JOURNAL OF CONSUMER PSYCHOLOGY, 7(1), 79–99

Informational Influence and the Ambiguity of Product Experience: Order Effects on the Weighting of Evidence

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This article examines how others' opinions can influence a consumer's evaluation of a product. This influence is said to be informational when the consumer accepts it as evidence of the product's true nature. An anchoring and adjustment process is proposed to explain how information from others is combined with direct experience when consumers form a global evaluation of a product. Two experiments are conducted to test this explanation. Findings from the two experiments suggest that when others offer their opinions about the quality of a product, the opinions have the most potential to influence a consumer who has tried the product when the opinions are considered before the consumer considers the evaluative implications of his or her own product experience. Findings from a third experiment suggest that others' opinions about product quality have limited potential to influence a consumer who has had an unambiguous experience with the product, even when conditions are most favorable for an influence to occur. The 3 experiments suggest that informational social influence obeys information processing principles associated with other kinds of private judgments.

Researchers (e.g., Calder & Burnkrant, 1977; Herr, Kardes, & Kim, 1991; Moschis, 1976; Venkatesan, 1966) often observe that others' opinions can influence consumers' reactions to products. Investigations into the nature of this influence often apply the bipartite classification of normative and informational influence proposed by Deutsch and Gerard (1955). For example, Bearden, Netemeyer, and Teel (1989,

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1990) developed a scale to measure consumers' susceptibility to normative and informational influence. The bifurcation of influence routes has also appeared in experimental studies of direct social influence on product evaluations (e.g., Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977).

Normative social influence results from pressure to conform to another's expectations, whereas informational social influence entails accepting information from another as evidence of reality (Deutsch & Gerard, 1955). These influences may produce similar behavioral outcomes, but they operate by distinct processes with different motivations (Burnkrant & Cousineau, 1975; Kelman, 1961). Accepting a normative influence is motivated by desires for self-maintenance or external rewards and operates by identification or compliance processes (Kelman, 1961). Identification occurs when an individual accepts the position of another person or group "because this behavior is associated with a satisfying self-defining relationship to this person or group" (Kelman, 1961, p. 63). Compliance occurs when "the individual conforms to the expectations of another to receive a reward or avoid a punishment mediated by that other" (Burnkrant & Cousineau, 1975, p. 207). Both identification and compliance involve normative pressures to behave, but neither requires a change in attitudes associated with the behavior. Informational influence, on the other hand, involves obtaining factual evidence about an evaluated object (Kaplan & Miller, 1987; Kelman, 1961; Park & Lessig, 1977) and operates through a process of internalization (Burnkrant & Cousineau, 1975; Kelman, 1961). People accept information from others if it facilitates problem solving or helps them cope with some aspect of their environment. They perceive others to be mediators of fact (Burnkrant & Cousineau, 1975). When internalization occurs, the content, rather than the outcome, of the induced behavior is rewarding (Kelman, 1961). The latter type of influence is the focus of the present research. Our goal is to build on previous experimental findings of informational influence on product evaluations by providing insight into the process by which evidence is internalized.

Kelman (1961) argued that when information is internalized, it will not be accepted *in toto* but will be modified to fit the unique experiences of the target. We expand on this notion by suggesting that informational social influence obeys information-processing principles associated with other kinds of private judgments. Specifically, we argue that information from others is integrated with other evidence in an anchoring and adjustment fashion, whereby the evaluative implications of initially considered evidence are weighted more heavily than is later information. Similar processes have been used to explain other judgmental phenomena, such as revising opinions (e.g., Lopes, 1982) and constructing evaluations (e.g., Lynch, Marmorstein, & Weigold, 1988). Lopes (1982) developed an anchoring and adjustment model of opinion revision that has been described as "a prototype of an online judgment procedure" whereby "subjects making the judgment revise, online, as items of evidence are encountered" (Hastie & Park, 1986, p. 261). Lynch et al. (1988) suggested a similar process whereby inputs are sequentially retrieved by the

consumer, who revises the implications of already considered evidence with each new input retrieved. In the present research, we conduct an experiment to determine if informational influence operates in a similar fashion, but first we review previous studies and interpret their findings in light of the proposed process.

REPRESENTATIVE PRIOR RESEARCH

Cohen and Golden (1972) attempted to distinguish normative influences on public compliance from informational influences on private acceptance of information. They designed an experiment in which they exposed participants to a display board containing a histogram of product (coffee) ratings ostensibly provided by others. The board contained nails that were aligned over 15 numbers to indicate response frequency for a given number on a 15-point product quality scale. The histogram was formed by arranging tags on the nails attached to the board. Each tag was initialed with a different writing style and a different type of ink so that participants would believe that others actually performed the rating task. The predetermined distribution that was used to manipulate the uniformity of others' opinions had either a high or low variance to reflect low or high uniformity of opinions, respectively. After participants saw the histogram, they were instructed to taste the product and provide their own ratings. Participants were told that their ratings would be visible to others. Two groups of control participants who did not see either histogram were also included in the experiment. Control participants were divided into groups whereby some were told that their evaluations would be made public and others were guaranteed anonymity. A comparison of product evaluations between control groups did not yield a significant difference. Hence, the threat of participants' evaluations being made public did not affect their ratings of product quality. A comparison of high and low uniformity conditions also failed to yield a significant difference. However, the modal rating attributed to a source of influence had a significant impact on the ratings provided by participants.

