

VU Research Portal

Differential contributions of linguistic factors to memory based ratings: Systematizing the systematic distortion hypothesis

Semin, G.R.; Greenslade, L.

published in

Journal of Personality and Social Psychology
1985

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Semin, G. R., & Greenslade, L. (1985). Differential contributions of linguistic factors to memory based ratings: Systematizing the systematic distortion hypothesis. *Journal of Personality and Social Psychology*, 49, 1713-1723.

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Differential Contributions of Linguistic Factors to Memory-Based Ratings: Systematizing the Systematic Distortion Hypothesis

G. R. Semin and L. Greenslade
University of Sussex, Brighton, England

The systematic distortion hypothesis, which is based on a general cognitive bias contention for memory-based ratings of persons, does not account for functional differences between different types of linguistic form. A distinction between immediate terms (e.g., verbs, behaviors) and mediate terms (e.g., adjectives, traits) is offered. We argue that these linguistic forms fulfill different functions in the description of behaviors and persons. The hypothesis that the former terms differentiate features of persons in situations and are not affected by conceptual similarity, whereas the latter are primarily used to interpret persons and are organized by their conceptual relations, is supported in an experimental design in which we varied the type of target person orthogonally to type of situation. We show that whereas immediate terms differentiated for persons, situations, and persons in situations, their co-occurrence matrices are virtually unaffected by conceptual similarity. A strong conceptual similarity effect was found for mediate terms. Both sets of findings provide support for the functional distinction made between the two linguistic forms, and they suggest that the systematic effects produced for the systematic distortion hypothesis are a function of the types of terms rather than the product of a pervasive cognitive bias. The implications of the distinction between different linguistic forms for the person-situation debate and rating scale construction are discussed.

What is the relationship between the language we use or encounter in the description of behavior and our ability to judge the co-occurrence of behaviors as they take place in everyday life? This question, which has significant implications for research in personality and social psychology, has been brought to the fore in recent years with the development and dissemination of what has become known as the *systematic distortion hypothesis* (SDH; e.g., Shweder & D'Andrade, 1980).

According to the systematic distortion hypothesis, in its most concisely stated form,

inferences about personality contain a systematic bias in that propositions about "what is like what" are substituted for propositions about what is likely, and *memory* for personality relevant events contains a systematic bias in that attitudes, affects, and behaviors that are conceptually associated . . . are recalled as if they covaried (Shweder, 1982, p. 66),

and the prediction is that

the correlational structure of variables in rated behavior matrices is unlike that of equivalent variables in actual behavior matrices, yet replicates the patterning of conceptual association judgments among those same variables in conceptual association matrices. (Shweder, 1982, p. 68)

This contention has been supported by results of a series of empirical studies conducted during the past decade (e.g., Shweder, 1975; Shweder & D'Andrade, 1980). These studies show that memory-based ratings bear a considerably stronger relation to ratings that are based on conceptual or semantic similarity than they do to on-line scoring of actual behavior.

The systematic distortion hypothesis is regarded as having significant implications for the study of personality. Factorial or circum-

This study was conducted through the Sonderforschungsbereich 24, Sozialwissenschaftliche Entscheidungsforschung, University of Mannheim, Mannheim Federal Republic of Germany, financed by the Deutsche Forschungsgemeinschaft with support from the Government of Baden-Wuerttemberg.

The first author is grateful to the Alexander von Humboldt Foundation, Bonn, Bad Godesberg, for the fellowship that facilitated the preparation of this article and the University of Mannheim, Faculty of Social Sciences, for acting as host. We also thank Guenter Bollinger for his kind advice on computational matters and two anonymous reviewers for their helpful comments and advice on computational matters.

Requests for reprints should be sent to G. R. Semin, University of Sussex, Arts E, Social Psychology, Falmer, Brighton BN1 9QN, England.

plex models of personality are derived largely from memory-based procedures such as rating scales, questionnaires, interviews, and so on. However, a considerable amount of the variance contributing to the structural representations obtained through such procedures can be explained through judgments of the conceptual or semantic similarity between the items that constitute such scales. Shweder (1982) therefore argued that the postulation of global traits and dispositions as explanatory devices may be based on an illusion brought about by a cognitive propensity to rely on similarity or conceptual proximity in judgments of behavioral co-occurrence. The general contention that "what is like what" in language is confused with "what goes with what" in behavior is constructed by means of drawing from the implications of work on human cognition and applying them to substantive issues in personality research (e.g., Shweder, 1977). The argument is based in part on research that shows that although human judgmental and mnemonic abilities do not conform to the canons of logic or statistical probability or both (e.g., Nisbett & Ross, 1980; Smedslund, 1963; Wason & Johnson-Laird, 1972), their manifestations do display systematicity. Relying on the work of Chapman (1967; Chapman & Chapman, 1969) and on Tversky and Kahneman's (1974) availability heuristic, Shweder (1982) argued that under difficult memory conditions, subjects adopt a strategy of generalization or recall that implicitly proceeds along "pathways of conceptual association rather than probabilistic association" (p. 81).¹

