

On Ignorance, Intuition, and Investing: A Bear Market Test of the Recognition Heuristic

Michael Boyd

This study replicates recent tests of the recognition heuristic as a device for selecting stock portfolios. The heuristic represents a lower limit to the search for information, since simple name recognition is the least one can know about anything. Gigerenzer and others conducted original experiments in this field at the Max Planck Institute for Psychological Research's Center for Adaptive Behavior and Cognition (the "ABC Research Group"). The ABC Group's tests support the use of the heuristic in a bull market environment. This study, conducted in a down market, reaches a different conclusion: Not only can a high degree of company name recognition lead to disappointing investment results in a bear market, it can also be beat by pure ignorance. Virtually the only finding of the ABC Group's study that we match here is that Americans are not very good at picking American stocks to outperform the market.

Introduction to the Problem

It is a common belief that the more information we have the better our choices will be. This belief springs from a long tradition of decision models of unbounded rationality and its close relative, optimization under constraints (Gigerenzer et al., 1999). The unbounded form of these models views the human mind as if it has superhuman reasoning power, limitless knowledge of alternatives, and all the time in the world to make decisions. Constrained optimization models admit the practical need to limit the search for information. But the stopping rule they invoke is anything but practical, as it calls for determining the point at which the cost of searching for more information equals the benefit of acquiring it. Paradoxically, this kind of "limit" also assumes that the mind has unbounded time, knowledge, and reasoning power, not to assess the decision information itself, but rather the costs and benefits of gathering *more* information! Both types of models have been criticized in recent years as having little to do with the way real people think (Gigerenzer et al., 1999).

In contrast are theories of bounded rationality, which first gained prominence in Herbert Simon's work on "satisficing" (Simon, 1955, 1956). Unlike optimization models, these theories consider both the limitations of the human mind and the environment

within which it operates (Gigerenzer et al., 1999). More recently, bounded rationality models have come to include certain rules of thumb that Gigerenzer and other researchers at the Max Planck Institute for Psychological Research's Center for Adaptive Behavior and Cognition (the "ABC Research Group") have termed "fast and frugal heuristics." They argue that decisions based on simple rules for limiting information search can be as accurate as more time-consuming strategies that use all available information and expensive computer resources (Gigerenzer et al., 1999).

The simplest such rule is the *recognition heuristic*, so-called because name recognition is the least one can know about anything. In its basic form, the recognition heuristic is a device for picking the better of two alternatives: "If one of two objects is recognized and the other is not, then infer that the recognized object has the higher value" (Gigerenzer et al., 1999).

The ABC Group researchers tested the recognition heuristic as a stock portfolio selection device, reporting largely positive results.¹ This study repeats Gigerenzer's tests in a different market environment and with differently structured participant groups. Our results do not support the ABC Research Group's findings. In fact, we find the opposite: In a bear market, complete ignorance can be better than minimal knowledge.

Stock Market Perspectives

The idea that a stock's current price reflects all available information is the crux of the efficient markets hypothesis (EMH), a model of unbounded rationality whose conclusion is that investors cannot consistently outperform the overall market (Brigham et al.,

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1999). Market efficiency is a key assumption of the aging but still venerated capital asset pricing model (CAPM) (Sharpe, 1964), which in turn forms the basis for modern portfolio theory (Malkiel, 1999).

Empirical support for the EMH is not hard to find. During the ten-year period ending June 30, 1998, the annual return on an average general equity mutual fund in the U.S. was 3.32 percentage points below that of the unmanaged Standard & Poor's 500 index (S&P 500). Pension funds have similarly poor records (Malkiel, 1999). Nonetheless, most investment portfolios are still actively managed and, in any given time period, some investment professionals obtain better-than-average results. It therefore seems wise for educators and practitioners to try to learn what information-limiting techniques, if any, lead consistently to better investment decisions.

