

SELF-SCHEMATA
AND
THE PRIMACY EFFECT

by

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Self-schemata and the Primacy Effect

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ABSTRACT

One of the most intriguing aspects of the way in which we form impressions of others is the role played by the order of presentation of personality trait information. It has been consistently found that the information presented first has a greater impact on the overall impression formed than information given later in the same description. This overwhelming influence of first-presented information has been called the primacy effect. Although the primacy effect has been shown to be a robust phenomenon, little has been done to examine possible individual differences in the degree of its expression.

As well, several recent studies have indicated that the dimensions people use as the basis for evaluating others are those which they select in describing themselves, so that the product of such evaluations may reflect as much about the perceiver as the perceived. The present study looks at how the operation of the primacy effect is influenced by the way in which people see themselves.

244 female undergraduate students were asked to complete self-description forms containing five dimensions related to the concepts of Introversion and Extraversion. 73 of these subjects described themselves extremely and consistently in either an introverted or extraverted manner. (These were designated, respectively, Introvert schematics or Extravert schematics.) For an additional 59 subjects, neither Extraversion nor Introversion was present to any large or consistent extent in the way they

described themselves. (These subjects were designated Aschematics.) The remaining 112 subjects were not included in the analyses.

It was hypothesized that a) the primacy effect would be weakened for schematic subjects when the descriptions of other persons which were given to them contained information congruent with their own self-description, and that b) the content of the impressions formed by the schematic subjects would be polarized in the direction of their self-description (Introvert schematics evaluating the persons described to them as being generally more Introverted, Extravert schematics evaluating the persons described to them as being generally more Extraverted).

Subjects were asked to form general impressions of three people described to them on an audio tape (target-persons) and express those impressions in terms of the likelihood of the target-persons' performing behaviors related to the taped descriptions. Analyses of the behavioral predictions revealed that information presented first did influence the impressions formed by Aschematic subjects while the impressions formed by Schematic subjects did not reveal an effect of the order of information presentation. It was concluded that the primacy effect was indeed weakened in subjects for whom the elements of a description of another person were related to those dimensions chosen to describe themselves. Support for the polarization hypothesis was not obtained.

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DEDICATION

To Glenda, Andrea, Bryan and Anna

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A. Introduction

In recent years the work of social psychologists has taken on an increasingly cognitive orientation. There are few phenomena in the realm of social behavior which have not been addressed in terms of the individual's interpretation of experience. Although subjective experience has for ages been the concern of philosophers and psychologists alike, what distinguishes current theorists' attempts at understanding the ways in which individuals come to terms with their social environment from those of their predecessors is the extent to which their ideas are amenable to testing. A good example is the difference between the "covert social acts" of George Mead's Symbolic Interactionism (1934) and the "a priori causal theories" described by Nisbett and Wilson (1977).

As intuitively plausible as the notion of 'covert social acts' is, namely that we possess personal interpretations or versions of overt, public acts, little else can be done beyond acknowledging and appreciating the numerous possibilities that can be present in an individual's interpretation of events. By contrast, the investigation of 'a priori causal theories' (beliefs about the "...extent to which a particular stimulus is a plausible cause of a given response.") (Nisbett & Wilson, 1977) has been able to predict how the presence of such common beliefs can result in individuals' commission of inaccurate

causal inferences.

The range of interest in what has come to be known as social cognition is tellingly revealed in the titles of several recent texts: Personality, Cognition, and Social Interaction, (Cantor & Kihlstrom, 1981); Person Memory: The Cognitive Basis of Social Perception, (Hastie, Ostrom et al, 1980); and Social Cognition: The Ontario Symposium on Personality and Social Cognition (Higgins et al, 1980). Schneider, Hastorf and Ellsworth's Person Perception, now in its second edition, is , essentially, a compilation of the work done in the numerous areas now broached by the social cognition approach. The interests of these researchers in general include concerns with the effects of individual difference factors in the encoding, retrieval, and interpretation of social information. Of central concern to a number of investigators has been the manner in which we form impressions of others' intentions, attitudes and dispositions. Such studies have been grouped under the general heading of person perception.

One aspect of person perception which has been of longstanding interest to social psychologists, is the effect which order of presentation has on the formation of impressions of others. The inordinate influence of first-presented information on impression formation has been called the primacy effect.

The Primacy Effect

Knowledge of others comes to us in many forms and over the course of numerous occasions. Rarely at first meeting do we have access to all we need to know about someone in order to make reliable evaluations of their personality. Nevertheless, we do not usually hold our initial judgments in abeyance. Far from it; we more often than not make decisions regarding others' intentions, dispositions and personality characteristics on the basis of minimal amounts of information (Miller & Porter, in press; Nisbett & Ross, 1980; Schneider, et al, 1979).

In 1925 Frederick Lund posited the "Law of Primacy in Persuasion", based on his observation that "...the side of the question first presented to us, and the first influences brought to bear upon us, are most effective in determining our beliefs...". Twenty-one years later, Solomon Asch conducted a now classic series of experiments in which he investigated the effect that order of presentation of trait adjectives had on the overall impression formed of a target person. Paralleling Lund's results, Asch found that trait items presented first in a list had a greater effect on determining the overall impression formed than those items presented later in the same list.

Since Asch's studies, a number of investigations have been conducted which, by and large, have supported the early findings (Hendrick & Costantini, 1970; Jones et al, 1968; 1972; Stewart, 1965). For example, in a series of experiments by Jones et al

(1968) subjects consistently rated confederates who had displayed early success in a series of tasks as having done better than they actually did, and as having a greater probability of success in a second series of tasks than did a comparably successful confederate who had a number of failures early on in the task series. Subjects also rated the "early successes" as being more intelligent than their "late blooming" counterparts. These findings led Jones et al to suggest, as had Lund and Asch before them, that early information, (in this case about ability) "...is overweighted and leads to premature and persistent attributions." (1968, p.336).

The primacy effect prompted Luchins (1958; 1960) to seek ways of reducing the "...rigid adherence to first impressions in everyday life, in rating situations and in the clinic." (1958, p.289). In one study he did succeed in eliminating the primacy effect, and in fact, actually obtained a recency effect in the rating of his target persons (evaluations that appeared to be more influenced by the last information received rather than the first). However, comments made by his subjects indicated that the instructions themselves may have been affecting the results more than Luchins had anticipated.

It seems that subjects who were given a distracting task between contradictory behavioral descriptions of the target (described first of all as behaving in a consistently Introverted manner, later as behaving in a consistently Extraverted manner, or vice versa) did not believe that the two

descriptions were of the same person. Some notes Luchins made on these comments are particularly interesting. For instance, he states that,

"Many subjects who received the interpolated questionnaire commented on the inconsistencies; some wrote in their booklets or stated after the experiment that the descriptions...were so different that they could not refer to the same person and they concluded that "two distinct Jims" had been described..."

and that

"...most subjects who had received the intervening questionnaire resisted the idea (that the descriptions were of the same person) and found it difficult, or were not at all able to reconcile the descriptions..."(p.284).

In marked contrast, those subjects who did not evaluate the target's behavior until after both sets of behavioral information had been presented and who were not given an intervening task to perform "...seemed to experience little or no difficulty in conceiving of the...entire communication, as pertaining to one individual."(p.284). Leach (1974) has also found that the use of such intervening tasks results in the observation of a recency effect and that in such situations the conflicting information is viewed by subjects as referring to two different persons rather than to a single individual.

