

THOUGHT AND NUMBER OF COGNITIONS AS DETERMINANTS OF ATTITUDE CHANGE

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Previous researchers have shown that thinking about some attitude object results in more polarized attitudes than being distracted from thinking about the object. Perhaps this difference is due to thought producing additional cognitions consistent with the initial attitude direction. To test this hypothesis, 64 participants indicated their attitudes toward fictitious persons described with either 4 or 8 adjectives. After thinking about the person or being distracted from thinking about the person, they again scaled their attitude. Assuming that it is easier to add cognitions to the smaller initial set, the following was predicted and obtained: Opportunity for thought and initial set size interact in polarizing attitudes ($p < .05$); the difference between thought and distraction conditions is more pronounced with 4 cognitions ($p < .01$) than with 8 cognitions (*ns*); and number of cognitions is negatively related to polarization under thought ($.10 < p < .05$).

Keywords: determinants of attitude change, thought, number of cognitions, polarization of attitudes.

In several recent studies it has been indicated that, if a person thinks about some attitude object, his feeling toward the object will tend to polarize (i.e., become more extreme in the initial direction). Sadler and Tesser (1973) found that participants given an opportunity to think about a likeable or dislikeable experimental partner held more polarized attitudes toward him than participants who were distracted from thinking about the partner. Tesser and Conlee (1975) showed that the probability of an individual's attitude becoming polarized increased monotonically with time spent in thought.

One explanation for the polarizing effect of thought on feelings can be derived from two simple assumptions: (1) That an affective or evaluative response to an object is causally

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dependent on what is believed about the object – a change in belief will produce a change in affect (e.g., Carlson, 1956) and (2) thought changes beliefs in a way which makes them more consistent with the original affective evaluative direction (e.g., Abelson, 1959). In the present study we examined one pathway by which beliefs might be changed to make them more consistent with the evaluation – a change in the number of cognitions associated with the attitude object.

In one previous study (Sadler & Tesser, 1973), participants listed their thoughts about their partner and classified each one as positive, neutral, or negative. Thought was found to be associated with significantly more attitude-consistent thoughts (positive for likeable partners, negative for dislikeable) than distraction. There were no differences in number of attitude inconsistent thoughts listed. These results suggest that thought is associated with greater attitude polarization than distraction because thought generates consistent cognitions.¹

How might thought produce additional consistent cognitions? Most beliefs are not self-contained entities, but they imply other beliefs. For example, Asch (1946) found that if he asked participants who had been exposed to a list of adjectives describing another's personality to describe that person, they tended to go beyond the information given. The linkage of one trait to another by a perceiver has been termed the perceiver's "implicit personality theory" (e.g., Rosenberg & Sedlak, 1972). These inferences or linkages are partially based on the specific content or denotative meaning of the belief (Peabody, 1967). There is also a strong tendency to make inferences to new cognitions which are evaluatively consistent or balanced with initial beliefs (Abelson & Rosenberg, 1958; Rosenberg & Olshan, 1970). Thinking, then, involves reviewing one's cognitions about the attitude object and adding those cognitions implied by the set of original cognitions. We emphasize set because we would not expect cognitions implied by single prior belief to be added if they were not implied by the set as a whole (Bruner et al., 1958).

Our strategy in testing this thought-generation hypothesis was to vary the number of cognitions in the initial set. This, in turn, should affect the difficulty of adding new cognitions consistent with the entire set. Considered as a whole, the fewer the initial cognitions the less circumscribed or delimited is the attitude object and the easier it will be to generate cognitions consistent with the set (Ostrom, 1974). Further, since they must satisfy fewer constraints, those cognitions generated by the smaller set may be less redundant, and thus should have greater impact on the overall attitude (e.g., Dustin and Baldwin, 1966).

¹Another interpretation is that distraction causes some of the initial *consistent* cognitions to be lost or forgotten. With fewer consistent cognitions remaining, there is a resultant decrease in attitude polarization. While this hypothesis is logically consistent with the Sadler and Tesser results, previous researchers suggest that people are more likely to "forget" those cognitions that are inconsistent with the predominant evaluative direction of their attitude (e.g., Alper & Korchin, 1952; Bartlett, 1932; Levine & Murphy, 1943; Malpass, 1969; Taft, 1954).

If the difference between thought and distraction in attitude polarization is due in part to thought-generation and if generation is facilitated by fewer cognitions, two predictions follow: (1) The difference in attitude polarization between thought and distraction will be more pronounced with fewer cognitions, and (2) the relationship between polarization and number of cognitions will be negative within thought.

