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GRADUATE COLLEGE

PERSONALITY CORRELATES OF STOCK MARKET SPECULATION

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

BY

WILLIAM G. BAKER III

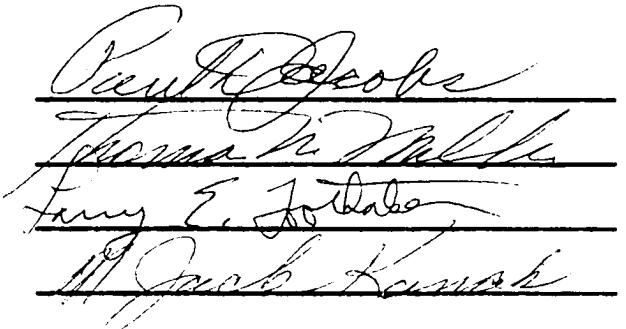
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1970

PERSONALITY CORRELATES OF STOCK

MARKET SPECULATION

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PERSONALITY CORRELATES OF STOCK MARKET SPECULATION

INTRODUCTION

The present research is the first known attempt to scientifically investigate the relationship between personality characteristics and stock market speculation. All previous data concerning the personality dimensions of the successful investor falls within the anecdotal realm. There is a preponderance of "fundamentals" in the marketplace, but the area of emotions remains unexplored. All the charts, breadth indices, and technical palavar are the statistician's feeble attempt to describe the emotional state of the investing public. There is substantial work to be done in this realm, but so far no one has taken marketplace psychology as an area worthy of intensive study. If the statistical area has been and is being so thoroughly explored, why shouldn't someone scientifically investigate this unexplored emotional sphere (Smith, 1969)?

As very little "hard data" is available on the personality characteristics or emotional makeup of successful versus nonsuccessful investors, it may be helpful to look

back at the investing public's reactions to various erratic swings in stock market prices, since the "marketplace" is really a reflection of mass psychology (Engel, 1962; Smith, 1969). In early October of 1929, the greatest stock market crash in financial history was casting its shadow over Wall Street. In five hours of hysterical trading on October 24, almost thirteen million shares (12,894,650) were traded on the New York Stock Exchange. The number of shares traded was four million more than the previous record for transactions in a single trading session. During the brief span of five hours, leading stocks fell anywhere from twenty to fifty points (Wall Street's Crisis, 1929). On Tuesday, October 29 the number of transactions went into astronomical figures. More than sixteen million shares were traded on this date, with the total estimated loss approaching $15,000,000,000 (Wall Street's "Prosperity Panic," 1929). It was a combination of fear and mob psychology which carried the debacle to the absurd depths to which it plunged.

One can infer from taking a brief glimpse at the 1929 stock market crash that the most predominant characteristic of the small "unsuccessful" investor was his impulsiveness. He appears to have been victimized by his own imagination (What Smashed the Bull Market, 1929). This impulsiveness, when coupled with his "sheep-like" conformity, led him down a one-way street. As a strict conformist, it was only natural that when a selling mania hit the market

during its sharp tumble, he sold out with the rest of the crowd.

Fowler (1880) describes the successful speculator as being hard-headed and strong of nerve. Those speculators who are unsuccessful are characterized as "ghosts of the market. . . . They flit about the door-ways, and haunt the vestibule of the exchange, seedy of coat, . . . unkempt, unwashed, unshorn, wearing on their worn and haggard faces a smile more melancholy than tears. They put up never a penny, and yet they are perpetually asking the prices of stocks which they never buy or sell (p. 40)."

Fuller (1962) pictures the speculator as hopeful, although often times neurotic. Speculative members of the Wall Street cult pay only scant attention to such trivia as price:earnings (P:E) ratios, debt structure, cash flow, and corporate stability. Their sole objective is to get on and off the band wagon at the appropriate moment. The average speculator is continually revolving through a manic-depressive cycle. His high feelings of elation are momentary, only to be followed by intense feelings of depression.

According to Lefévre (1930), one of the greatest speculators specializing in making quick millions was Charles Topping. "He [was] a quiet, unassuming man, unimpressive in appearance, suggesting studious habits, personally shy, and the extreme opposite of picturesqueness . . . I have never known anyone less communicative (p. 13)."

How prevalent is stock market speculation today? To answer this question, one needs to only take a brief glimpse at the titles of recently published articles about Wall Street investment. Such titles as the following dominate the literature: "Big Casino" (1967), "Gamblers' Market: Warning of Speculative Activity" (1967), "Old Fever Returns to the Street: Speculative Fever" (1967), "Speculation in stocks, a Growing Worry" (1967), "Speculative Spree Alarms AMEX" (1967), "Stock Speculation: a New Warning" (1967), and "When Wall Street Catches the Flu, 26 Million Americans Ache" (1969).

Until recently, brokers and market analysts soothed themselves and the public with their observations that the majority of speculation was carried on by sophisticated investors who were aware of the risks and could afford them (Wall Street: Plungers and Swingers, 1967). However, it is now recognized that speculation in the stock market is no longer the prerogative of a small wealthy subculture, as it was in the early 1900's (Engel, 1962). The quality of speculation has changed dramatically in the intervening years. Today, there are many uninformed and definitely unsophisticated individuals speculating on Wall Street--individuals who are ill-equipped to financially afford the risks that they are taking (Engel, 1962; Fuller, 1962; Smith, 1969).

The present study is concerned, not only with the relationship between the investor's personality and his success in stock market speculation, but also with the role of personality as a determinant in the composition of an investor's portfolio. To date, there has been no specific research devoted to studying an investor's personality characteristics and their affect on the kind of stocks that he chooses to include in his portfolio. There are three types of data that pertain to how an individual selects his stocks: anecdotal data, data which have been derived from decision-making models and theories, and data which have been contributed by the relatively new theory of portfolio selection.

