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Cognitive Representation of Personality Impressions: Organizational Processes in First Impression Formation

David L. Hamilton
University of California
Santa Barbara

Lawrence B. Katz
Yale University

Von O. Leirer
University of California, Santa Barbara

In three experiments subjects given either impression formation or memory task instructions read a series of behavior descriptions that either did or did not contain a highly distinctive item. In each study subjects given impression formation instructions recalled significantly more items than did subjects in the memory condition. Subjects given impression formation instructions were more likely to recall a distinctive item, but presence of a distinctive item in the stimulus list had little effect on recall of the other items. Results are discussed in terms of the organization of information acquired during the process of impression development.

For the last 15 years, the experimental study of impression formation processes has focused on testing and evaluating various models of information integration. The aim of this research has been to formulate, in precise and quantifiable terms, the relation between global judgments of a stimulus person and the collections of items of information on which they are based. The degree of precision achieved by some of these models has been impressive (e.g., Anderson, 1974).

Although this research literature has been informative regarding the effectiveness of various combinatory rules in predicting judgment responses, it has become apparent that this approach to studying the impression formation process is somewhat limited. One reason for the incompleteness of this approach is that these models shed relatively little light on the actual cognitive processes mediating the formation of first impressions. That is, it is not presumed that the mathematical operations specified in a combinatory rule represent cognitive operations performed by the perceiver. There is, then, a need for research focusing on the cognitive processes actually engaged in during the impression formation process.

A second respect in which information integration models are limiting as an approach to studying impression formation is reflected in the dependent variables used in these studies. Typically, the dependent variable is a judgment on a single scale, most frequently a judgment of one's "liking" for a stimulus person. Although such a response measure is an appropriate dependent variable for evaluating the predictive utility of various combinatory rules, a single evaluative judgment fails to adequately assess all that we typically mean when we speak of our impression of another person.

In the present article we shall adopt an alternative orientation. In the research reported here, we define an impression as the

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Requests for reprints should be sent to David L. Hamilton, Department of Psychology, University of California, Santa Barbara, California 93106.

perceiver's *cognitive representation* of another person and focus our inquiry on the cognitive processes involved in the development of that representation from the stimulus information available to the perceiver. According to this view, forming an impression is an active process in which the perceiver imposes an organization on the information available about a target person in an effort to develop a coherent representation of him/her. That is, as the perceiver acquires items of information about the target person, the encoded information becomes organized and represented in memory in terms of a cognitive structure that represents the perceiver's accumulated knowledge (including both acquired information and inferences drawn from it) about the target person. It is this cognitive representation (and not the informational facts taken separately) that constitutes the basis for the perceiver's subsequent judgments about the person (Jaccard & Fishbein, 1975; Lingle, Geva, Ostrom, Leippe, & Baumgardner, 1979). By studying the way in which perceivers acquire collections of discrete items of information and represent them in a coherent cognitive representation of a person, we should be able to gain some understanding of the organizational processes by which these memory structures emerge.

To provide a context for the discussion to follow, consider an experiment in which subjects are instructed to form an impression of a person on the basis of a serially presented list of descriptive facts (e.g., descriptions of behaviors). According to the above argument, the subjects would take an active role in evolving a coherent representation of the target person's personality from whatever information items they were given. In doing so, it is likely that the subjects would organize the serially presented information in terms of certain cognitive structures (e.g., implicit personality theories, cognitive schemas, prototypes) that they brought with them to the experiment. As part of accomplishing this organization, subjects would engage in a process of relating each new information item they came on to others that had preceded it in the list (and perhaps to an already emerging impression). This process of relating items of information to each other would lead to the formation of associations among their representations in memory and would result in a progressively expanding structure as more facts about the target person are processed. Recent research in cognitive psychology has shown that such organizational, integrative activity facilitates later retrieval of stimulus information (cf. Bransford & Johnson, 1973; Smith, Adams, & Schorr, 1978).

For purposes of comparison, suppose the same list of descriptive facts is presented to subjects in the context of a memory experiment, with instructions to try to remember as many of the behavior descriptions as they can. In this case there would be no need for subjects to impose a coherent organization on the information contained in the list, since the task's emphasis would be on accuracy in the recall of individual items. Consequently, subjects should devote less cognitive effort toward interrelating the items and be more likely to engage in other strategies, such as the rehearsal of each item as it appeared in the serial sequence. Whatever organization emerged in memory would be due in large part to characteristics of the stimulus sequence, reflecting, for example, the extent to which items were contemporaneously rehearsed.

In each of the experiments reported in this article, we make use of this distinction between impression formation and memory tasks. If the argument developed above is correct, then we would expect that the greater number of interitem associations developed by impression formation subjects would facilitate recall of the stimulus items. The hypothesis that subjects instructed to form an impression of a person described by a series of items would recall more of those items than would subjects instructed to remember as many of the items as they can was tested in each of these experiments.

In addition to the effects of this "processing set" manipulation, the present research examined the role of distinctive information in forming an impression. In the process of organizing the information available about the target person, a highly distinctive item might well serve as a focal point around which the emerging impression can be structured. We

might therefore expect a distinctive item to enter into more associative relationships with other items than would the less distinctive items. Such an effect would then be expected to increase recall in the presence of a distinctive item.

