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When Should Consumers and Managers Trust Their Intuition?

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Ambady, Krabbenhoft, Hogan, and Rosenthal (2006) demonstrated that "thin slices" or very brief observations of behavior are not only sufficient for drawing accurate automatic trait inferences, they actually improve accuracy, relative to inferences based on larger amounts of information. Too much information, too much knowledge, or too much analysis can reduce the accuracy of intuitive judgment. Who benefits most and what types of judgments benefit most from thin-slice data? When should people trust their intuition? The answers to these questions depend on informational variables, such as feedback quality and the consequences of inferential errors (Hogarth, 2001). Evidence is reviewed suggesting that consumers and managers should trust their intuition only when high quality (frequent, prompt, and diagnostic) feedback is available and when inferential errors are consequential and therefore easy to detect.

Ambady, Krabbenhoft, Hogan, and Rosenthal (2006) presented an intriguing study of the effects of "thin slices" or very brief behavioral observations on automatic trait inferences and sales performance. Participants formed surprisingly accurate inferences about the social skills and the anxiety levels (but not the task-specific skills) of sales management job applicants on the basis of three 20-sec audio clips sampled randomly from job interviews. Accuracy levels were high even when the audiotapes were content-filtered so that only information about voice tone was provided. In fact, accuracy decreased when the audiotapes were not content-filtered. Accuracy was assessed in terms of experts' judgments, or more specifically, supervisors' evaluations. The results suggest that too much information can reduce the accuracy of intuition or judgments that "are reached with little apparent effort, and typically without conscious awareness. They involve little or no conscious deliberation" (Hogarth, 2001, p. 14).

Too much knowledge (i.e., information stored in memory) can also reduce the accuracy of intuition. Borges, Goldstein, Ortmann, and Gigerenzer (1999) suggested that the recognition heuristic—or the strategy of choosing recognized alternatives from a set of alternatives—is more accurate when knowledge is moderate than when knowledge is low or high. In their study, 480 German and American laypeople and experts were asked to indicate which companies they recognized from the American S&P 500 and from a list of 298 German companies. Financial returns were higher for the stocks of highly recognized companies compared to less recognized companies, and this effect was more pronounced for laypeople than for experts and for international stocks than for domestic stocks. These effects suggest that too much knowledge can reduce the accuracy of intuition because experts are more knowledgeable than laypeople and because most experts and laypeople are more knowledgeable about domestic companies than about international companies, and in both cases, financial returns decreased with knowledge. The recognition heuristic also outperformed the Dow 30, the Dax 30, the Fidelity Growth mutual fund, and the Hypobank Equity mutual fund. Borges et al. argued that evolutionary forces have shaped the development of fast and frugal cognitive heuristics, and in the case of the recognition heuristic, ignorance is a virtue when a lack of knowledge is systematic and informative.

Too much information or too much knowledge can reduce the accuracy of intuitive judgment. Similarly, too much analysis can also reduce the accuracy of intuitive judgment. Wilson and Schooler (1991) examined consumer preferences for different brands of strawberry jam and different college courses and found that introspection instructions, or instructions to deliberate about reasons for preferring one option over others, reduced the accuracy of intuitive judgment. Similar to Ambady et al. (2006), Wilson and Schooler used experts' judgments as a measure of accuracy. In a follow-up

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study, consumers were asked to choose one of several decorative posters to take home (Wilson et al., 1993). About 3 weeks later, participants who received introspection instructions were less satisfied with their choices, relative to participants who received no introspection instructions.

Of course, analytical thinking—or deliberative, systematic processing—does not reduce the accuracy of all types of judgments. McMackin and Slovic (2000) asked participants to perform an intuitive judgment task or an analytical judgment task. The intuitive judgment task involved predicting how much typical consumers would like various advertisements, and the analytical judgment task involved guessing the answer to trivia questions with objective answers, such as, "what is the length of the Amazon River?" Introspection reduced accuracy on the intuitive judgment task, but not on the analytical judgment task.

Dual-process models have long emphasized that people sometimes process information analytically and sometimes process information intuitively (for a review, see Chaiken & Trope, 1999). Most dual-process models predict that analytical processing is more likely when the motivation and the ability to process information carefully is high, but that intuitive processing is more likely when motivation or ability is low. However, motivation-and ability-related variables are not the only moderators of analytical versus intuitive processing. Informational variables have generally been neglected. Hogarth (2001, 2005) suggested that two informational variables are particularly important: feedback quality and the consequences of inferential errors.