Anecdotal literature relates two primary means of selecting stocks. First, there is the easily procurred indirect tip, "that you get, say, from Henrietta Whimple's husband--you know the short fat one with the bad teeth--who has a brother in somebody's office--anyway, it's in Wall Street--who has a secretary who has a friend who works in Morgan's who said she'd just made a date for the Old Man to have lunch with J. W. Tickle of Tickle's Gum Arabic--which must mean something (Dayton, 1929, p. 30)." Then there is the sure-fire method of selecting stocks while blindfolded.

The traditional normative decision-making theory (Normative theories predict what an individual should do rather than what he actually does do.), is concerned with making choices among bets, and predicts that a gambler will

choose that bet which has the highest expected value (EV). Do individuals actually make bets in accordance to an "expected value" theory? Edwards (1955) believes that people not only do not bet according to this scheme, but it is even doubtful that they should. Bernoulli (1738, translated by Sommer, 1954) suggests that a gambler will choose that bet which he believes has the highest expected utility (EU).

Von Neumann and Morgenstern (1947) have only recently made an attempt to revive Bernoulli's suggestion. They have assumed that expected utility (EU) maximization is a theory which actually describes what people will do in a given choice situation, rather than simply describing what people should do. Following in the footsteps of von Neumann and Morgenstern, Mosteller and Nogee (1959) assumed the validity of the expected utility (EU) maximization model and then subsequently used it in order to experimentally measure the utility of relatively small amounts of money. Subjects did not demonstrate the high degree of consistency, with regard to their preferences and indifferences, as was previously postulated by von Neumann and Morgenstern (1947). Friedman and Savage (1952) have attempted to make the "expected utility hypothesis" a scientific hypothesis i.e. one that would enable correct predictions to be made about an individual's behavior. Presently, the available evidence does not contradict this hypothesis. However, it must be

emphasized that the opportunities for contradiction have been few and direct evidence in favor of the hypothesis has been meager.

Edwards (1955) presents a relatively simple mathematical model in order to predict choices among bets. This model is based on the concepts of utility, subjective probability, and the theory of games. Edwards (1954) demonstrated that a subject will prefer to bet at certain probabilities, as opposed to others, and that a subject's preferences will generally be independent of the value of the money involved, as long as the monetary value does not get too large and as long as all the bets that are being considered have the same expected value (EV)

The current research dealing with the theory of portfolio selection provides specific data about why an individual selects a particular investment portfolio. Markowitz's (1959) theory of portfolio selection assumes that if the investor has a choice between two portfolios, he will prefer that portfolio with the lowest standard deviation. If both portfolios have the same standard deviation, the investor will then prefer the one with the highest mean rate of return. The above theory is more than just a device for computing the most efficient portfolio; it also demonstrates the tendency of the successful investor to avoid risk.

To date, no objective index has been developed to accurately predict whether or not a given individual will be successful in investing in the stock market. There has been absolutely no scientific research conducted with respect to marketplace psychology. Is it possible that an index can be developed to predict the likelihood that a potential investor will be successful in the stock market, i.e. are there certain personality characteristics which can be used to differentiate the potentially successful investor from the potentially nonsuccessful investor? The present research is concerned with identifying the distinguishing personality characteristics, or the personality profile, of the successful investor. These research findings should pertain not only to the private investor, but also to the broker or account executive, who is hired by the brokerage firm to invest money for its clients. Brokerage firms have only recently begun to research the emotional sphere of the marketplace. Presently, they are primarily concerned with the selection of trainable, potential brokers, i.e. individuals who will have a high probability of succeeding in the firm's training program. However, just because an individual is successful in a training program does not mean that he will succeed in making money for the firm's clients. Thus, trainability is not necessarily a good predictor of ultimate success as an investor. The ultimate criterion of successful investing for both the private investor and the

broker will be his profit, whether it be for himself or for his clients. As there are as yet no tools available for accurately predicting the probable success of a potential investor, the development and subsequent application of such an index could have far reaching economical benefits for individual investors, as well as brokerage firms.

The present study is thus primarily concerned with scientifically investigating the relationship between personality characteristics and stock market speculation. Two major hypotheses are to be tested:

1. It is expected that there will be personality differences between those subjects who are successful investors and those subjects who are nonsuccessful investors.

2. It is expected that there will be personality differences between those subjects who are risk-takers and those subjects who are nonrisk-takers.

The following hypotheses have little, if any, basis in previous literature, but are considered in the present study as ancillary hypotheses:

3. It is expected that male subjects will be greater risk-takers than female subjects.

4. It is expected that female subjects will be more successful than male subjects as investors.

5. It is expected that those subjects who are nonrisk-takers will be more successful investors than those subjects who are risk-takers.

The .10 level of significance was necessary to reject the null form of the above hypotheses.[1] Due to the exploratory nature of this study, the above level of significance was chosen rather than the more stringent .05 or .01 levels. In exploratory research type I errors are less important, while there is increased concern with regard to limiting type II errors and thus increasing the power, i.e. the probability of detecting real differences if they are present.

METHOD AND PROCEDURE

Subjects

The subjects were 64 students enrolled in two sections of an Introductory Psychology course at the University of Oklahoma. Of the 152 students who originally began the study (i.e. those who selected stocks on the first day of the study), only those 21 male and 43 female students who were present for all eight testing sessions (October 29th to December 10th, 1969) were used in the final analyses.

Materials

The materials consisted of one test booklet per subject (see Appendix B). Each booklet contained instructions, information about sixteen stocks which had previously been selected by the experimenter, a questionnaire, an investment sophistication test, and additional sheets which

were used for inventorying weekly stock transactions and determining each subjects' net worth[2] for a particular week.

