Stability of Spoken and Typed Attitudes

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Abstract

Speaking and typing recruit different cognitive and motor systems, and activate distinct perceptual mechanisms that result in the encoding of distinct memory traces. These procedural and representational factors did not affect the expression of stimulus-based attitudes, but they did moderate attitude stability and the consistency between an expressed attitude and delayed choice. In Experiment 1, attitudes were more consistent over time when they were expressed in the same versus different response mode. In Experiment 2, attitudes better predicted choice behavior when the choice was expressed in the same mode as the attitude. The manner in which attitudes are initially expressed, therefore, appears to be integral to their mnemonic representation and subsequent accessibility. These findings are of growing relevance because attitudes are increasingly expressed in typed form over the Internet.

(129 words)
Stability of Spoken and Typed Attitudes

Consider a situation in which a person expresses an attitude about a book in an Internet chat room. A second person expresses her attitude in a face-to-face conversation. At a later point in time, both again express their attitudes on the same book in a telephone conversation. Whose attitudes will be more stable across the two occasions? What if they had expressed the attitude online the second time in an Amazon.com review, where they had to type their response?

Attitudes are learned predispositions to respond in a consistently favorable or unfavorable manner with respect to a given object (Fishbein & Ajzen, 1975) and previous research tacitly assumes that oral and manual responses are neutral with respect to mode of response; that the essential elements that differentiate oral and manual responses comprise motor components alone. This paper questions this assumption.

The assumption that attitudes are not dependent on the mode of response may hold for an initial stimulus-based evaluation of an object. In many situations, however, choices and judgments are memory-based and influenced by past judgments an individual has made (Lingle & Ostrum, 1979). It is in this context, for the repeated expression of attitudes, that we question the assumption that attitudes are neutral with respect to response mode. In two experiments, we examine how different combinations of spoken and typed responses affect attitude stability and the link between an expressed attitude and choice. We propose that initial attitudes should be more persistent when they are expressed in the same response mode as later attitudes or choices.

Attitude Stability

Attitude stability – the degree of agreement between initial and delayed attitudes – is an important concern for both theorists and practitioners interested in persuasion effects. Research has found that the factors driving the valence and extremity of an initial evaluation may be very
different from the factors determining stability (Cook & Flay, 1978; Zanna et al., 1994). Further, investigations in the area of attitude stability have found that the degree of correspondence between initial and delayed attitudes is often low and that attitudes can be quite labile (Schwarz & Bless, 1992; Wilson & Hodges, 1992). This lack of stability is likely to occur when individuals construct evaluations afresh on the delayed response occasion. According to this constructivist viewpoint, responses to attitudinal questions are based on a search for relevant information in memory (Feldman & Lynch, 1988; Tourangeau & Rasinski, 1988).

In contrast, delayed attitudes tend to be consistent with initial attitudes when initial attitudes are accessible in memory (Allport, 1935; Lingle & Ostrom, 1979; Petty & Cacioppo, 1981). This model is based on the central premise that attitudes are stored in memory as evaluative responses towards objects. When responding to an attitude scale, the individual simply has to retrieve this evaluative response from memory and report it on the response scale provided; it is not functional for people to have to construct their attitudes toward the same object anew on every fresh encounter (Fazio, 1995). Thus, according to this retrieval perspective, respondents attempt to recall an earlier attitude and use it in order to form their current response (Lavine et al., 1998).

For delayed attitudes, there is, therefore, a trade-off between constructing attitudes anew based on specific facts retrieved from memory and accessing and reporting attitudes that had been formed earlier (Fazio, 1989). We propose that a match between the response mode of initial and delayed attitudes will facilitate the accessibility of initial attitudes. When initial attitudes are diagnostic, the greater their accessibility the greater should be the correspondence between initial and delayed attitudes (Feldman & Lynch, 1988).
The Effect of Response Mode on Attitude Accessibility