The literature on memory processes, on the other hand, suggests somewhat different consequences of the presence of a distinctive item in a serially presented list. Although it is known that the probability of recall of the distinctive item is much higher than that for nondistinctive items, evidence also suggests that recall of items near the distinctive item in the serial list may be somewhat depressed (cf. Wallace, 1965). This latter finding suggests some degree of interference in the recall of other items by the distinctive item. Thus, we hypothesized that the presence of a distinctive item in the stimulus list would facilitate recall of the other items in the impression formation condition, but that in the memory condition it would, if anything, result in decreased recall.

A second possible role of distinctive information in the impression formation process was also examined. If a coherent representation of a person emerges gradually as more and more information is incorporated into the developing impression, then subjects in this condition should be particularly aware of where, in the sequence of items received, the distinctive item had occurred. In contrast, if subjects in the memory condition attempt to learn the items individually, without considering the relations among their meanings, the position of the distinctive item in the stimulus sequence should be less apparent to them. This hypothesis was also tested in the experiments reported below.

Experiments 1 and 2

The first two experiments provided parallel tests of the above hypotheses and hence will be reported simultaneously.[1] In these experiments subjects read a series of 15 sentence predicates, each describing a particular behavior, for example, "took his dog for a walk in the park," "watched a movie on TV," and so forth. Half of the subjects were told that the study was concerned with processes involved in forming first impressions and were asked to form an impression of a person described by the series of statements. The other half of the subjects were told that the experiment was concerned with memory for verbal descriptions and were told to try to remember as many of the sentences as possible. The other manipulation was contained within the set of stimulus sentences. For half of the subjects, the middle item in the series of 15 statements was a highly distinctive behavior; for the other half the middle item was a common everyday behavior like the other items in the series.

Method

Subjects

The subjects in both studies were drawn from the student body of Southern Connecticut State University in New Haven, Connecticut. In Experiment 1 the subjects were 32 undergraduate students run in small groups in the social psychology laboratories at Yale University and were paid for their participation. Subjects in Experiment 2 were 32 master's level graduate students who were run in two groups as a part of their regular class sessions.

Design

The design of both experiments was a 2 (processing set: impression formation vs. memory) × 2 (middle item: distinctive vs. nondistinctive) × 2 (replications of middle item) analysis of variance (ANOVA). All three independent variables were between-groups factors. In both experiments there were four subjects in each of the eight cells of the design, with the exception that two subjects in Experiment 2 (each in a different cell of the design) failed to follow instructions on the recall task, requiring omission of these subjects from those analyses.

Stimulus Materials

The stimulus materials presented to the subjects consisted of a series of 15 sentence predicates, 14 of which described common, everyday behaviors (e.g.,

[1] In both of these studies, additional experimental conditions proved to be uninformative, and discussion of their results would be irrelevant for present purposes. Hence, in the interests of brevity and ease of presentation, only the overlapping portions of these experiments are reported here.

"read the evening newspaper," "cleaned up the house before company came," etc.). In addition to these items, one additional item was included in the eighth, or middle, position of the resulting 15-item sequence. To implement the distinctiveness manipulation, a highly distinctive negative behavior was used ("lost his temper and hit a neighbor he was arguing with" or "insulted his secretary without provocation"), and an additional neutral behavior was used in the middle position in the nondistinctive condition. Two replications of these middle-position items were used. Finally, two random orders of the 14 neutral context sentences were used, each order being presented to half of the subjects in each cell.

A comment regarding the manipulation of item distinctiveness is appropriate. There are many ways in which information can be distinctive, and the present operationalization reflects two properties commonly found in manipulations of distinctiveness in social psychological research. We wanted the distinctive items to stand out in relation to the common, everyday behaviors presented in the other items. The behaviors described in these items are nonnormative and hence are distinctive in the sense of unusualness or statistical infrequency. In addition, the behaviors described are negative in evaluation, whereas the other 14 items presented neutral or mildly desirable behaviors. Thus, the behaviors may also be seen as distinctive in the context of the other items in the stimulus set.

Procedure

Experiment 1. When all subjects for a given experimental session had arrived, each was handed a sheet giving general instructions that they were told to read to themselves while the experimenter read them aloud. The manipulation of processing set was implemented within these instructions. All participants in a given experimental session were administered the same instructional set; the order in which the impression and memory conditions were run was randomly determined in advance.

For subjects assigned to the impression formation condition, the instructions read as follows:

> The first part of this experiment is concerned with the way in which we form an impression of a person on the basis of his or her actions. In a few moments you will be shown a series of slides, each slide containing a single description of a person's behavior. Please read these sentences carefully, studying each one until the next slide appears on the screen. Do not be concerned with memorization—there are far too many individual items to remember. Try instead to form an overall impression of what the person who performed these various actions is like. At the end of the session, we will ask you a series of questions concerning the impression that you have formed of the person described in these sentences.

In contrast, the instructions for subjects in the memory condition read as follows:

> The first part of this experiment is concerned with the way in which we memorize verbal descriptions of action. In a few moments you will be shown a series of slides, each slide containing a description of a particular behavior. Please read these sentences carefully, studying each one until the next slide appears on the screen. Try to remember the exact wording of each single description as accurately as you can. At the end of the session, we will ask you a series of questions pertaining to the information contained in these sentences.

As can be seen, an attempt was made to make the two sets of instructions as comparable as possible while still effectively manipulating the desired processing sets.