Stock list

Four stocks were selected from each of four investment categories (i.e. a total of sixteen stocks). These stocks were all chosen from either the New York or American Stock Exchange. The investment categories and the criteria for selecting those stocks within each category were as follows:[3]

1. Exceptional Growth

   A. The stock must have maintained a minimum 10% average annual rate of growth, in per share earnings, over the last five years.

   B. The stock must indicate a capability of extending its 10% average annual rate of growth (i.e. estimated 1969 earnings per share[4] must show a minimum increase of 10% over actual 1968 earnings per share)

   C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 12%.

   D. The current yield of the stock must not be greater than 2%.

   E. The stock must have a P:E ratio of at least 25.

2. Conservative Growth With Current Income

A. The stock must have maintained a minimum 5.5% average annual rate of growth, in per share earnings, over the last five years.

B. The stock must indicate a capability of extending its 5.5% average annual rate of growth (i.e. estimated 1969 earnings per share must show a minimum increase of 5.5% over actual 1968 earnings per share).

C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 12%.

D. The current yield of the stock must not be less than 2.7%.

E. The stock must not have a P:E ratio greater than 12.5.

3. High Risk

A. The stock has not maintained a minimum average annual rate of growth, in per share earnings, over the last five years.

B. The stock does not need to indicate a capacity of extending any minimum average annual rate of growth (i.e. estimated 1969 earnings per share do not need to show any minimum increase, and may show a decrease, over actual 1968 earnings per share).

C. The stock does not need to have a minimum combined return (annual per share earnings growth rate plus current yield).

D. The current yield of the stock must not be greater than 1%.

E. The stock must have a P:E ratio of at least 25.

4. Low Risk With High Current Return

A. The stock must have maintained a minimum 3% average annual rate of growth, in per share earnings, over the last five years.

B. The stock must indicate a capability of extending its 3% average annual rate of growth (i.e. estimated 1969 earnings per share must show a minimum increase of 3% over actual 1968 earnings per share).

C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 8%.

D. The current yield of the stock must not be less than 4.5%.

E. The stock must not have a P:E ratio greater than 15.

For the purposes of data analyses, categories 1 and 3 were combined to represent those stocks with risk oriented investment objectives, and categories 2 and 4 were combined

to represent those stocks with conservative investment objectives. "Exceptional growth" and "conservative growth" are simply two other means of classifying risk and nonrisk oriented stocks without the blatant labels of "high risk" and "low risk," respectively.

Procedure

Each subject was given $50,000 (hypothetically) with which to invest in one or more of sixteen stocks. These stocks were divided into four categories according to the investment objectives usually associated with purchases of them. The stocks were then numbered to prevent their names from biasing the subjects' selections (refer to APPENDIX C for the actual names of the sixteen stocks). It was felt that the subjects might be unduly impressed by popular brand names, and hence be prejudiced to purchase only "name stocks," while actual Wall Street speculators appear to be influenced more by fads, i.e. computer stocks were the rage in 1968 and oil stock in 1969. A brief description was given regarding the principal business of each stock. Additional information about each stock's present price, price range during 1969, present yield, and actual per share earnings for the previous five years along with estimated per share earnings for 1969 was presented.

The "Stock Market Game" was conducted at each of eight consecutive Wednesday class meetings. Subjects were given the last fifteen minutes of each of these class

meetings to complete their market transactions. During the first session, subjects were able to make their initial stock selection(s). There were only two restrictions with regard to these initial purchases: (1) All transactions (i.e. buying and selling) needed to be in multiples of 100 shares and (2) initial stock purchases could not exceed $50,000 in total value. At each of the next six Wednesday class meetings, the current prices of all sixteen stocks (based on the previous Tuesday evening's closing stock market prices) were written on the black board. Subjects were then able to calculate the current value of their stocks and to decide whether they would like to keep their present stocks or to sell some, or all, of these stocks and buy different ones. The subjects were instructed that the sole objective of the "Stock Market Game" was to accumulate the largest amount of money possible within the investment period and that a prize of $10 was to be given to that individual, in each class, who was the most successful investor. At the eighth, and final, testing session subjects were required to sell all their remaining stocks at the previous day's closing market prices. They were then able to calculate their final total net worth.

Additional information was also obtained on the subjects during the testing sessions. Prior to the subject's initial stock selection, during the first testing session, they were given a stock market sophistication test. This

test was given in order to equate the subjects with respect to their knowledge about the stock market.[5] Demographic data were obtained on each subject during the second testing session. All subjects were administered the California Psychological Inventory (CPI) on the sixth testing day. The latter instrument is a self-report personality inventory that was developed for use with normal populations, age 13 and above (Anastasi, 1968).

Variables

A successful investor was operationally defined as one who performed better than the Dow Jones Industrial Average, during the eight week investing period. From October 29th to December 10th, 1969, the Dow Jones Industrial Average lost 64.6 points (down 7.6%). Thus to be considered successful, subjects needed to have a final net worth of at least $46,200. For the purpose of data analyses, subjects were rank ordered in terms of their final net worth. The top 27% were designated as the successful group and the bottom 27% as the nonsuccessful group. (The top and bottom 27% are common cutoffs used in business oriented research.) This division established extreme criterion groups.

A risk-taker was operationally defined as one whose total dollar investments in risk oriented stocks (i.e. those stocks in categories 1 and 3) were greater than his total dollar investments in conservative oriented stocks (i.e. those stocks in categories 2 and 4). Once again, for

the purpose of data analyses, the subjects were rank ordered in terms of the total amount of money which they invested in risk oriented stocks. In order to establish extreme criterion groups, the top 27% were designated as the risk-taking group and the bottom 27% as the nonrisk-taking group.