Burnkrant and Cousineau (1975) also found people's product evaluations to be significantly affected by ratings ostensibly provided by others. They used the display board methodology of Cohen and Golden (1972), but added an experimental condition in which participants were exposed to the histogram of others' responses, but were assured that their own responses would be anonymous. This extension of Cohen and Golden (1972) allowed a more meaningful analysis of the impact of visibility-induced normative pressures on acceptance of information from others. If participants' product ratings were affected by others' evaluations despite no obvious pressures to conform, then informational influence was assumed to be operating.

They also found participants' ratings were signficantly influenced by evaluations attributed to others. Moreover, this effect did not dissipate with the assurance

of anonymity.[1] Hence, they concluded that the influence was informational because participants appeared to use "the ratings of others as evidence about the true nature of the product" (Burnkrant & Cousineau, 1975, p. 213). Two other factors, evaluator credibility and uniformity of evaluator opinions, were also manipulated in this experiment. Credibility was manipulated by attributing the distribution of product ratings to either expert (home economists) or novice (other students) sources. This manipulation did not influence evaluations rendered by participants. Uniformity of evaluator opinions was manipulated by exposing participants to a histogram with high, low, or zero variance. However, pairwise comparisons involving the three levels of uniformity failed to produce a significant difference among them.

Pincus and Waters (1977) also used the display board methodology. They examined the impact of direction of influence, uniformity of information, and comparative cues on acceptance of information from others. Participants were shown the display board containing a histogram of more or less favorable and more or less consistent evaluations of a product (paper plate). Then they were given the opportunity to experience and rate the product. This experiment showed that product evaluations can be influenced both upward and downward by changing the modal rating attributed to others. Participants who were led to believe that others provided a high modal rating of a plate rated it higher than did those who rated the same object after being told that others provided a low modal rating. The effect diminished somewhat as the variance in others' ratings increased.

Pincus and Waters also used a comparison cue manipulation that involved allowing some participants to compare a focal plate to other plates before making their evaluations. This cue gave some participants a frame of reference to make them more certain about their own evaluations and, therefore, less dependent on others. However, this additional information failed to moderate the extent to which participants were influenced by others.

According to Deutsch and Gerard (1955), accepting an informational influence dependes on the relative certainty in one's own versus others' evaluations. Greater uncertainty in the former increases susceptibility to influence, although greater uncertainty in the latter decreases it. Both sources of uncertainty have been manipulated in experimental investigations of informational influence on product evaluations. For example, Pincus and Waters (1977) manipulated participants' certainty in their own evaluations by providing comparison products to serve as a reference point. Burnkrant and Cousineau (1975) manipulated certainty in others' evaluations by varying credibility of the evaluators. Neither manipulation had the predicted effect on participants' ratings, although both appeared to lead participants

[1] Burnkrant and Cousineau found a significant effect of visibility ($p < .05$), but not in the hypothesized direction. Influence was actually greater when participants were guaranteed anonymity than when they believed their evaluations would be seen by others.

to adjust their estimates slightly. We offer an anchoring and adjustment explanation for why these and other manipulations produced minimal effects.

AN ANCHORING AND ADJUSTMENT INTERPRETATION

Anchoring and adjustment involves making judgments by starting from an initial value that is adjusted to yield the final answer (Tversky & Kahneman, 1974). Adjustments to initial estimates are often insufficient (Slovic & Lichtenstein, 1971), so different starting points yield different estimates that are biased toward initial values (Tversky & Kahneman, 1974). This phenomenon appears to be operating in experimental investigations of informational social influence on product evaluations.

Participants in these experiments were allowed to experience the product after they were shown a distribution of ratings ostensibly provided by others. When they were asked to provide their own evaluations, they seemed to anchor on the value manipulated by the experimenter and adjust, albeit inadequately, for their own experience and any uncertainty created by other manipulations. For example, Cohen and Golden (1972) found participants to be significantly influenced by the modal rating attributed to others. However, the amount of dispersion in others' ratings had no significant effect. Likewise, participants in other experiments (e.g., Burnkrant & Cousineau, 1975; Pincus & Waters, 1977) also appeared to anchor on the modal quality rating and adjust their assessments to account for their own experiences and the uncertainty introduced by other factors. For example, the hypothesis that greater variance in others' ratings has an adverse effect on acceptance of an informational influence was only supported by Pincus and Waters (1977).[2] Other attempts to manipulate certainty, such as providing comparison cues (Pincus & Waters, 1977), and manipulating source credibility (Burnkrant & Cousineau, 1975) failed to produce the predicted effects on participants' evaluations.