Hogarth's (2001, 2005) learning structure model is summarized in Table 1. As Table 1 indicates, feedback quality can range from low to high. Low quality feedback is noisy, infrequent, delayed, ambiguous (many interpretations come to mind), or vague (no interpretations come to mind). Self-fulfilling prophecies can impede learning when feedback quality is low. For example, a waiter who believes that well-dressed customers leave larger tips provides better service to those customers, and consequently, receives larger tips from those customers. A physician who diagnoses typhoid fever by touching patients' tongues spreads the disease, and this guarantees that his diagnoses will be accurate. A manager who predicts the quality of new product concepts allocates greater resources to concepts that are predicted to be successful and increases their likelihood of success. By contrast, high quality feedback is not influenced by expectation-based behavior; has a high signal-to-noise ratio; and is frequent, prompt, unambiguous, and not vague.

TABLE 1
Learning From Experience as a Function of Feedback Quality and the Consequences of Inferential Errors

	Feedback Quality	
	High	*Low*
Exacting	Frequent, prompt, and diagnostic feedback (brain surgery, rocket science, meteorology)	Infrequent, delayed, or pseudodiagnostic feedback (selective hypothesis testing, singular evaluation)
Consequences of inferential errors		
Lenient	"Satisficing" (horseshoes and hand grenades)	Noncontingent feedback (superstition)

Note. Information was adapted from Hogarth (2001).

The consequences of inferential errors reveal how accurate intuitive judgment needs to be. For lenient environments, precision is unnecessary and judgments that are fairly accurate are good enough. For example, "satisficing" choice heuristics often lead to choices that are satisfactory and it is often unnecessary for consumers to choose the very best brand (Payne, Bettman, & Johnson, 1993). In this case, small errors are inconsequential and therefore difficult to detect. For exacting environments, however, a high degree of precision is required and small errors are consequential and easy to detect. For example, in brain surgery, small errors can lead to brain damage or death, and in rocket science, small errors can lead a rocket to go off course or explode. Consumers and managers learn a lot from experience and form sound intuitive judgments when they receive high quality feedback in exacting environments. In the remaining three cells, consumers and managers learn little from feedback and form flawed intuitive judgments, although they continue to believe that they learn a lot from feedback and that their judgments are sound.

HIGH QUALITY FEEDBACK IN EXACTING ENVIRONMENTS

Frequent, prompt, and diagnostic feedback received in environments in which small inferential errors are consequential and easy to detect helps consumers and managers to educate or train their intuitive judgment processes. Following sufficient practice forming intuitive judgments under these conditions, consumers and managers should trust these judgments. Meteorologists' forecasts are well-calibrated because they receive precise and accurate daily feedback and errors are easy to detect (Murphy & Winkler, 1984).

Ambady et al.'s (2006) results suggest that people routinely receive timely and informative feedback about the accuracy of automatic trait inferences. Such inferences are formed frequently, feedback can be immediate and relevant, and most people have a great deal of practice forming automatic trait inferences. Errors can be consequential because untrustworthy salespeople, executives, politicians, and con artists are constantly trying to gain our trust. People also need to form accurate impressions of others to predict and control their own environments.

This interpretation of Ambady et al.'s (2006) results suggests that people who are particularly sensitive to subtle social cues should form more accurate thin-slice inferences, relative to those who are less sensitive. Because high (vs. low) self-monitors are more sensitive to subtle social cues (Snyder, 1974, 1979), their thin-slice inferences should be more accurate and their social interactions should run more smoothly. Consistent with this prediction, sales performance is greater for salespersons who are high (vs. low) self-monitors (Goolby, Lagace, & Boorom, 1992; Spiro & Weitz, 1990).

LOW QUALITY FEEDBACK IN EXACTING ENVIRONMENTS

Consumers and managers should not trust their intuition when they receive infrequent, delayed, or pseudodiagnostic feedback and when inferential errors are consequential. Under these conditions, experience is seductive but misleading (Hoch, 2002; Hoch & Deighton, 1989). However, people continue to believe that they learn much from experience even when experience is uninformative (Kardes, Muthukrishnan, & Pashkevich, 2005; Muthukrishnan, 1995; Muthukrishnan & Kardes, 2001).