The elimination of the primacy effect in these experimental settings, therefore, is difficult to interpret. Indeed, it may be that the only reason recency was obtained was because the subjects had lost the sense of a single coherent impression. If so, these findings provide even further evidence of the strength of the primacy effect in presentation order.

The one thing that all of the primacy studies have had in common is their singular interest in how information is combined to form coherent impressions of target persons. More recently though, attention in the field of social cognition has turned to the role of the individual in structuring his or her social perceptions. The essential component of this perceiver-oriented work is that expectation, belief, or self-relevance all play important parts in the interpretation of events, including judgments of the personality of others. Two concepts of contemporary social cognition that may prove particularly relevant to the primacy effect are those of self-schemata and hypothesis testing.

Self-Schemata

Schemata generally have been defined as knowledge structures containing information abstracted from experience in any particular domain. Numerous studies have shown that their principle functions involve the breaking up of the flow of incoming information into meaningful units thereby facilitating encoding, storage and retrieval. Schemata also appear to include expectations regarding future, schema-related behaviors or information. (Fiske & Linville, 1980; Taylor and Crocker, 1980)

Among the more recent studies in the schemata area are several which focus on the role of what have come to be known as self-schemata (Markus et al, 1981). According to Markus (1977),

self-schemata are

"...cognitive generalizations about the self, derived from past experiences, that organize and guide the processing of self-related information contained in the individual's social experiences." (p.64)

The research of Markus and others has shown that the processing of information that is relevant to an existing self-schema is done quicker, with greater confidence, and more consistently than it is for information deemed inconsistent with or irrelevant to the schematized domain (Markus, 1977; Markus et al 1980; 1981; 1982).

In Markus' (1977) study, for example, subjects who were designated schematic (possessing self-schema for either dependence or independence), had shorter response latencies in pressing a buzzer to signal the selection of trait adjectives consistent with their self-schema than they did adjectives inconsistent or irrelevant to the schema. However, response latencies for aschematic subjects (those lacking self-schema for dependence or independence) were similar for all trait adjectives.

Schematics were similarly more consistent in their choices of adjectives as being self-descriptive than were aschematics. That is, aschematics were much more likely to select adjectives related to both dependence and independence than were subjects deemed independent or dependent schematics. The latter's selections were predominantly schema-consistent. Schematics were also more resistant to suggestions that they possessed traits which were inconsistent with their self-description in the

schematized domain than were aschematic subjects. Consistent findings have been reported by Markus and others in the domains of gender identity, body weight, (see Markus et al, 1981) and social-sensitivity (Markus and Sentis, 1980).

In addition, comparisons have been drawn between persons who possess self-schemata in certain domains and "experts" (defined as individuals "...whose knowledge of a subject area is "denser" than the novice--that is, both more complete and more complexly organized."). (Markus et al, 1981)

Essentially, these comparisons suggest that in much the same way that experts are capable of dividing information within their area of expertise up into more meaningful, manageable chunks to facilitate decision-making, people with well-developed self-schemata can, in the schematized domains, process information with greater efficiency than they could without such cognitive aids. In the study by Markus, Smith and Moreland (1981), for instance, both masculine schematics and aschematics were shown a film depicting a male actor performing several routine actions either related or unrelated to stereotypically masculine behaviors (respectively, reading a Playboy magazine, crushing a beer can vs eating an apple, playing records). Subjects were instructed to indicate, by pressing a buzzer, when they had "...observed a meaningful action unit." (p.12)

Schematics reliably segmented the schema-relevant portions of the film into larger chunks than did aschematics. Neither group, however, differed in the size of segments into which they

divided the masculinity-irrelevant film sequences. Markus et al suggested that the self-schema, in this case, "...is assumed to have provided both a context and an interpretive framework for the film which allowed the stream of behavior to be organized into relatively large and meaningful chunks." (p.14).

Although the ability to divide action sequences up into relatively large units has been regarded as a function of expertise (Chiesi, 1979), it is also somewhat self-evident that experts should be able, when the situation demands it, to break down the behavior stream into fine action units to perform in-depth analyses of situations. (Commentator analysis of pitches during World Series games, or observations by the likes of Howie Meeker during the course of NHL hockey play provide ample anecdotal evidence of this.) And indeed, Markus et al (1981) found this to be the case for the masculine-schematics' analysis of the film sequences described above. Given instructions to break down the action sequences into the smallest possible units, schematics consistently divided the schema-relevant portion of the film into smaller units than aschematics.

Clearly, the self-relevance of information has significant effects on the encoding of social information. However, as much as such cognitive frameworks may reduce the "cognitive load" we may be burdened with in any given situation, they may also be the source of systematic errors in the processing of that same information. Pertinent examples of this have emerged in the

recent studies done on hypothesis testing.

Hypothesis Testing

Recent studies by Snyder and others (Snyder et al, 1978 (a); (b); (c); 1979; 1980) indicate that there is a general tendency for people to seek hypothesis-confirming information in their attempts to evaluate information received about others. In a representative series of studies conducted by Snyder and Cantor (1979), subjects were provided with biographical descriptions "equally rich in Introvert and Extravert material" (p.333) and at a later date were given the task of indicating how suitable the target person was for a certain job.

If the most suitable person had been described to them as being a "prototypic" Introvert (i.e. quiet, shy, studious, etc.), subjects, in rating the target, provided more Introverted examples from the biography than they did Extravert examples while ranking her as being highly suitable for the job. On the other hand, subjects who were told that the best person for the job would be a "prototypic" Extravert (i.e. bold, enthusiastic, self-assured, etc.) later gave more examples of Extravert behavior from the biographical description while ranking her as being highly suitable for the job.

In another study (Snyder & Campbell, 1980), subjects were given the opportunity to select the type of questions they would ask job applicants to assess their suitability for a job

requiring either an "Introverted" or "Extraverted" type of person. Again, subjects chose more questions which affirmed suitability than they did questions that would gauge unsuitability for the position. But an even more dramatic example of this hypothesis testing bias, and one more pertinent to the present study, was that conducted by Lord et al (1979).

These investigators looked at the manner in which people holding "strong opinions on complex issues" (capital punishment) examined what was portrayed as being empirical evidence regarding the legitimacy of either a pro- or anti-capital punishment stand (1979, p. 2098). They found that regardless of the order of presentation of "evidence" (first supportive of subjects' original opinion followed by opposing views, or vice versa) or the method purported to have been used in the collection of data (statistics compiled before and after changing legislation on capital punishment vs statistics compiled in two different states, one with the death penalty, one without), subjects believed that the findings supportive of their initial view were more convincing than those substantiating opposing views. As well, the methodology used in the "preferred" studies was deemed more reliable. In fact, after hearing arguments both for and against, they became even more certain of the appropriateness of their original beliefs than they were before they read any of the pro or con arguments.

Similarly, studies by Hirschberg and Jennings (1980) and Shrauger and Patterson (1974) note the effect that existent

personality attributes have in the perception of others. Hirschberg, for instance, notes that "...people will pay attention to those aspects of their interpersonal environment that correspond to prominent personality characteristics of the persons themselves..." (p. 237). Fong and Markus, in an unpublished study (cited by Markus and Sentis, 1980), changed Snyder's (1979) experimental paradigm slightly to include an individual difference variable in the examination of hypothesis-confirming tendencies. Unlike those studies conducted by Snyder et al (1978 (a); (b); (c); 1980), Fong and Markus were interested in the type of expectancies the individual brings into the hypothesis testing situation, specifically, information included as part of their collection of self-schemata.