RESULTS

Hypothesis 1 was tested by a 2 (success versus non-success) x 18 (personality characteristics) repeated measures design with analysis of variance (Table 1). (The means and standard deviations are given in Table 2.) The personality characteristics predictive of successful investing were found by using two-sample t-tests (Table 3).[6] Hypothesis 1 was supported in that there was a difference between the personality characteristics of those subjects who were successful investors and those subjects who were non-successful investors, $F\ (1,32)=7.82$, $p < .01$.

Hypothesis 2 was also tested by a 2 (risk versus nonrisk) x 18 (personality characteristics) repeated measures design with analysis of variance (Table 4). (The means and standard deviations are given in Table 5.) The personality characteristics predictive of risk investing were found by using two-sample t-tests (Table 6).[6] Hypothesis 2 was not supported in that those subjects who were risk-takers did not differ in terms of their personality characteristics from those subjects who were nonrisk-takers.

Table 1

Summary of the Two-Way Repeated Measures Analysis of Variance for the Relationship of Personality Characteristics to Successful Investing

	df	MS	F
Between subjects	33		
Success (A)	1	3,152.50	7.82**
Subjects within groups	32	403.20	
Within subjects	578 X 1/17=34[a]		
Personality (B)	17 X 1/17= 1[a]	590.61	6.54*
A X B	17 X 1/17= 1[a]	175.63	1.35
B X subjects within groups	544 X 1/17=32[a]	90.21	

*P < .05

**P < .01

[a]The degrees of freedom for the within subject variables have been corrected for heterogeneity of variances and covariances by using the Geisser - Greenhouse conservative F test.

Table 2

Means and Standard Deviations for the Relationship of Personality Characteristics[7] to Successful Investing

	Successful			Nonsuccessful		
	$\bar{X}$.	S.D.	N	$\bar{X}$.	S.D.	N
Do	55.5	10.6	17	43.6	9.1	17
Cs	49.5	6.6	17	41.6	7.3	17
Sy	51.6	8.4	17	48.2	9.4	17
Sp	56.9	8.9	17	45.4	9.1	17
Sa	59.4	5.6	17	52.6	10.6	17
Wb	46.1	9.0	17	39.8	13.4	17
Re	47.8	10.2	17	45.0	9.9	17
So	45.9	7.5	17	48.5	10.3	17
Sc	40.9	12.1	17	43.8	11.4	17
To	46.5	10.4	17	38.3	12.0	17
Gi	43.2	8.1	17	41.4	11.8	17
Cm	53.0	7.8	17	49.8	9.7	17
Ac	46.1	7.5	17	45.6	8.6	17
Ai	50.0	8.0	17	48.6	12.0	17
Ie	52.0	9.2	17	45.9	12.7	17
Py	50.4	9.4	17	43.0	13.2	17
Fx	58.0	11.4	17	48.5	10.0	17
Fe	50.4	9.2	17	51.9	9.6	17

Table 3

Rank Order of Personality Characteristics as Predictors of Successful Investing[a]

Rank	Personality Characteristic	t
1	Dominance (Do)	3.53
2	Social Presence (Sp)	3.19
3	Capacity for Status (Cs)	3.16
4	Flexibility (Fx)	2.50
5	Tolerance (To)	2.05
6	Psychological Mindedness (Py)	1.80
7	Self-acceptance (Sa)	1.58
8	Sense of Well-being (Wb)	1.58
9	Intellectual Efficiency (Ie)	1.52

[a]Only those personality characteristics which, if tested, would be significant at the .10 level are included in the above rank order.

Table 4

Summary of the Two-Way Repeated Measures Analysis of Variance for the Relationship of Personality Characteristics to Risk Investing

	df	MS	F
Between subjects	33		
Risk (A)	1	113.92	1.00
Subjects within groups	32	617.84	
Within subjects	578 X 1/17=34[a]		
Personality (B)	17 X 1/17= 1[a]	362.61	4.22*
A X B	17 X 1/17= 1[a]	2.92	1.00
B X Subjects within groups	544 X 1/17=32[a]	85.98	

*P < .05

[a]The degrees of freedom for the within subjects variables have been corrected for heterogeneity of variances and covariances by using the Geisser-Greenhouse conservative F test.

Table 5

Means and Standard Deviations for the Relationship of Personality Characteristics[7] to Risk Investing

	Risk-taking			Nonrisk-taking		
	$\bar{X}$.	S.D.	N	$\bar{X}$.	S.D.	N
Do	46.1	10.2	17	48.0	10.4	17
Cs	46.1	10.6	17	45.2	6.7	17
Sy	44.7	9.4	17	50.2	7.3	17
Sp	50.2	10.6	17	52.9	11.4	17
Sa	52.9	11.9	17	53.8	13.5	17
Wb	43.1	13.6	17	45.4	10.9	17
Re	46.0	11.4	17	48.2	10.4	17
So	44.8	11.3	17	49.4	8.4	17
Sc	42.7	9.6	17	44.6	9.8	17
To	44.0	11.5	17	45.3	11.5	17
Gi	40.0	8.4	17	44.6	9.1	17
Cm	45.2	6.7	17	49.0	10.2	17
Ac	42.6	12.1	17	45.5	8.8	17
Ai	53.0	9.7	17	46.7	9.4	17
Ie	47.6	13.8	17	50.6	9.4	17
Py	48.2	11.6	17	47.6	10.9	17
Fx	56.1	12.0	17	52.7	10.7	17
Fe	49.8	10.1	17	47.6	9.1	17

Table 6

Rank Order of Personality Characteristics as Predictors of Risk Investing[a]

Rank	Personality Characteristic	t
1	Achievement via Independence (Ai)	1.91
2	Sociability (Sy)	1.83
3	Communality (Cm)	1.60
4	Good Impression (Gi)	1.43

[a]Only those personality characteristics which, if tested, would be significant at the .10 level are included in the above rank order.

