Assessing Psychopathology in Individuals and Groups:
Aggregating Behavior Samples to Form Overall Impressions

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Subjects were presented with vocabulary definitions that were to be used in assessing emotional disturbance in a single patient ("Mr. Green") or in a group of patients. Some respondents were initially presented with a high-pathology series of definitions, whereas others received more benign (low-pathology) definitions. All respondents then received a set of midscale definitions. Assessments of Mr. Green, *both at the beginning and at the end of the experimental session, were directly related to the available information (definitions). Ratings of the* group *initially followed a similar course. However, at the end of the experiment, there was clear evidence of a reversal (crossover pattern); in their final assessments, respondents who had initially received a pathological set of definitions judged the group-as-a-whole to be* less *disturbed than did the respondents who had initially been provided with nonpathological definitions. Theoretical implications of these results are discussed.*

Social psychologists have been concerned with the process of impression formation for a long time. Asch's pioneering research was critical in establishing this area (1946); however, more recent investigators (e.g., Anderson, 1965) have turned away from the Gestaltlike conception that animated Asch's efforts. Instead, there has been an emphasis on more tractable models based on simple algebraic operations like *averaging* and *adding*. The present work explores the process of impression information as it is manifested in connection with a *single* target individual, as compared with the impressions ("stereotypes") we form of *groups*.

The social impressions that we form often reflect (at least in part) a distillation of specific events or items of information. Following Asch's general

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approach, many investigators have presented respondents with trait adjectives that were said to apply either to a single individual or to each of several individuals (one trait to a person). Respondents integrated this information, yielding an overall "liking rating" for the "target." In this work the main goal has been to specify the relationship between (1) the input information (e.g., the affective values of the individual traits presented by the experimenter) and (2) the respondent's overall judgments concerning the likability of the target-individual (or the target-group).

The study that is reported below follows in this general tradition. Rather than studying *likability* judgments based on traits, however, we will be concerned with judgments of *psychopathology*, based on concrete behavior samples (vocabulary definitions). Briefly stated, respondents were presented with a series of vocabulary definitions, one at a time. Some respondents were led to believe that these definitions had been taken from the records of a single hospital patient ("Mr. Green"). Other respondents were told that each definition came from a different patient. As each definition was presented, the respondents evaluated the amount of disturbance that it seemed to reflect. Most important, they were intermittently asked for their *overall* impressions of the mental health status of Mr. Green, or of the patient group as a whole, based on all the information they had received to that point in time.

Respondents assigned to the *individual* and *group* conditions were further divided into subgroups, based on the sorts of definitions that were initially provided. Some respondents received pathological definitions at the start of the experimental session, whereas others were provided with a series of less pathological definitions. We expected that the respondents' overall impressions would parallel these initial definitions, at least for a time; for example, respondents who had received pathological definitions would presumably infer that Mr. Green (or the group) was fairly disturbed, as compared with respondents who were initially provided with a more benign set of definitions.

We were less certain of the effects that might result from the different *sources* of these behavior samples. People who believed that the definitions all derived from a *single patient* might regard them as relatively interdependent, and hence redundant. For example, if presented with pathological definitions these respondents might regard the target (Mr. Green) as somewhat *less* disturbed than the respondents in the group condition, who had read these same pathological definitions, but considered them as independent (and hence nonredundant).

Memory factors might also play a role. Forming an impression of someone based on his or her behaviors seems like a familiar task. It is conceivable, however, that people are less practiced at forming an overall group judgment based on the behaviors displayed by *different* individuals.If the members of a group were regarded as truly independent of one another, a diverse set of behaviors (definitions) might be weakly associated with one another, difficult to recall, and hence difficult to incorporate into a single overall impression. Recent

research by Wyer, Bodenhausen, and Srull (1984) is consistent with this view. These considerations suggest that in judging a group, as more and more information is acquired, people might be relatively unaffected by the items that had initially been presented, due to forgetting. In forming impressions of individuals, on the other hand, there might be a more balanced influence of the behavior samples that had been presented throughout the experiment (i.e., early as well as late in the session).