The study reported here was derived from the contention that proponents of the systematic distortion hypothesis, by resorting to a "cognitive propensity" argument, confound a functional distinction that is linguistically given. This distinction is in reference to the logically different roles played by different terms in describing *behaviors* and *persons*, which we refer to as *immediate* and *mediate* terms, respectively. In describing behaviors in particular situations, we have access to terms (e.g., verbs) that concern concrete descriptions of actions and events in a situation. These are terms that maintain an immediate reference to behavior and that involve classification and discrimination of behaviors. In contrast to terms with immediate reference, there also ex-

ist terms (e.g., traits or adjectives) that are more *abstract* in reference and thus detached from the immediate here and now of a specific action or event. These are terms that are used in the main to describe persons and that maintain only a mediate reference to empirical events and actions. The important point about such terms is that the relations between them are established and maintained in language itself. Their coherent application is mediated by the abstract, semantic, or logical relations implied between the terms themselves (cf. Smedslund, 1982), for which the likeness/unlikeness continuum may constitute one mode of relational representation.

This distinction may be illustrated as follows: For example, one may classify the following instances of behavior in a particular situation: A person *entering* a supermarket, *taking* a pack of caviar, *putting* it into a bag, *walking* to another stand, *pocketing* another object, and so on, until the person *walks out*, *smiling* to a few customers and *bidding farewell* to the cashier after *joking* with her or him. Such discriminations and categorizations of action are concerned exclusively with the recording of behavior occurrences. However, the application of a mediate term such as *dishonest* to the person in this description would involve an interpretation of the observed behaviors fulfilling the function of describing the person and of distinguishing him or her from other persons (i.e., honest persons). Characteristically, these terms do not stand in a directly definable relation to empirical realities of ongoing action, and their application is mediated through "family resemblances" (cf. Wittgen-

¹ The systematic distortion hypothesis incorporates elements of longstanding problems in the area of rating methods, for example, Thorndike's (1920) "halo effect" and Newcomb's (1929, 1931) postulate of a "logical error." As a recent review of these studies seems to indicate (Cooper, 1980), the detection and elimination of these difficulties, particularly the former, are problems that have yet to achieve a satisfactory solution. In a more contemporary vein, the systematic distortion hypothesis also broaches the questions raised by Passini and Norman's (1966) subjects' ability to reproduce a personality factor structure on the basis of minimal knowledge of their targets (cf. also Norman & Goldberg, 1966). More directly relevant studies to the systematic distortion hypothesis are those by Mulaik (1964) and D'Andrade (1965, 1974), among others.

stein, 1958); that is, the defining criteria for such abstract terms are not particular co-occurrence frequencies of specific behaviors, particular intensities, or common features of behavior manifestations. The occurrence of a behavior such as "paying" or the knowledge that the person is the supermarket owner would be sufficient to modify the attribution from *dishonest* to possibly *pleasant, charming, or friendly*. Therefore, such abstract terms maintain only a mediate reference to empirical events and actions. Furthermore, honesty, in the abstract, is unlikely to be correlated with dishonesty, although one and the same person may be capable of acting in either fashion. This relation does not hold, however, for concrete or immediate terms such as verbs; that is, the same person may give, take, agree, disagree, laugh, and cry within the same episode.

In short, our argument is the following: If one presents subjects with a rating scale consisting of immediate terms—that is, concrete behavioral items (e.g., walk, take, smile, talk, smoke)—and asks them to estimate their relative frequency of occurrence in a given situation for a particular person, then their task consists of extracting from memory quantitative distinctions. These involve discriminations; that is, did a given event occur or not? How frequently did it occur? This is primarily not a qualitative task. However, if the scale consists of mediate terms (e.g., kind, honest, outgoing) the demands are different. Instead of engaging in absence or presence distinctions and estimates of frequency, the subject is asked to engage in an interpretative process. In doing so, the subject gives judgments that are mediated by logico-semantic implications, of which conceptual similarity between terms is just one (cf. Semin & Rosch, 1981; Semin, Rosch, & Chassein, 1981). In summary, the position adopted here is that the type of linguistic form that one uses in constructing a scale determines in large part whether one will obtain results that confirm the systematic distortion hypothesis.

The proponents of the systematic distortion hypothesis have not made such a distinction. Their position rests on the contention that semantic similarity affects judgments for both mediate and immediate terms.²

To examine these differences in detail, we devised an experimental study in which types

of situations were varied orthogonally to types of persons. The subjects' task consisted first in judging how likely a particular person was to manifest each of a series of behaviors (i.e., immediate terms) in a specific situation. Second, they were required to judge how likely the same person was to manifest specific qualities (i.e., mediate terms) in the same situation. Differential hypotheses can be derived from the systematic distortion hypothesis and from our distinction between immediate and mediate terms. According to the systematic distortion hypothesis, conceptual similarity effects should influence judgments about frequency or likelihood of occurrence, irrespectively of whether the judged items are mediate or immediate terms. According to our argument, one would not expect this to hold for verbs of behavior. If verbs are differentially sensitive to events and behaviors of persons in concrete situations, then one should expect the correlation between conceptual similarity judgments between these terms and judgments of their co-occurrence for a person in a situation to be low. From this hypothesis one can also derive a corollary: One would expect immediate terms not only to be sensitive to behaviors across different situations and different types of persons, but also to the interaction between situations and persons (i.e., persons in situations).