In summary, the modal quality rating attributed to others has significantly influenced participants' product evaluations, although other factors have had minimal effects. We believe that participants did not appear to be influenced by these factors because they weighted the evaluative implications of other information more heavily. We test this explanation by manipulating the order in which two informational inputs are presented. Others (e.g., Hogarth & Einhorn, 1992; Lopes, 1987) have used similar approaches to test for anchoring and adjustment.

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[2]Pincus and Waters (1977) found a significant interaction between direction of influence and uniformity of information ($p < .05$). The difference in means between high and low mode conditions was substantially greater in the high uniformity condition than in the low uniformity condition.

ORDER EFFECTS ON THE WEIGHTING OF INPUTS

When people accept information about product quality from others, they should use the information either as an input to form their own initial quality estimate or as an impetus to revise a previous assessment of quality. Information used to form an initial estimate should have a greater impact on the final evaluation than does information used to revise an estimate because revisions are often insufficient (Slovic & Lichtenstein, 1971). Hence, the final estimate of quality should be biased toward the value suggested by initially considered information. When evaluations are made online, information is considered in the order in which it is received. As a result, a primacy effect should be observed when people make evaluations online.

The primacy effect should hold when the evaluative implications of inputs are considered in chronological order. However, evaluations are not always made as information is acquired; instead, they are often made long after relevant inputs have been received (Lingle & Ostrom, 1979; Lynch & Srull, 1982). If people's processing goals do not involve an evaluation when information is acquired, then they must retrieve previously acquired inputs and compute an evaluation on the spot (Lichtenstein & Srull, 1987; Loken & Hoverstad, 1985). Thus, evaluations for delayed memory-based judgments should be based on the order in which inputs are retrieved (Lynch et al., 1988). Because retrieval order is a function of accessibility (Alba, Hutchinson, & Lynch, 1991) that is inversely related to time since activation (Feldman & Lynch, 1988), a recent input should be retrieved and an initial impression formed based on its evaluative implications (Lichtenstein & Srull, 1985). This impression then would be adjusted to account for subsequently retrieved inputs. The memory search and adjustment process should continue until no other diagnostic inputs are accessible, or the already retrieved inputs are perceived as being sufficiently diagnostic to suggest a decision (Feldman & Lynch, 1988; Lynch et al., 1988).

There are two informational inputs provided in the present experiment. The initially presented input should have a greater impact on quality estimates for participants making evaluations online, but it should have a lesser impact on quality estimates for participants making delayed evaluations. For this experiment, we attempted to minimize the disparity between values implied by the two inputs, because disparities between sources of evidence may cause consumers to overestimate the diagnosticity of their own experience and disregard input from others (Herr et al., 1991). Otherwise, the relation between presentation order and informational social influence should be as follows:

H1a: Consumers who evaluate a product online and are given information about others' product evaluations before they experience the product will be more susceptible to an informational social influence than will

consumers making similar types of evaluations who receive information about others' ratings after they experience the product.

H1b: Consumers who make memory-based evaluations of a product and are given information about others' product evaluations before they experience the product will be less susceptible to an informational social influence than will consumers making similar types of evaluations who receive information about others' ratings after they experience the product.

These hypotheses are tested in a laboratory experiment in which two informational inputs, direct experience and others' opinions, are provided. We expect participants' evaluations of a product to be more discrepant from those of a control group when participants consider others' opinions of a product before they consider the evaluative implications of their own experience.

EXPERIMENT 1A

The stimulus for this experiment was a 50-sec cassette recording of a musical selection. The recording was duplicated from a compact disc and played on a portable stereo with dual cassette decks. The dependent measure was participants' evaluations of the recording's sound quality. Details of the design and procedure for this experiment are discussed next.

Design

A 2 × 2 × 2 between-subject design with two no-influence control groups was employed in this experiment. The three factors were: (a) direction of influence, (b) information presentation order, and (c) processing goals. Direction of influence was manipulated by exposing participants to a histogram of sound quality ratings with a mode either higher or lower than the mean rating of a no-influence control group. This manipulation was designed to convince participants that the recording was either better or worse than the "actual" quality estimate provided by the control group. Information presentation order was manipulated by exposing participants to the influence manipulation either before or after they were given direct product experience. The two processing goals were evaluation and detection. The evaluation goal involved informing participants that they will be asked to rate the sound quality of the recording. This manipulation was intended to encourage them to evaluate the recording online. The detection goal involved telling participants that they will be asked to determine whether the selection is a recorded copy or a

store-bought original. These instructions were intended to encourage participants to attend to the stimulus without forming a numerical evaluation of quality online.