To address these possibilities the definitions in this experiment were presented in a two-part scheme (although there was no formal break in the experimental session). At the beginning of the experiment subjects received high-pathology (or low-pathology) definitions; later on, however, all subjects were presented with a common series of midscale items. If the group subjects found it difficult to recall the definitions that they had initially received, the final impressions of those in the *high*-pathology condition might not be very different from the impressions of subjects who had initially been presented with *low*-pathology definitions. For respondents in the individual condition, on the other hand, the early (polarized) items might be more accessible; hence, even at the end of the experiment, respondents in the high-pathology condition might rate Mr. Green as substantially more disturbed than would the respondents in the low-pathology group.

METHOD

Subjects

Subjects were paid volunteers who were recruited on the campus of the University of Michigan. There were 64 respondents, half men and half women. Subjects were normally run in small groups (2-7), with some people being treated individually.

Induction Booklets

Subjects were told that the study concerned "social judgments." As part of a research project at a nearby university, they learned, patients in a state hospital had been given repeated diagnostic tests; these tests had been analyzed by the research staff, to arrive at a number of "mini-diagnoses," reflecting the patients' psychiatric status at each testing session.

A series of vocabulary definitions had purportedly been included as part of the diagnostic battery; these definitions were presented to our respondents in test booklets, one at a time. Table 1 presents some examples of high- and low-pathology definitions, as well as some midscale definitions.

The respondents had two main tasks: (1) Based on the information they received during the course of the experiment, respondents were intermittently asked to indicate their *overall impression* of the target (i.e., Mr. Green, or the "group as a whole"), using a 7-point scale that ran from (1) normal to (7) highly disturbed. (2) In addition, respondents evaluated each of the definitions at the

TABLE 1 Sample Definitions

High pathology
VESPER: related to the sundown fundown
CUSHION: to sleep on a pillow of God's sheep
DIAMOND: a piece of glass made from roses
Low pathology
GOWN: garment you wear for lounging
CUSHION: a padded device for comfort
MICROSCOPE: a device for enlarging small objects
Midscale
DONKEY: a donkey is an animal raised like an ass
HAT: protection for the head ornament
JOIN: our friends who we love

time that it was presented, indicating those that appeared to reflect disturbed thinking; Ss also indicated their confidence in these "disturbance" judgments, using a 7-point scale that ran from (1) guess to (7) very certain. These ratings of the individual definitions were combined to yield a 14-point scale, ranging from (1) very certain this patient is normal to (14) very certain this patient is disturbed.

To enhance motivation, respondents were told that their judgments would be studied to see how closely they meshed with professional evaluations. Respondents were also told that the definitions would be presented in a scrambled order; that is, the items that had been obtained in a patient's earliest testing sessions would not necessarily be shown first.

Warm-up. The first four definitions in each booklet had been rated (by a norm group) as roughly midscale with respect to psychopathology; these items were used as a warm-up and to measure individual differences in response bias. Respondents who, on the average, rated these midscale items as indicating substantial disturbance were regarded as having a response bias that favored the disturbed end of the judgmental continuum.

Following the first three warm-up definitions, respondents were asked for their first *overall* evaluation of the target, using a 7-point rating scale (see below). This item was mainly intended to familiarize our respondents with the integration task; in addition, responses to this item were subsequently used as a measure of individual differences (response biases) in the integration process.

Induction. The warm-up items were followed by an induction series that consisted of 18 additional definitions, which were either low-pathology (norm ratings from 1.95 to 3.95 on an 11-point scale) or *high-pathology* (norm ratings between 9.00 and 10.68). Respondents were randomly assigned to the low- versus high-pathology booklets.

Postinduction trials. Following the induction series all Ss evaluated a set of 12 midscale definitions that were presented without any discernible break.

Overall ratings. Throughout the experimental session Ss were intermittently asked for their overall evaluations of Mr. Green or of the patient group as a

whole (depending upon the experimental condition to which each *S* had been assigned). Ratings were obtained on a 7-point scale that ranged from (1) normal to (7) highly disturbed. Five such ratings were collected during the induction trials; three additional ratings were obtained during the postinduction trials.

RESULTS

Table 2 presents the respondents' overall impression ratings as they proceeded through the experiment. Data are presented separately for respondents who were assigned to the individual and group targets and for those who had received high- versus low-pathology induction booklets. Most important, the last column in Table 2 presents the mean difference in overall ratings (high- minus low-pathology results) through the course of the experiment.

