtle exemplars, this finding suggests that calculating acts are performed with nontrivial frequency and capture an important theme that runs through the everyday stream of conduct in social life. It should be noted that the base-rate criterion has only subsidiary standing in ordering dispositions by importance—even very low base-rate dispositions (e.g., courageousness) may hold importance within personality theory and for societal viability. In any event, calculating does show a reasonable base rate, and acts from this reprieved disposition are manifested with nontrivial frequency.

Another criterion for ordering dispositions by importance pertains to the range of individual differences in acts performed from a given dispositional category. This criterion is only relevant from the interindividual difference mode of dispositional analysis, and is not relevant for dispositional analysis at the

level of modal human tendencies or in the idiographic analysis of persons (Buss & Craik, 1983a). However, dispositions that fail to display a range of individual differences may be reasonably excluded from traditional personality assessment and theory.

Using the simplest method of computing frequencies—a yes–no dichotomous index of whether an individual performed a given act within the 3-month assessment period—yields a range of individual differences from 2 to 51 (from the possible 100 calculating acts) for the self-recorded data source and from 5 to 58 for the spouse-observer data source. Thus, individuals do appear to display a wide range of variation on the number of calculating acts they perform in everyday life over a 3-month period.

Study 5: Temporal Stability of Calculating-Act Performance

A fifth study examined the temporal stability of calculating act performance. Participants in Study 4 were contacted again 6 months after the initial assessment. Of the original sample of 186, 130 individuals participated in the follow-up (Buss, 1984a). Act performance was again assessed by two sources: self- and spouse-observer reports of performance frequencies over the 3-month period immediately preceding the assessment. Only a subset of the initial 100 calculating acts was employed in the follow-up study; the 25 most prototypical calculating acts after those with exceptionally low or high base rates (less than 10% or greater than 90%) were eliminated. These calculating acts were interspersed among acts from seven other act categories, and were not identified by the category within which they were nominated, sorted, or rated.

The mean temporal stability of single calculating acts was +.41 for the self-reported performance frequencies and +.39 for the spouse-observer reported frequencies. The temporal stability of the act trend for calculating (composite with unit weighting) was +.68 and +.65 for the self- and observer sources, respectively. And the temporal stability of the self-plus-observer composite was +.66. In sum, calculating acts appear to display reasonably high temporal stability, particularly if the act trend or composite of

calculating act performance is employed as the unit of analysis (for a fuller report of these data, see Buss, 1984b).

Before conducting these studies, the personality literature was examined for scales or assessment devices that might index the calculating disposition. The closest scale appeared to be the Machiavellianism scale (Christie & Geis, 1970), which purports to index a style and set of attitudes characterized by manipulativeness, cynicism about human nature, and shrewdness in interpersonal behavior. Study 4 included the Machiavellianism scale in the larger assessment battery. The correlations between this scale and the highly prototypical act-performance composites for calculating were +.17 ($p < .05$) and +.08 (*ns*) for the self- and spouse-observer data sources, respectively. Thus, calculating act performance appears to be relatively independent empirically of Machiavellianism, as indexed by the Christie-Geis Machiavellianism scale. A fully comparable analysis, entailing act nominations and prototypicality judgments for the Machiavellianism construct, would provide a more thorough comparative analysis.

Does calculating deserve its new-found status as a noteworthy disposition? According to our studies, this disposition represents a clear and meaningful category of acts that are reasonably topographically diverse; prototypicality of act members can be identified with consensus; panels agree on the acts that belong in the calculating act category when presented with a multiple-category sorting task; many prototypical calculating acts appear to be distinctive to that category and are not encompassed by other categories assessed here; a relatively large sample displayed a nontrivial performance base rate of calculating acts as indexed by two data sources; individuals appear to differ considerably on the number of calculating acts they report for a 3-month period, and performance of calculating acts appears to be moderately stable over time, particularly for the act-trend index. On the basis of these multiple criteria, the disposition *calculating* amply deserves its new-found status.

Conclusions and Implications

The act frequency approach to personality offers an explicit and informative set of cri-

teria for evaluating the significance of dispositional constructs. The application of these criteria to calculating establishes the case for attending to that disposition. But what about other dispositions such as ingenuous, injudicious, and inept, or affected, bawdy, and jaded? Preliminary nomination studies point to a formidable array of trait constructs that may serve as important cognitive categories of everyday acts. An informal panel of undergraduates, for example, readily nominated the following acts for dispositional categories: "She referred to the less fortunate as *peasants* (affected)," "He mooned the group of girls (bawdy)," and "He complained he could not go to parties any more because they were boring (jaded)."

The primary cost of excluding viable dispositional categories is that such exclusion may remove partially or entirely important domains of everyday conduct from theoretical and empirical attention. Excluded acts are likely to be lost or to become only peripheral members of included dispositional categories. Formulations of personality based on arbitrarily or overly restrictive criteria may explain or account for only fragments of everyday action.