In their study, subjects were not provided with any specific hypothesis to test. They were simply given the opportunity to select the kind of questions they would ask someone whom they were about to meet. Fong and Markus found that those subjects whom they had designated as being Introvert schematics selected more introvert questions than extravert questions. Extravert schematics, on the other hand, selected more questions asking for information related to extraverted types of behavior than they did questions that would provide information related to the performance or preference for introverted behaviors. As schematics, however, asked more introversion/extraversion irrelevant than relevant questions. Again, this latter finding suggests that information was

selected by subjects in terms of what was relevant to their own self-descriptions rather than on the basis of objective hypothesis testing methods.

Individual Differences in Past Primacy Literature

Given the current interest in schemata and the findings on the role of self-schemata in person perception and hypothesis-testing just mentioned, it seems reasonable to presume that such an individual-difference approach to social information processing could be interestingly applied to the primacy effect. Ironically enough, the beginnings of such a perspective was present in the "primacy literature" as early as 1925 (Lund). For instance, in his discussion of the effect of order of presentation Lund states that

"...if primacy is the factor, then propositions upon which one has already had ample opportunity to form an opinion should be much less subject to persuasive influences..." (1925, p. 189).

Unfortunately, later researchers, for the most part concerned with the role of primacy in impression formation, by and large ignored examination of the role of the perceiver. However, more direct evidence for the role of individual differences has been the principle focus of at least one primacy study. Although it is not concerned with primacy's role in impression formation, it does speak to the original issue of familiarity which Lund posited (1925). In the present study, as will soon become evident, it is essentially degree of familiarity with target

information which distinguishes subject groups.

Janis and Feierabend (1957) studied 182 high school students to see if order of presentation of the issues in a two-sided argument (pro/con volunteering for the Civil Defense Organization or CDO) would have any influence on the degree to which an audience could be persuaded to change their original attitudes. Their main hypothesis was that

"...when the opposing arguments have a very low probability of being spontaneously salient for the audience, an authoritative communication will be more effective if the con arguments are presented after rather than before the major pro arguments." (p.117).

They assumed that for most high school students, arguments against CDO volunteering would not be salient, if only because "...they generally regard(ed) it as unpatriotic to hold an unfavorable attitude toward civil defense." (p.118) The accuracy of this assumption was supported in the results of a questionnaire administered by the investigators to a separate group of students. Responses to the questionnaire showed that students held

"...mainly unstructured and positive stereotyped opinions concerning civil defense preparations rather than judgments based on familiarity with the major pros and cons of the issue." (p.119)

The findings supported their original hypothesis. Students who were presented first with the pro, then with the con CDO argument were significantly more favorably disposed toward CDO than were those students who were assigned to a control group and provided with no arguments (either for or against civil defense). Students who received the con, then pro arguments,

however, hardly differed from the control group in their attitude toward the Civil Defense Organization. These results prompted Hovland, (1957) to state that "...the nearer one comes to achieving primacy in the sense of the first presentation of unfamiliar material, the more apt one is to obtain primacy effects." (p.139) It is unfortunate that in the 25 years since the Janis and Feierabend study that little else has been done to examine the role of the individual in the operation of the primacy effect.

The Present Study

Recent work on the influence of stable cognitive structures (e.g. self-schemata) on information processing (Cantor, 1976; Hirschberg & Jennings, 1980; Kuiper & Rogers, 1979; Lemon and Warren, 1974; Shrauger & Patterson, 1974) suggests a novel approach to studying the primacy effect. That is, it seems reasonable to propose that the likelihood and strength of a primacy effect being obtained will depend upon the self-schema of the individual. In forming impressions, a primacy effect should emerge most strongly in the judgments of observers who lack a self-schema (are aschematic) for the domain of person information included in the description of a target person, than for observers who do possess relevant self-schema (are schematic).

For aschematics this would be the case because lacking personal experience (Markus, 1977) or familiarity with the relevant domain, the first bits of information given them should initiate the formation of their impression. Subsequently, they should construct an impression largely influenced by that initial information (Janis & Feierabend, 1957; Hovland, 1957). Schematics, however, being sensitive to information pertinent to their self-schema, should not be affected by order of presentation.

Unlike aschematics, they should selectively attend to (Hirschberg & Jennings, 1980;) and consider more reliable or valid (Lord et al, 1980) information congruent with their schema-based expectations. This selective attention should not only weaken the primacy effect but result in dramatically divergent evaluations of target persons described as possessing schema-relevant attributes, for, as noted by Taylor and Crocker (1980, p.123) ,

"...a schema, as a normative structure against which incoming data are matched, contains only evidence of what an instance should look like, not evidence of what it should not look like."

Hypotheses

The present study is guided by two hypotheses.

Hypothesis 1

The impact of early information on impression formation will be weakened for those observers possessing self-schema relevant to the information provided. Observers lacking relevant self-schema will, however, form impressions of others that reflect the overwhelming influence of first presented information.

Hypothesis 2

The content of observers' impressions of a target person will be polarized in the direction of their self-schemata.

B. Method

This experiment was a 3 X 3 mixed factorial design upon which a two-factor analysis of variance for repeated measures was performed. Subjects were grouped according to schema-type (Introvert, Extravert, Aschematic) , the between-subjects factor, and were presented with three targets to evaluate (the within-subjects factor) Introvert/Extravert target, Extravert/Introvert target and Neutral target (as control). Order of presentation was counterbalanced across conditions.

Overview

Data was obtained from 244 females enrolled in undergraduate psychology courses. Meeting in small groups, they filled out self-description forms designed to establish whether or not they could be designated Introvert or Extravert schematic or Aschematic. After they had completed the self-description task they were presented with tape recorded descriptions of three different females. They were then asked to form a general impression of each target person and after each description, complete a "behavioral inventory" indicating how they thought the target person would conduct herself in a number of different social situations. For the purpose of analysis, subjects were categorized on the basis of their self-descriptions as either

Extravert schematics, Introvert schematics, or Aschematics.

Subjects and Subject Classifications

In small groups ranging in size from 4 to 13, female undergraduate subjects were asked to rate themselves on fourteen bipolar trait dimensions and complete a short adjective checklist. The bipolar dimensions were arranged on an eleven point semantic-differential type scale. Five of the fourteen dimensions were constructed from materials used by Cantor and Mischel (1977) and had been determined by those authors as being highly related to the concepts of Introversion (e.g. soft-spoken, reserved, quiet, shy and introverted) and Extraversion (e.g. exuberant, outgoing, talkative, self-assured and extraverted). The remaining nine dimensions were chosen from Cantor and Mischel's study (1977) and included to reduce the likelihood of subjects' identifying the dimension of interest. Adjectives comprising the adjective checklist were chosen randomly by the investigator, the only items of interest being "introvert" and "extravert". (See Appendix 1)

Introvert Schematics

Subjects were designated Introvert schematics only if they met all of the following criteria; 1) rated themselves on three or more of the five Introversion/Extraversion dimensions at

least four or fewer scale points from the Introvert end of the eleven point bipolar scale; 2) rated none of the remaining relevant dimensions within four or fewer scale points from the "Extravert" end of the eleven point scale; 3) checked the "introvert" item on the adjective checklist. (See Appendix 1)

Extravert schematics

Subjects were designated Extravert schematics only if they met all three of the following criteria; 1) rated themselves on three or more of the five Introversion/Extraversion dimensions at least four or fewer scale points from the Extravert end of the eleven-point bipolar scale; 2) rated none of the remaining relevant dimensions within four or fewer scale points from the "Introvert" end of the eleven point scale; 3) checked the "extravert" item on the adjective checklist.