Procedure

A total of 26 undergraduate students were recruited and randomly assigned to two no-influence control groups before other participants were recruited for the remaining conditions. Advance recruitment of control participants was necessary because the modal ratings for the influence manipulations depended on the mean ratings of the control groups. Two control groups were necessary to ensure that participants' sound-quality ratings were unaffected by different cover stories for the processing goal manipulations. Mean sound quality ratings among control participants for the evaluation and detection goals were 9.15 and 9.38, respectively ($t = 0.24$, *n.s.*). We set the modal ratings for the two directions of influence at roughly ± 3.5 points from the grand mean of the control groups.

An additional 114 participants were recruited and assigned en masse to experimental conditions. They were told that the purpose of the experiment was to determine either product quality perceptions (evaluation goal) or how well they can distinguish an original (i.e., store-bought) cassette recording from a tape-recorded copy (detection goal). A cassette was placed in each side of a dual cassette player and covers for a blank cassette and the original were displayed to reinforce the detection goal manipulation. After initial instructions, participants answered questions about music listening habits and previous research participation. These questions were asked to reinforce the cover story about our interest in their perceptions of the recording, and to mask the true purpose of the study. After participants answered these questions, they either listened to the selection or they examined a distribution of sound-quality ratings attributed to 16 students who had participated in an earlier experiment. At this point in the experiment, a histogram of ratings with a high or low mode was projected onto a screen in front of the room. The shape of the hypothetical distribution is presented in Figure 1. The musical selection and histogram were presented sequentially, with the first being withdrawn before the other was presented (order was rotated). Participants concluded by:

1. guessing whether they heard an original or a copy,
2. rating the sound quality on a 15-point scale ranging from 1 (*worst*) to 15 (*best I ever heard*),
3. guessing the purpose of the experiment.

Control participants followed a similar procedure, except they were not exposed to an influence manipulation and they were not asked to guess the purpose of the experiment.

Results

A 2 × 2 × 2 analysis of variance (ANOVA) was conducted to test the effects of direction of influence, information presentation order, and type of judgment on participants' sound quality ratings. The analysis yielded a significant main effect for direction of influence, $F(1, 106) = 72.99$, $p < .0001$, $\omega^2 = 0.39$.[3] As expected based on previous findings (e.g., Pincus & Waters, 1977), participants who were told that others judged a product more favorably rated it higher than did those who were told that others evaluated it less favorably.

The hypothesized three-way interaction was also supported, $F(1, 106) = 6.08$, $p < .02$, $\omega^2 = 0.04$. An examination of the mean sound quality ratings presented in Table 1 reveals the predicted primacy effect of the influence manipulation for online evaluations and a recency effect for delayed evaluations. The difference in means between high and low mode conditions for online judgment participants was greater when the influence manipulation was presented *before* product experience than

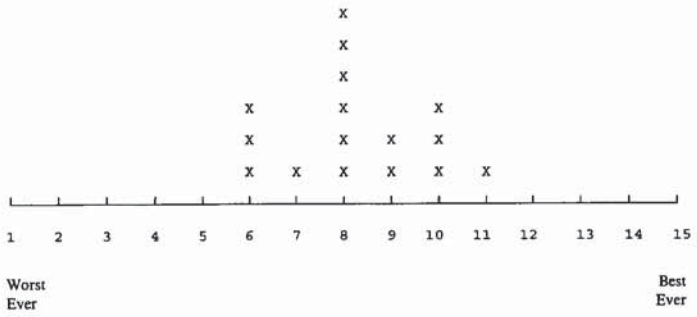

FIGURE 1 Example distribution of quality ratings by 16 students.

[3]Examination of the postexperimental inquiries for the 114 noncontrol participants revealed that 26.32% of them guessed that we were trying to use others' responses to influence their ratings. Following Shimp, Hyatt, and Snyder (1991, 1993), we retained their data only after we examined their effects on our findings. We found that retaining these data resulted in minor changes in statistical significance, larger reductions in effect sizes, but no major changes in conclusions drawn from the study. For example, a main effect of direction of influence was found whether hypothesis guessers were included in the analysis, $F(1, 106) = 72.99$, $p < .0001$, $\omega^2 = 0.39$, or not, $F(1, 76) = 151.50$, $p < .0001$, $\omega^2 = 0.64$. Hypothesis guessing was less prevalent in Experiment 1B (16.44%) and Experiment 2 (11.46%), and had minimal effects on the results of each experiment. For consistency across studies, we retained the data for known hypothesis guessers in all three experiments.

when it was shown afterwards. However, the difference between the two gaps is not significant, $F(1, 106) = 1.95$, *n.s.* A similar comparison among delayed judgment participants shows that the influence attempt had a significantly greater impact when it was made *after* product experience than when it was made beforehand, $F(1, 106) = 4.40$, $p < .05$, $\omega^2 = 0.03$. Overall, these results support our predictions.