Since knowledge and expertise are apparently of little use in predicting the market, researchers at the Center for Adaptive Behavior and Cognition investigated whether an investment model based on ignorance might do better (Gigerenzer et al., 1999). Noting that "The recognition heuristic feeds on ignorance when it is systematically, rather than randomly, distributed", they observed the performance of stock portfolios built upon a single investment criterion: company name recognition.

In December 1996, the ABC Group researchers surveyed 480 people regarding their recognition of the names of 798 publicly traded companies. The respondents were classified into four groups: American experts, American laypersons, German experts, and German laypersons. Most of the firms were American (the S&P 500), and the rest were German. Two portfolios of highly recognized companies—one domestic and one international—were constructed for each of the four groups, and rates of return (excluding dividends) were computed for the first half of 1997. In six of the eight cases, the ignorance-based portfolios beat the market. Interestingly, the two that did not were the domestic portfolios of both the American groups. On the other hand, the U.S. groups fared much better than their German counterparts in picking the *other* country's stocks.

As part of the study, the German participants were also asked to pick up to ten stocks from the overall list they thought would be the best performers in the months ahead. Two model portfolios, one domestic and one American, were then structured for each German group using the ten stocks most often selected. The novices tended to select domestic (i.e., German) companies with much higher recognition rates than those picked by the experts. In this case, the novice portfolio soundly beat the market, while the expert portfolio actually lost money. Recognition rates among stocks in the international (American) portfolios were low and did not differ between groups. Even so, the novices outperformed the market by a slim margin.

Overall, these results were deemed consistent with what might have been predicted by the recognition heuristic.

On the strength of their initial findings, Gigerenzer and his colleagues call for further testing of the recognition heuristic as an investment selection device. They note that their experiment was conducted during a strong bull market and that the positive results could have been due to a big-firm size effect (the presumption that large firms, which also tend to be better recognized, tend to outperform smaller ones in up markets) (Gigerenzer et al., 1999). Although this latter generalization is open to question (Fama and French, 1992), I agree that the experiment should be repeated in a variety of market climates, including the current deep sell-off, whose major feature has arguably been the bursting of the Internet/technology stock "bubble."

Method of Inquiry

This study is both confirmatory and exploratory. In the former vein, it repeats Gigerenzer's tests on a new sample of American respondents vis-à-vis U.S. stocks (including the experiment in individual "best stock" selection). In the latter, it looks at alternative formulations of expert and non-expert groups, as well as a number of different model portfolio structures. A follow-up phase, scheduled for completion by early 2002, will search for possible correlations between individual "best stock" choices and several measures of intuition, including Loye's Hemispheric Consensus Prediction (HCP) Profile (Loye, 1980, 1983, 2000), the Myers-Briggs Type Indicator® (MBTI®) (see Lawrence, 1993), and gender (Reeves, 1999).

The study began in June 2000 with the gathering of test data from two groups of college students. One group consisted of those with undergraduate business majors, including accounting, finance, management, and marketing, as well as general business. The other comprised students from a broad range of non-business majors.

Participants were given identical lists of the names of 111 U.S. corporations randomly selected from those that make up the Standard & Poor's 500 stock index and asked to check the names they recognized. They were then asked to review their lists of recognized names and, using only their intuition, to select up to eight companies whose shares they thought would outperform the overall market over the following three months. Respondents were cautioned against blind guessing and instructed not to participate in this part of the experiment unless they had strong intuitive feelings about their choices. They were also advised that in a down market, the best performers might simply be those suffering the smallest losses. Following Gigerenzer, stock performance is defined in this study as the rate of change of share price.

Combined Sample Results

To provide an overall perspective, a single high-recognition test portfolio was first constructed for the combined sample of 184 participants, business and non-business students alike. This portfolio comprised equal dollar weightings of the twenty-three stocks whose company names were recognized by at least 90% of the participants. Along with the 111-stock "market" portfolio (also equal dollar-weighted), it was priced initially on June 15, 2000, then again on September 15, and finally on December 15.² Rates of return were computed for the test and market portfolios for both three- and six-month holding periods.