Aschematics

Subjects were designated Aschematics if they rated themselves highly on two or fewer of the five Introversion/Extraversion dimensions and who checked neither the "introvert" nor the "extravert" item on the adjective checklist.

Target Descriptions

Target descriptions were composed of fourteen simple, declarative sentences (e.g. Joanne is shy.) In the Introvert/Extravert and Extravert/Introvert targets five of the fourteen sentences contained trait adjectives rated by Cantor and Mischel (1977) as being moderately related to the concept of Introversion (e.g. discrete, studious, cautious, subtle, hesitant) and five moderately related to Extraversion (e.g. venturesome, entertaining, ambitious, eager, vigorous). Four sentences contained trait adjectives unrelated to either concept (e.g. neat, logical, thrifty, efficient).

Introvert/Extravert Targets

The order of presentation of trait adjectives in the Introvert/Extravert descriptions was, three Introvert, one Extravert, one Neutral, one Introvert, two Neutral, one Extravert, one Neutral, one Introvert, and three Extravert.

Extravert/Introvert Targets

This same list used for the Introvert/Extravert targets, order of sentences reversed, constituted an Extravert/Introvert description in another condition. (See Appendix 3)

Neutral Targets

Neutral targets contained fourteen simple declarative sentences containing no trait adjectives related to either Introversion or Extraversion.

Conditions

There were twelve presentation conditions to which subjects could have been exposed. They differed in the order of the stimulus set presentation (E/I, Neutral, I/E; Neutral, I/E, E/I; E/I, I/E, Neutral) and in terms of how each target was presented (Joanne as Introvert/Extravert, Robin as Extravert/Introvert, or Joanne as Extravert/Introvert and Robin as Introvert/Extravert). In each condition then, each subject evaluated an Introvert/Extravert target, an Extravert/Introvert target and a Neutral target. The names chosen for the schema-relevant targets were Joanne and Robin, for the neutral target, Linda.

In an effort to counterbalance the presentation of target descriptions, sixty-five (65) of the 132 subjects were exposed to "Joanne" as an Extravert/Introvert and "Robin" as an Introvert/Extravert while sixty-seven (67) subjects saw "Joanne" as an Introvert/Extravert and "Robin" as an Extravert/Introvert.

Dependent Measure

The behavioral inventories used by the subjects to evaluate the target persons were made up of thirty-seven (37) questions from Eysenck's Personality Inventory (EPI), (1963). Twenty-four of the items were adapted from the EPI Extraversion Scale, Form A. (For example, EPI item, "I prefer reading to meeting people." was changed to "She prefers reading to meeting people."). The adaptations were necessary so that responses to the questions were made in terms of their reference to how subjects believed the target person may act rather than, as in the EPI, how the testee would describe him or herself. The remaining thirteen items were randomly selected from the remaining EPI items, modified as necessary and interspersed throughout the inventory. (see Appendix 2)

Procedure

Upon completion of the set of self-description materials, subjects were presented with tape recorded descriptions of three target females. They were told to listen carefully to each description and try to form an overall impression of the person being described. After each description, subjects were told to wait one minute before filling out a behavioral inventory for each target person. Upon completion of this final portion of the experiment subjects were debriefed.

C. Results

For the purpose of analysis, subjects were grouped according to their schematic designation. The dependent measure was analyzed using a two-factor analysis of variance for repeated measures. Using the modified EPI Extraversion scale, scores ranged from a low of 0 (indicating a target's being evaluated as extremely Introverted) to a high of 24 (indicating a target's being evaluated as extremely Extraverted). The two factors were schema-type and target-type.

A Priori Tests

Tukey comparisons of the means for the control targets, taken from the 3 x 3 ANOVA (see Tables 1 & 2) revealed no significant differences between groups. (see Table 3) Comparisons for within group differences between schema-relevant targets and Neutral targets, were, however, significant in four of six cases (See Table 4 and Figure 1).

Table 1

Means and standard deviations
of
Group Evaluations of Target Persons

Subject Groups

	N=20. Introvert schematic	N=53 Extravert schematic	N=59 Aschematic
Introvert/Extravert	\bar{x} = 9.75* sd= 4.56	\bar{x} =11.62 sd= 5.98	\bar{x} = 9.42 sd= 5.52
Extravert/Introvert	\bar{x} =11.40 sd= 5.87	\bar{x} =12.02 sd= 6.32	\bar{x} =14.56 sd= 5.26
Neutral	\bar{x} = 6.40 sd= 5.46	\bar{x} = 8.02 sd= 6.66	\bar{x} = 8.07 sd= 4.49

Target types

* The lower the evaluation, the more "Introverted" the impression formed of the target; the higher the evaluation, the more "Extraverted" the target.

Table 2

ANOVA Summary Table
(3X3 matrix)

Source	Sum of Squares	Degrees of Freedom	Mean Squares	F values	Prob.
Group	106.79	2	53.40	3.54	0.03
Error	1147.23	129	15.09	--	--
Target	1400.72	2	700.36	17.28	0.00
Group by Target	328.02	4	82.01	2.02	0.09
Error	10457.21	258	40.53	--	--

Table 3

Between-group Tukey paired comparisons
(Q matrix values and probability levels)
Q(9,258)

Groups Compared

	Introvert with Extravert schematics	Introvert schematics with Aschematics	Extravert schematics with Aschematics
Introvert/Extravert	Q=1.59 p > .05	Q=0.28 p > .05	Q=2.59 p > .05
Extravert/Introvert	Q=0.53 p > .05	Q=2.70 p > .05	Q=2.99 p > .05
Neutral	Q=1.37 p > .05	Q=1.43 p > .05	Q=0.06 p > .05