In the case of mediate terms, however, we would expect predicted outcomes from both the systematic distortion hypothesis and our position to concur; that is, memory-based judgments about persons in situations should be governed by the conceptual similarities of the terms. There should be high correlations between mediate term co-occurrences in their use and judgments of their conceptual similarities. Furthermore, as a consequence of their

² It may be argued that there are a number of studies (e.g., Cooper, 1981; D'Andrade, 1974; Shweder, 1975; Shweder & D'Andrade, 1980) which provide support for the systematic distortion hypothesis. On closer inspection, however, one finds that most of these researchers used either mediate terms exclusively (e.g., D'Andrade, 1965; Shweder, 1975) or that they relied on a mixture of the two, using both mediate and immediate terms. The only exception is a videotape study conducted by D'Andrade and reported by Shweder and D'Andrade (1980) and by Shweder (1982). However, other researchers using a similar research paradigm (e.g., Semin & Greenslade, 1984) show results that do not support those reported by Shweder and D'Andrade (1980).

type of category, one might expect that, unlike immediate behavior terms, adjectives should not differentiate between situations because the function of these terms is to differentiate between persons. Raters' judgments should reflect their knowledge of the semantic relations between the items in such a way as to mark this functional characteristic. Thus if the target person is described, for example, as a prototypical introvert or a prototypical extravert, this should influence the subsequent endorsement of the scales because the implicative features consist of bipolar opposites (cf. Semin & Rosch, 1981). This would be expressed in terms of differences in average item endorsement between target persons. However, it should not affect the extent to which interitem relations reflect conceptual similarity.

Our study consisted of a 3×5 (Persons \times Situations) between-subjects factorial design. The dependent variables consisted of a series of verbs and adjectives that were to be judged with respect to their relative likelihood of occurrence. Independently, conceptual similarity judgments on the dependent variables were obtained.

Method

Participants

Two hundred fifty-five undergraduate students at the University of Mannheim, Mannheim, Federal Republic of Germany, participated in this study on a paid voluntary basis. Thirty were assigned to the conceptual similarity task and the remaining 225 were randomly assigned to experimental conditions. They participated in groups of 5 to 8 persons.

Overview

Each participant received one of 15 booklets. Their task was to judge the characteristics and behaviors that a target person would manifest in a situation. The first independent variable was varied such that each booklet contained a specific reference to one of five situations (i.e., no specific situation, a seminar, a pub, an ice hockey match, and a demonstration). We varied the description of the target person orthogonally to the situation variable. The target person was unspecified with respect to his or her person characteristics, was described as a prototypic introvert or a prototypic extravert. The design was therefore a 3×5 factorial involving three target person conditions and five situation conditions. There were 15 subjects per cell. The dependent variables consisted of judging the frequency of occurrence of each of 10 behaviors for the target in a given situation, and judging the applicability of six adjectives to the target.

Procedure

All participants received a booklet. The cover page contained the general instructions about the experiment, namely, "an examination of the behaviors that people manifest in a situation and the characteristics they display." They were then provided with a description of the target person and a situation in which they were to judge the frequency of occurrence of a particular set of behaviors and the applicability of a set of attributes.

Manipulation of the Target Person

Participants were given one of three target person descriptions. A third of the participants received no further information aside from a general reference to imagine "a person." Half of the remaining subjects were asked to imagine a typical extravert and the remaining half a typical introvert. Both of the latter groups were then provided with the description of either type. These descriptions were taken from the Eysenck Personality Inventory (EPI) manual (Eysenck & Eysenck, 1976).

Manipulation of the Situation

After receiving the general instructions and description of the target person, subjects were provided with one of five situation conditions. In the *no situation* condition they were asked to judge the frequency of occurrence of the behaviors and the applicability of attributes as they would be manifested in everyday life. In the remaining four conditions, they were asked to visualize one of the following situations: a pub, a seminar, an ice hockey match, or a demonstration, respectively.

Measures

After receiving these instructions and descriptions, participants were asked to judge the frequency with which each of 10 behaviors were likely to be manifested by the target person in the situation. They used a 7-point scale, the ends of which were labeled *not at all frequently* (1) and *very frequently* (7). These behaviors were as follows: *joke*, *criticize*, *smoke*, *tease*, *laugh*, *agree*, *show off*, *disagree*, *dominate*, and *get excited*. Subsequently, subjects received six adjectives, which they rated with respect to their applicability to the target person in the situation. Again, they used a 7-point scale, the ends of which were labeled *highly inapplicable* (1) and *highly applicable* (7). The six adjectives were as follows: *reserved*, *lively*, *talkative*, *impulsive*, *sensitive*, and *concerned*.

Conceptual Similarity

Thirty participants were given a booklet containing the 120 pairwise combinations of the 16 terms in a random order. Their task consisted in judging the similarity in meaning of each pair on a 10-point scale, the ends of which were labeled *highly dissimilar in meaning* (1) and *highly similar in meaning* (7).