Between June 15 and September 15, 2000, the return on the market portfolio was a small but positive 1.65%, while the high-recognition portfolio *lost* 9.06%. By the end of six months, the market portfolio was down 4.54%. But the test portfolio had taken a real drubbing, with a six-month loss of 14.75%. The combined sample, high-recognition test portfolio's performance results are detailed in Table 1, along with frequency-of-recognition data.

While these numbers do not support the recognition heuristic as a stock selection device in a down market, they do reinforce an interesting finding of the ABC Group's experiment: The heuristic fails when American respondents use it to pick American stocks. (We cannot, of course, infer that German respondents would have fared any better though, had the sample included them.

Nor can we say anything about how Americans might have done vis-à-vis foreign stocks. These are sample limitations with which the present study must live.)

It is not surprising that among the names most highly recognized by young college students are those representing such things as Internet service (Yahoo!, America Online), hand-held calculators (Texas Instruments), telecommunications service (AT&T), photocopiers (Xerox), contact lenses (Bausch & Lomb), clothing stores (The Gap), automobiles (General Motors), and washing machines (Whirlpool, Maytag).

Unfortunately, the stocks of these companies lost so much value during the second half of 2000 that not even strong performances by Walgreen, Wendy's, and Winn-Dixie could bail out the portfolio.

Out of curiosity sparked by the abysmal results of the first test, a second test portfolio was constructed, this time of the twenty stocks *least* recognized by the combined participant groups (fewer than 10%). This time the performance results were dramatic, with *positive* three- and six-month returns of 17.30% and 16.27%, respectively.

Recognition frequencies and performance details for the combined sample low-recognition portfolio are shown in Table 2. As one might expect, most of the names on this list are fairly non-descript, including those of three of the biggest winners (Willamette Industries, St. Paul Companies, and Central & South West). And the top performer (Manor Care) represents an industry that as yet probably means little or nothing to the

Table 1. Stocks Recognized by at Least 90% of Participants

Company	Ticker Symbol	Number Recognized	Closing Price 6/15/00	Closing Price 9/15/00	Closing Price 12/15/00	3-Month Return	6-Month Return
America Online	AOL	184	\$55.56	\$56.25	\$48.96	1.24%	-11.88%
AT&T Corp.	T	184	\$33.94	\$32.25	\$21.00	-4.98%	-38.13%
Delta Air Lines	DAL	184	\$51.50	\$47.00	\$48.13	-8.74%	-6.55%
General Motors	GM	184	\$65.06	\$70.00	\$53.81	7.59%	-17.29%
Yahoo! Inc.	YHOO	184	\$139.69	\$105.25	\$33.00	-24.65%	-76.38%
Winn-Dixie	WIN	183	\$14.50	\$13.81	\$17.75	-4.76%	22.41%
American Express	AXP	182	\$55.75	\$59.31	\$54.63	6.39%	-2.02%
FedEx Corporation	FDX	182	\$36.44	\$39.20	\$39.20	7.57%	7.57%
Walgreen Co.	WAG	182	\$29.06	\$38.19	\$40.31	31.42%	38.72%
Gap (The)	GPS	181	\$31.88	\$23.94	\$23.88	-24.91%	-25.11%
Texas Instruments	TXN	181	\$80.81	\$59.00	\$47.00	-26.99%	-41.84%
Whirlpool Corp.	WHR	181	\$53.38	\$38.81	\$40.06	-27.29%	-24.95%
Exxon Mobil Corp.	XOM	180	\$82.44	\$88.00	\$84.13	6.74%	2.04%
Hilton Hotels	HLT	179	\$9.50	\$11.81	\$9.69	24.32%	1.97%
Albertson's	ABS	178	\$36.00	\$21.00	\$24.25	-41.67%	-32.64%
Kellogg Co.	K	178	\$30.13	\$24.50	\$24.38	-18.69%	-19.10%
Du Pont (E.I.)	DD	177	\$47.88	\$40.06	\$43.75	-16.33%	-8.63%
Xerox Corp.	XRX	177	\$25.31	\$17.75	\$6.25	-29.87%	-75.31%
Liz Claiborne, Inc.	LIZ	176	\$38.94	\$42.00	\$39.81	7.86%	2.24%
Wendy's International	WEN	176	\$19.31	\$18.00	\$25.81	-6.78%	33.67%
Maytag Corp.	MYG	173	\$36.56	\$33.63	\$26.88	-8.01%	-26.49%
Sherwin-Williams	SHW	170	\$23.13	\$21.50	\$23.06	-7.05%	-0.29%
Bausch & Lomb	BOL	167	\$74.56	\$36.75	\$43.75	-50.71%	-41.32%
Portfolio Return						-9.06%	-14.75%