Target types

Table 4

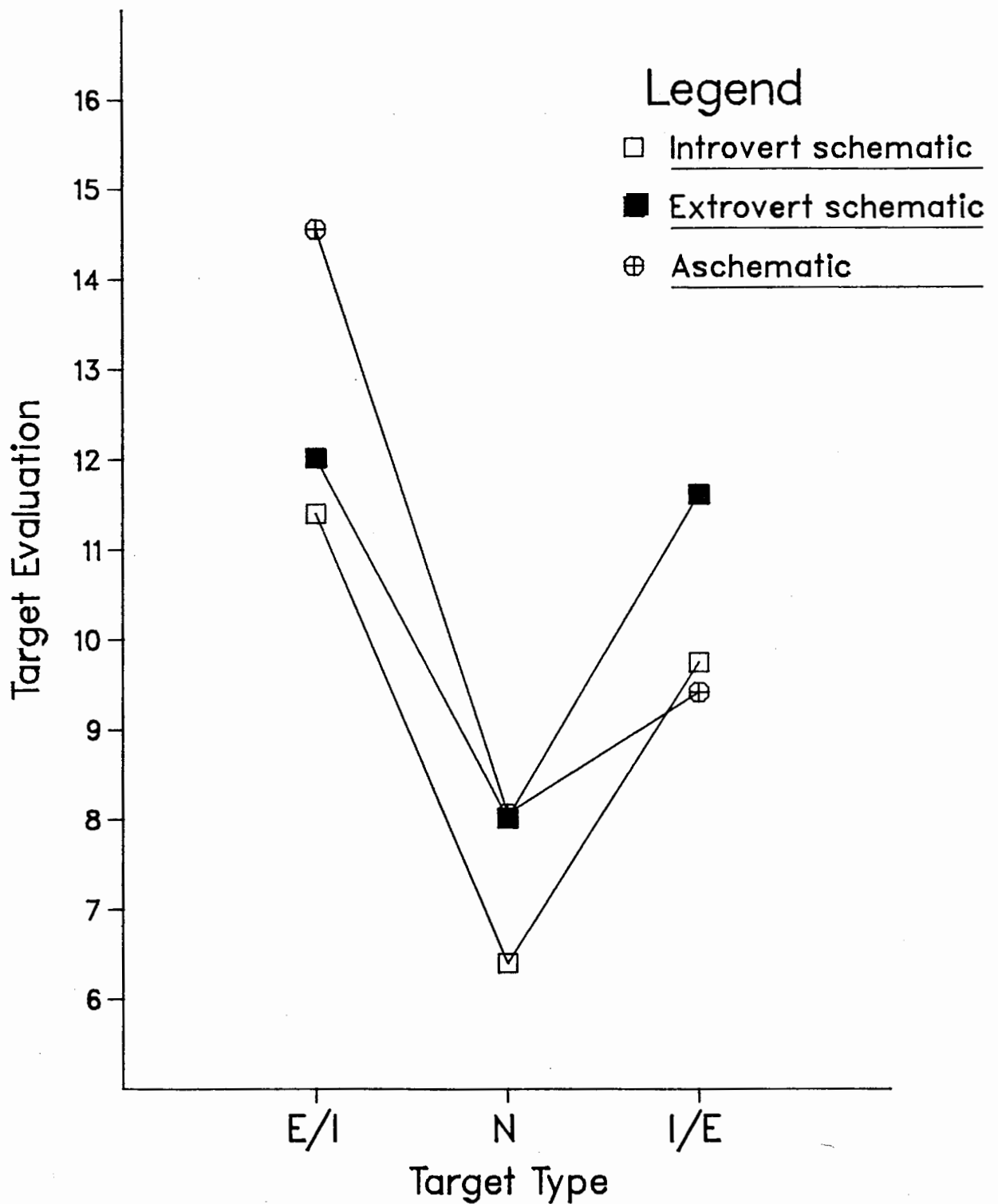
Within-group Tukey paired comparisons,
(Q matrix values and probability levels)
Q(9,129)

Targets Compared

	Introvert/Extravert to Neutral	Extravert/Introvert to Neutral	Introvert/Extravert to Extravert/Introvert
Introvert schematic	Q=3.86 p > .05	Q=5.75 p < .01	Q=1.90 p > .05
Extravert schematic	Q=6.79 p < .01	Q=7.55 p < .01	Q=0.75 p > .05
Aschematic	Q=2.65 p > .05	Q=12.73 p < .01	Q=10.08 p < .01

Subject group

Figure 1
Mean Target Evaluations from 3 x 3 ANOVA



Hypothesis 1

To test the hypothesis that the primacy effect would be weakened for those subjects possessing a self-schema in the domain for which information is provided but be evident in the target evaluations of those lacking such self-schema, a 2-factor analysis of variance for repeated measures (3(schema-type) X 2(target)) was performed. The 3 X 3 matrix was not used in this or further analyses as the Neutral target was present as a control only. It's inclusion, therefore, adds little to understanding possible primacy effects.

Results of this 3 X 2 (group X target) analysis revealed no main effect for groups ($F(2, 129) = 1.50, p > .05$), but a significant main effect for targets ($F(1, 129) = 6.82, p < .05$), and, most pertinent to Hypothesis 1, a significant target by schema-type interaction ($F(2, 129) = 3.70, p < .05$). (see Table 5 and Figure 2)

Supporting Hypothesis 1, Tukey comparisons (see Tables 6 & 7) revealed that the only significant effect of order occurred in the aschematic group. In this group, evaluations of I/E and E/I targets differed considerably ($Q(6, 129) = 8.71, p < .01$). When data for both schematic groups is combined, a more direct comparison of schematic vs aschematic target evaluations is made possible. In this case, the interaction is even more pronounced ($F(1, 130) = 7.19, p < .01$). (see Tables 8 & 9; Figure 3)

Table 5

ANOVA Summary Table
(3X2 matrix)

Source	Sum of Squares	Degrees of Freedom	Mean Squares	F values	Prob.
Group.	62.18	2	31.09	1.50	0.23
Error.	2674.86	129	20.74	--	--
Target.	300.51	1	300.51	6.82	0.01
Group by Target.	326.67	2	163.33	3.70	0.03
Error.	5688.07	129	44.09	--	--