Hypothesis 3 was tested by a two-sample t-test (Table 7), comparing males and females with respect to their risk-taking behavior. Hypothesis 3 was supported in that male and female subjects were found to differ in their risk investing, t (62)=1.39, $p < .10$. Male subjects took greater risks in investing than did female subjects.

Hypothesis 4 and 5 were tested by using a 2 (male versus female) x 2 (risk versus nonrisk) factorial design, with a two-way least squares analysis of variance (Table 8) (The means and standard deviations are given in Table 9.) Hypothesis 4 was supported in that male and female subjects differed in their success as investors, F (1,60)=4.35, $p < .05$. Female subjects were more successful as investors than were male subjects. Hypothesis 5 was not supported in that those subjects who were risk-takers did not differ in terms of their success as investors from those subjects who were nonrisk-takers.

DISCUSSION

Globally speaking, the successful investor's personality (Figure 1) appears to be more psychologically well-adjusted than does the nonsuccessful investor. Successful investors had a higher mean score on fifteen of the eighteen personality characteristics, that are measured by the California Psychological Inventory (CPI). On nine of

Table 7

Male and Female Differences in Risk Investing

	M	t	df
Male	39.80		
		1.39*	62
Female	31.92		

*P < .10

Table 8

Summary of the Two-Way Least Squares Analysis of Variance for the Relationship of Sex and Risk to Successful Investing

	df	MS	F
Sex (A)	1	24,063,072.00	4.35*
Risk (B)	1	6,219,072.00	1.12
A X B	1	357,827.00	1.00
Error	60	5,528,451.66	
Total	63		

*P < .05.

Table 9

Means and Standard Deviations for the Relationship of Sex and Risk to Successful Investing

		Risk-taking	Nonrisk-taking
Female	$\bar{X}$.	$46,757.44	$47,466,16
	S.D.	1,705.01	2,345.75
	N	9	12
Male	$\bar{X}$.	$44,801.25	$45,940.60
	S.D.	2,470.73	2,715.67
	N	8	5

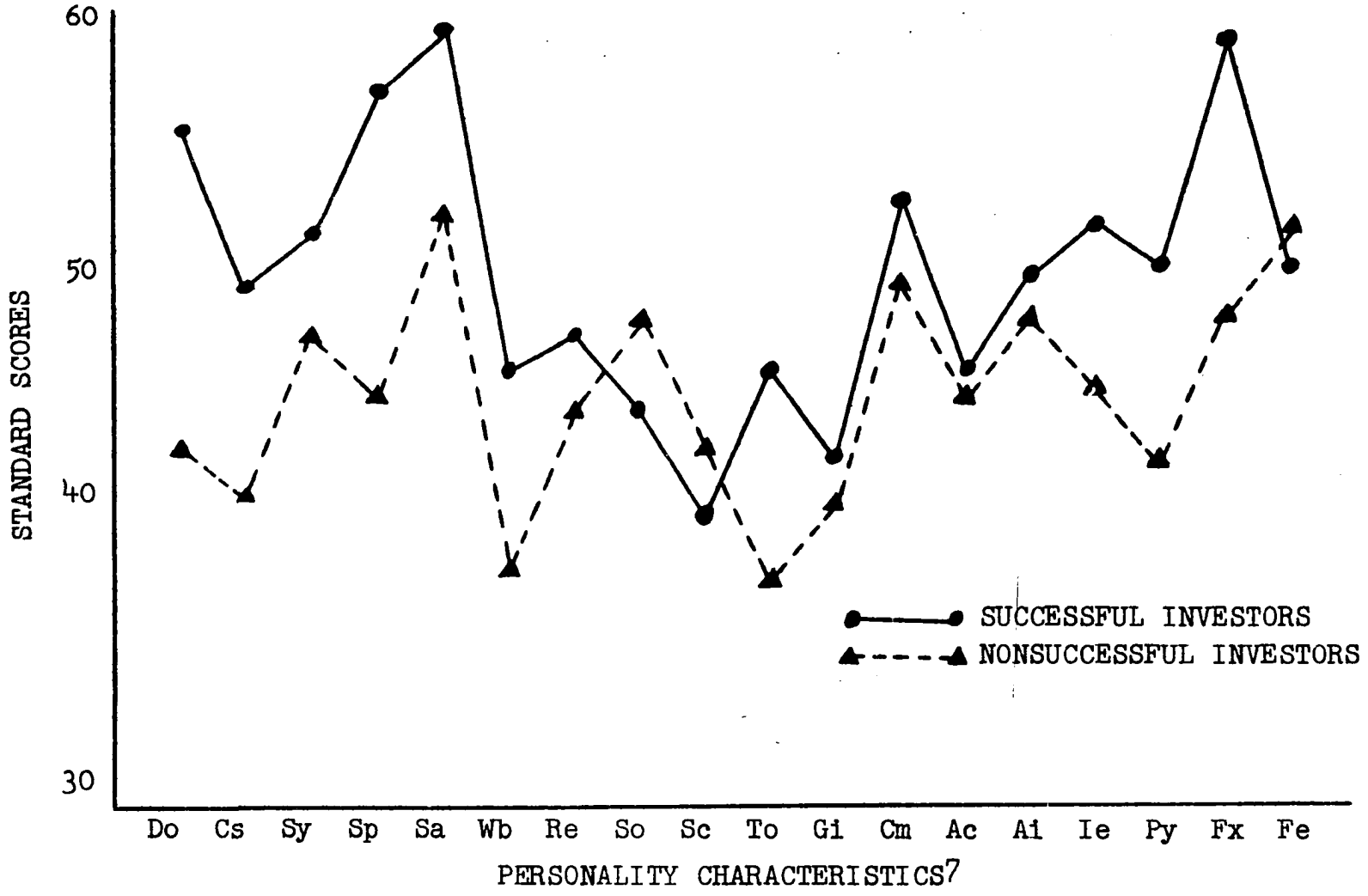


Fig. 1. Personality profiles of successful and nonsuccessful investors.