There are two complementary processes through which matching the mode of response between the delayed and the initial attitude may increase the accessibility of the initial attitude: procedural and representational. The procedural account, that of transfer-appropriate processing, views memory as an event without making any claims about specific types of mnemonic representations. It suggests that re-enacting the processing at encoding will facilitate memory (Morris, Bransford & Franks, 1977; Roediger, Srinivas & Weldon, 1989). Whereas the original idea emphasized general forms of processing, such as perceptual and conceptual priming, more recent research has found that transfer-appropriate processing also extends to specific motor actions. For example, after typing a digit string at study, recognition memory was better when the to-be-recognized digit strings were re-typed at test compared to when they were simply judged as “old” and “new” in the presence of the keypad (Fendrich, Healy & Bourne, 1991). Moreover, this facilitating effect was attenuated when motoric enactment with one hand at study was repeated with the other hand at test, rather than with the same hand on both occasions (Engelkamp et al., 1994).

These ideas are particularly relevant with respect to differences in speaking versus typing (for reviews, see Caramazza, 1991; Garman, 1990; Patterson & Shewell, 1987). There are obvious differences in the recruitment of appropriate motor systems: the complex muscle movement system for speech – including programs for controlling laryngeal vibration, airflow, and articulation – differ from the arm, hand and finger movements required for typing. There are also production-planning differences in auxiliary cognitive systems for spoken and typed responses, including the creation or retrieval of different kinds of linguistic structures in separate phonological and orthographic output lexicons and output buffers. For example, when people
write, but not when they speak, graphemic representations must be activated prior to the execution of motor programs for handwriting or typing. There are also differences in the perceptual mechanisms involved, for example, in monitoring the verbal outputs via ear and eye.

Neurological evidence further suggests that the writing system is not simply scaffolded on top of the phonological system. For example, in some patients centers for speech and writing are completely independent. A patient whose corpus callosum had been severed could name pictures aloud when they were presented to the left hemisphere, but she could not write the corresponding words. In contrast, when they were presented to the right hemisphere she could write them but she could not read them aloud (Baynes et al., 1998).

In other words, speaking and typing are differentiated in terms of cognitive systems and processes involved and not just in terms of their motoric manifestation. Because either spoken or typed response is integral with the encoding of the initial attitude, reinstating the same process for the delayed attitudes should make the initial attitude more accessible.

A different but related view is the representational view based on the encoding specificity principle. This suggests that reinstating the encoding context at recall improves the accessibility of learned information in memory (Tulving & Thomson, 1973). Research has shown that retrieval cues can be unrelated to the information learned, such as being in the same room at test as at learning (Marsh, Edelman & Bower, 2001). Retrieval cues can also be physically generated as part of a person’s internal bodily environment. For example, recall was facilitated when participants were intoxicated rather than sober at retrieval, when they had also been intoxicated at learning (Goodwin, 1969). Recall is also improved when participants are in same mood at retrieval as at encoding (Bower, 1981). We argue that activating the internal processes necessary for speaking and typing (reviewed above) will similarly act as retrieval cues and facilitate the
accessibility of the initial attitude when the response mode for the delayed attitude is matched. Other self-generated retrieval cues may be linked to the physical outputs that people observe. For example, study-to-test changes in modality, font, or voice can result in a decrement in explicit recognition memory (Craik & Kirsner, 1974; Kirsner, 1973) as well as in priming on implicit memory tests (Rajaram & Roediger, 1993; Pilotti et al., 2000). A person’s own voice or the font setting on a web browser may be integrated as part of the memorial representation of initial attitudes and thus facilitate access to this attitude when voice and font are reinstated at retrieval.

To summarize, we propose that factors inherent in the expression and representation of initial attitudes will affect the accessibility of these initial attitudes, based on the mode of response used to express delayed attitudes. Procedural and representational factors suggest that a match between the mode of reporting initial attitudes and the mode of response for delayed attitudes will lead to attitude stability. We test this hypothesis in Experiment 1.