Dunnette's procedure was used to compare treatment means to the grand mean of the control groups.[4] This analysis was performed as an additional assessment of the anchoring and adjustment interpretation. This analysis reveals that each group's ratings were in the predicted direction relative to control, and these results are consistent with anchoring and adjustment. For online evaluations, only those who were exposed to the influence before hearing the musical selection rated it significantly different from the control groups in both the high and low mode conditions. These findings suggest that when participants made evaluations online, they anchored on the initially presented information and adjusted for their later experience. The opposite was true for participants induced to wait until both inputs were received before making an evaluation. Those who saw the influence manipulation

TABLE 1
Means and Standard Deviations for Experiment 1A Treatment and Control Groups

Conditions					
Mode	*Order*[a]	*Judgment*	*N*	*M*	*SD*
High	I – E	Online	13	11.69*	1.44
High	E – I	Online	14	10.57	2.21
Low	I – E	Online	14	7.14*	1.79
Low	E – I	Online	15	7.53	1.55
High	I – E	Delayed	14	10.57	2.44
High	E – I	Delayed	14	11.00	2.08
Low	I – E	Delayed	15	9.00	2.00
Low	E – I	Delayed	15	7.20*	2.40
Control		Online	13	9.15	2.70
Control		Delayed	13	9.38	2.14

[a]Order of E (product experience) and I (influence attempt).

*Significantly different from control at $\alpha = .05$.

[4]Dunnette's procedure was chosen because we were specifically interested in comparing each experimental group to the relevant control group, and Dunnette's procedure was developed for this purpose (Kirk, 1982). The Tukey honestly significant difference (HSD) procedure, which is recommended in most experimental situations, is useful for "evaluating the significance of all possible differences between pairs of treatment means" (Keppel, 1991, p. 173).

after hearing the recording gave evaluations that were more discrepant from the control groups' than were the evaluations of those who saw the influence manipulation first. However, the difference from control was only significant for participants exposed to the low mode influence manipulation.

Discussion

The data for this experiment support the proposed anchoring and adjustment process. When making evaluations of sound quality online, participants appeared to anchor on the evaluative implications of initial information and adjust their estimate for later information. However, those who waited until all relevant information was received before making an evaluation appeared to anchor on more recent information and adjust their estimate to account for previous information. A comparison of each experimental condition to its respective control group provides further evidence of anchoring and adjustment. In three of four cases, participants who anchored on the value given by the influence manipulation did not appear to adjust sufficiently for their own experience. Consequently, their evaluations were significantly different from those of the control groups.

We manipulated information processing goals by using different instructions across experimental conditions. Recall that, unlike participants who made evaluations online, participants who made delayed evaluations were discouraged from forming numerical ratings of quality as they experienced the product. Instead, they were told that their objective was to determine whether a brief musical selection was a recorded copy or a store-bought original. The fact that even a small effect emerged with such a subtle manipulation of the independent variable should be viewed as strong support for our hypothesis (see Prentice & Miller, 1992, for a discussion of the minimalist approach to demonstrating an important effect). On the other hand, the processing goal manipulation for participants in delayed judgment conditions is potentially problematic. Determining whether a recording is an original or a copy probably involves an assessment of sound quality. That is, if people believe the recording to be a copy, then they must doubt that it is of good enough quality to be an original. Hence, even participants in the delayed judgment condition may have made evaluations online even if those evaluations were not numerical ones. Because of this potential limitation, we decided to conduct an additional experiment with different instructions to test the proposed order effects for delayed, memory-based judgments.

EXPERIMENT 1B

The purpose of this experiment is to provide a more stringent test of H1b than was accomplished in the previous experiment. A 2×2 between-subject experiment with

a no-influence control group was conducted for this purpose. The two factors in this experiment, direction of influence and information presentation order, were manipulated as they were in the previous experiment. The experiment was completed by 55 control participants before others were recruited for the remaining conditions for us to obtain an estimate of the "actual" sound quality of the recording. The control group provided a mean rating of 8.58 (out of 15), so the modal ratings used to manipulate downward and upward influence were 5 and 12, respectively.

A total of 73 undergraduate business students were recruited and assigned en masse to the four experimental conditions. The context and procedures used for this experiment were similar to those of Experiment 1A except participants were recruited for a signal detection task for which they were instructed to identify the number of musical instruments used to produce a 50-sec recording. These instructions were used to prevent participants from being in an evaluative mode while listening to the recording. After participants answered a few preliminary questions, they were exposed to a histogram of sound quality ratings ostensibly provided by 16 students from a previous experiment. The histogram, which had either a high (12) or low (5) mode, was presented either before or after they heard the musical selection. Participants were told that the histogram of others' ratings was provided to assure (alert) them of the ease (difficulty) of the task.

Results

A 2 × 2 ANOVA was conducted to test for the hypothesized effect (H1b). This analysis reveals a significant main effect of direction of influence, $F(1, 69) = 233.62$, $p < .0001$, $\omega^2 = 0.75$, and a marginally significant interaction between direction of influence and information presentation order, $F(1, 69) = 3.87$, $p < .06$, $\omega^2 = 0.04$. An examination of the mean sound quality ratings presented in Table 2 suggests that the interaction is due to the predicted recency effect for participants making

TABLE 2
Means and Standard Deviations for Experiment 1B Treatment and Control Groups

Conditions				
Mode	*Order*[a]	*N*	*M*	*SD*
High	I – E	18	11.56*	1.34
High	E – I	18	12.17*	0.99
Low	I – E	19	7.05*	1.47
Low	E – I	18	6.33*	1.85
Control		55	8.58	2.50

[a]Order of E (product experience) and I (influence attempt).