Ambady et al. (2006) found that thin-slice inferences about task-specific skills were inaccurate. Learning how to judge a salesperson's task-specific skills is difficult because feedback about such skills is often delayed. It may take weeks or months to close a sale and this lag makes it difficult to determine the effectiveness of various task-specific skills. Delayed feedback makes it difficult to learn about the task-specific skills of salespersons from interviews (which also provide small and biased samples of behavior), but managers continue to believe that they learn a great deal from interviews (Dawes, 1994). Delayed feedback also makes it difficult for physicians to learn about the accuracy of their diagnoses (Christensen-Szalanski & Bushyhead, 1981) and difficult for managers to learn about the accuracy of their judgments of advertising effectiveness.

Feedback that is difficult to interpret tends to be processed selectively. Selective hypothesis testing involves examining the merits of one hypothesis at a time (Sanbonmatsu, Posavac, Kardes, & Mantel, 1998). This encourages people to search for evidence that supports the focal hypothesis. Evidence that supports alternative hypotheses is neglected, and ambiguous evidence is interpreted as supportive of the focal hypothesis rather than alternative hypotheses. Selective search and interpretive processes facilitate premature acceptance of the focal hypothesis. Selective processing also facilitates singular evaluation, or the evaluation of one alternative at a time (Posavac, Fitzsimons, Kardes, & Sanbonmatsu, 2005; Posavac, Sanbonmatsu, Kardes, & Fitzsimons, 2004).

In a recent study, Simon School MBAs received information about four equally favorable new product concepts (Posavac, Kardes, & Brakus, 2005). They were told that, to save time, they would be asked to focus on one randomly selected new product concept and to judge how likely it was that this was the best concept. Not only did they overestimate the likelihood that this concept was the best, they predicted that the majority of the executive board would also prefer this concept. In a follow-up study, a different group of MBAs were asked to consider four marketing strategies for increasing market share for an established product: increasing advertising, cutting prices, hiring more sales representatives, and investing in research and development. The MBAs were told that, to save time, they would be asked to focus on one randomly selected strategy and to judge how likely it was that this was the best strategy. In addition to overestimating the likelihood that this randomly selected strategy was the best, they predicted that the majority of the executive board would also prefer this strategy. People focus too quickly on a single option, even when the option is selected randomly and there is no a priori reason for preferring this option.

Selective processing of pseudodiagnostic information also leads to the persistence of erroneous beliefs. Muthukrishnan and Kardes (2001) gave female participants attribute descriptions of four brands of skin lotion and the descriptions were varied to create one focal brand (i.e., one brand was superior to the others on most attributes) or no focal brands. After reading the descriptions, participants indicated their preferences, tried each brand, and again indicated their preferences. To minimize random brand switching, they were led to believe that their most preferred brand during the attribute description phase and the experience phase was the same brand. In reality, experience was uninformative because the brands were equivalent on all key attributes (e.g., moisturizing, cleansing, conditioning). In extensive experience conditions, participants tried their most preferred brand six more times. In limited experience conditions, no additional experience was provided.

After 48 hr, participants were told that the original four brands were unavailable and they needed to choose between two new brands. One new brand had attributes similar to the originally preferred brand and one had different attributes (two different sets of attributes—vitamin E, jojoba extracts, and papaya extracts versus aloe vera, cocoa butter, and apricot extracts—were counterbalanced). The former brand was preferred more strongly and the former brand's attributes were rated as more effective in the focal brand-extensive experience condition than in the remaining three conditions. In other words, the combination of selective processing and extensive experience led to the persistent preference for pseudodiagnostic attributes.

Selective processing can also lead to stereotypy, or the persistent preference for a previously successful strategy. For example, executives at Ethicon Endo-Surgery (a Johnson & Johnson company) experienced a great deal of success with the Palmaz-Schatz stent (a tool used in cardiac surgery). However, cardiologists wanted flexible stents that came in

multiple sizes, hospital administrators wanted lower prices, and market share fell from 95% in 1997 to 8% in 1998 (Finkelstein, 2003). A competitor (Guidant) gave customers what they wanted, whereas Ethicon Endo-Surgery continued to live in the past. For Ethicon Endo-Surgery, stereotypy produced complacency and impeded learning. Furthermore, research suggests that stereotypy increases when the stakes are high: Large financial rewards encourage executives to stick with what worked in the past and to refrain from learning other more effective strategies (Schwartz, 1982).