METHOD

PARTICIPANTS

Sixty-four² males and females recruited from introductory psychology courses were randomly assigned to conditions with the constraint that there be an equal number of participants evenly divided by sex within each cell.

STIMULUS DESCRIPTIONS

Using Anderson's (1968) likeableness ratings of 555 trait-descriptive adjectives, 60 personality descriptions were prepared and recorded on 3 in. x 5 in. cards. One deck of 30 cards contained descriptions using four adjectives; the other deck was made up of cards bearing eight adjectives. Within each deck half the descriptions had mean likeableness ratings on the positive side of neutral and half had mean likeableness ratings on the dislikeable side of neutral.³

PROCEDURE

Upon reporting for the experiment, participants were told that the purpose of the study was to examine the formation of feelings about others. Instructions were given in the use of a 15-point graphic scale (anchored with the labels "like strongly" (+ 7) and "dislike strongly" (-7). After rating four practice descriptions to assure understanding of the rating procedure, participants

²Data from an additional two male Ss were eliminated from further consideration: one because his original description ratings used only the four most extreme scale values, and the other because of a misunderstanding of the directions designed to manipulate opportunity for thought.

³The descriptions were intended to vary in terms of consistency as well as direction. Specifically, Anderson's list was divided into five sections: Hi⁺ (likeableness rating on a scale from 0 to 6 is greater than 4.8), Med⁺ (4.8 ≥ • > 3.6), Neutral (3.6 ≥ • > 2.4), Med⁻ (2.4 ≥ • > 1.2), and Hi⁻ (• = 1.2). Adjectives within each division were randomly chosen to form descriptions of size four as follows: Positive Consistent - Hi⁺, Med⁺, Neutral, Neutral; Positive Inconsistent - Hi⁺, Hi⁺, Neutral, Med. These negative descriptions were mirror images of the positive descriptions. The eight adjective descriptions were constructed by selecting two adjectives from each division for each of the adjectives in the four-adjective descriptions. Since the consistency manipulation did not have a significant impact on a manipulation check or on the dependent variables, discussion of it has been deleted.

went through either the four- or eight-adjective deck of 30 descriptions and verbally indicated their rating of each. Decks were shuffled after each experimental session. For each participant, two descriptions rated +3 or +4 and two rated -3 or -4 were randomly selected from all the appropriately rated descriptions.⁴

Participants were given one of the selected descriptions and asked to “try to form an overall impression – something general that they could remember about the person.” When participants assigned to the *thought condition* returned the description, they were instructed to “...start thinking about the person described on the card – just concentrate on him. You might want to think about such things as what sort of person he is, what characteristics he would have, what other people would think of him, and how you feel about him.” When participants assigned to the *distraction condition* returned the description, they were given a general information questionnaire containing a number of heterogeneous multiple choice items to work on. This was intended to prevent the participant from thinking about the personality description he had just seen.

After 90 seconds of thought or distraction, participants were stopped and asked to rate the likeability of the person on the scale they had used before. The participants then wrote down “any thoughts, feelings, or impressions formed about the person described on the card” and indicated for each separate thought whether it had a positive, negative, or neutral evaluative connotation. The same procedure was repeated for the remaining three cards. Order of presentation of the cards was randomized for each participant.

After dependent measures had been taken for all four descriptions, participants filled out a postexperimental questionnaire; their hypotheses concerning the purpose of the study were assessed (none guessed the hypothesis); and they were fully debriefed.

RESULTS

To derive an index of polarization, final likeableness ratings were compared with initial likeableness ratings. If the rating had polarized, it was scored +1; if it did not change or depolarized, it was given a score of zero. That is, initially negative attitudes were scored +1 only if they became more negative and initially positive attitudes were scored +1 only if they became more positive. Tesser and Conlee (1975) found this index to be more sensitive than algebraic change in attitude and preliminary analyses revealed this to be the case in the present study also.