Each slide was shown for a period of 8 sec, controlled automatically by a timer in the slide projector. Each group saw 15 slides, the middle or 8th one being either a distinctive or a nondistinctive item. This manipulation, along with the processing set manipulation, created the 2×2 design of primary interest in this research. In each of these four cells, four replication sets were run, created by orthogonally combining the two replications of the "middle" items with the two different serial presentation orders of the 14 context sentences. The middle item and serial ordering given to each group was randomly determined in advance.

After the slides had been presented, subjects were given a distracting task of 5 minutes duration to reduce their short term memory for the behavior descriptions. The dependent measures were administered immediately following the distracting task. When the dependent measures had been completed, the purpose of the experiment was explained, and any questions the subjects had were answered.

Experiment 2. The procedure and stimulus materials for Experiment 2 were essentially the same as those for Experiment 1, except that all materials were contained in booklets distributed at the start of a class session. To control exposure time for each behavior description, the experimenter sounded a bell at 8-sec intervals as a signal to turn to the next page of the booklet. The distracting task in this case lasted 15 min. Booklets for the different experimental conditions were distributed randomly throughout the two classes participating in the study. Thus, all conditions of the experiment were run simultaneously in both class sessions. The nature of the experiment and the hypotheses being tested were explained at the conclusion of the session.

Dependent Measures

Free recall. Following the distracting task, all subjects were given a sheet on which they were instructed to list as many of the behavior descriptions as they could remember. Subjects were told not to

worry about word-for-word accuracy but at the same time to come as close to each item's original wording as possible. Four minutes were allowed for completion of this free recall task, a time period that was sufficient in essentially all cases.

Before–after discrimination task. Following the free recall measure, subjects were given another sheet that presented, at the top of the page, the item that had appeared in the eighth or middle position in the series of 15 sentences the subjects had read. Below this item were listed the other 14 items, arranged in a scrambled order. The instructions informed the subject that the item at the top of the page had been the middle item in the series they had seen and that "some of the other sentences are listed below." For each of the other 14 items, they were asked to indicate whether it had come before or after this middle item in the stimulus sequence.

Confidence ratings. For each of the 14 judgments made in the before–after discrimination task, subjects were asked to rate their confidence in the correctness of their response for that item. Ratings were made on a 10-point scale, where 1 indicated "extremely unconfident" and 10 represented "extremely confident." These confidence data are available only for Experiment 1.

Results

The data from Experiments 1 and 2 were analyzed by a 2 (processing set: impression formation vs. memory) × 2 (item distinctiveness: distinctive vs. nondistinctive middle item) × 2 (Replications 1 and 2) ANOVA, all independent variables being between-groups factors.

Free Recall

Impression versus memory set. It was hypothesized that subjects given impression formation instructions would evidence better recall of the stimulus items than would subjects in the memory condition. To test this hypothesis, the number of items *other than the middle item* recalled by each subject was determined, and these scores were used in the ANOVA. The middle item was omitted from these recall scores due to expected differential recall of the distinctive and nondistinctive middle items. The criterion for accurate recall of an item was fairly liberal. As indicated in the recall instructions, word-for-word accuracy was not necessary (and, in fact, was infrequently achieved). If the subject's recall of an item contained the primary concept or meaning expressed in the behavior description, it was scored as accurate recall.

As is clearly evident in Figure 1, in both Experiments 1 and 2 subjects given impression formation instructions recalled more items than did memory condition subjects. The main effect for the processing set manipulation was highly significant in both Experiment 1, $F(1, 24) = 7.57$, $p < .02$, and Experiment 2, $F(1, 22) = 8.86$, $p < .01$. These results provide strong support for the hypothesis.

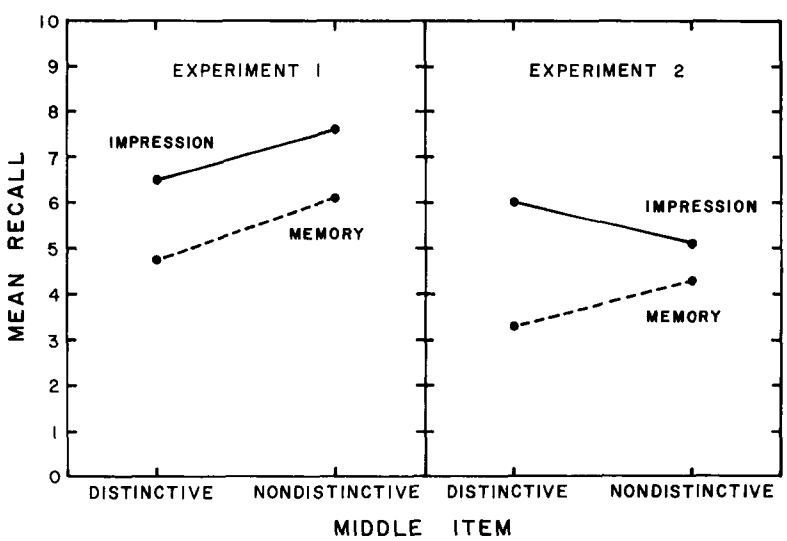

Figure 1. Mean number of items recalled in Experiments 1 and 2.