these dimensions, the differences were such that if tested they would be significant at the .10 level. These nine differentiating factors of successful investing are, in rank order of their predictive ability: Dominance, Social Presence, Capacity for Status, Flexibility, Tolerance, Psychological Mindedness, Self-acceptance, Sense of Well-being, and Intellectual Efficiency. The successful investor can probably be characterized as a self-assured, gregarious, and ambitious individual. He appears to be very resourceful and quite flexible and adaptable, with respect to his thinking and social behavior. This individual seems to have a high degree of intelligence, particularly in the verbal realm. The nonsuccessful investor in contrast appears to be more apathetic, shy, a little self-restrained, and less ambitious.

It was not surprising that the psychologically well-adjusted, successful investor would also be more likely to invest in conservative stocks. During the period in which the present study was conducted (October 29, 1969 to December 10, 1969) the Dow Jones Industrial Average fell 7.6%. The successful investor thus needed to be more resourceful and adaptable in order to cope with the bad market. Although a different composite personality profile (Figure 2) was not found between the risk-taking investor and the non-risk-taking investor, four personality characteristics did appear to discriminate between them. As the main effect (risk versus nonrisk) was not significant, the high t values

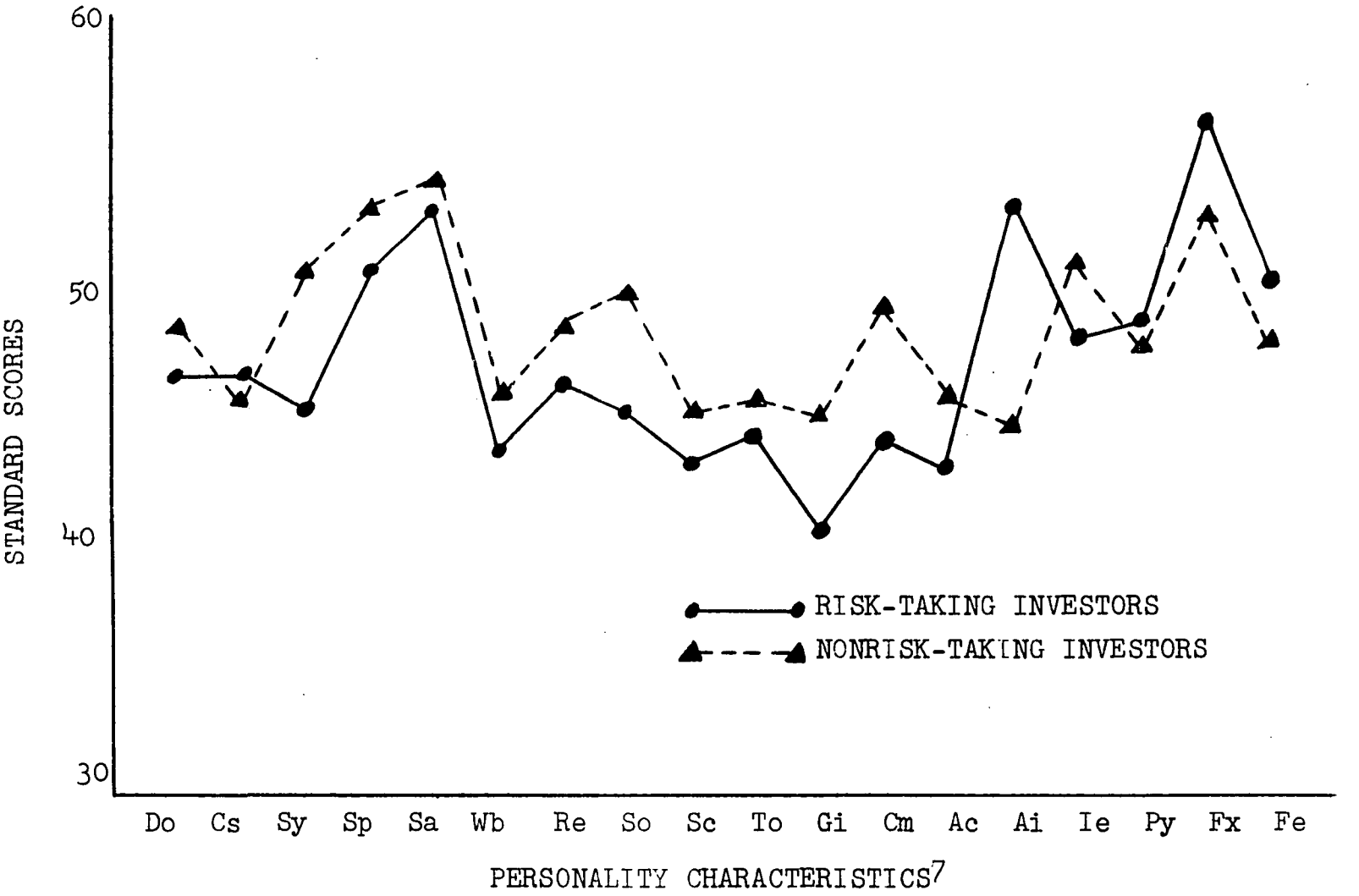


Fig. 2. Personality profiles of risk-taking and nonrisk-taking investors.

that were found for these four factors could have occurred by chance. The four differentiating characteristics of risk investing are, in order of their predictive ability: Achievement via Independence, Sociability, Communality, and Good Impression. On all of the above dimensions, the differences between the risk-taker and the nonrisk-taker were such that if tested they would be significant at the .10 level. The risk-taking investor appears to be very demanding, independent, and some what detached from society--not being very concerned with the needs and wants of those around him. In contrast, the nonrisk-taker appears to be outgoing, tactful in his social encounters, and somewhat more concerned with the impression that he makes on other people. Globally speaking, the nonrisk-taker seems more psychologically well-adjusted than the risk-taker. The nonrisk-takers had a higher mean score on thirteen of the eighteen personality characteristics, that were measured in the present study.