The respondents' overall impressions were initially reflective of the input definitions they had received. That is, during the induction trials, the Ss assigned to the high-pathology group felt that the target was more disturbed than the Ss in the low-pathology condition. Although this effect appeared most clearly among the respondents assigned to the group condition, the contrasting targets did not differ reliably in this regard; that is, the interaction between the different *targets* (Mr. Green versus the group as a whole) and *induction series* (high- versus low-pathology) was far from significant; $F(1, 60) = 1.53, p > .20$.

In the postinduction trials all Ss were presented with an extended series of midscale definitions. As more and more of these items were processed they might be expected to dilute the impact of the prior, more polarized, definitions; this, in turn, would reduce the difference between the impression ratings of respondents who had received the high- versus low-pathology induction series.

This result was clearly obtained among the respondents who had been told that the definitions all derived from a *single* patient (Mr. Green). Here, during the postinduction trials, the subjects who had been assigned to divergent induction groups came to adopt less disparate views of the target. Nonetheless, even at the end of the experiment, the subjects who had initially been presented with pathological definitions regarded Mr. Green as somewhat more disturbed than those who had received benign definitions (see Table 2).

Subjects who believed that the various definitions derived from a *group* of patients showed a clear-cut crossover pattern. Those who had been presented with high-pathology definitions in the induction series initially formed the impression that the target group was relatively disturbed. Subsequent judgments, however (during the postinduction trials), indicated that these subjects ultimately came to regard the target group as somewhat *less* disturbed than the Ss who had been assigned to a more benign (low-pathology) induction series.

To assess the reliability of these results the impression ratings that derived from the induction series and the postinduction trials were subjected to separate analyses of variance. The independent variables were as follows: (1) instructions (did the various definitions appear to derive from one patient or from a group of

TABLE 2 Mean Overall Judgments as a Function of the *Target* ("Green" versus "Group") and the *Induction* Service (High- versus Low-Pathology)

	High-Pathology		*Low-Pathology*		*Mean*
	Mean	*SD*	*Mean*	*SD*	*Difference*[b]
		Target: Mr. Green			
Induction ratings					
1	5.2	(1.0)	4.1	(1.4)	1.1
2	5.1	(1.3)	3.2	(1.5)	1.9
3	5.0	(1.2)	2.9	(1.5)	2.1
4	5.5	(1.1)	2.8	(1.6)	2.7
5	5.8	(1.0)	3.0	(1.6)	2.8
Postinduction ratings					
1	4.7	(1.2)	3.7	(1.4)	1.0
2	4.8	(1.0)	4.2	(1.2)	.6
3	4.7	(1.1)	4.0	(1.3)	.7
		Target: Group			
Induction ratings					
1	5.1	(1.2)	3.1	(1.0)	2.0
2	5.2	(1.1)	2.5	(1.5)	2.7
3	4.8	(1.4)	2.0	(1.2)	2.8
4	5.7	(.9)	2.0	(1.2)	3.7
5	5.3	(1.1)	2.8	(1.2)	2.5
Postinduction ratings					
1	3.5	(1.1)	4.3	(1.3)	−0.8
2	3.4	(1.4)	4.8	(1.2)	−1.4
3	3.1	(1.3)	4.2	(1.3)	−1.1

a. Standard deviations are presented in parentheses. ( )
b. Difference = Mean high-pathology minus mean low-pathology.

patients?), (2) induction group (high- versus low-pathology), and (3) the respondent's sex.

Induction-Trial Ratings

During the induction series, the respondents' overall impressions were directly reflective of the definitions that were presented. Respondents in the high-pathology condition viewed the target as substantially more disturbed than those assigned to the low-pathology group; $F(1, 60) = 90.05$, $p < .001$, omega squared = .57.[1] Moreover, as noted previously, this result was not significantly affected by the type of target that was involved—individual versus group ($p > .20$).

Postinduction Ratings

The most striking aspect of the postinduction data (Table 2) is the crossover pattern that was observed in the group condition. Ss assigned to the high-pathology induction initially viewed the patient group as more disturbed than did those who had received the low-pathology induction; this result was reversed, however, in the postinduction phase of the study. For respondents assigned to the individual condition, on the other hand, the Ss' initial impressions were maintained to some degree throughout the experiment. Subsequent analyses were designed to explore these effects more intensively.