Effects of the distinctive item. It was hypothesized that the presence of a distinctive item would have a facilitating effect on recall in the impression formation condition and an interfering effect on recall in the memory condition. This hypothesis was tested by the interaction term of the ANOVA. The results of the two experiments differed somewhat and provided only weak support for the hypothesis. In Experiment 1 the interaction term did not approach significance, as indicated by the nearly parallel lines shown in the left panel of Figure 1. Instead, a significant main effect for item distinctiveness, $F(1, 24) = 4.48$, $p < .05$, indicated that there was an interference effect due to the distinctive item in both the impression formation and memory conditions. The pattern of results obtained in Experiment 2 conformed more closely to the predicted findings, although the interaction term only weakly approached significance, $F(1, 22) = 2.52$, $p < .13$. Thus, although in both experiments the distinctive item tended to lower recall in the memory condition, its effects on recall in the impression formation condition were less consistent and inconclusive. In sum, the hypothesized effect of a distinctive item on free recall must be viewed with considerable caution.

Recall of middle item. Table 1 presents the percentage of subjects in each condition of Experiments 1 and 2 who recalled the middle item. In Experiment 1 the distinctive item was recalled by more subjects than was a nondistinctive middle item in both the impression formation and memory conditions ($p < .05$ and $p < .01$, respectively, by Fisher's exact probability test). In Experiment 2 this difference was evident only in the impression formation condition, although not significantly so ($p < .15$). The percentages shown for Experiment 2 suggest a possible interaction effect of the two independent variables on recall of the middle item. However, given the small sample sizes, a test of this interaction (cf. Langer & Abelson, 1972, pp. 28–29) was not significant.

Table 1
Percentage of Subjects Who Recalled Key Item: Experiments 1 and 2

Processing set	Middle item	
	Distinctive	Nondistinctive
Experiment 1		
Impression	87.5	25.0
Memory	100.0	25.0
Experiment 2		
Impression	71.4	28.6
Memory	37.5	28.6

Before–After Discriminations

Accuracy. On the before–after discrimination task, subjects were asked to indicate, for each of the 14 context items, whether it came before or after the middle item in the stimulus sequence. It was predicted that subjects in the impression formation–distinctive item condition would make the fewest errors on this task. The hypothesis states that one cell of the design will differ significantly from the other three. To test this hypothesis, the number of errors made by each subject was determined and analyzed by an a priori contrast. As indicated in Figure 2, the fewest errors in both experiments were made by subjects in the impression formation–distinctive item condition, as predicted. The a priori contrast for Experiment 1 was not significant, due to the unexpectedly (and unexplainably) high accuracy of subjects in the memory–nondistinctive item condition; because of this, the interaction term in the ANOVA was significant, $F(1, 24) = 7.24$, $p < .02$. In Experiment 2 the data fit the predicted pattern exactly, and the planned comparison was highly significant, $F(1, 24) = 7.16$, $p < .025$.

Confidence ratings. In Experiment 1 subjects rated their confidence in each of their before–after discrimination judgments. These ratings were summed across the 14 items for which the judgments were made. An ANOVA of these total confidence scores yielded no significant results.

Discussion

The first two experiments have provided clear evidence that subjects instructed to form an impression of a stimulus person on the

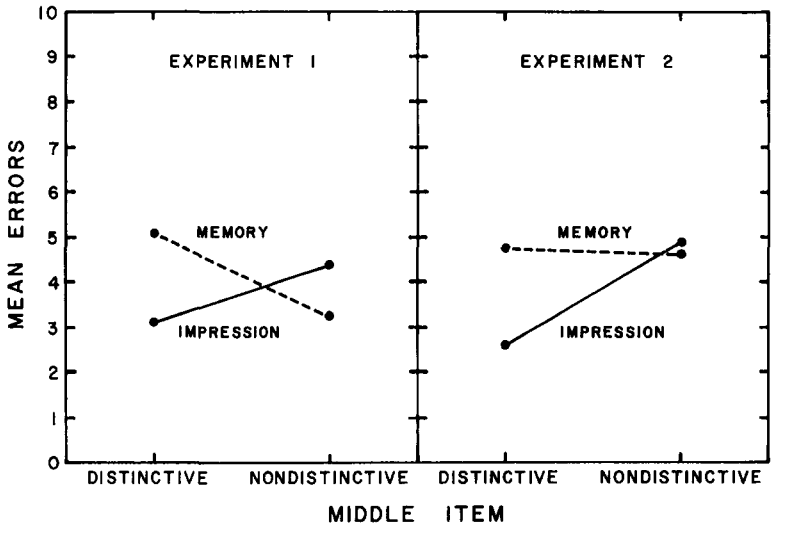

Figure 2. Mean number of errors on the before–after discrimination task in Experiments 1 and 2.

basis of a series of behavior descriptions are subsequently able to recall more of those items than are subjects instructed to commit them to memory. This finding supports the view that forming an impression of a person inherently involves integration of the available items of information into some structural organization, that this process results in more extensively developed associations among those stimulus items, and that these associations ultimately facilitate later recall. In contrast, even though interitem associations may to some extent be formed in a memory task, such integration of items is not an inherent consequence of this task.

The role of a highly distinctive item in the formation of an impression or representation of a person remains unclear. The influence of the distinctive middle item on free recall differed somewhat in these two experiments and was not a powerful effect in either case. However, results of the before–after discrimination task indicated that impression formers in the distinctive item condition manifested the greatest degree of accuracy in both experiments; these subjects were able to accurately identify which items had preceded and which had followed the distinctive behavior description. These findings, although more suggestive than conclusive, are consistent with the view that in forming an impression, an attempt is made to relate each new piece of information to the others already processed and integrated into a continuously emerging representation of a person.