Table 2. *Stocks Recognized by Fewer Than 10% of Participants*

Company	Ticker Symbol	Number Recognized	Closing Price 6/15/00	Closing Price 9/15/00	Closing Price 12/15/00	3-Month Return	6-Month Return
Air Prod. & Chem.	APD	15	\$34.81	\$34.94	\$35.25	0.37%	1.26%
Illinois Tool Works	ITW	15	\$58.25	\$55.63	\$56.56	-4.50%	-2.90%
Manor Care	HCR	14	\$7.00	\$14.69	\$17.56	109.86%	150.89%
NICOR Inc.	GAS	14	\$35.38	\$37.90	\$39.00	7.12%	10.23%
St. Paul Cos.	SPC	14	\$37.75	\$48.81	\$51.56	29.30%	36.59%
Inco, Ltd.	N	13	\$15.56	\$18.00	\$15.40	15.68%	-1.03%
Fluor Corp.	FLR	12	\$35.31	\$29.63	\$37.90	-16.09%	7.34%
Willamette Industries	WLL	12	\$30.25	\$27.69	\$47.25	-8.46%	56.20%
Williams Cos.	WMB	12	\$42.75	\$45.94	\$34.69	7.46%	-18.86%
Guidant Corp.	GDT	11	\$53.44	\$66.81	\$50.81	25.02%	-4.92%
Halliburton Co.	HAL	11	\$46.50	\$52.69	\$37.25	13.31%	-19.89%
Central & South West	CSR	10	\$21.00	\$39.90	\$45.50	90.00%	116.67%
Xilinx, Inc.	XLNX	10	\$86.75	\$80.56	\$40.56	-7.14%	-53.24%
Anadarko Petroleum	APC	9	\$50.31	\$66.50	\$61.25	32.18%	21.75%
Synovus Financial	SNV	9	\$19.19	\$20.75	\$23.56	8.13%	22.79%
Constellation Energy	CEG	8	\$34.75	\$45.33	\$38.88	30.45%	11.87%
Becton, Dickinson	BDX	7	\$28.25	\$28.06	\$31.06	-0.67%	9.96%
Transocean Sedco	RIG	7	\$49.50	\$63.06	\$39.31	27.39%	-20.58%
Pall Corp.	PLL	5	\$20.75	\$20.50	\$18.81	-1.20%	-9.34%
Temple-Inland	TIN	5	\$45.06	\$39.56	\$49.81	-12.21%	10.55%
Portfolio Return						17.30%	16.27%

Note: Central & South West merged with American Electric Power on terms of 1 CSR = 0.6 AEP.

study's participants. (Manor Care is the leading owner and operator of long-term care centers in the U.S.)

Two additional portfolios were formed from the combined group data. These were based not on the frequency of name recognition, but of intuitive selection as best performers. The results, unfortunately, do not say much for student intuition. The third portfolio, which contained the ten most frequently selected stocks, had a three-month return of -10.54%. Over the six-month period, this loss grew to nearly 35%! The fourth portfolio comprised fifteen stocks that had not been selected by *any* of the study's 184 participants. This portfolio's three-month return was 3.66% and its six-month return was a respectable 7.42%. Results and selection frequencies for the third and fourth test portfolios are detailed in Tables 3 and 4, respectively.

As Table 3 indicates, students tended to pick high-recognition stocks as potential best performers for the

test period, and the portfolio suffered accordingly. Only three of the ten selections showed gains for the three-month period and all were down over the full six months, nine of them with double-digit losses.