Figure 2
Mean Target Evaluations from 3 x 2 ANOVA

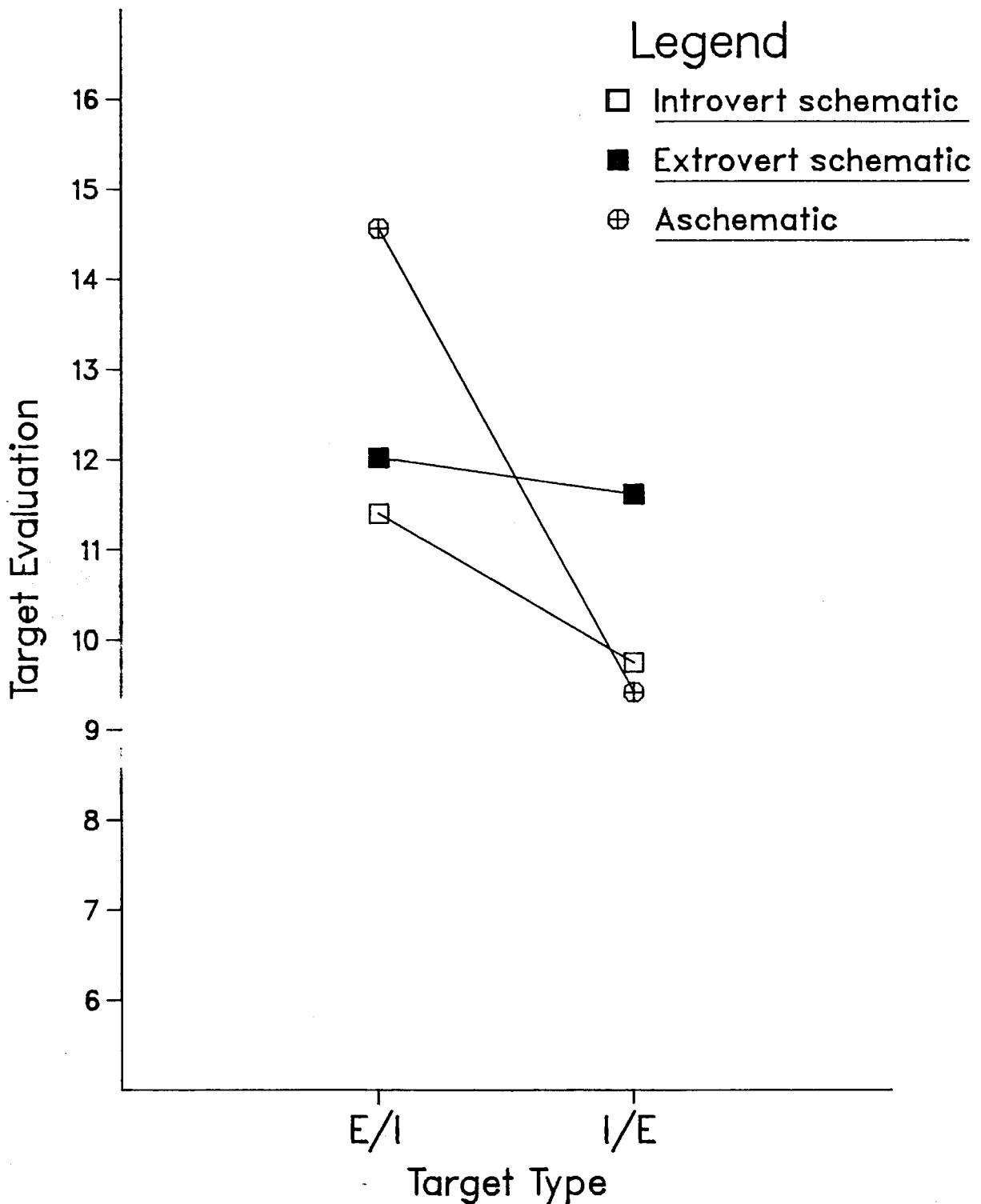


Table 6

Between-group Tukey paired comparisons
(Q matrix values and probability levels)
Q(6,129)

Groups Compared

	Introvert with Extravert schematics	Introvert schematics with Aschematics	Extravert schematics with Aschematics
Introvert/Extravert	Q=1.87 p > .05	Q=0.27 p > .05	Q=2.47 p > .05
Extravert/Introvert	Q=0.50 p > .05	Q=2.61 p > .05	Q=2.85 p > .05

Target type

Table 7

Within-group Tukey paired comparisons
 (Q matrix values and probability levels)
 $Q(6,129)$

Targets Compared

	Introvert/Extravert to Extravert/Introvert
Introvert schematic	Q=1.62 p > .05
Extravert schematic	Q=0.63 p > .05
Aschematic	Q=8.71 p < .01

Subject group

Table 8

Means and standard deviations
of
Group Evaluations of Target Persons

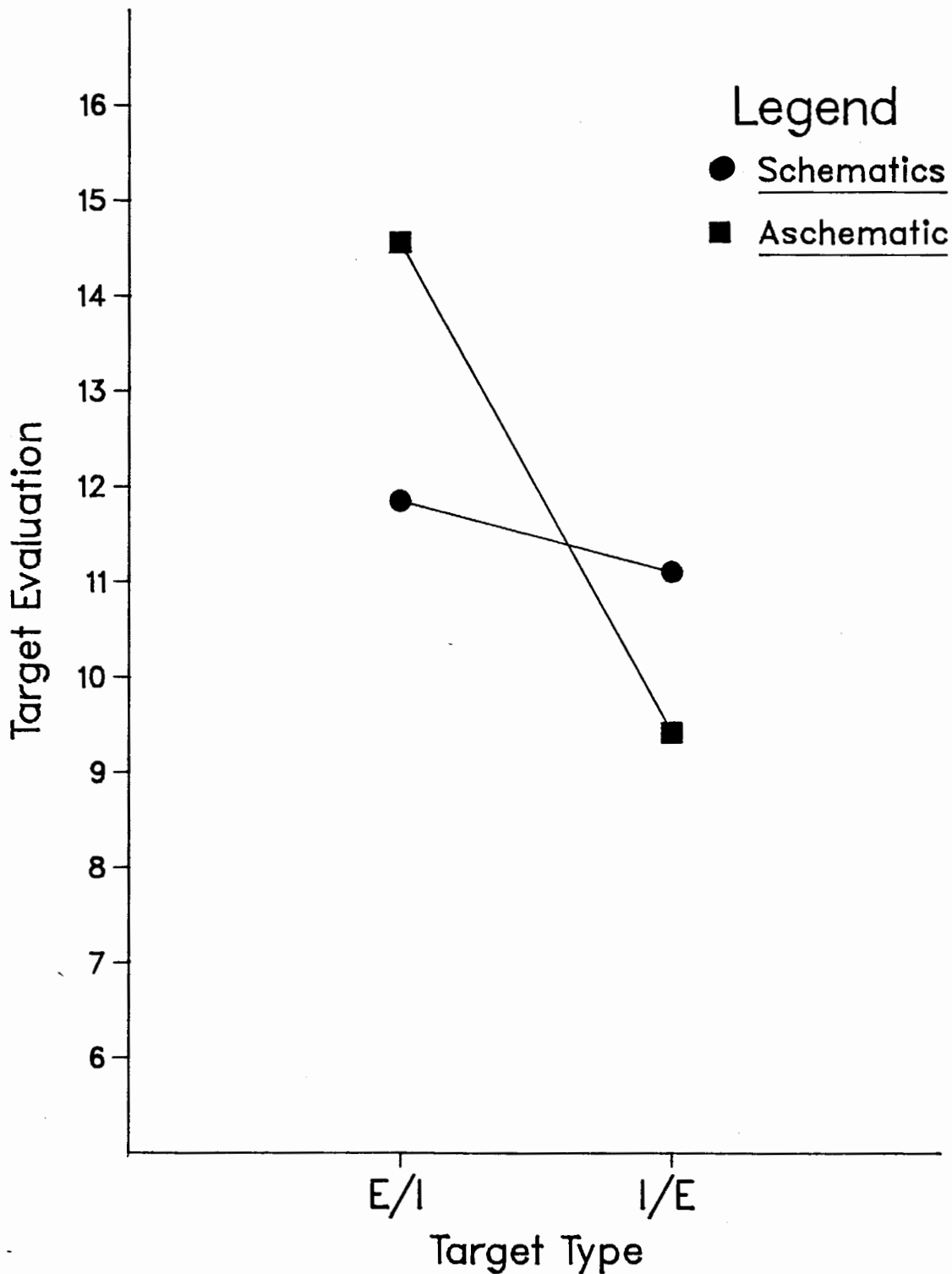
Target type	Subject group	
	N=73 Schematic	N=59 Aschematic
Introvert/Extravert	\bar{x} =11.11 sd= 5.66	\bar{x} = 9.42 sd= 5.52
Extravert/Introvert	\bar{x} =11.85 sd= 6.17	\bar{x} =14.56 sd= 5.26

Table 9

ANOVA Summary Table
(2X2 matrix)

Source	Sum of Squares	Degrees of Freedom	Mean Squares	F values	Prob.
Group	17.11	1	17.11	0.82	0.37
Error	2719.13	130	20.92	--	--
Target	563.16	1	563.15	12.85	0.0005
Group by Target	315.25	1	315.25	7.19	0.008
Error	5699.49	130	43.84	--	--

Figure 3
Mean Target Evaluations from 2 x 2 ANOVA



Hypothesis 2

To test the Hypothesis that schematics will attend more to schema-relevant than schema-inconsistent information a 3 (group) X 2 (schema-relevant target) analysis of variance was performed on the target assessments. No main effect for schema-type was observed (see Table 5) and no between-schema group Tukey comparisons were observed. (see Table 6) The lack of significance for this analysis fails to support Hypothesis 2. If the second hypothesis had been correct, a significant schema-type main effect should have been observed.