Experiment 3

In the first two studies, the key item whose distinctiveness was manipulated always occurred in the middle position of the stimulus sequence. The impact of a distinctive item may, however, differ depending on whether that item occurs relatively early, toward the middle, or relatively late in the stimulus sequence. In addition to providing a further test of the hypotheses investigated in the first two studies, Experiment 3 was designed to examine this possibility.

In both Experiments 1 and 2, recall performance of subjects in the memory condition was somewhat impaired when the stimulus list included a distinctive item. If this difference were due to the distinctive item disrupting rehearsal of other items in the list, then this effect should be greater when that item occurs early, rather than late, in the list, since in the latter case the preceding items would be well rehearsed before the disruptive influence occurs. Thus, varying the position of the distinctive item should result in differences in recall of the other items, with poorest

recall when that item occurs early and improved recall as that item occurs later in the stimulus list.

In contrast, our assumptions about the impression formation process suggest an alternative outcome. In forming an impression, organization of information and formation of interitem associations should occur regardless of the distinctive item's position in the stimulus sequence. If so, then varying the position of the distinctive item should have little influence on recall of other items in the stimulus list.

In sum, several hypotheses were tested in Experiment 3. The two major hypotheses examined in Experiments 1 and 2 were tested again, namely (a) that subjects in the impression formation condition would recall more items than subjects in the memory condition and (b) that a distinctive item in the stimulus list would facilitate recall of impression formation subjects but impair recall for those in the memory condition. In addition, it was predicted (c) that the position of the distinctive item in the stimulus sequence would have little influence on recall in the impression formation condition, but in the memory condition it would impair recall more when it occurred early, as opposed to late, in the stimulus list.

Method

Subjects

The subjects in the experiment were 120 undergraduate students at the University of California at Santa Barbara (UCSB). All subjects received course credit for their participation. Subjects were run in small groups (1–6 persons) in the social psychology laboratories at UCSB.

Design

The major independent variables were processing set (impression formation vs. memory), key item (distinctive vs. nondistinctive), and position of key item (early, middle, late). There were 10 subjects in each cell of the resulting $2 \times 2 \times 3$ design. In addition, two complete replication sets of both context sentences and key items (distinctive and nondistinctive) were constructed. In contrast to the previous experiments, in which each subject was presented with only one stimulus set, in this experiment two replications of the same stimulus condition were given to each subject. That is, subjects read a series of behavior descriptions, completed a filler task, and were administered the dependent measures, as in the previous studies. They were then given a second, totally different set of sentences, which represented a replication of the same stimulus condition they had received first, and after another filler task, completed the dependent measures with regard to this second stimulus sequence. Thus, in addition to the three major independent variables, there were two replication sets, and the order in which these sets were presented was counterbalanced.

To maintain comparability of the present analyses with those of the earlier studies and for substantive reasons to be indicated below, the primary results are based only on the first stimulus set that was presented to the subjects. Half of the subjects received Replication 1 first, and the other half received Replication 2 first. Thus, the design for the major analyses presented below was a 2 (processing set) $\times$ 2 (key item) $\times$ 3 (position of key item) $\times$ 2 (replication sets) ANOVA, with all factors being between-groups factors.

Stimulus Materials

The stimulus sets presented to the subjects were similar to those used previously, although in this case the list consisted of 11, rather than 15, items. Two replications of 10 context sentences and of the distinctive and nondistinctive key items were developed. The position of the key item in the series of behavior descriptions was systematically varied. In the 11-item sequence, the key item occurred in either the 2nd, 6th (middle), or 10th position.

Procedure

The procedure for Experiment 3 was similar to that used in the previous experiments. The instructions administered to induce the impression formation versus memory processing set manipulation were essentially the same as those used in the first two studies. The stimulus sets, consisting of 11 sentence predicates, were presented in booklet form, one behavior description per page. Tape recorded instructions directed the subjects, at 8-sec intervals, to "turn to the next page." After a brief distracting task, subjects completed the dependent measures. At this point subjects were informed that they would be given a second set of behavior descriptions and were asked to perform the same tasks as they had just completed. The impression/memory instructions were readministered, and a second stimulus booklet was given. Each subject received a replication of the same Distinctiveness $\times$ Position of key item stimulus condition that he/she had received previously. The same dependent measures were administered following completion of the stimulus presentation. At the conclusion of this procedure, the purpose of the experiment was explained, and any questions the subjects had were answered.

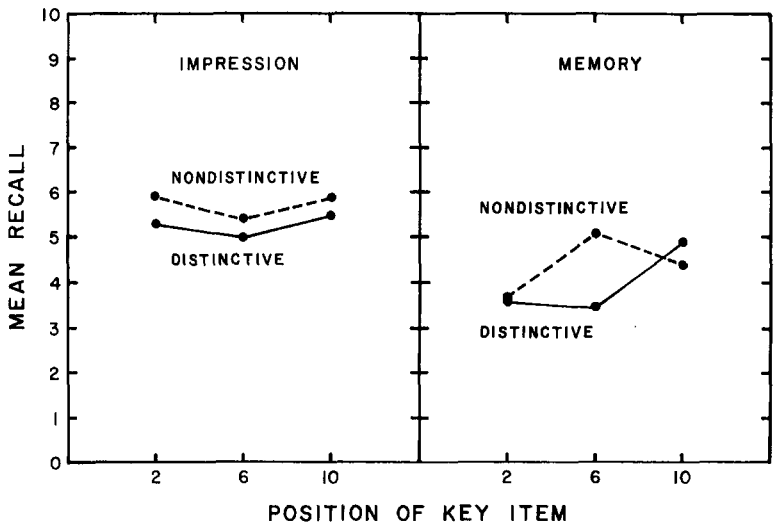

Figure 3. Mean number of items recalled in Experiment 3. (Data are from the first stimulus set only.)