*Significantly different from control at $\alpha = .05$.

delayed, memory-based judgments. Participants who were exposed to the influence manipulation after they were allowed to experience the product rendered evaluations that were more discrepant from those of the no-influence control group than did participants who saw the influence manipulation before their product experience. We interpret this result as evidence that participants anchored on the value suggested by the most recently presented information and adjusted for earlier inputs.

Discussion

This experiment provides further evidence that consumers who accept an informational social influence do so by anchoring on initially considered information and adjusting to account for additional inputs. When consumers evaluate a product online, they are expected to weight others' feedback about the product more heavily when the feedback is given before they have had an opportunity to experience the product than they would when the feedback occurs after product experience (Experiment 1A). However, when consumers evaluate a product from memory, they should rely more on input from others when that feedback is provided after they have experienced the product (Experiments 1A and 1B). It appears that when judgments are made from memory, the initially considered inputs are those that are presented most recently.

The results of Experiments 1A and 1B may have been obtained only because of the ambiguity of the experimental task. That is, judging the quality of an unfamiliar recording based on a single exposure may be an ambiguous experience for all but the most sophisticated music listener (Kardes, Kim, & Lim, 1994). It is doubtful that the effects observed in the previous experiments will also be found when the product experience is unambiguous, because previous research (e.g., Hoch & Ha, 1986) suggests that other information about a product is of limited use to a consumer who has had an unambiguous experience with the product. Hoch and Ha (1986, Experiment 1) found that advertising did not effect product evaluations for participants who had an unambiguous product experience following message exposure. Likewise, others' evaluations may not influence consumers' own evaluations of the product if they have had an unambiguous experience with it. In the next experiment, we investigate how the ambiguity of a product experience affects the acceptance of an informational influence.

EXPERIMENT 2

Consumers sometimes make decisions about products by using ambiguous evidence in conjunction with other information (Deighton, 1984). However, their

reliance on other information diminishes when unambiguous evidence about the product is present (Hoch & Ha, 1986; Experiment 1). This finding can be explained by the accessibility–diagnosticity model, which posits that accessible information will not be used as an input to judgments when more diagnostic information is available (Feldman & Lynch, 1988; Lynch et al., 1988). Diagnosticity refers to the extent to which an input provides unequivocal or unambiguous evidence about the nature of an object (Herr et al., 1991; Hoch & Ha, 1986). Because people often extol the virtue of learning from experience (Hoch & Ha, 1986), they may perceive their own experience to be diagnostic, especially when that experience clearly contradicts other information. Hence, consumers may base their evaluations of a product solely on direct experience when their experience with the product is unambiguous. Based on this discussion, we hypothesize the following:

H2: Consumers who have had an unambiguous experience with a product will be less susceptible to an informational social influence than will consumers who have had an ambiguous experience with the product.

To test this hypothesis, participants were recruited to participate in a laboratory experiment to evaluate the quality of paper towels.

Design

A 2 × 2 between-subject design with two no-influence control groups was used in this experiment. In addition to two directions of influence (low and high mode), there were two types of product test (feel test and absorbency test) that were used to manipulate the ambiguity of product experience. The two tests were chosen based on a pretest conducted with 32 participants who indicated on a 7-point scale ranging from 1 (*not at all confident*) to 7 (*very confident*) their confidence in their ability to judge the quality of a paper towel if they could "rub, rip, or wad" (feel test) or "wipe up a spill with" (absorbency test) a sample before purchasing the brand. Confidence scores for the two-product test conditions were taken within subjects (order was rotated). Participants were significantly more confident performing an absorbency test than a feel test ($M_{Absorbency} = 5.94$, $M_{Feel} = 5.38$), $F(1, 30) = 5.64$, $p < .03$. Therefore, the feel test was chosen as the more ambiguous experience.

Procedure

Sixty undergraduate students were recruited and assigned in groups of 30 to two no-influence control groups before other participants were recruited for the remaining conditions. Two control groups were used to determine whether perceptions of

product quality differed according to type of product test. Mean quality ratings among control participants for the feel and absorbency tests were 7.63 and 8.27, respectively ($t = 0.94$, *n.s.*). We set the modal ratings for the direction of influence manipulations at approximately ± 3.0 points from the grand mean of the control groups.