Several writers (Fowler, 1880; Fuller, 1962; Smith, 1969) have postulated that the marketplace seems to have predominantly feminine characteristics and therefore should be better understood by the female investor. To follow this reasoning to its logical conclusion would be to then hypothesize that women should be more successful investors than men. Although the aforementioned writers only hint at this conclusion, in the present research women were found to be more successful than men as investors. Perhaps, the major

determinant of the female subjects' successful investing was her significantly more conservative investment behavior i.e. female subjects had a higher probability of investing in conservative oriented stocks, while male subjects were more likely to invest in risk oriented stocks.

As in any research project in which the subjects have not been randomly sampled from a normal population, there are certain restrictions on the present study, with regard to the generalizations which can be drawn. Although these particular findings must, of necessity, be limited to describing the investment behavior of the 64 subjects sampled in this study, the research methodology that has evolved from the present research can be applied to a more normal population, such as a random sample of private investors or a random sample of brokers within a particular brokerage firm. The resultant set of personality characteristics which are found to distinguish between the successful and nonsuccessful investors could then be used as a diagnostic aid to the private investor and as a selection device for brokerage firms. These research findings thus need to be validated in a more life-like situation where the investor is using real rather than hypothetical money, where he is not limited with respect to the stocks from which he can choose, and where the study can be conducted over a time span which is long enough to include a greater variety of the erratic swings in stock market prices that are typically observed on Wall Street.

Findings from the present study indicate that there are major differences in the personality characteristics of the successful and nonsuccessful investor as well as for the risk-taking and nonrisk-taking investor. Female subjects had a higher probability of investing in conservative oriented stocks, while male subjects were more likely to invest in risk oriented stocks. An additional finding was that female subjects were more successful investors than male subjects. Perhaps, of even greater importance than the actual research findings presented here, is the development of a research methodology for obtaining objective personality characteristics which distinguish between potentially successful investors and potentially nonsuccessful investors. As the first known attempt to scientifically investigate marketplace psychology, the present study has demonstrated an approach which should aid in raising the study of stock market behavior out of its anecdotal abyss.

FOOTNOTES

1. Although a more lenient level of significance was selected, only hypothesis 3, of those hypotheses found to be significant, was rejected at this level, i.e. the .10 level of significance. Hypotheses 1 and 4 were rejected at the more stringent .01 and .05 levels, respectively.
2. A subject's net worth is equal to the market value of his stocks plus his cash balance.
3. The technical terms, that are used to describe the investment categories and the criteria for selecting those stocks within each category, are in common usage in market parlance.
4. Estimated 1969 earnings per share were obtained from analysts at Francis I duPont, One Wall Street, New York City, New York.
5. The sophistication test did not discriminate between the sophisticated and nonsophisticated "student investor." It was quite apparent that the subjects had very little knowledge about the stock market.
6. As the A x B interaction effect was not significant, post hoc comparisons of cell means were inappropriate. Thus the t-tests, as used here, are performed strictly for descriptive analyses. The higher the t value, the greater is the predictive ability of a given personality characteristic.

7. The eighteen personality variables on the California Psychological Inventory (CPI) are: Dominance (Do), Capacity for Status (Cs), Sociability (Sy), Social Presence (Sp), Self-acceptance (Sa), Sense of Well-being (Wb), Responsibility (Re), Socialization (So), Self-control (Sc), Tolerance (To), Good Impression (Gi), Communality (Cm), Achievement via Conformance (Ac), Achievement via Independence (Ai), Intellectual Efficiency (Ie), Psychological Mindedness (Py), Flexibility (Fx), and Femininity (Fe).

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APPENDIX A

PROSPECTUS

PROSPECTUS

CHAPTER I

INTRODUCTION

The present research will be the first known attempt to scientifically investigate the relationship between personality correlates and stock market speculation. All previous data concerning the personality dimensions of the successful investor falls within the anecdotal realm. There is a preponderance of "fundamentals" in the marketplace, but the unexplored area is the emotional area. All the charts, breadth indices, and technical palavar are the statistician's feeble attempt to describe the emotional state of the investing public. There is substantial work to be done in this realm, but so far no one has taken marketplace psychology as an area worthy of intensive study. If the statistical area has been and is being so thoroughly explored, why shouldn't someone scientifically investigate this unexplored emotional sphere (Smith, 1969)?