Dependent Measures

The dependent measures used in Experiment 1 were also used in Experiment 3: free recall, before–after discrimination task, and confidence ratings in the before–after judgments. On the before–after discrimination task, the key item identified in the instructions had, of course, actually occurred in either the 2nd, 6th, or 10th position in the 11-item sequence. Consequently, the instructions in this experiment simply identified the item as one of the phrases in the booklet (rather than as the "middle" item, as in the first two studies).

In addition, a series of other ratings were obtained in this study. The next page of the booklet had the following instructions at the top: "Consider that all of the sentences presented earlier described a single person. To what extent do you think you would like that person?" The first sentence of these instructions was necessary, since memory condition subjects presumably had not, up to this point, thought of the stimulus sentences as pertaining to the same person. This instruction led them to consider this possibility for the first time. These instructions were followed by two rating scales on which subjects indicated how much they would like the person and the extent to which they thought the series of sentences could describe a single person. Both of these ratings were made on 10-point scales with appropriate labels at the endpoints. The final page of the booklet contained 10 10-point trait rating scales. The 10 personality attributes to be rated were selected on the basis of the five factors reported by Norman (1963), two scales being included to represent each of the five factors.

Results and Discussion

The presentation of the results will focus first on the analyses of the data obtained from the first stimulus replication to which the subjects responded. We will then turn to a consideration of some findings comparing results for the first and second stimulus sets.

Free Recall

Impression versus memory set. The mean number of items recalled (excluding the key item) from the first stimulus set in each condition is shown in Figure 3. As in the first two experiments, the main effect for processing set was significant, with greater recall evidenced by subjects in the impression formation than in the memory condition. Analysis of the data yielded a highly significant main effect, $F(1, 96) = 20.38$, $p < .01$. The mean number of items recalled by subjects in the impression formation condition was 5.50, compared to an average of 4.20 for the memory condition subjects. Thus, the major finding obtained in the first two experiments was replicated in Experiment 3.

Other effects. Experiment 3 provided another test of the hypothesis that the presence of a distinctive item in the stimulus list would

facilitate recall of the other items in the impression formation condition, but would interfere with such recall in the memory condition. As in the first two studies, this hypothesis failed to receive statistical support (for the interaction of processing set and distinctiveness of the key item, $F < 1$).

It was hypothesized above that varying the position of the distinctive item would have differential effects in the impression formation and memory conditions. Although this manipulation was not expected to influence the recall performance of impression formation subjects, it was predicted that in the memory condition, performance would improve as the distinctive item occurred later in the stimulus sequence. Examination of the pattern of means in Figure 3 reveals some support for this hypothesis. However, the three-way interaction appropriate to testing the hypothesis was not statistically significant, $F(2, 96) = 1.25$, *ns*.

Recall of key item. The percentage of subjects in the impression formation and memory conditions who recalled the key item (distinctive or nondistinctive) is shown in Table 2. In the impression formation condition, the distinctive key item was recalled by significantly more subjects than was the nondistinctive key item, $\chi^2(1) = 8.30$, $p < .01$, but this difference did not occur in the memory condition. The interaction of processing set and distinctiveness on recall of the key item was highly significant ($Z = 2.66$, $p < .01$). The position in which the key item occurred had little influence on whether or not it was recalled.

Thus, the distinctive item was recalled by most subjects if they were given an impression formation set but not if given memory instructions. This pattern, which was also observed in Experiment 2 (though nonsignificantly so), has two interesting implications. First, the failure of memory condition subjects to recall the distinctive item suggests that this manipulation was ineffective in this condition. If so, then the weak evidence for the interfering effects of a distinctive item on recall of items is not surprising. Second, the fact that the distinctive item *was* recalled by most impression formation subjects suggests that this manipulation of distinctiveness may be context bound. That is, perhaps the negative behavior described in this item was distinctive only when considered in the context of (i.e., in relation to) the neutral and mildly desirable behaviors described in the other items. If so, then this pattern of findings can be viewed as indirect evidence of the greater integrative activity hypothesized for impression formations, as compared to memory, condition subjects.

Table 2
Percentage of Subjects Who Recalled Key Item: Experiment 3

Processing set	Key item	
	Distinctive	Non-distinctive
Impression	76.7	40.0
Memory	43.3	53.3

Before–After Discriminations

Accuracy. The number of errors made on the before–after discrimination task was determined for each subject. Analysis of these data yielded a significant main effect due to position of the key item, $F(2, 96) = 8.84$, $p < .01$. Subjects made significantly fewer errors when the key item occurred in the second position, a result reflecting the salience of items occurring early in a stimulus sequence. In addition, the three-way Processing Set × Distinctiveness × Position of Key Item interaction was of borderline significance, $F(2, 96) = 3.03$, $p < .10$. This interaction was due primarily to the near perfect performance of impression formation subjects when a distinctive item occurred early in the list and the particularly poor performance of memory condition subjects when a nondistinctive item occurred late in the stimulus sequence.