This index, as well as most of the other variables, was analyzed with a 2 (sex of participant) x 2 (4 vs. 8 cognitions) x 2 (distraction vs. thought) x 2 (positive vs. negative initial attitude)⁵

⁴Actually, one positively and one negatively related description was selected from among the “consistent” descriptions, and one positively and one negatively rated description was selected from among the “inconsistent” descriptions (see footnote 5).

analysis of variance assuming repeated measures on the last factor. There are 1/56 degrees of freedom for each effect. Thought, as expected, resulted in greater attitude polarization ($\bullet = 0.523$) than distraction ($\bullet = 0.391$; $F = 4.02$, $p < .05$). This cannot be explained in terms of unidirectional shifts (e.g., greater positivity *or* greater negativity) since there was no initial attitude direction main effect ($F < 1$) and initial attitude direction did not interact with opportunity for thought ($F < 1$). Furthermore, on the postexperimental questionnaire, participants indicated that, to the extent thought resulted in attitude change, this change tended to be positive for initially liked persons and negative for initially disliked persons ($F =$

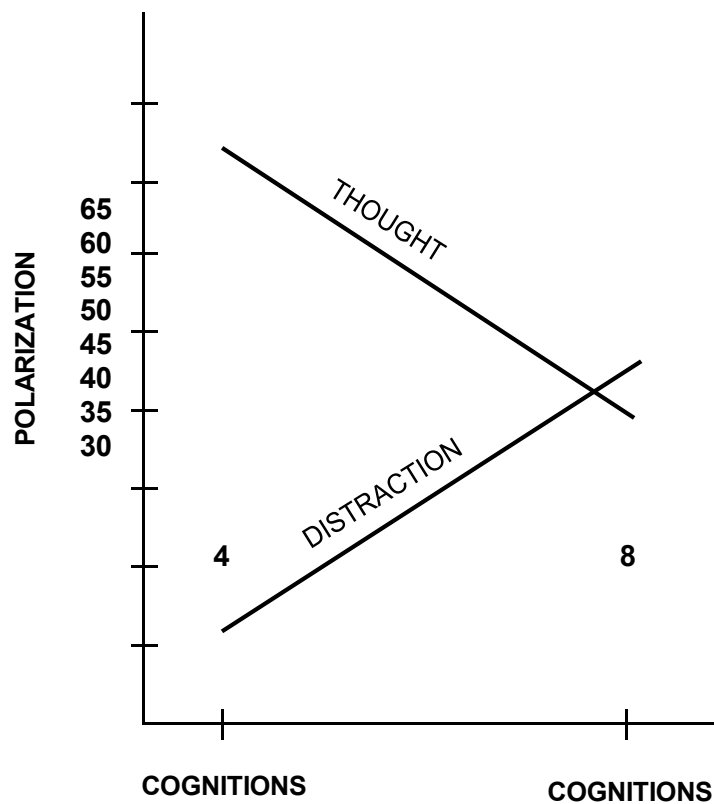


Figure 1: The interactive effect of opportunity for thought and number of initial cognitions on attitude polarization.

⁵On some postexperimental questionnaire items the last factor is not relevant because the items concerns all the descriptions the participant saw regardless of whether they were positive or negative. The variance due to consistent vs. inconsistent descriptions was also partitioned in some of the overall analyses, but these data are not reported here (see footnote 4).

54.12, $p < .01$) and this effect was stronger in the thought condition than the distraction condition (F for interaction 7.19, $p < .02$).

If the polarization effect is mediated by thought generation, one would expect a greater impact of opportunity for thought with four cognitions than with eight cognitions and that polarization will be negatively related to number of cognitions under thought. As can be seen in Figure 1, the results are clearly consistent with the hypothesis. The overall interaction between opportunity for thought and number of cognitions is significant ($F = 6.14$, $p < .05$). Further, analyses of simple effects reveal that thought reduces significantly greater polarization than distraction in the 4-cognition condition ($F = 10.05$, $p < .01$) while there is virtually no difference in the 8-cognition condition ($F < 1$). Number of cognitions was negatively related to polarization in the thought condition ($F = 3.37$, $.05 < p < .10$). There were no other significant sources of variation on this measure.

Several postexperimental questionnaire items also bear on these hypotheses. The thought-generation hypothesis suggests that polarization results from thought because thought produces new cognitions. If this is true, and it is easier to generate information in the four-cognition than the eight-cognition condition, we would expect thought, compared with distraction, to attenuate the extent to which participants consider eight adjectives to be a more adequate description than four adjectives. This is exactly what was obtained (F for interaction = 3.62, $p < .10$). Participants were also asked "...to what extent did your feelings about the person...change as a result of thinking...?" They reported greater change with 4 cognitions than 8 cognitions ($F = 5.86$, $p < .05$) as would be expected from the thought-generation hypothesis. Finally, participants were asked to indicate the extent to which their thoughts were only on the described characteristics of the stimulus person vs. characteristics not specifically described. While there were no significant effects associated with opportunity for thought or number of cognitions, the means were ordered just as predicted by the thought-generation hypothesis. Participants reported going beyond the information to greater extent in the thought condition than the distraction condition, and this effect was more pronounced with 4 cognitions ($\bullet = 400$ vs. $\bullet = 3.375$) than with 8 cognitions ($\bullet = 356$ vs. $\bullet = 3.44$).