The review process advanced by the act frequency approach for identifying relative importance of dispositions entails both conceptual criteria and empirical procedures for examining the internal and manifested structure of dispositions. The information gathered in this review process would greatly advance our understanding of a wide array of dispositions and how they function. Analysis of dispositional act structure and estimated incidence of acts performed in everyday life form part of a neglected naturalistic agenda of personality research. At some future date, perhaps visitors to a personality research institute could be shown videotapes depicting 50 or more prototypical acts for each of the hundreds of dispositions of systematically established significance. These demonstrations would not be final ends or goals of personality research, of course, but they would offer a vivid and compelling way to communicate the nature of dispositional concepts and their rich and varied instantiations.

In this context, it is useful to compare the act frequency strategy for selecting important dispositions with the statistical and lexical approaches discussed earlier. The statistical

strategy has typically used covariation among trait ratings as a basis for identifying important dispositions. Trait ratings may be considered as possible surrogates for act-trend indices in that they may serve to summarize the observers' impressions of the trends in the target person's conduct. In this sense, factor analyses of correlation matrices of trait ratings are analogous to the factor analysis of intercorrelations among act-trend indices for an array of dispositional constructs. Comparative analyses of these two kinds of matrices are not yet available. Shared correlations with third variables and other influences may complicate analyses and interpretations based on them. What is not evident, moreover, is whether either of these matrices correspond to or yield the same implications as matrices based on the number of overlapping (vs. distinctive) act memberships within the internal structures of dispositional categories.

Thus, the issue of convergent and discriminant validity (Campbell & Fiske, 1959) is viewed from a different perspective. Our criteria require included dispositions to possess distinctive prototypical acts that are not subsumed by other dispositions. From the act frequency perspective, the issue of discriminativeness is focused at the conceptual level, whereas in the Campbell and Fiske analysis, the issue of discriminativeness is focused at the manifested level.

The strategy proposed by the act frequency formulation bears a closer affinity to the lexical strategy, as represented by Allport and Odbert (1936), Norman (1963), Goldberg (1972, 1982), and Wiggins (1979). A basic assumption of the lexical approach is that trait terms evolved specifically to capture important facets of human conduct. The use of synonym groupings is the most distinctive reduction procedure of the lexical approach (Cattell, 1943; Goldberg, 1982). The basis on which these synonymic judgments occur, however, is not altogether evident. Presumably, reference to human conduct is entailed. Thus, terms such as *generous*, *charitable*, *bighearted*, and *philanthropic* are synonyms that have to do with giving and sharing (Goldberg, 1982). The act frequency approach's comparative analysis of the internal structure of dispositional categories could usefully supplement and perhaps illuminate this important work on synonymic judgments. Its application to synonym groupings of dispositions could

identify both commonalities and distinctive variations in their specific manifestations in human conduct. This dual emphasis on distinctiveness as well as commonalities may grant more importance to the diversity of dispositional constructs than does the lexical approach. Functional distinctiveness in the evolution of different trait terms is at the heart of the lexical rationale. Eliminating distinctiveness at the start by synonym reduction without reference to the internal and manifested structure of dispositions may be an overly hasty way of achieving reduction. Maintaining that distinctiveness, in contrast, is a way of preserving and honoring the basic assumption underlying the lexical approach, namely, that distinctive dispositional concepts surviving in the natural language each serve a function.

Our focus on the distinctive functions that specific dispositional terms may possess points to a relatively more expansive taxonomic orientation. Indeed, we expect that the application of the criteria derived from the act frequency approach will identify a much larger set of dispositions as important and worthy of theoretical and empirical attention. Because most of our criteria are continua, the degree of inclusiveness may itself depend on the setting of cutting points, rather than on the inherent nature of the criteria. However, we anticipate that reasonable considerations of the information generated by comparative analyses of dispositional constructs will incline most personologists to begin to grant rights of recognition to a much wider array of dispositions than they presently tend to acknowledge.

The procedure of reviewing dispositional constructs offers formidable pragmatic difficulties. The screening of thousands of dispositional constructs by the act frequency approach is a daunting enterprise. The temptation to use other criteria for preliminary screening (e.g., similarity judgments) should be resisted. A random sampling strategy would preserve the possibility for discovery within this process. A series of initial screening exercises applied to representative samples of dispositional constructs would serve the purpose of clarifying the issues involved in setting cutting points for the proposed criteria and provide a comparative framework for doing so.

From this naturalistic perspective, it is

altogether appropriate for entire research programs or even research careers to be focused on single dispositional constructs (see, e.g., London & Exner, 1978). These pursuits must be balanced, however, by the recognition of the larger taxonomic task that faces personality psychology. Historically, at every juncture, the field seems to have chosen a narrower rather than broader formulation of the taxonomic enterprise. Even moderately ambitious efforts are offered in a notably apologetic tone (Murray, 1938, chapter 3). And as Goldberg (1971, 1972) noted, the target for new personality measures has too often been determined by mere historical precedence, with past constructs and item pools being worked over rather than neglected constructs being identified and explored.

Had this inclination prevailed in the development of biology, then botany and zoology would be quite different from their modern disciplines. In his review of personality systematics, Dahlstrom (1972) observed

The fact that the known species in either zoology or botany numbers in the millions serves to shame the pretenses of any behavioral typologist who seeks to employ at most a dozen "species" of personality organization to account for human behavioral diversity. (p. 6)

In this spirit, Goldberg's (1972) well-taken query, Why measure *that* trait?, may be joined by the equally apt question, Why *not* measure that trait?

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