In the first two studies, when the key item occurred in the middle position, superior performance was observed in the impression formation–distinctive item condition. This finding was not replicated in this experiment.

Confidence. For each before–after judgment, subjects rated their confidence in that judgment being correct. The average of each subject's confidence ratings was then determined. Subjects in the impression formation condition expressed greater confidence (M = 7.62) in the before–after judgments than did subjects in the memory condition (M = 6.76), $F(1, 96) = 4.48$, $p < .05$.

Ratings of Stimulus Persons

Subjects rated the stimulus person on a series of 10 trait scales, rated their liking for the person described by the sentences, and rated the extent to which the items could reasonably describe a single person. Two analyses were performed to examine the subjects' overall evaluative perceptions of the stimulus person. Each subject's ratings on the 10 trait scales were summed and used as a general measure of the evaluative character of the subject's inferences about the person. In addition, the liking ratings were analyzed as an indicator of the subject's personal affective reaction to the stimulus person. Neither of these analyses produced any substantively interesting findings. Other than one effect due to differences between replication sets, the only significant result was a main effect due to item distinctiveness: As one would expect, subjects gave less desirable trait ratings to the person described by a negative distinctive behavior. Finally, the analysis of ratings on the "single person" scale yielded no significant results.

Differences Between First and Second Stimulus Set Data

The processing set manipulation used throughout this series of experiments leads subjects to expect that they will be performing different kinds of tasks. For subjects in the impression formation condition who expect to be asked about the target person's personality, the recall task comes as a surprise. Similarly, memory condition subjects, expecting that they will be asked to retrieve the stimulus information, do not anticipate having to make personality ratings. When another stimulus set is presented following completion of the dependent measures, all subjects have in common the knowledge of what tasks they will be asked to perform. Our intuition was that this difference between the first and second sets could have an important impact on how the stimulus descriptions were processed by the two groups of subjects. Impression formation subjects, knowing that they would have to recall the items, might alter their strategy in processing this information. Similarly, memory condition subjects, knowing that they would have to rate a stimulus person described by the items, might process the items with that task in mind. If these intuitions are correct, then the distinction between these two processing sets might be undermined for the second stimulus set.

In Experiment 3 this question was examined empirically by presenting subjects with two stimulus sets, the second one being a replication of the stimulus condition presented in the first set. The design of the experiment then becomes a 2 (processing set) × 2 (key item) × 3 (position of key item) × 2 (order of replications) × 2 (replication sets) design, with repeated measures on the last factor. The Order × Replication interaction in the ANOVA represents differences on a dependent measure as a function of having already completed a previous stimulus set. For several of the dependent measures, this interaction term was highly significant. Thus, it cannot be assumed that the data from the second stimulus set show the same pattern as in the first. It is for this reason that the presentation of the findings of this experiment has focused on results based only on the subjects' responses to the first stimulus set.

A detailed report of the findings from this analysis would be of tangential interest and hence will not be presented. However, one potentially interesting finding was obtained, though its interpretation must remain somewhat speculative. On the dependent variable of primary interest, free recall, the three-way Processing Set × Order × Replication interaction was highly significant, $F(1, 96) = 17.57$, $p < .01$. In effect, this result indicates that the difference between the impres-

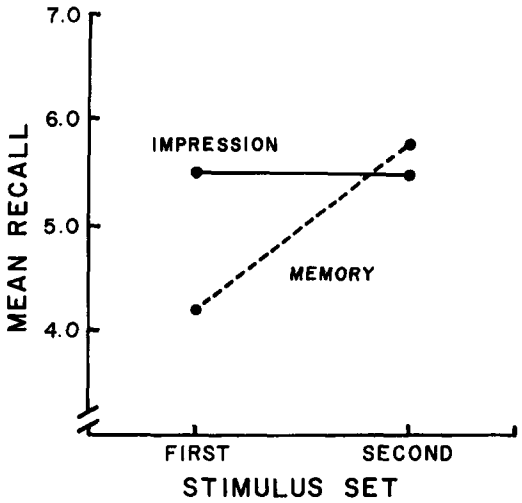

Figure 4. Mean number of items recalled for first and second stimulus sets in Experiment 3.

sion and memory conditions differed for the two stimulus sets. The data from this analysis have been collapsed into first and second stimulus sets received (combining order and replication), and the mean number of items recalled by impression and memory subjects for each set is shown in Figure 4. The left half of this figure shows the recall means reported earlier, indicating that in the first stimulus set they received, impression formation subjects recalled more items than did those in the memory condition. In their subsequent recall of items from the second stimulus set, however, the difference between these two groups was trivial. More specifically, subjects in the memory condition improved dramatically, whereas the performance of impression subjects was almost identical to their level of recall for the first stimulus set.