THOUGHT-LIST MEASURES

The manipulations had their predicted impact on attitude polarization and on several postexperimental questionnaire items specifically designed as manipulation checks. In spite of this, the total number of thoughts listed regarding the stimulus person was virtually unaffected by the opportunity for thought and number of cognitions manipulations. However, participants also indicated for each thought whether it was positive, negative, or neutral/irrelevant. Since these data are relevant to the experimental hypotheses, we analyzed each of the three types of thought separately. We also analyzed the thoughts in terms of "consistent

cognitions" (i.e., positive cognitions for positive attitude objects, negative cognitions for negative objects) and "inconsistent cognitions." Regardless of the index analyzed, in no case did any of the F ratios associated with the experimental manipulations even approach significance. (Except, of course, that negative objects were associated with more negative cognitions than positive attitude objects, $p < .001$.)

DISCUSSION

Previous researchers have shown thought to be positively related to polarization of attitudes toward "actual" other persons (Sadler & Tesser, 1973; Tesser & Johnson, 1974), various political and social issues, and news type photos (Tesser & Conlee, 1975). Results gained in the current study demonstrate the effect with simple descriptions of other persons. These data increase our confidence in and add generality to the thought polarization effect across attitude objects.

The index of polarization used in this study should, perhaps, also be commented upon. It is more like a "probability of polarization" index than a "degree of polarization" index. Each of the means is directly interpretable as the percentage of attitudes observed that became more polarized. Mean "degree of polarization" (i.e., algebraic change of attitude in the more polarized direction) yielded essentially a similar pattern of results. (For example, there was a significant difference ($F = 4.51, p < .05$) between thought ($M = 0.53$) and distraction ($M = -0.34$) with four cognitions while thought ($M = -0.125$) and distraction ($M = -0.125$) did not differ ($F < 1$) with eight cognitions.) This index, however, was associated with relatively greater within-condition variability and, hence, less sensitivity to the experimental manipulations. Tesser and Conlee (1975) also found this to be true in another three independent experiments. Mean "degree of polarization" may be less sensitive than mean "probability of polarization" because one or two extreme changes in the wrong direction will have a greater impact on the former mean and its variability than the latter.

The results of this experiment provide some insight into the thought polarization effect. According to a thought-generation hypothesis, thought results in the addition of cognitions which are implied by the initial set of cognitions. Since the additional cognitions would tend to be consistent with the initial attitude direction, the attitude becomes more polarized. Since there is evidence suggesting that it is easier to generate new cognitions with four initial cognitions than eight (Ostrom, 1974), a greater difference between thought and distraction in the four-cognition than in the eight-cognition condition was expected and obtained. Further, as suggested, among participants who thought about the attitude objects, attitudes of those in the four-cognition condition were more likely to become polarized than those with eight cognitions.

The lack of effect of the experimental manipulations on the thought-listing measure might be mentioned. It may be that participants' cognitions were unaffected by the manipulations or

that the thought-list measures were inadequate indicants of participants' cognitions at the time of the post-test attitude measure. Three bits of evidence recommend the latter interpretation. First, it appears highly unlikely that the four- vs. eight-cognition manipulation would have *no* effect on the number of beliefs held about the stimulus person. Second, participants were given no time limit on the thought listing. As Miller and Brown (1973) suggest, thought listing without a time limit invites participants to include information that was not salient or available when the attitude measure was taken, and hence the construct validity of the measure is decreased. Finally, the measure appears to be reactive and differentially so in the different experimental conditions. For example, on the postexperimental questionnaire, participants reported that *while thought listing*, their feelings toward the stimulus person changed more in the four-cognition condition than in the eight-cognition condition ($p < .05$); more in the distraction condition than the thought condition ($p < .05$). Fortunately, these reported changes in feeling cannot have affected the polarization index since thought listing always came *after* the attitude measure. It does suggest, however, that the time taken and the thought invested in listing one's cognitions may have partially compensated for experimental differences that existed prior to this activity.

Attitude polarization results coupled with questionnaire data provide consistent support for the thought-generation hypothesis. However, the polarization data are indirect evidence, and the questionnaire data were based on retrospective self-reports. While the data presented render the thought-generation hypothesis tenable, more research is needed to establish it firmly or provide additional opportunities for its predictions to be disconfirmed.

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