**Experiment 1: Attitude Stability**

**Method**

*Design and Procedure.* 93 American students participated in the 2 (Presentation modality: auditory or visual) x 2 (Response mode for the initial attitude: Spoken or typed) x 2 (Response mode for the delayed attitude: spoken or typed) between-subjects experiment. Participants were individually engaged in a series of tasks for which they sat alone in a sound-proof room in front of a computer. At the beginning of the experiment, participants were exposed to information about three Canadian candy bars that were not available in the United States. Half of the participants read this information and half of the participants heard this information via loudspeakers. Immediately after exposure, participants judged each of the candy bars on two attitudinal scales. They either heard the instructions and the scale items and responded by
speaking back their response orally into a microphone, or they read this information and responded by typing the appropriate response. Next, they participated in filler tasks requiring both speaking and typing for 45 minutes. They were then unexpectedly asked to again express their attitudes about the three candy bars on two different scales. Half of the participants were asked to respond to these delayed attitude scales in the same mode as they had expressed initial attitudes, and half of the participants responded in a different mode. At the end of the experiment, participants were asked about specific knowledge of the candy bars, provided demographic information and were debriefed.

**Dependent measures.** For initial attitudes toward each brand of candy bar participants either spoke or typed their response to the following questions: “Do you think that ____ is very good, pretty good, neither good nor bad, pretty bad, or very bad?” and “Do you think that ____ is a candy bar you would like very much, like somewhat, neither like nor dislike, dislike somewhat, dislike very much?” For each response participants had to type or speak the entire statement that best represented their attitude. For example, they would respond “I think that Mr.Big is pretty good.” For the delayed attitudes, they were unexpectedly queried again with the questions: “Do you think of ____ as highly favorable, mildly favorable, neither favorable nor unfavorable, mildly unfavorable, or highly unfavorable?” and “Do you think that ____ is think is totally great, fairly great, neither great nor awful, fairly awful, totally awful?” The same questions were asked for each of the three different candy bars to reduce memory for the specific response on a scale. Attitude instability was calculated as the mean absolute difference between the initial and the delayed attitude across the three candy bars.
Results

An analysis of variance (ANOVA) performed on the factors presentation modality, response mode for the initial attitude, and response mode for the delayed attitude was significant, $F(7,85) = 5.62, p < .0001$. The only significant effect was the interaction between the mode of response of the first attitude and the second attitude, $F(1,85) = 36.62, p < .0001$. This interaction effect can be interpreted in a straightforward manner: attitudes were less stable when the mode of response differed between the initial and delayed attitudes (mean absolute difference between initial and delayed attitude: $M = .69$ for spoken-typed; $M = .73$ for typed-spoken) than when they were matched ($M = .21$ for spoken-spoken; $M = .30$ for typed-typed), $F(1,85) = 37.60, p < .0001$.

Discussion

The results of Experiment 1 found no effect of presentation modality, which has been the primary focus of previous research. There were also no effects of response mode on attitudes per se. Initial attitudes did not differ whether they were spoken ($M = 3.76$) or typed ($M = 3.65$; $F[1,91] = 1.28, p > .10$). Similarly, delayed attitudes did not differ when they were spoken ($M = 3.70$) or typed ($M = 3.67; F[1,91] = 0.12, p > .10$). Instead, what mattered was whether delayed attitudes were expressed in the same mode as the initial attitude. Matching the mode of response resulted in more stable attitudes.

One possible alternative explanation, that is unrelated to the notion of attitude accessibility, is that scale usage may have differed between the auditory and visual scales. This would result in responses that are differentially skewed across scales and cross-matching scales would then artificially create absolute differences between the initial and delayed attitudes. This is not likely to be the case, however, because initial and delayed attitudes did not differ across response modes. A different alternative explanation is that even though the actual scales differed,
and participants responded to three candy bars, consistency-seeking participants may have been more successful at recalling their relative response to the initial attitude when the response modes matched (Lingle & Ostrum, 1979). In a strict sense, the retrieval model of attitude response refers not only to the initial attitude being retrieved from memory, but also being reported as the delayed attitude. For instance, Lavine et al. (1998) define the retrieval process as consisting of “retrieving the stored evaluation from long-term memory and mapping it onto a given response scale” (p. 359). Thus, retrieval ensures stability because the delayed attitude that is reported is essentially the same as the initial attitude.

To better isolate the construct of attitude accessibility from that of response matching and response recall, we asked participants whether they would like to receive additional information about a product that they had previously evaluated. Experiment 1 demonstrated higher test-retest reliability when assessed using the same versus a different response mode. The reliance on a choice behavior in Experiment 2 circumvents the problem of response recall and shared method variance between the initial and delayed attitude assessment, thereby examining the predictive validity of the initial attitude (Feldman & Lynch, 1988).