Results

Conceptual Similarity

The first hypothesis examined concerns the predictions that arise from the systematic distortion hypothesis and the language-based perspective adopted here. To test this hypothesis, we computed a Pearson product correlation matrix (i.e., the interitem correlation per cell) for each of the 15 cells for both verbs and adjectives. Each of these two sets of 15 co-occurrence matrices were then correlated with the respective average conceptual similarity matrix (i.e., the verb or adjective matrix).³ This involves correlating between-item co-occurrences (r_s), obtained separately for each cell, with between-item conceptual similarity (mean similarity between item pairs obtained on the basis of conceptual similarity judgments). As one can see from Table 1, the average correlation between the conceptual similarity matrix and the behavior co-occurrence matrices was .24 (obtained through z transformation of the 15 r_s for behaviors in Table 1) and was never higher than .52. In contrast, the correlations for the mediate terms are with one exception all above .53 with an average correlation of .83 (obtained through z transformation of the 15 r_s for adjectives in Table 1). This distinctive pattern of correlations for verbs and adjectives strongly underlines the distinction that is introduced between immediate and mediate terms and the argument about their differential functions in the description of persons and behaviors.

Differential Sensitivity of Immediate and Mediate Terms to Situations and Persons

To examine the differential sensitivity of the two linguistic forms to contextual variables (i.e., Persons, Situations, and Persons \times Situations), we conducted two multivariate analyses of variance (MANOVAs). The first analysis was carried out with the verbs. As expected, the multivariate main effect for the target person factor was significant, $F(20, 402) = 29.03$, $p < .0001$, as well as were the multivariate main effect for situations, $F(40, 764.02) = 4.06$, $p < .0001$, and the Target Person \times Situations interaction, $F(80, 1283.40) = 1.86$, $p < .0001$. The univariate effects (cf. Table 2) sug-

Table 1
Correlations Between the Conceptual Similarity Matrix and the Co-occurrence Matrices for Behaviors and Adjectives

Situation	Target Person		
	Unspecified	Extraverted	Introverted
Behaviors			
Unspecified	.07	.21	.17
Pub	.52	.20	.26
Seminar	-.04	.24	.20
Ice hockey	.36	.40	.20
Demonstration	.36	.17	.34
Adjectives			
Unspecified	.36	.77	.58
Pub	.89	.88	.92
Seminar	.93	.94	.93
Ice hockey	.73	.91	.69
Demonstration	.53	.63	.93

gest that for the target person factor, all verbs except *agree* were significant. In the case of the situation factor, all the univariate main effects except *agree* and *disagree* reached significance. Of the univariate interaction terms, five were significant (*joke*, *laugh*, *show off*, *disagree*, and *get excited*). The remaining five verbs showed tendencies in the expected direction, the lowest $F(8, 210)$ being 1.51, $p < .16$, and the highest being 1.86, with the respective p range being $< .16$ and $> .07$.

The MANOVA for the adjectives revealed a significant main effect for the target person factor, $F(12, 410) = 12.28$, $p < .0001$; all the univariate effects reached significance (cf. Table 2). The multivariate situation effect was not significant, $F(24, 716.37) = 1.33$. The multivariate interaction term reached significance, $F(48, 1012.75) = 1.59$, $p < .01$, whereby the univariate analyses for *reserved* and *lively* yielded the only significant terms.⁴ The means

³ Whether the overlap between conceptual and co-occurrence matrices was calculated via Pearson product-moment correlations or via nonparametric rank order correlations did not make a notable difference. The correlations reported in Table 1 are based on Pearson product-moment correlations.

⁴ The directions of the univariate effects are not discussed in any detail for two reasons. First, they are in the direction one would expect by common sense. More important,

Table 2
Univariate Effects for Behaviors and Adjectives

Dependent Variables	Effect type		
	Person, <i>F</i> (2, 210)	Situation, <i>F</i> (4, 210)	Person × Situation, <i>F</i> (8, 210)
Behaviors			
Joke	200.46***	4.30***	3.02***
Criticize	9.66***	6.87***	1.83*
Smoke	32.13***	9.34***	1.86*
Tease	84.69***	4.76***	1.51
Laugh	155.29***	7.90***	4.58***
Agree	0.22	1.47	1.68
Show off	90.65***	3.24**	2.05**
Disagree	18.21***	0.75	2.23**
Dominate	78.40***	6.63***	1.79*
Get excited	124.90***	9.09***	2.68***
Adjectives			
Reserved	73.50***	3.24**	3.15***
Lively	62.69***	0.49	2.25**
Talkative	32.23***	0.54	1.09
Impulsive	32.17***	0.31	1.30
Sensitive	9.40***	1.34	1.11
Concerned	11.52***	0.38	1.63

* $p < .10$. ** $p < .05$. *** $p < .01$.

and standard deviations for both verbs and adjectives for the complete design are provided in Tables 3 and 4.