D. Discussion

The results provide support for the proposition that self-schemata play a role in the weakening of the primacy effect but not for the hypothesized polarization effect among schematic subjects.

Hypothesis 1

The first hypothesis proposed that the impact of early information on impression formation (the primacy effect) would be weakened for those observers possessing self-schema relevant to the information provided while being evident in the impressions formed by those lacking such self-schema. That is, first presented information would figure more prominently in target evaluations of aschematics than it would for schematic subjects. The results bore this out.

Although a significant difference in schema-relevant evaluations was obtained for aschematic subjects, no such difference was present in the evaluations of either schematic group. It is reasonable to infer from these results that order of presentation did affect schematic subjects' impressions less than it did those of aschematic subjects. Had order of presentation influenced schematics and aschematics in a similar manner, all should have exhibited significant evaluation

differences.

Thus, the observations of Lund (1925), Hovland (1957), and Janis and Feierabend (1957) have been substantiated in this study. Namely, that acquaintance with a knowledge domain will weaken the primacy effect. Schematics, who have been variously described as having denser, better articulated, more "expert" appreciation of the various aspects of their schematized domains, do, unlike aschematics, appear to be less affected by the order in which they receive information about another person.

Hypothesis 2

The second hypothesis proposed that there would be a polarization of the impression formed by schematic subjects which would be in the direction of their self-schema. If this was the case, a significant difference in the evaluations of each type of schema-relevant target should have been observed between schematic groups. The lack of significant between-group differences show this not to be the case. As it is with the failure to support any hypothesis, there could be numerous reasons why significant differences were not obtained.

Operational Shortcomings

It is possible that the descriptions of interest did not have enough impact to create substantial differences in their evaluations by the subjects. There could be three reasons for this. First, there may not have been enough trait adjectives given and/or, secondly, those given may not have been extreme enough to effectively elicit an Introversion/Extraversion dimension from the subjects. Thirdly, the presence of inconsistent information in a single description could have weakened the extent to which either target could have been seen as being "prototypically" Introverted or Extraverted, and so been less likely to be evaluated extremely in either direction.

In response to the first two points, (the number and/or degree of relatedness of the trait adjectives), Cantor and Mischel (1977) found that the presentation of 6 trait adjectives, moderately related to either Introversion or Extraversion, was enough to produce consistently high ratings of the targets as being either Introverted or Extraverted. From this it would appear that the number and "moderate" relatedness of these adjectives is sufficient to produce an effective concept-related impression. Although possible, it is difficult to see how a description containing 5 moderately related descriptors could differ significantly from one with 6, especially considering that all were chosen from the same adjective pool.

With reference to the third point, (the "muting" of the prototypicality of the targets by their being described in

conflicting terms) it is difficult to understand why aschematics, unlike schematics' evaluations, were, in effect, "polarized" significantly by order of presentation. Also, inconsistency within a single description does not result in some trait adjectives' being more salient than others when both are present in equal numbers (Cantor & Mischel, 1979; Hastie & Kumar, 1979). The "poor prototypicality" of the targets (as defined by Cantor) ¹ additionally leaves unexplained why 4 of 6 within-group Tukey comparisons in the 3 X 3 ANOVA (see Table 4) showed a significant difference between evaluations of the Neutral and schema-relevant targets. Clearly, the "zero" value of the target persons possessed more than a psychological zero value for the subjects in this study. Some muting of the targets' prototypicality, therefore, cannot be reason enough to have resulted in the findings obtained in the present work.

It would appear then that none of the arguments for the inadequacy of the operationalization of the Introvert/Extravert construct for target descriptions are sufficient to account for the lack of differences found between schematic groups. Both the number and relatedness of the traits used appear to be

1

From the prototype perspective both the Introvert/Extravert and Extravert/Introvert targets used in this study (indeed, in virtually all primacy effect studies) are equivalent; poor prototypes. According to Cantor's (1981) rating procedures, their prototypic values would both be zero. Computation of a "breadth-differentiation" score (total Extravert descriptors minus total Introvert descriptors for the E/I target, vice versa for I/E) would equal zero for both (5-5=0). Similarly, their "ratio-dominance" score (ratio of number of I or E attributes relative to the total number of attributes) is again zero (5-5/14) in both cases.

sufficient to produce an effective impression of the target as either highly Introverted or Extraverted. Also, it does not seem likely that the presence of inconsistent information alone could have diminished the impact of the descriptions.

The Primacy Debate

For a number of years a spirited debate has gone on over just what the cause of the primacy effect is. (Ostrom, 1977) Some, (Asch, 1946; Hamilton and Zanna, 1974) favor a change of meaning hypothesis wherein early information sets the "tone" or "direction" for the interpretation of later presented information. Others (Ostrom, 1977) prefer weighted averaging models whereby the overall impression is influenced by the valence attached to each term; words appearing earlier in the list getting greater weight values than those later on in the list. The latter approach includes consideration of a notion of "attention decrement" occurring, meaning that a person, paying less attention to later information, encodes or stores it improperly, assigning it less weight or relevance and so, giving greater importance to first presented information.

In the case of the present study, it may well be that for the aschematics, a change of meaning did occur, depending on the order of presentation, or, for that matter, that early information was weighted more heavily, and so more closely attended to than later information; hence, the observed primacy

effect. For the purposes of this paper it does not matter which may be the case. As Ostrom (1977) notes, each position is ill-defined enough to accommodate almost any finding. (see also Nisbett & Ross, 1980) What is interesting to examine is how these propositions may have fared in predicting the target evaluations of the schematic subjects.

Both the meaning change and the weighted averaging models would have predicted (or could have accounted for) either the primacy effect or lack thereof among schematics. If no a priori weighting of some items was assumed, both would have predicted the occurrence of a primacy effect. If an assumption had been made of the role of expectation or belief, expected or belief-congruent information could have been said to have been heavily weighted, hence, weakening the primacy effect. This would have been the case for, as Taylor and Crocker (1980) note, schema contain "...only evidence of what an instance should look like, not evidence of what it should not look like.". (p. 123) But, given the conceptualization of schema, as noted by Taylor and Crocker, this a priori weighting should have been accompanied by a polarization effect caused by over-weighting of expected or relevant information. Obviously, neither approach is helpful in this study.

However, a third alternative might be that schematics simply attended more to all information given than did aschematics. This option, though, is a weak one, for two reasons. First, even when Jones et al (1968) manipulated their

subjects' attention, such that each item in the target description was necessarily focussed on, a primacy effect still emerged. Thus, (without considering the possibility of individual differences) even if schematics had attended to all of the information, it could still be predicted that a primacy effect would be observed, not a polarization or "levelling" effect. Second, according to the current conceptualization of schemata (as per Taylor & Crocker, 1980), if attention was focussed throughout the description, it still should have been (given inclusion of an individual differences factor) on schema-consistent information not on schema-inconsistent information (see also Snyder et al, 1978 (a); (b); (c);). Again, the consequences would be a polarization effect, not the equivalent evaluations observed in the present study.

It appears then that neither the change of meaning nor the weighted averaging models approach to interpretation of the primacy effect can assist in interpreting the results obtained concerning hypothesis 2. As well, the "attention decrement" hypothesis seems of little worth; exaggerated or extended attention by schematics, given the presence of conceptualization of schemata, would have similarly predicted the observation of a polarization effect.