What should consumers and managers do when faced with low quality feedback in exacting environments? Rather than engaging in selective hypothesis testing, comparative hypothesis testing should be performed. Comparison often reveals the pseudodiagnostic nature of low quality feedback, and recent studies suggest that increasing attention to multiple alternatives and encouraging comparison improves judgment and decision making (Hirt, Kardes, & Markman, 2004; Kardes, Posavac, & Cronley, 2004; Sanbonmatsu, Kardes, Houghton, Ho, & Posavac, 2003). People often overestimate how much they learn from experience and underestimate how much they learn from comparison.

HIGH QUALITY FEEDBACK IN LENIENT ENVIRONMENTS

In lenient environments with relevant feedback, nearly any reasonable decision will produce a satisfactory outcome. As in horseshoes and hand grenades, precision is unnecessary and getting close to the target is good enough. For example, the satisficing heuristic involves considering alternatives one at a time and choosing the first alternative with attribute values that meet or exceed the decision maker's cutoffs (Simon, 1955). This often leads to the selection of the first alternative that is considered, especially if most alternatives perform fairly well. The conjunctive and disjunctive choice heuristics are closely related to the satisficing heuristic, and several other choice heuristics (e.g., lexicographic, elimination-by-aspects, majority of confirming dimensions, frequency of good and bad features) are available in consumers' repertoires (Payne et al., 1993). Consumers are particularly likely to rely on simplifying choice heuristics when task complexity is high (number of alternatives, number of attributes, time pressure) and when the consequences of inferential errors are low.

LOW QUALITY FEEDBACK IN LENIENT ENVIRONMENTS

Consumers and managers are likely to form superstitious beliefs in lenient environments with low quality feedback. When behavioral outcomes have skill and chance components, these components are confounded and easy to confuse. Separating the influences of skill and chance on behavioral outcomes requires the systematic manipulation of skill- and chance-related variables and performing an analysis of variance. Instead, consumers and managers often adopt a "win-stay, lose switch" strategy, repeating behaviors that preceded success and changing behaviors that preceded failure (Hastie & Dawes, 2001). This strategy makes it impossible to evaluate the role of chance in success versus failure, and the distinction between adaptive versus superstitious behavior becomes meaningless (if behavior X is performed, outcome Y follows).

CONCLUSION

This learning structure analysis suggests that thin-slice inferences are likely to be accurate when consumers and managers receive high quality (frequent, prompt, and diagnostic) feedback in exacting environments and are likely to be inaccurate when feedback quality is low or when the environment is lenient. In general, dual-process models have focused on motivation- and ability-related variables at the expense of informational variables. For a more complete picture of the conditions under which intuitive versus analytical processing is likely and the conditions under which intuitive versus analytical judgments are likely to be accurate, greater attention to informational variables is needed. Learning structure analysis suggests that consumers and managers should trust their intuition only when high quality feedback is available and when inferential errors are consequential and easy to detect.

REFERENCES

Ambady, N., Krabbenhoft, M. A., & Hogan, D. (2006). The 30-sec sale: Using thin slice judgments to evaluate sales effectiveness. *Journal of Consumer Psychology, 16,* 4–13.

Borges, B., Goldstein, D. G., Ortmann, A., & Gigerenzer, G. (1999). Can ignorance beat the stock market? In G. Gigerenzer, P. M. Todd, & ABC Research Group (Eds.), *Heuristics that make us smart* (pp. 59–72). Oxford, England: Oxford University Press.

Chaiken, S., & Trope, Y. (Eds.). (1999). *Dual-process theories in social psychology.* New York: Guilford.

Christensen-Szalanski, J. J. J., & Bushyhead, J. B. (1981). Physicians' use of probabilistic information in a real clinical setting. *Journal of Experimental Psychology: Human Perception and Performance, 7,* 928–935.

Dawes, R. M. (1994). *House of cards: Psychology and psychotherapy built on myth.* New York: Free Press.

Finkelstein, S. (2003). *Why smart executives fail.* New York: Portfolio.

Goolby, J. R., Lagace, R. R., & Boorom, M. L. (1992). Psychological adaptiveness and sales performance. *Journal of Personal Selling and Sales Management, 12,* 51–66.