An overall analysis of the postinduction data revealed a highly significant interaction between the pathology level of the induction definitions (high versus low) and their source (Mr. Green versus a group of patients); $F(1, 60) = 12.01, p < .001$, omega squared = .14. Among the subjects who thought Mr. Green to be the source, those in the high-pathology condition continued to view him as more disturbed than did those in the low-pathology group; $F(1, 30) = 3.93; p < .06$, omega squared = .08. Subjects assigned to the group condition showed a significant reversal of this pattern; that is, the Ss who were initially presented with high-pathology definitions now regarded the target (the group as a whole) as significantly *less* disturbed than did those who had initially received low-pathology definitions; $F(1, 30) = 8.53, p < .01$, omega squared = .19.

A correlational analysis. A logical analysis of the integration task suggests that the respondents' evaluations of the individual definitions should be positively related to their subsequent impressions; thus, a definition that seemed pathological would presumably contribute to an overall impression that the target was disturbed, rather than normal. We anticipated, however, that this relationship would probably be attenuated as a function of the time gap separating (1) the presentation of a given definition and (2) the respondents' subsequent impression rating (based on *all* the information that had been presented to that point). This attenuation would reflect the respondents' imperfect memories for the definitions they had seen initially and the reduced salience of these earlier inputs (if they were remembered at all).

We reasoned, moreover, that if the respondents assigned to the group condition found it difficult to recall the definitions that had initially been evaluated, these items would have a limited impact on subsequent judgments. Evaluations of the early definitions would then be weakly correlated, at best, with the respondents' later impressions regarding the group as a whole. For respondents in the individual condition, on the other hand, the initially presented definitions might be more memorable and have a longer lasting impact; hence, they should be more highly correlated with the respondents' later judgments of Mr. Green (as compared with the results observed in the group condition).

To assess this line of thought we correlated the respondents' overall target impressions (obtained at various points in the experimental session), with their evaluations of the individual definitions that had previously been presented. To

eliminate the substantial effect that we anticipated from Ss' assignments to the high- versus low-pathology induction booklets we employed a partial correlation procedure. Our partial correlation also controlled for two response biases: (1) between-subject differences in rating the *individual* vocabulary definitions and (2) response biases that might have affected the respondents' *overall* evaluations.[2]

Partial correlations were computed separately for the two target conditions (individual versus group). For each target the resulting correlations reflected the association between (1) the respondents' reactions to the various input definitions and (2) their subsequent overall impressions, holding constant the subjects' induction assignment (high- versus low-pathology), plus pertinent response biases. To reduce the "noise" in this analysis and facilitate a graphic presentation we grouped the results through a simple averaging technique, combining the correlations that involved adjacent triads of input definitions. Figure 1 presents the results of this analysis for subjects in the individual and the group conditions.

Consider the group condition first. The leftmost data point (.48) tells us that the three definitions that immediately preceded the various impression ratings were, on the average, substantially correlated with the respondents' subsequent impressions of the group as a whole. Continuing with this same group curve, we note that the preceding triad of definitions (definitions that had been presented four-six items prior to the impression rating in question) were somewhat less influential in affecting the respondents' judgments, for the mean of these correlations was only .29.

Comparison of the individual and the group conditions suggests a crossover pattern (see Figure 1). For the leftmost points in the graph (where the input definitions closely preceded the overall ratings), the individual definitions had a somewhat higher correlation with ratings of the group, as compared with the ratings of Mr. Green. As we move to the right of the graph, however, where the data focus on definitions that had been presented earlier in the session, this pattern is reversed; that is, we consistently find higher correlations in the individual condition.

Figure 1 includes 16 pairs of data points, 2 for each value on the x-axis. In comparing the results (correlations) obtained in the individual and the group conditions, note first that the group respondents show higher correlations at only four points on the graph. Assuming the null hypothesis, this distribution (four "reversals" out of a total of 14 comparisons and the two "ties") had a p-value of .10, based on a one-tailed sign test.