Although there may be several explanations for why recall performance in the memory group would improve while that of the impression subjects would remain stable, this pattern of results can be interpreted as consistent with the processes described in the Introduction to this article. Specifically, we would suggest that in processing the information from the first stimulus set, the impression formation subjects developed associations among the items that facilitated recall, resulting in performance superior to that of the memory subjects, who may have used various other cognitive-processing tactics (e.g., rehearsal, memorization of key words, etc.) that result in interitem connections being formed to a lesser extent. However, after the dependent measures for the first stimulus set had been completed, and thus when the second set was presented, *all* subjects were aware that the questionnaire measures would require that they make ratings of a person described by these behavior descriptions. Consequently, in processing the items from the second (but not the first) stimulus set, memory subjects may have regarded the items as describing a common object—a person they would be asked to rate. In effect, the memory subjects may have been processing the stimulus information in much the same way as those in the impression formation group, thus producing more interitem associations than they had for the first stimulus set. This would result in the improved recall performance shown in Figure 4. In the impression formation condition, on the other hand, the task requirements clearly included this integrative activity for both stimulus sets, resulting in a consistent level of performance.

General Discussion

The most consistent finding obtained in the three experiments reported above was the superior recall of impression formation subjects, as compared to those in the memory condition. The main effect for this processing set manipulation was highly significant in each experiment. These results provide strong support for the primary hypothesis underlying this research.

At first glance this finding may seem rather surprising. After all, memory condition subjects were told that the study was concerned with memory processes, instructions that strongly implied that they subsequently would be asked to remember the items presented to them. Impression formation subjects, on the other hand, were simply told to form an impression and hence had no "advance warning" that a recall task would be forthcoming. However, this result follows directly from the assumption we made at the

outset—that the process of forming an impression inherently involves integrating the available information into an organized cognitive representation of the target person. Such organization of information would facilitate later retrieval of the individual descriptive items.

Even though we have interpreted this finding as reflecting differences between processing set conditions in information organization, other explanations cannot be ruled out. For example, the instructional manipulation may have induced impression formation subjects to attempt to comprehend the meaning of the items to a greater extent than memory condition subjects, who may have simply focused on retaining the exact wording of the items. The liberal criterion used in scoring recall (i.e., word-for-word accuracy was not necessary) may then have favored subjects in the impression condition. This explanation suggests that use of a more stringent recall criterion might reduce differences between these conditions in recall performance. Although this possibility cannot be totally dispelled, its viability is questioned by two observations. First, perfect word-for-word accuracy occurred relatively infrequently in the recall protocols; use of this criterion would result in low recall scores in both impression formation and memory conditions. Second, in Experiment 3 recall scores were also determined according to a criterion requiring closer (though not perfect) accuracy to the original wording than our more liberal criterion. Analysis of these data yielded results essentially identical to those reported above.

A number of theoretical perspectives can be adopted in thinking about the integrative, organizing process we have discussed. For example, a network model of memory (e.g., Anderson & Bower, 1973) might view the items as associated through their common linkages with a "person node" around which information about the target person is organized (see Hastie & Kumar, 1979, pp. 32–34, for an illustration of how such a model might be conceptualized). Alternatively, schema theory (cf. Rumelhart & Ortony, 1977) might conceive of the acquired information as organized into various schematic data structures. In this case items would be associated with each other through their being stored together in the same location in memory. The present experiments do not provide an empirical basis for evaluating the relative usefulness of these (or other) theoretical orientations. In either case, however, the resulting organization produces the consequence that recall of one item facilitates retrieval of other descriptive items with which it has come to be associated in memory. It is this organization that we believe is a natural consequence of the impression formation process.

In contrast to the impact of the processing set manipulation, the manipulation of item distinctiveness had surprisingly little effect on free recall performance. We had sought to use, as distinctive items, behaviors that were distinctive in their own right as infrequently occurring acts. Failure of memory subjects to differentially recall these items suggests that this manipulation was ineffective, at least in this condition. If so, then the lack of any systematic effect of distinctiveness on recall in the memory condition is understandable. We had also hypothesized that distinctive information would facilitate recall in the impression condition, but no support for this prediction was obtained. The fact that the distinctive items were to some extent evaluatively inconsistent with the context in which they were embedded may have prevented these items from serving as a focal point for the organization of information, as we expected. Perhaps the use of items of information that are distinctive but not evaluatively inconsistent with other items would have produced results providing stronger support for the hypothesis.

Although the distinctive item had little effect on recall of other stimulus items, the probability of recall was consistently higher for a distinctive than for a nondistinctive key item in the impression formation condition. Similar results have been reported by Hastie and Kumar (1979). Such findings indicate that distinctive information about a person is more likely to be retained and incorporated in the perceiver's cognitive representation of the person.

The results of these experiments provide encouraging support for the general perspective underlying the present approach to understanding impression development. Nevertheless, it is clear that a number of questions remain that will need to be addressed in future research. For example, given the sizable and consistent difference in recall performance of subjects in the impression formation and memory conditions, it becomes important to determine where, in the processing of information, the memory and impression formation processes diverge. Intuitively, it seems probable that a large part of the organizational activity involved in impression development occurs during the encoding of information into memory. However, additional organizing processes may continue after information input has been completed and may even occur as a part of the retrieval process. This issue remains unresolved at the present time. Second, future studies will need to go beyond the present research in investigating the organization of information more directly, perhaps by applying methods that cognitive psychologists have developed for studying subjective organization to this topic. Finally, we need to determine the relationship of findings obtained in this approach to investigating conceptions of persons, using free recall and related tasks, to existing knowledge about impression formation, based largely on research using evaluative judgments. The linkages between how information becomes organized and stored in a cognitive representation of a person and the nature of the perceiver's judgments about that person, both of which are based on the same information, is an unresolved issue that will require attention.

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