Hastie, R., & Dawes, R. M. (2001). *Rational choice in an uncertain world: The psychology of judgment and decision making.* Thousand Oaks, CA: Sage.

Hirt, E. R., Kardes, F. R., & Markman, K. D. (2004). Activating a mental simulation mind-set through generation of alternatives: Implications for debiasing in related and unrelated domains. *Journal of Experimental Social Psychology, 40,* 374–383.

Hoch, S. J. (2002). Product experience is seductive. *Journal of Consumer Research, 29,* 448–454.

Hoch, S. J., & Deighton, J. (1989). Managing what consumers learn from experience. *Journal of Marketing, 53,* 1–20.

Hogarth, R. M. (2001). *Educating intuition.* Chicago: University of Chicago Press.

Hogarth, R. M. (2005). Deciding analytically or trusting your intuition? The advantages and disadvantages of analytic and intuitive thought. In T. Betsch & S. Haberstroh (Eds.), *The routines of decision making* (pp. 67–82). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Kardes, F. R., Muthukrishnan, A. V., & Pashkevich, V. (2005). On the conditions under which experience and motivation accentuate bias in intuitive judgment. In T. Betsch & S. Haberstroh (Eds.), *The routines of decision making* (pp. 139–156). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Kardes, F. R., Posavac, S. S., & Cronley, M. L. (2004). Consumer inference: A review of processes, bases, and judgment contexts. *Journal of Consumer Psychology, 14,* 230–256.

McMackin, J., & Slovic, P. (2000). When does explicit justification impair decision making? *Journal of Applied Cognitive Psychology, 14,* 527–541.

Murphy, A., & Winkler, R. L. (1984). Probability forecasting in meteorology. *Journal of the American Statistical Association, 79,* 489–500.

Muthukrishnan, A. V. (1995). Decision ambiguity and incumbent brand advantage. *Journal of Consumer Research, 22,* 98–109.

Muthukrishnan, A. V., & Kardes, F. R. (2001). Persistent preferences for product attributes: The effects of initial choice context and uninformative experience. *Journal of Consumer Research, 28,* 89–104.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The adaptive decision maker.* Cambridge, England: Cambridge University Press.

Posavac, S. S., Fitzsimons, G. J., Kardes, F. R., & Sanbonmatsu, D. M. (2005). Implications of selective processing for marketing managers. In F. R. Kardes, P. M. Herr, & J. Nantel (Eds.), *Applying social cognition to consumer-focused strategy* (pp. 37–51). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Posavac, S. S., Kardes, F. R., & Brakus, J. J. (2005). *When focus induces tunnel vision in marketing management decision making.* Manuscript submitted for publication.

Posavac, S. S., Sanbonmatsu, D. M., Kardes, F. R., & Fitzsimons, G. J. (2004). The brand positivity effect: When evaluation confers preference. *Journal of Consumer Research, 31,* 643–651.

Sanbonmatsu, D. M., Kardes, F. R., Houghton, D. C., Ho, E. A., & Posavac, S. S. (2003). Overestimating the importance of the given information in multiattribute consumer judgment. *Journal of Consumer Psychology, 13,* 289–300.

Sanbonmatsu, D. M., Posavac, S. S., Kardes, F. R., & Mantel, S. P. (1998). Selective hypothesis testing. *Psychonomic Bulletin & Review, 5,* 197–220.

Schwartz, B. (1982). Reinforcement-induced behavioral stereotypy: How not to teach people to discover rules. *Journal of Experimental Psychology: General, 111,* 23–59.

Simon, H. (1955). A behavioral model of rational choice. *Quarterly Journal of Economics, 69,* 99–118.

Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology, 30,* 526–537.

Snyder, M. (1979). Self-monitoring processes. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 12, pp. 85–128). New York: Academic.

Spiro, R. L., & Weitz, B. A. (1990). Adaptive selling: Conceptualization, measurement, and nomological validity. *Journal of Marketing Research, 27,* 61–69.

Wilson, T. D., Lisle, D. J., Schooler, J. W., Hodges, S. D., Klaaren, K. J., & LaFleur, S. J. (1993). Introspecting about reasons can reduce post-choice satisfaction. *Personality and Social Psychology Bulletin, 19,* 331–339.

Wilson, T. D., & Schooler, J. W. (1991). Thinking too much: Introspection can reduce the quality of preferences and decisions. *Journal of Personality and Social Psychology, 60,* 181–192.

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