A total of 96 participants were recruited and assigned en masse to experimental conditions. After initial instructions, participants in each condition performed a brand recognition task. This task was included to reinforce the cover story about our interest in their ability to judge product quality, and to camouflage the true purpose of the experiment. After they performed the brand recognition task, they were instructed to examine a chart containing a histogram of product ratings ostensibly provided by 16 other students from an earlier experiment. The mode of the histogram was three points above or below the grand mean of the control groups, depending on the experimental condition. After participants saw how others rated the product, they were told to evaluate it based on their own experience. Participants either performed a feel test that required them to "rub, rip, or wad" the paper towel (high ambiguity) or an absorbency test that involved wiping up "a reasonable amount of water" sprayed from a plastic bottle (low ambiguity). After the product experience, participants concluded by: (a) guessing the brand, (b) rating its quality on a 15-point ranging from 1 (*worst*) to 15 (*best I ever saw*) scale, (c) indicating the degree of confidence in their ratings, and (d) guessing the purpose of the experiment. Control participants followed a similar procedure except for the influence manipulation. All participants, including control, received instructions designed to induce them to make evaluations online, and all participants in the four treatment conditions were exposed to the influence manipulation before they were given direct product experience. We adopted these procedures because they were found (in Experiment 1A) to be the conditions most favorable for an influence to occur. Our premise was that if consumers who have had an unambiguous product experience are difficult to influence under these conditions (i.e., making evaluations online when potentially biasing information precedes direct product experience), then they are unlikely to be influenced under less favorable circumstances.

Results

A 2 × 2 ANOVA was conducted to test the effects of direction of influence and ambiguity on acceptance of an informational influence.[5] The analysis yielded a

[5]As a check for the ambiguity manipulation, we asked participants to indicate their degree of confidence in their product evaluations on a 15-point scale ranging from 1 (*unsure*) to 15 (*sure*). Participants who performed the absorbency test (low ambiguity) were slightly more confident in their evaluations than were those who performed the feel test (high ambiguity). However, this difference was

significant main effect for direction of influence, $F(1, 92) = 34.06$, $p < .0001$, $\omega^2 = 0.26$. Participants who believed that others rated the paper towel more favorably rated it higher than did those who believed that others rated it less favorably.

The interaction between direction of influence and ambiguity was also significant, $F(1, 92) = 4.34$, $p < .04$, $\omega^2 = 0.03$. An examination of mean quality ratings in Table 3 shows that the difference in ratings between subjects in the high and low mode conditions was greater with an ambiguous product experience, $F(1, 92) = 31.37$, $p < .0001$, $\omega^2 = 0.24$, than with an unambiguous one, $F(1, 92) = 7.04$, $p < .01$, $\omega^2 = 0.06$. These results suggest that the ability of others to influence an individual's product evaluations may be moderated by the ambiguity of one's experience with the product, thereby supporting H2.

A comparison of treatment group means to the grand mean of the control groups further illustrates the difficulty of influencing product evaluations among consumers who have had an unambiguous experience with the product. Each group rated the product in the predicted direction relative to control, but the differences from control was significant only for those having a somewhat more ambiguous product experience.

TABLE 3
Means and Standard Deviations for Experiment 2 Treatment and Control Groups

Conditions				
Mode	*Ambiguity*	*N*	*M*	*SD*
High	High	24	9.54*	2.62
High	Low	24	8.50	3.30
Low	High	24	5.58*	1.59
Low	Low	24	6.63	1.93
Control	High	30	7.63	2.33
Control	Low	30	8.27	2.89

*Significantly different from control at $\alpha = 0.05$.

not significant ($M_{Absorbency} = 10.53$, $M_{Feel} = 10.12$), $t = 0.90$, *n.s.* Although this result appears to imply that the manipulation was ineffective (as one reviewer indicated), our pretest results do not support this conclusion. The fact that our manipulation check did not reveal a difference of the magnitude found in our pretest is consistent with evidence presented by Quattrone (1985) that primary judgment tasks (e.g., assessing quality) frequently interfere with secondary judgment tasks (e.g., indicating confidence) when the primary task produces consequences that call into question inferences about the secondary task. Actual differences in confidence across experimental conditions may have been obscured by the task of reporting an evaluation that may (dis)agree with others. Nonetheless, different levels of confidence may have accounted for the differences in the extent to which direct experience affected product evaluations.

Discussion

Results of this experiment support H2. Participants who had a less ambiguous experience with the product were less susceptible to influence than were those who had a more ambiguous product experience. However, even those who had a less ambiguous product experience rated the product higher when the evaluation from others was more favorable. But, unlike their high ambiguity counterparts, low ambiguity participants' did not render evaluations that were significantly different from those of a control group that did not receive information from others prior to making a judgment. In general, findings from this experiment are consistent with previous findings (e.g., Hoch & Ha, 1986) that direct experience with an object is most heavily weighted when the experience is unambiguous.