Table 4, on the other hand, paints the opposite picture. None of the fifteen unselected stocks appears on the high-recognition list (Table 1), while six are in the low-recognition portfolio (Table 2). Three of these, Public Service Enterprise, Willamette Industries, and Central & South West, had six-month gains ranging from 25.68% to 116.67%, more than enough to offset big losses in W.R. Grace and Worthington Industries.

While the returns on test portfolios 1 and 2 mirror the ABC Group's finding of poor performance for portfolios selected on the basis of American recognition of American stocks, results for portfolios 3 and 4 run counter to the ABC Group's experience regarding individual best stock selection. The earlier study found

Table 3. *The 10 Most Frequently Selected Stocks*

Company	Ticker Symbol	Number Selected	Closing Price 6/15/00	Closing Price 9/15/00	Closing Price 12/15/00	3-Month Return	6-Month Return
America Online	AOL	92	\$55.56	\$56.25	\$48.96	1.24%	-11.88%
Yahoo! Inc.	YHOO	74	\$139.69	\$105.25	\$33.00	-24.65%	-76.38%
Cisco Systems	CSCO	68	\$66.50	\$62.31	\$48.17	-6.30%	-27.56%
NEXTEL Communications	NXTL	66	\$62.81	\$50.88	\$31.88	-18.99%	-49.25%
AT&T Corp.	T	58	\$33.94	\$32.25	\$21.00	-4.98%	-38.13%
General Motors	GM	39	\$65.06	\$70.00	\$53.81	7.59%	-17.29%
Texas Instruments	TXN	34	\$80.81	\$59.00	\$47.00	-26.99%	-41.84%
WorldCom Inc.	WCOM	32	\$41.88	\$29.25	\$17.44	-30.16%	-58.36%
American Express	AXP	27	\$55.75	\$59.31	\$54.63	6.39%	-2.02%
Viacom Inc.-Class B	VIA.B	25	\$69.50	\$63.56	\$51.94	-8.55%	-25.27%
Portfolio Return						-10.54%	-34.80%

Table 4. *The 15 Unselected Stocks*

Company	Ticker Symbol	Number Selected	Closing Price 6/15/00	Closing Price 9/15/00	Closing Price 12/15/00	3-Month Return	6-Month Return
American Home Products	AHP	0	\$56.13	\$54.25	\$58.56	-3.34%	4.34%
Central & South West	CSR	0	\$20.94	\$39.90	\$45.50	90.00%	116.67%
Franklin Resources Inc.	BEN	0	\$29.56	\$41.91	\$34.50	41.77%	16.70%
Grace (W.R.) & Co.	GRA	0	\$12.69	\$7.50	\$1.94	-40.89%	-84.73%
Inco, Ltd.	N	0	\$15.56	\$18.00	\$15.40	15.66%	-1.04%
Masco Corp.	MAS	0	\$18.13	\$19.44	\$19.56	7.26%	7.93%
Meredith Corp.	MDP	0	\$32.50	\$28.00	\$29.81	-13.85%	-8.27%
NICOR Inc.	GAS	0	\$35.38	\$37.90	\$39.00	7.14%	10.25%
Pall Corp.	PLL	0	\$20.75	\$20.50	\$18.81	-1.20%	-9.34%
Public Service Enterprise Inc.	PEG	0	\$36.50	\$43.08	\$45.88	18.03%	25.68%
Temple-Inland	TIN	0	\$45.06	\$39.56	\$49.81	-12.21%	10.54%
Weyerhaeuser Corp.	WY	0	\$47.19	\$40.63	\$45.44	-13.80%	-3.71%
Willamette Industries	WLL	0	\$30.25	\$27.69	\$47.25	-8.46%	56.20%
Worthington Ind.	WOR	0	\$12.44	\$10.00	\$7.44	-19.60%	-40.20%
Wrigley (Wm) Jr.	WWY	0	\$81.00	\$71.69	\$89.38	-11.49%	10.34%
Portfolio Return						3.66%	7.42%

Note: Central & South West merged with American Electric Power on terms of 1 CSR = 0.6 AEP.

that when picking “best performers,” the German novices did better when they chose domestic (German) stocks with high recognition rates.