An additional statistical index for the proposed effects can be obtained by calculating the respective eta for the multivariate terms. Eta squared is a measure approximating amount of variance explained (cf. Moosbrugger, 1978; Tatsuoka, 1971). A comparison of η^2 for the different terms of the multivariate analysis for adjectives and behaviors is complicated by the fact that the number of dependent variables that go into the analyses are different. To obtain some comparability, we would have to reduce the number of dependent variables for the analysis with the immediate terms from 10 to 6. To ensure this, we ran multivariate analyses for all combinations of six immediate terms. This provided a range of

minimum and maximum η^2 . A comparison of the η^2 for immediate and mediate terms, respectively, for the person main effect ($.7420 < \eta^2 < .7950$ vs. $\eta^2 = .4588$), the situation main effect ($.3403 < \eta^2 < .4360$ vs. $\eta^2 = .1411$) and the Person × Situation interaction ($.3419 < \eta^2 < .4220$ vs. $\eta^2 = .3002$) supports the contention that the effects for immediate terms explain a higher proportion of variance than effects for mediate terms.

In contrast, conceptual similarity accounts for a considerably larger amount of the variance of the average mediate term co-occurrence matrix ($r^2 = .69$) than of the average immediate term co-occurrence matrix ($r^2 = .06$). These results also indicate support for the language-based hypothesis.

These findings suggest that immediate terms allow a differentiation between persons, situations, and their particular compositions, which supports the predictions advanced in the introduction. Mediate terms allow in the main differentiations between persons, again as predicted; however, some appear to differentiate for specific constellations of persons in situations as well.

Discussion

The results of our experiment support the postulated differences between mediate and immediate terms in the description of persons and their behaviors. The results indicate that whereas the adjective co-occurrences in the description of persons in situations were highly correlated with their similarity in meaning, this was not the case for verbs. Conceptual similarity accounts for a minimal amount of the variance of the behavior co-occurrence matrix in any of the 15 cells. Furthermore, it is also shown that immediate, behavior terms allow differentiation of actions as a function of the person and the situation. In the case of mediate terms we find that attribute co-occurrences are largely accounted for by similarity in meaning and that such terms allow differentiation between persons with ease, but not for situations or for persons in situations.

These results suggest a narrowing down of the broader purview of the systematic distortion hypothesis in at least two respects. The first concerns the extent to which the system-

however, is the second reason: namely, that the hypothesis derived from the language-based perspective is predictive of differences for the multivariate terms (main effects and interaction) between mediate and immediate terms but does not provide any specific content-based differentiations as such.

atic distortion effect may be said to reflect a general, underlying cognitive process or tendency. This is expressed in the contention that memory-based judgments are systematically distorted by the confusion of propositions about likelihood with propositions about like-

Table 3
Mean Judgments and Standard Deviations for Behaviors (Full Design)

Situation	Joke	Criticize	Smoke	Tease	Laugh	Agree	Show off	Disagree	Dominate	Get excited
Unspecified target person										
Unspecified										
<i>M</i>	4.47	4.33	5.40	4.53	4.27	4.80	4.93	3.40	4.88	5.53
<i>SD</i>	1.19	1.83	1.60	1.25	1.34	1.57	1.22	1.24	1.06	1.19
Pub										
<i>M</i>	5.20	3.87	5.07	3.67	6.07	4.13	4.33	4.27	4.20	4.13
<i>SD</i>	1.01	1.30	1.58	1.54	0.70	1.24	1.45	0.96	1.21	1.69
Seminar										
<i>M</i>	3.60	4.13	2.27	2.47	3.87	4.20	2.60	4.07	3.27	3.67
<i>SD</i>	1.55	1.55	1.83	1.64	1.13	1.15	1.55	1.58	1.75	1.92
Ice Hockey										
<i>M</i>	3.40	6.33	4.47	4.87	3.67	3.40	3.87	4.80	3.93	6.40
<i>SD</i>	2.13	0.72	1.92	1.36	1.92	1.55	2.13	1.27	1.71	0.83
Demonstration										
<i>M</i>	3.80	5.40	4.53	4.27	3.60	4.13	3.47	4.67	3.73	5.80
<i>SD</i>	1.47	0.99	1.36	1.75	1.18	1.81	1.73	1.23	1.49	0.68
Extravert										
Unspecified										
<i>M</i>	6.47	4.80	5.53	5.00	6.40	3.73	4.40	4.80	5.60	5.60
<i>SD</i>	0.52	1.66	0.92	1.19	0.91	1.03	1.54	1.21	1.18	1.24
Pub										
<i>M</i>	6.27	3.67	5.47	4.87	6.53	4.07	4.87	4.47	5.47	5.07
<i>SD</i>	0.59	1.40	1.46	1.96	0.52	1.39	1.51	1.55	1.46	1.28
Seminar										
<i>M</i>	5.60	4.47	4.07	4.53	6.27	4.27	4.27	4.60	5.07	5.40
<i>SD</i>	0.99	1.51	1.49	1.19	0.80	1.03	1.34	1.30	1.10	1.24
Ice Hockey										
<i>M</i>	5.60	5.20	4.47	4.67	5.53	4.33	4.40	4.67	5.13	6.27
<i>SD</i>	1.05	2.00	1.68	1.80	1.18	1.68	1.64	1.59	1.36	1.22
Demonstration										
<i>M</i>	5.20	4.13	5.27	4.67	5.33	4.33	4.80	3.93	4.87	5.53
<i>SD</i>	1.57	1.55	0.96	1.40	1.35	1.63	1.37	1.22	1.46	1.25
Introvert										
Unspecified										
<i>M</i>	2.13	4.20	2.87	2.13	3.13	4.33	2.06	3.67	3.87	3.07
<i>SD</i>	0.63	1.52	1.92	1.36	0.83	1.11	1.38	1.11	1.96	1.44
Pub										
<i>M</i>	1.53	3.07	3.00	1.53	2.53	4.67	1.27	2.60	1.47	2.00
<i>SD</i>	0.64	1.58	1.13	1.30	1.06	1.68	0.46	1.21	0.74	1.25
Seminar										
<i>M</i>	1.47	3.60	2.33	1.27	2.13	4.13	1.47	3.47	2.27	1.93
<i>SD</i>	0.64	0.99	1.76	0.46	0.74	0.91	1.06	0.99	1.03	1.16
Ice Hockey										
<i>M</i>	2.33	3.87	3.00	2.00	3.07	3.40	1.40	3.27	2.60	2.27
<i>SD</i>	1.11	1.72	1.77	1.25	1.28	0.83	0.63	1.22	1.72	1.71
Demonstration										
<i>M</i>	2.20	4.00	3.60	2.07	2.60	3.53	1.80	3.40	1.73	2.53
<i>SD</i>	1.47	1.77	1.64	1.49	1.55	1.36	1.08	1.64	1.10	1.55