Although this result is provocative, the comparison is excessively general. That is, the sign test reported in the preceding paragraph does *not* take cognizance of the time gap between (1) the presentation of the individual definitions and (2) the respondents' subsequent impression ratings. It is interesting to note, moreover, that the difference between the two targets becomes substantially more impressive if we focus on the correlations that were

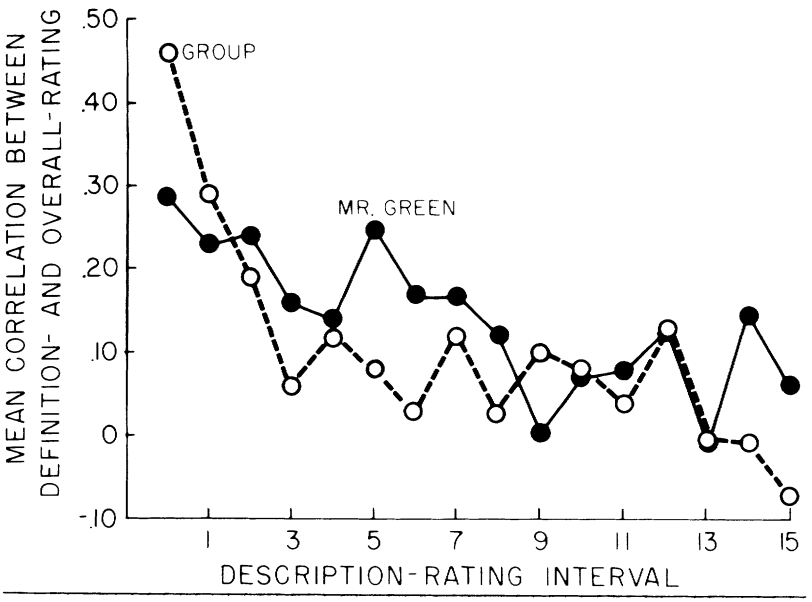

FIGURE 1 Mean correlations between overall impression ratings and the ratings assigned to previously presented definitions (see text).

obtained under circumstances involving some delay. Returning to Figure 1, if we omit the first (leftmost) data points from consideration, we find that there are only three instances in which the group condition yields higher correlations than the individual condition. Assuming the null hypothesis, this distribution (three reversals out of 13 comparisons and two ties) has a one-tailed p-value of less than .05. If we focus on the last 14 comparisons in Figure 1 (omitting the data associated with the first two x-values on the graph), the resulting distribution involves only two reversals out of 12 comparisons and two ties; $p < .02$.

At a conceptual level, Figure 1 is closely related to the postinduction results that are summarized in Table 2. In both cases the overall ratings in the group condition proved more susceptible to *recent* inputs than to inputs that had been presented earlier in the experimental session. Thus, for Ss in the group condition, the postinduction trials showed a reversal of the pattern that had initially been established (see Table 1), reflecting the reduced importance of the early (induction) items. In contrast, for Ss in the individual condition the initial (induction) trials had a more lasting impact; Ss who had initially received pathological definitions continued to regard Mr. Green as more disturbed than those assigned to the low-pathology induction.

Figure 1 reflects a similar pattern, in which the group respondents were less strongly affected by the definitions they had initially received, compared with

the individual respondents. It is important to note, moreover, that Figure 1 is based on an analysis that controlled for between-group effects due to the contrasting induction conditions. Table 2, in contrast, *highlights* between-group effects that derive from Ss' assignment to a high- versus low-pathology induction. The conclusions derived from these two lines of analysis thus seem mutually supportive (convergent) and increase our confidence in the reality and replicability of these results.

DISCUSSION

The results of this experiment emphasize the role of the information source (one patient versus a group of patients) as a significant factor in the integration process. Respondents who believed that the various definitions all emanated from a single patient behaved in general accord with an averaging model. Those who were initially represented with high-pathology definitions consistently rated Mr. Green as more disturbed than those who had been exposed to a more benign induction series. The difference between these groups was somewhat reduced, however, following the presentation of several midscale definitions (in the postinduction trials).

In contrast, among the respondents who were assigned to the group condition, the postinduction assessments showed a reversal of the pattern that would be anticipated from most models of information integration. Respondents who were initially presented with pathological definitions subsequently rated the target group as significantly *less* disturbed than those who had been assigned to a more benign induction series. Two processes may be involved here: memory failure (forgetting) and contrast.