Grouping the Participants

The project’s next step was to repeat the recognition and selection tests on the participant sample’s subgroups of business and non-business majors, with business students further classified as either finance or non-finance majors. There were 104 business majors, of whom 14 were finance majors. The eighty remaining participants were pursuing non-business majors. The relatively small group of finance majors recognized the largest number of company names (twenty-eight), followed by non-business majors (twenty-four), and non-finance business majors (twenty-two). All the returns on the recognition-based portfolios were inversely related to the number of stocks in the portfolio. This was true without exception for both three- and six-month holding periods. While it is tempting to dismiss this result as nothing more than a diversification effect (more stocks leading to lower risk and therefore lower return), that would probably not be the case because of 1) the high degree of overlap among the portfolios, and 2) the nature of stocks that were incremental to the larger portfolios.

The non-finance business majors’ twenty-two-stock portfolio was identical to the twenty-three-stock aggregate for all 184 participants shown in Table 1, except for the omission of Bausch & Lomb, a stock plagued with double-digit losses in the range of 40% to 50%. This is why the smaller portfolio performed better (i.e., lost less) than the overall benchmark. The twenty-four-stock non-business majors’ portfolio was the same as the “all-participants” twenty-three-stock portfolio—including Bausch & Lomb—plus Dollar

General, a stock that lost 34% over the three-month period but bounced back to a small gain of 3% by the end of six months. Thus, the non-business majors’ performance was very close to that of the twenty-three-stock aggregate but slightly below that of the non-finance business majors. Finally, the finance majors’ twenty-eight-stock portfolio was the same as the non-business majors’ holdings without Dollar General but *with* the addition of five big losers: Cisco Systems, NEXTEL Communications, Dow Chemical, Nordstrom, and Viacom (B). Six-month losses on these five stocks averaged just over 31%. Certainly no one can accuse them of having reduced this portfolio’s risk!

Information on the recognition-based portfolios and the 111-stock “market” portfolio is summarized in Table 5.

Visual inspection of the group portfolio returns reveals them all to be lower than those of the market portfolio. The question is, are these differences significant? To answer this question, four ANOVA tests were run on the portfolios’ individual stock return data. The first looked at between-group and within-group variation in three-month returns among all five portfolios. The resulting F-statistic of 3.02 exceeded the critical value of 2.42 ($P = 0.019$), indicating significant variation between groups. However, the second test, which excluded the market, showed no significant between-group variability in returns for the test portfolios ($F = 0.198$, $F_{crit} = 2.71$, $P = 0.898$). From this, we infer that virtually all the between-group variation in the first test is attributable to differences between the recognition-based test portfolios and the market portfolio. In other words, each of the test portfolios significantly underperformed the market.

When the ANOVA tests are repeated using six-month return data, the test portfolios’ underperfor-

Table 5. *Recognition-Based Portfolios*

Group by Major:	(1) Non-Finance Business	(2) Finance	(3) Non-Business	(4) All Participants	(5) Market Portfolio
Number of Participants	90	14	80	184	—
Number of Stocks	22	28	24	23	111
3-month Return	-7.16%	-10.88%	-9.06%	-9.06%	1.65%
Std. Dev. of Return	18.18%	19.01%	19.95%	19.95%	24.76%
6-month Return	-13.54%	-17.68%	-14.75%	-14.75%	-4.54%
Std. Dev. of Return	29.13%	27.45%	29.05%	29.05%	37.38%

mance of the market becomes insignificant ($P = 0.955$ and 0.898 , respectively, for the four- and five-portfolio tests).

Table 6 summarizes results for the four selection-based portfolios versus the group of fifteen unselected stocks.