ness (e.g., D'Andrade, 1974; Shweder, 1977; Shweder & D'Andrade, 1980). The second point concerns the broad and generic application of the notion of conceptual similarity or semantic similarity.

Our findings suggest that the nature of the correlations between behavior co-occurrence matrices and conceptual similarity matrices depend largely on the type of linguistic terms used. Thus concrete and discrete terms such

Table 4
Mean Judgments and Standard Deviations for Adjectives (Full Design)

Situation	Reserved	Lively	Talkative	Impulsive	Sensitive	Concerned
Unspecified target person						
Unspecified						
<i>M</i>	2.60	4.47	3.67	4.33	3.53	4.27
<i>SD</i>	0.73	1.13	1.18	1.63	2.03	1.58
Pub						
<i>M</i>	5.13	3.53	2.93	2.93	4.87	4.47
<i>SD</i>	1.06	1.18	1.71	1.22	1.36	1.69
Seminar						
<i>M</i>	3.26	3.80	4.13	3.53	3.80	3.60
<i>SD</i>	1.83	1.37	1.60	1.30	1.70	1.92
Ice hockey						
<i>M</i>	5.40	2.40	3.40	2.67	4.60	4.40
<i>SD</i>	1.72	1.68	1.45	1.83	2.13	1.96
Demonstration						
<i>M</i>	4.53	3.67	3.40	3.53	3.40	3.47
<i>SD</i>	1.30	1.50	1.68	1.80	1.06	1.92
Extravert						
Unspecified						
<i>M</i>	5.60	2.40	2.53	2.53	3.66	4.60
<i>SD</i>	2.13	2.26	2.23	2.35	1.87	1.68
Pub						
<i>M</i>	5.67	2.53	2.47	3.07	4.00	4.87
<i>SD</i>	1.84	1.96	2.23	2.12	1.36	1.99
Seminar						
<i>M</i>	5.33	2.47	2.40	2.53	3.47	5.07
<i>SD</i>	1.44	1.25	1.30	1.55	1.24	1.49
Ice hockey						
<i>M</i>	5.13	2.13	2.47	2.13	4.53	3.60
<i>SD</i>	2.33	1.85	1.77	2.07	1.64	1.88
Demonstration						
<i>M</i>	5.86	2.27	2.33	2.20	4.33	5.07
<i>SD</i>	0.83	1.62	1.44	1.57	1.29	1.22
Introvert						
Unspecified						
<i>M</i>	2.60	4.53	3.67	4.33	2.80	3.13
<i>SD</i>	1.81	2.23	1.68	2.61	2.11	1.64
Pub						
<i>M</i>	2.47	5.13	5.07	5.07	2.73	3.00
<i>SD</i>	2.26	3.89	1.58	2.71	1.83	1.77
Seminar						
<i>M</i>	1.80	5.73	4.87	5.53	3.27	3.87
<i>SD</i>	1.32	1.83	1.46	2.26	1.98	1.80
Ice Hockey						
<i>M</i>	1.93	6.06	4.67	5.47	3.07	3.40
<i>SD</i>	1.03	1.10	1.59	1.99	1.58	1.64
Demonstration						
<i>M</i>	2.67	5.80	4.80	5.00	3.07	3.07
<i>SD</i>	1.80	1.47	1.61	2.29	1.62	1.43

as verbs that refer to specific actions allow discriminative judgments about the behaviors that persons manifest in situations. Although we do not present an examination of ongoing behavior in the flow of everyday life, the fact that raters engage in differential recall of complex behavior contingencies as a function of the person and the situation suggests that such terms permit discriminations in terms of likelihood and not likeness. More abstract and mediate concepts such as adjectives, we argue, are organized around semantic or logical relations implied between them and fulfill the function of describing the person interpretatively. The correlations obtained between the adjective co-occurrence matrices and the conceptual similarity matrix suggest that adjective ratings are largely guided by linguistic propositions (i.e., semantic considerations). The contrasting findings with respect to verbs and adjectives suggest that the types of results generally obtained in studies that show the systematic distortion effect need not be explained by reference to a generic cognitive process or tendency, but by constraints imposed by the linguistic forms used in such studies. Indeed, a careful examination of those studies that are regarded as supporting the systematic distortion hypothesis indicates that with one exception (a videotape study conducted by D'Andrade and reported briefly by Shweder & D'Andrade, 1980, and by Shweder, 1982) all of the researchers relied on either mediate terms exclusively or, at best, a mixture of mediate and immediate terms.