(1) Forgetting. Table 2 and Figure 1 both suggest that for respondents in the group condition, as time passed, the definitions that had been presented initially did not produce the clear positive impact on the Ss' overall impressions that was observed in the individual-target condition. This may reflect a memory failure; unfortunately, however, no recall measures were collected in this study, and hence this possibility cannot be tested with the present data set. Supportive evidence for this position has, however, been reported by Wyer, Bodenhausen, and Srull (1984). These investigators suggest that the use of group targets in an impression task are associated with relatively poor recall performance, because of weaknesses in the respondents' item-to-item associations (an important type of recall cue).

(2) Contrast effects. Ratings of the individual midscale definitions (presented in the postinduction trials) showed clear evidence of contrast, both in the individual-target and the group-target conditions. Subjects who were assigned to the high-pathology induction regarded these definitions as relatively normal, compared with the respondents who had initially been presented with low-pathology definitions—a classic contrast effect (the mean ratings here were 6.3 and 9.1, respectively, $p < .001$). Although it is uncertain if this contrastive pattern reflects a central "perceptual" process, or a more peripheral "semantic"

effect (Upshaw, 1984), these biased assessments were doubtless an important influence on the respondents' overall impressions.

Considered together, the presumed failure of the group respondents to recall the early (induction) definitions, plus their contrastive reaction to the more accessible postinduction items, provides a possible explanation for the crossover pattern that is summarized in Table 2. Acting in concert, these processes might account for the surprising fact that the respondents who had initially received pathological definitions emerged with a *less* pathological impression of the group as a whole than those who were initially presented with a benign set of definitions. In contrast, the overall impressions of respondents in the individual-target condition continued to be dominated by the high- (or low-) pathology definitions that they had initially received.

Despite the plausibility of this account, however, an important experiment by Anderson and Hubert (1963) suggests that memory may be less critical to the impression process than our preceding comments might suggest. In their experiment (Anderson & Hubert, 1963), respondents indicated their liking for an unknown target person who had been described by a series of personality adjectives. In some conditions the subjects also attempted to recall the adjectives they had heard. The results showed a surprising disjunction between judgment and memory. Most important, when recall was not required, the impression ratings showed clear evidence of a *primacy effect* (the traits that were presented first had a greater impact than those that were presented later on). The recall measure, on the other hand, showed a strong *recency effect*, for the trait adjectives that were presented last were most successfully recalled.

In light of these results, the postinduction ratings that were obtained in our group condition are somewhat surprising, for they fail to show the primacy effects that have so commonly been reported in the past (Anderson & Barrios, 1961; Anderson & Hubert, 1963). Indeed, our results appear to reflect a type of recency phenomenon, in that the 18 induction definitions (high- or low-pathology) seemed to exert less influence on the respondents' final impressions than the 12 midscale definitions that were subsequently presented. We note, however, that the results reported by Anderson and his coworkers (e.g., 1961, 1963) have typically involved individual targets.

The role of the initially presented (induction) definitions is somewhat paradoxical. We have taken some care to emphasize the fact that these definitions appeared to have a limited impact on the group respondents' *final impressions*. On the other hand, these same induction items were very influential in producing a contrastive reaction to the individual definitions that were subsequently presented for evaluation. This then is our paradox: although the induction items were important determinants of the ratings assigned to the postinduction definitions, they appear to have been largely ignored when the respondents formed their overall impressions of the group.

The present results indicate then, that when group impressions are formed *inductively*, that is, through the case-by-case accumulation of relevant informa-

tion, they are unstable and appear to be heavily dependent on the information that was most recently received. The labile group impressions that were observed here are in interesting contrast to the rather unyielding stereotypes (generalized impressions of social groups) that have so often been noted in the prejudice literature. The divergence between these two sets of observations suggests the importance of external influences (e.g., the opinion of others), as opposed to pure induction (the focus of the present experiment) in the formation of real-world stereotypes.

NOTES

[1]This omega-square value refers to the amount of between-subjects variance that was attributable to the respondent's assigned induction group—high- versus low-pathology. Other omega-square values (presented below) should be similarly interpreted.

[2]Two types of response biases were assessed at the very beginning of the experimental session: (1) Between-subject differences in rating the individual definitions were quantified by computing the respondents' average ratings of the first four (midscale) definitions. (2) Individual differences in the integration process were quantified by noting the overall impressions that were conveyed via the first three of these midscale items (when evaluated as an overall set).

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