Once again, each of the test portfolios appears to underperform the benchmark (in this case, the unselected stocks) for both three- and six-month holding periods. Now, however, significant differences are found only in the six-month results. It is interesting to note that of the study's 184 participants, all of whom were cautioned not to select "best performing" stocks unless they had strong intuitive feelings about their choices, only seven picked no stocks at all. And each of these students was a non-business major.

The Study's Remaining Agenda

The project's second phase will be an exploration of the individual participants' "best stock" selections in light of several measures of intuition, including Loye's Hemispheric Consensus Prediction Profile, the Myers-Briggs Type Indicator®, and gender. This stage will necessitate forming a portfolio for each participant, measuring its three- and six-month performance over the study period, and applying appropriate statistical tests to the extended data set. Included in this phase

will be a search for empirical links between the intuition-related variables and the number of stocks selected by each individual.

Summary and Conclusions

This study replicates recent tests of the recognition heuristic as a device for selecting stock portfolios. Gigerenzer and others conducted original experiments in this field at the Max Planck Institute for Psychological Research's Center for Adaptive Behavior and Cognition (the "ABC Research Group"). The ABC Group's tests support the use of the heuristic in a bull market environment, but this study, conducted in a bear market, reaches the opposite conclusion. We find that a high degree of company name recognition can lead to disappointing investment results in a down market, and it can also be beat by pure ignorance. Virtually the only finding of the ABC Group's study that we match here is that Americans are not very good at picking American stocks to beat the market.

A Suggestion for Future Research

In the original study and in this one, the primary test portfolios consist of high-recognition stocks. Obvious-

Table 6. *Selection-Based Portfolios*

Group by Major:	(1) Non-Finance Business	(2) Finance	(3) Non-Business	(4) All Participants	(5) Unselected Stocks
Number of Participants	90	14	73	177	—
Number of Stocks	12	9	10	10	15
3-month Return	-4.40%	-3.22%	-10.03%	-10.54%	3.66%
Std. Dev. of Return	16.20%	12.20%	13.13%	13.88%	30.62%
t-Statistic (v. column (5))	-0.917	-0.726	-1.622	-1.654	
t-Statistic (critical)	1.721	1.729	1.734	1.729	
P-Value (one-tail)	0.185	0.238	0.061	0.057	
6-month Return	-18.02%	-22.22%	-29.60%	-34.80%	7.42%
Std. Dev. of Return	24.12%	26.73%	22.55%	22.62%	43.30%
t-Statistic (v. column (5))	-1.845	-1.863	-2.788	-3.181	
t-Statistic (critical)	1.721	1.725	1.725	1.725	
P-Value (one-tail)	0.040	0.039	0.006	0.002	

ly, many of the survey respondents know much more about some of these firms than simply their names. If this were not the case, they would have no subsequent basis for attempting to predict the sample's best performers. But the recognition heuristic, by definition, is supposed to represent the use of minimal knowledge as a selection criterion. It might be worthwhile in future studies to have participants check from the stock sample only those companies whose names they recognize but about which they know absolutely nothing else. Returns on these stocks could then be compared with those of the unrecognized set.

It is too late for this project to take that approach, and, had we done so, it would not have been a replication of the ABC Research Group's tests. However, the "flavor" of this modification might have been captured in the two test portfolios consisting of low-recognition and unselected stocks. It seems likely that the less widely recognized a company's name, the smaller the chance that many people will know much about its operations. Interestingly, although both of these portfolios beat the market over both the three- and six-month holding periods, the low-recognition stocks turned in considerably better performances than the unselected ones. (Recall that of the fifteen unselected stocks, only six were on the low-recognition list.) In retrospect, this may provide the study's strongest support for the recognition heuristic.

Notes

1. To fit the multidimensional context of portfolio selection, the rule is broadened: "When choosing a subset of objects from a

larger set, choose the subset of recognized objects" (Gigerenzer et al. 1999, p. 61).

2. Stock prices have been rounded to the nearest cent wherever necessary to conform to the "decimalization" of U.S. stock markets that began in late summer and was nearing completion by the end of the study period. Several have also been adjusted to reflect stock splits and mergers that occurred after the study began.

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