The second aspect concerns the ambiguity surrounding the notion of similarity in meaning. As Block, Weiss, and Thorne (1979) argued, this term has been used without "consideration and articulation" (p. 1071). Gara and Rosenberg (1981) reported a study in which they attempted to clarify whether semantic similarity judgments merely reflect linguistic factors or also contain beliefs about trait co-occurrence. To examine this, they adopted Tversky's (1977) notion of *shared features* and devised an index for its measurement. Their results suggested that "meaning similarity contains two components: shared features and perceived co-occurrence" (Gara & Rosenberg, 1981, p. 450). However, in this work they relied completely on mediate terms (i.e., adjectives as trait terms). Our findings al-

low a different delineation of the notion of similarity in meaning, namely, its range of sensible applicability as a function of the linguistic forms that are used in rating scales. The reported findings demonstrate quite clearly that whereas co-occurrences among adjectives in memory-based judgments of persons are largely predictable from ratings of the same adjectives in terms of their similarity in meaning, this does not apply to co-occurrences among behaviors. Thus, in the description of persons, the respective roles of verbs and adjectives are characterized by differences in function, and the idea of semantic similarity can only be regarded as applicable to adjectives to the extent that the relations between such terms are mediated by abstract linguistic convention, whereas concrete terms fulfill discriminatory functions.

The implications of this conclusion for the systematic distortion hypothesis are twofold. First, it raises questions about the validity of a central assumption underlying the hypothesis: namely, that behavior co-occurrences are mediated largely by similarity in meaning and, by implication, by the assumption that trait terms (e.g., adjectives) consist merely of specific behavior co-occurrence patterns. Our results suggest that this central assumption is not supported. Furthermore, as mentioned earlier, most researchers examining the systematic distortion hypothesis use mediate terms or a mixture of mediate and immediate terms. In addition, there is evidence that suggests that memory-based judgments of ongoing behavior in a real-life episode, in which only immediate terms are used, correlate highly with behavior co-occurrences (cf. Semin & Greenslade, 1984) and are negligibly correlated with similarity in meaning.

The more speculative implications of these findings concern the question of the relation between behavior co-occurrences and their adjectival descriptions. Obviously, as Block et al. (1979) argued, "the use of frequency counts of behavior is not a sufficient means of operationalizing complex psychological variables" (p. 1060). That traits or adjectives are qualitative and interpretative comments on ongoing behavior has been argued before. However, the differential sensitivity of the two linguistic forms to parameters of ongoing behavior, as illustrated in our study, suggests that in ful-

filling different functions these terms also allow observers to focus attention on different aspects of ongoing behavior. Immediate behavior terms differentiate as a function of the situational and personal parameters of ongoing action, whereas mediate person-descriptive terms, although sensitive to person parameters, are more crude with respect to their differential sensitivity to persons in situations. What is more important is that although mediate terms are not applied in a differential manner to reflect the features of events, they contain a systematicity that is provided by their semantic interrelations, which explains a larger proportion of their variance than do situational or personal features of an event. These considerations may provide a possible explanation of the structural differences that Buss and Craik (1983a) found in their analysis, in which they compared their act frequency approach to personality with the Wiggins (1979) circumplex model of interpersonal dispositions. Whereas with the former one relies on acts, which may be regarded as falling in the category of immediate terms, the latter involves reliance on adjectives. Systematic relations such as bipolar relations in the Wiggins (1979) model are likely to be mediated by the semantic relations between the adjectives, whereas the structure of act frequencies appear to be independent of such influences. That one is able to use both forms raises a theoretically and empirically interesting question: namely, how is the link between these two forms of terms established? If this link is mediated by, for example, family resemblances, then it may prove difficult to uncover systematic empirical effects. The program developed by Buss and Craik (1983b) may indeed provide a possible solution to this problem.

Lastly, our findings have implications for questionnaire construction in general. The formulation of questions with mediate or immediate terms should produce effects that, from a theoretical point of view, have implications above and beyond the immediate objectives of the instrument's design. This may have important bearings on issues such as the prediction of behavior from the assessment of attitudes or of traits. Our perspective may thus also have implications for the person-situation debate. Whatever the varied implications, our main conclusion is that the proponents of the

systematic distortion hypothesis appear to have confused propositions about semantic relations with propositions about cognitive processes.