Neutral Target Evaluations

The neutral target was included in the present study to obtain a baseline measure of target evaluations. It was assumed that Extravert schematic subjects would rate them as less Extraverted than either schema-related target, Introvert schematics rate them as less Introverted than schema-related targets, and Aschematics rate them approximately mid-way between their evaluations of both the Introvert/Extravert and Extravert/Introvert target descriptions. However, it appears that all subjects perceived these neutral targets as being considerably more Introverted than expected.

Having recourse only to post hoc interpretation, the author can but speculate that Extravert-related information played some part in all of the impressions formed. Indeed, the comparability of Introvert and Extravert schematic evaluations of schema-relevant targets suggests that schematics were sensitive to both types of information. It may well be then, that even Aschematic subjects' evaluations of the I/E targets included some effect of Extravert information (the extent of influence, of course, affected by the order of presentation) and hence, a more Extraverted rating made than would be the case if only Introverted information had been presented in the targets of interest. Therefore, the perception of the neutral target evaluations as being extremely Introverted may be the product of a general elevation of all schema-relevant targets rather than

the consequence of any properties of the neutral target itself. As well, there may have been a general tendency to rate such target descriptions in the Introvert direction given the absence of information related to either Extraversion or Introversion. Such statements, however, can only be substantiated through further study.

Conclusions

It is apparent that when subjects were provided with information about a target person, in an area which was relevant to their own self-description, that order of presentation had relatively little effect on the overall impression formed. To date, studies on the role of the primacy effect in impression formation have not included such an individual difference factor. The results of the present study strongly suggest that formulation of hypotheses regarding the mechanisms involved in the operation of the primacy effect should consider subject differences. This is especially so given both the support of hypothesis 1 and the inadequacy of existent "primacy" explanations for the non-significant results concerning hypothesis 2.

The results also bring into question the adequacy of the current conceptualization of schema structure. If, as Taylor and Crocker (1980) write, schemata contain only "...evidence of what an instance should look like...", hypothesis 2 should have been

supported. It may well be that schemata do contain evidence of what schematized "instances" should and should not look like. This, however, is an issue that can be treated adequately only by further investigation.

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I. Appendix 1

Self-description Form

sex M F

EXUBERANT	--0--0--0--0--0--0--0--0--0--0--0--0--	SOFT-SPOKEN ✓
OUTGOING	--0--0--0--0--0--0--0--0--0--0--0--0--	RESERVED
PRACTICAL	--0--0--0--0--0--0--0--0--0--0--0--0--	IDEALISTIC
KIND	--0--0--0--0--0--0--0--0--0--0--0--0--	STERN
BITTER	--0--0--0--0--0--0--0--0--0--0--0--0--	WELL-DISPOSED
TALKATIVE	--0--0--0--0--0--0--0--0--0--0--0--0--	QUIET ✓
COORDINATED	--0--0--0--0--0--0--0--0--0--0--0--0--	UNCOORDINATED ✓
ACADEMIC	--0--0--0--0--0--0--0--0--0--0--0--0--	NON-ACADEMIC
DEPENDENT	--0--0--0--0--0--0--0--0--0--0--0--0--	INDEPENDENT ✓
SELF-ASSURED	--0--0--0--0--0--0--0--0--0--0--0--0--	SHY ✓
OBJECTIVE	--0--0--0--0--0--0--0--0--0--0--0--0--	EMOTIONAL ✓
OPTIMISTIC	--0--0--0--0--0--0--0--0--0--0--0--0--	PESSIMISTIC
INTROVERTED	--0--0--0--0--0--0--0--0--0--0--0--0--	EXTRAVERTED
INTUITIVE	--0--0--0--0--0--0--0--0--0--0--0--0--	ANALYTIC ✓

From the following adjective checklist check off those words which you consider to be part of a description of yourself.

absent-minded _____

alert _____

aloof _____

conventional _____

fearful _____

hurried _____

severe _____

introverted _____

courageous _____

sexy _____

thrifty _____

restless _____

mature _____

independent _____

logical _____

dependent _____

easy-going _____

simple _____

plain _____

silent _____

lazy _____

unconventional _____

relaxed _____

sharp-witted _____

kind _____

extraverted _____

sophisticated _____

serious _____

II. Appendix 2

Behavioral Inventory¹

1. Does her mood often go up and down? yes no
2. Does she often long for excitement? yes no
3. Is she usually carefree? yes no
4. Does she stop and think things over before doing anything?
yes no
5. Once in a while does she lose her temper and get angry? yes
no
6. Would she do almost anything for a dare? yes no
7. Does she often do things on the spur of the moment? yes no
8. Are her feelings rather easily hurt? yes no
9. Does she generally do and say things quickly without
stopping to think? yes no
10. Does she prefer reading to meeting people? yes no
11. Does she daydream a lot? yes no
12. Does she like going out a lot? yes no
13. When people shout at her, does she shout back? yes no
14. Does she prefer to have few but special friends? yes no
15. Can she usually let herself go and enjoy herself at a party?
yes no

¹Adapted from Eysenck and Eysenck (1963)

16. Would you call her tense or "high strung"? yes no
17. Do other people think of her as being very lively? yes no
18. Does she sometimes gossip? yes no
19. Is she mostly quiet when she is with other people? yes no
20. Do ideas run through her head so that she cannot sleep? yes no
21. If there is something she wants to know about, would she rather look it up in a book than talk to someone about it? yes no
22. Does she like the kind of work that she needs to pay close attention to? yes no
23. Would she always declare everything at the customs, even if she knew that she could never be found out? yes no
24. Does she hate being with a crowd who play jokes on one another? yes no
25. Does she like doing things in which she has to act quickly? yes no
26. Is she slow and unhurried in the way she moves? yes no
27. Has she ever been late for an appointment or work? yes no
28. Does she like talking to people so much that she would never miss a chance of talking to a stranger? yes no
29. Is she troubled by aches and pains? yes no
30. Can she easily get some life into a rather dull party? yes no
31. Is she easily hurt when people find fault with her or her work? yes no
32. Would you say she was fairly self-confident? yes no
33. Would she be very unhappy if she could not see lots of people most of the time? yes no
34. Does she worry about her health? yes no
35. Does she have many nightmares? yes no
36. Does she find it hard to really enjoy herself at a lively party? yes no

37. Does she like playing pranks on others? yes no

Appendix 3

Target Descriptions
(A sample condition)

Extravert/Introvert	Neutral	Introvert/Extravert
Joanne is venturesome.	Linda is precise.	Robin is bashful.
Joanne is entertaining.	Linda is courteous.	Robin is sad.
Joanne is ambitious.	Linda is generous.	Robin is self-conscious.
Joanne is discrete.	Linda is tolerant.	Robin is energetic.
Joanne is punctual.	Linda is serious.	Robin is appreciative.
Joanne is eager.	Linda is imaginative.	Robin is lonesome.
Joanne is logical.	Linda is candid.	Robin is disciplined.
Joanne is neat.	Linda is thrifty.	Robin is able.
Joanne is studious.	Linda is observant.	Robin is impulsive.
Joanne is trustful.	Linda is inexperienced.	Robin is efficient.
Joanne is vigorous.	Linda is kind.	Robin is solemn.
Joanne is cautious.	Linda is inventive.	Robin is bold.
Joanne is subtle.	Linda is cooperative.	Robin is daring.
Joanne is hesitant.	Linda is earnest.	Robin is active.