**Experiment 2: Attitude-Choice Consistency**

**Method**

*Design and Procedure.* 98 American students participated in the 2 (Presentation modality: auditory or visual) x 2 (Response mode for the initial attitude: Spoken or typed) x 2 (Response mode for the delayed choice: spoken or typed) between-subjects experiment. The procedure was similar to that in Experiment 1 except that participants were exposed to information about only one of the candy bars. Moreover, the delay between the initial attitude assessment and the choice measure was 1 hour.
Dependent measures. Initial attitudes were assessed in the same way as in Experiment 1. For the unexpected delayed choice measure, participants read or heard “Mr. Big is expected to be introduced to the U.S. market sometime in the next year. Would you like to receive an email that informs you when and where it becomes available?” In the typed response mode they then read “Please indicate your response by clicking the appropriate button below, and entering your email in the text box if you click yes.” In the spoken response mode they heard “Please indicate your response by saying yes or no. Please also say and spell your email address if you responded yes.”

Results

The dependent measure was the choice to receive additional information. A logistic regression was performed with four factors: presentation modality of the product information, the mode of response used for the initial attitudes, the mode of response used for the delayed choice, and the average initial attitude score. There were several significant effects. First, initial attitudes were predictive of the choice to receive more information on the product (Wald’s $\chi^2 = 7.92, p < .005$). Second, parallel to Experiment 1, there was a significant two-way interaction effect between the mode of response for the initial attitude and the mode of response for the choice behavior (Wald’s $\chi^2 = 6.75, p < .01$). Third, qualifying these effects, there was a three-way interaction between the initial attitude, the mode of response of the first attitude, and the mode of response of the choice (Wald’s $\chi^2 = 6.61, p = .01$).

This pattern of results can be interpreted in a straightforward manner when examining the correlation between the initial attitudes and the choice to receive more information about the brand. The correlations show that the initial attitudes were predictive of the choice behavior in the matched conditions, when both the initial attitude and the delayed choice were expressed spoken ($\rho = .55, p < .005$) and when both the initial attitude and the delayed choice were
expressed typed ($\rho = .40, p < .05$). In contrast, initial attitudes were not predictive of delayed choices in the mismatched conditions, when the initial attitude was spoken and the delayed choice was expressed typed ($\rho = -.04, p > .85$) and when the initial attitude was typed and the delayed choice was expressed spoken ($\rho = .16, p > .50$). In other words, attitudes were predictive of behavior only when expressed in the same response mode, suggesting that the attitude stability results of Experiment 1 were not epiphenomenal.

**GENERAL DISCUSSION**

This paper links differences in verbal production and monitoring mechanisms to memory accessibility for attitudes. Our results show that these differences are not only mechanical but that they mediate intellective processes. We demonstrated that attitudes are not independent of the mode of response and that mode of response makes differentially accessible episodic memory traces for previously expressed attitudes. This finding is consistent with the procedural view espoused by Kolers and Roediger (1984) who argued that memory representations cannot be divorced from the procedures used to acquire them.

To the degree attitudes are measured in an attempt to predict either future attitudes or future behavior, our results suggest researchers should strive to match the mode of initial attitude expression with that of subsequent attitude collection or behavior. While attitudes and behaviors have commonly been expressed orally, the rise of the Internet and of text messaging on cellular telephones is associated with a sharp increase in typed expressions of beliefs, opinions and behaviors. As a result, the basic results reported in our paper have important implications for everyday behaviors as well as for marketing researchers and opinion pollsters: attitudes will be more stable when there is a match between the response mode used to construct initial and delayed attitudes. Similarly, initial attitudes will better predict future behavior if the mode of
attitude expression matches that of the behavior. If the research goal is to evaluate the
effectiveness of a political or marketing intervention, for example, researchers should attend
carefully to the match between mode of initial and subsequent attitude expression. Interventions
that fall between two attitude assessments are likely to yield larger measured impact when the
mode of response differs across the two occasions, independent of the intervention itself.
References


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