References

- Block, J., Weiss, D. S., & Thorne, A. (1979). How relevant is a semantic similarity interpretation of personality ratings? *Journal of Personality and Social Psychology*, *37*, 1055-1074.
- Buss, D. M., & Craik, K. H. (1983a). Act prediction and the conceptual analysis of personality scales: Indices of act density, bipolarity, and extensity. *Journal of Personality and Social Psychology*, *45*, 1081-1095.
- Buss, D. M., & Craik, K. H. (1983b). The act frequency approach to personality. *Psychological Review*, *90*, 105-126.
- Chapman, L. J. (1967). Illusory correlation in observational report. *Journal of Verbal Learning and Verbal Behavior*, *6*, 151-155.
- Chapman, L. J., & Chapman, J. P. (1969). Illusory correlation as an obstacle to the use of valid psychodiagnostic signs. *Journal of Abnormal Psychology*, *74*, 271-280.
- Cooper, W. H. (1980). Ubiquitous halo. *Psychological Bulletin*, *90*, 218-244.
- Cooper, W. H. (1981). Conceptual similarity as a source of illusory halo in job performance ratings. *Journal of Applied Psychology*, *66*, 302-307.
- D'Andrade, R. G. (1965). Trait psychology and componential analysis. *American Anthropologist*, *67*, 215-228.
- D'Andrade, R. G. (1974). Memory and the assessment of behavior. In T. Blalock (Ed.), *Measurement in the social sciences* (pp. 159-186). Chicago: Aldine-Atherton.
- Eysenck, H. J., & Eysenck, S. B. G. (1976). *Manual of the Eysenck Personality Inventory*. Sevenoaks, Kent, England: Hodder and Stoughton.
- Gara, M. A., & Rosenberg, S. (1981). Linguistic factors in implicit personality theory. *Journal of Personality and Social Psychology*, *41*, 450-457.
- Moosbrugger, H. (1978). *Multivariate Statistische Analyseverfahren [Methods of multivariate statistical analysis]*. Stuttgart: Kohlhammer.
- Mulaik, S. A. (1964). Are personality factors raters conceptual factors? *Journal of Consulting Psychology*, *28*, 506-511.
- Newcomb, T. M. (1929). The consistency of certain extrovert-introvert behavior patterns in 51 problem boys. *Contributions to Education* (Tech. Rep. No. 382). New York: Columbia University.
- Newcomb, T. M. (1931). An experiment to test the validity of a rating technique. *Journal of Educational Psychology*, *22*, 279-289.
- Nisbett, R. E., & Ross, L. (1980). *Human inference: Strategies and shortcomings of social judgment*. Englewood Cliffs, NJ: Prentice-Hall.
- Norman, W. T., & Goldberg, L. R. (1966). Raters, ratees, and randomness in personality structure. *Journal of Personality and Social Psychology*, *4*, 681-691.
- Passini, F. T., & Norman, W. T. (1966). A universal conception of personality structure? *Journal of Personality and Social Psychology*, *4*, 44-49.
- Semin, R. R., & Greenslade, L. (1984). *Memory for be-*

- havior: A re-examination of the systematic distortion hypothesis.* Unpublished manuscript, University of Sussex, England.
- Semin, G. R., & Rosch, E. (1981). Activation of bipolar prototypes in attribute inferences. *Journal of Experimental Social Psychology, 17*, 472-484.
- Semin, G. R., Rosch, E., & Chassein, J. (1981). A comparison of the common-sense and scientific conceptions of extroversion-introversion. *European Journal of Social Psychology, 11*, 77-86.
- Shweder, R. A. (1975). How relevant is an individual difference theory of personality? *Journal of Personality, 43*, 455-484.
- Shweder, R. A. (1977). Likeness and likelihood in everyday thought: Magical thinking in judgments about personality. *Current Anthropology, 18*, 637-648.
- Shweder, R. A. (1982). Fact and artifact in trait perception: The systematic distortion hypothesis. In B. A. Maher & W. B. Maher (Eds.), *Progress in experimental personality Research* (Vol. 2, pp. 65-101). New York: Academic Press.
- Shweder, R. A., & D'Andrade, R. G. (1980). The systematic distortion hypothesis. In R. A. Shweder (Ed.), *Fallible judgment in behavioral research. New directions for methodology of social and behavioral science* (pp. 3-38). San Francisco: Jossey-Bass.
- Smedslund, J. (1963). The concept of correlation in adults. *Scandinavian Journal of Psychology, 4*, 165-173.
- Smedslund, J. (1982). Revising explications of common-sense through dialogue: Thirty-six psychological theorems. *Scandinavian Journal of Psychology, 23*, 299-305.
- Tatsuoka, M. M. (1971). *Multivariate analysis*. New York: Wiley.
- Thorndike, E. L. (1920). A constant error in psychological ratings. *Journal of Applied Psychology, 4*, 25-29.
- Tversky, A. (1977). Features of similarity. *Psychological Review, 84*, 327-352.
- Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science, 85*, 1124-1131.
- Wason, P. C., & Johnson-Laird, P. N. (1972). *Psychology of reasoning*. London: Batsford.
- Wiggins, T. S. (1979). A psychological taxonomy of trait-descriptive terms: I. The interpersonal domain. *Journal of Personality and Social Psychology, 37*, 395-412.
- Wittgenstein, L. (1958). *Philosophical investigations* (2nd ed.). Oxford, England: Blackwell.

Received March 13, 1984

Revision received September 1, 1984 ■