GENERAL DISCUSSION

Researchers (e.g., Burnkrant & Cousineau, 1975; Cohen & Golden, 1972; Pincus & Waters, 1977) have found that consumers' evaluations of a product can be influenced by others' opinions of the product. This influence is said to be informational if it is accepted as evidence of the true nature of the product. We argue that consumers combine input from others with other information in an anchoring and adjustment fashion whereby initially considered evidence is disproportionately weighted in global evaluations. Findings from Experiments 1A and 1B support this argument by demonstrating that the order in which information from others and product experience are considered moderates the impact of each input. Findings from Experiment 2 suggest that the relative impact of the inputs is also moderated by the ambiguity of the product experience. When consumers have an unambiguous experience with a product, they are difficult to influence even when conditions are favorable for an influence to occur (i.e., making judgments online when an influence attempt precedes product experience). Therefore, the effects that were found in Experiments 1A and 1B should be nullified when the product experience is unambiguous.

This research contributes to efforts by other researchers (e.g., Deighton, 1984; Hoch & Ha, 1986) to investigate how multiple inputs interact to influence product evaluations. For example, Deighton (1984) showed that consumers may interpret evidence of product quality differently when they have previously been exposed to advertisements about the product. Hoch and Ha (1986) showed that the evidence must be ambiguous for this interaction to occur. The present study arrives at similar conclusions about the interaction between product experience and information from others. We find that others' opinions about product quality are more likely to influence a consumer's product evaluations when the consumer's own experience with the product is somewhat ambiguous.

Hoch and Ha (1986, Experiment 2) also found that the order in which direct product experience and advertising are considered affects the impact of the advertised message. When consumers were exposed to advertising before they experienced the advertised product, they evaluated the product more favorably than did those who were exposed to the same inputs but in reverse order. We found similar results when direct experience is accompanied by information from others. Input from others is most influential when it is considered before consumers have an opportunity to reflect on their own experiences. These findings support the anchoring and adjustment interpretation.

This research supports the work of theorists (e.g., Lopes, 1982; Lynch et al., 1988; Tversky & Kahneman, 1974), who argue that judgmental phenomena can be modeled as an anchoring and adjustment process. Anchoring and adjustment occurs when initially considered evidence is disproportionately weighted in global evaluations. Findings from Experiments 1A and 1B suggest that information processing goals (or instructional task) and presentation order jointly influence the order in which inputs are considered. Consequently, the weight given to each input and the ensuing evaluation varies according to these factors.

Finally, our results are consistent with those of others (e.g., Fazio & Zanna, 1978, 1981; Gilovich, 1987; Kardes et al., 1994; Regan & Fazio, 1977; Songer-Nocks, 1976; Zanna, Olson, & Fazio, 1981) who have investigated the relative impact of firsthand versus secondhand information. For example, beginning with Songer-Nocks (1976), investigations of factors moderating attitude–behavior consistency have found firsthand information (i.e., direct experience) to be more impactful than is information obtained secondhand (i.e., indirect experience). This result was replicated and extended in the program of research conducted by Fazio and colleagues (see Fazio & Zanna, 1981, for a review). Of particular interest is a finding reported by Fazio and Zanna (1978, Experiment 1) that not only is direct experience more impactful than is secondhand information, but it also leads consumers to be more confident in their evaluations. Gilovich (1987), on the other hand, found secondhand accounts to be more impactful and less ambiguous than firsthand accounts. Kardes et al. (1994) reconciled these differences by arguing that firsthand information is less ambiguous and more impactful than is secondhand information, but only among those who perceive themselves to be highly knowledgeable about the attitude object. We find that secondhand information is weighted most heavily when it is obtained before firsthand experience occurs and the firsthand experience is ambiguous.

Limitations and Future Research

This research has at least two noteworthy limitations. First, because our influence manipulation was fairly transparent, several research participants were aware of

our attempt to influence their ratings by exposing them to others' evaluations. Hypothesis guessing was especially problematic in Experiment 1A. Therefore, we cannot eliminate demand bias as an alternative explanation for some of the effects we observed, especially the simple main effect of direction of influence found in each experiment. However, it is unclear how demand bias could produce the more complicated effects such as the triple interaction found in Experiment 1A. Moreover, the fact that hypothesis guessers did not appear to influence our results in a hypothesis-confirming direction is evidence against demand bias. For example, the effect size of the triple interaction from Experiment 1A increases from small ($\omega^2 = 0.04$) to medium ($\omega^2 = 0.08$) when hypothesis guessers are deleted from the study. Nonetheless, the potential for demand bias exists because some participants may have been aware of our intentions but failed to report it.

A second limitation is that participants were given only two informational inputs on which to base their evaluations. The amount of information available may have been sufficient to exceed the threshold of perceived diagnosticity for this task because of the nature of the task and the information provided. However, future investigations should employ tasks in which multiple inputs are needed before an evaluation can be rendered. Moreover, it may be useful to examine the extent to which the availability of irrelevant information moderates the acceptance of an informational influence.

ACKNOWLEDGMENTS

We thank Frank Kardes and two anonymous reviewers for their insightful comments. We also thank Joseph Alba, Rich Lutz, John Lynch, and Alan Sawyer for comments on an earlier version of this article.

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Accepted by Frank Kardes.