As very little "hard data" is available on the personality correlates or emotional makeup of successful

versus nonsuccessful investors, it may be helpful to look back at the investing public's reactions to various erratic swings in stock market prices, since the "marketplace" is really a reflection of mass psychology (Engel, 1962; Smith, 1969). Modern-day stock market history can be dated from the early 1900's (Engel, 1962). The movement of the stock prices during the period from 1900 to the middle of 1929 is aptly described by Dice (1929) in language almost as speculator as the behavior of the market itself. Successive periods were labeled "The McKinley-Roosevelt Boom," "The Coolidge Boom," and "The Hoover Boom." Thus, there had been two great bull markets previous to the incomparable boom which followed the election of Herbert Hoover. The predominant question being asked by both the public and the investors, alike, in late 1928 was, "Has a reasonably level headed people suddenly gone mad with a mania for speculation and created a situation which is headed for a catyclysmic collapse, or is there sound reason for the wild dervish dance which has dragged into its mazes hundreds of thousands of persons of every class whose previous financial operations involved no more risk than the maintenance of a savings account or the purchase of a liberty bond (The Dance of the Billions, 1928)." The "boom" atmosphere of 1928 which resulted in swift and easy winnings for the now rapidly growing number of amateur speculators, during weeks when almost every high volume stock was climbing to incredible new

heights, produced a kind of intoxicating or mesmerizing affect on the entire country.

Not until mid 1929 did the stock market show any major signs of weakness. In early October of 1929, the greatest stock market crash in financial history was casting its shadow over Wall Street. In five hours of hysterical trading on October 24, almost thirteen million shares (12,894,650) were traded on the New York Stock Exchange. The number of shares traded was four million more than the previous record for transactions in a single trading session. During the brief span of five hours, leading stocks fell anywhere from twenty to fifty points (Wall Street's Crisis, 1929). On Tuesday, October 29 the number of transactions went into astronomical figures. More than sixteen million shares were traded on this date, with the total estimated loss approaching $15,000,000,000 (Wall Street's Prosperity Panic," 1929). It was a combination of fear and mob psychology which carried the debacle to the absurd depths that it plunged. Most market analysts were in agreement that the October catastrophe on Wall Street was strictly a stock market panic. Fisher (1930) states vehemently that the prime fault for the market crash of 1929 lay in the overeagerness of the investor to make a profit. Trouble developed as cheap money brought in an ever increasing number of speculators who were able to borrow and subsequently purchase stocks with the sole hope of "breaking the bank."

One can infer from taking a brief glimpse at the 1929 stock market crash that the most predominant characteristic of the small "unsuccessful" investor was his impulsiveness. He appears to have been victimized by his own imagination (What Smashed the Bull Market, 1929). This impulsiveness, when coupled with his "sheep-like" conformity, led him down a one-way street. As a strict conformist, it was only natural that when a selling mania hit the market during its sharp tumble, he sold out with the rest of the crowd. This influx of selling only served to further perpetuate the market's downfall (The Men Who Did It, 1929).

"If" and "but" are said to be the most frequent conjunctions in the speculator's vocabulary. The speculator is pictured as an extreme rationalizer. His life has been a series of regrets. Strangely enough, he is more concerned with rationalizing the fortune he might have made, rather than rationalizing the fortune which he has actually lost (Fowler, 1880).

There is an apparent leveling of social class lines and conventionalities in the domain of speculation. Individuals from all classes are equally represented in the realm of stock speculation. The only distinctions made on Wall Street are with respect to whether or not an individual is a successful or nonsuccessful speculator (Engel, 1962; Fuller, 1962; Smith, 1969).

Fowler (1880) describes the successful speculator as being hard-headed and strong of nerve. Those speculators who are unsuccessful are characterized as "ghosts of the market. . . . They flit about the door-ways, and haunt the vestibule of the exchange, seedy of coat, . . . unkempt, unwashed, unshorn, wearing on their worn and haggard faces a smile more melancholy than tears. They put up never a penny, and yet they are perpetually asking the prices of stocks which they never buy or sell (p. 40)."

Fuller (1962) pictures the speculator as hopeful, although often times neurotic. Speculative members of the Wall Street cult pay only scant attention to such trivia as price:earnings (P:E) ratios, debt structure, cash flow, and corporate stability. Their sole objective is to get on and off the band wagon at the appropriate moment. The average speculator is continually revolving through a manic-depressive cycle. His high feelings of elation are momentary, only to be followed by intense feelings of depression.

According to Lefevre (1930), one of the greatest speculators specializing in making quick millions was Charles Topping. "He (was) a quiet, unassuming man, unimpressive in appearance, suggesting studious habits, personally shy, and the extreme opposite of picturesqueness . . . I have never known anyone less communicative (p. 13)."

Niccolas Darvas (1962), the present-day Charles Topping, stresses the importance of cautiousness as an

essential characteristic of the successful investor. "I gamble, yes. But I gamble with the caution born of experience. One thing I know: If I'm burned by something, I stay away from it (p. 182)."

Dr. Charles McArthur (Smith, 1969) of Harvard University has used ink blots in an effort to distinguish the personality characteristics of successful analysts and portfolio managers. He has discovered that there are personality differences between the analyst who is good at picking the right stocks and the portfolio manager whose job it is to call the shots with regard to the correct time to buy or sell stocks. The good stock analyst is characterized as having a high aptitude, with respect to both words and numbers. However, his abilities in the abstract realm are far from superior. In contrast, the good portfolio manager is a very intent individual who has a high degree of emotional maturity. An additional and very important prerequisite for the latter individual is that he must be able to function without undue anxiety.

How prevalent is stock market speculation today? To answer this question, one needs to only take a brief glimpse at the titles of recently published articles about investment on Wall Street. Such titles as: "Big Casino" (1967), "Gamblers' Market: Warning of Speculative Activity" (1967), "Speculation in Stocks, a Growing Worry" (1967), "Speculative Spree Alarms AMEX" (1967), "Stock Speculation:

a New Warning" (1967), and "When Wall Street Catches the Flu, 26 Million Americans Ache" (1969) dominate the literature.

Until recently, brokers and market analysts soothed themselves and the public with their observations that the majority of speculation was being engaged in by sophisticated investors who were aware of the risks and could afford them (Wall Street: Plungers and Swingers, 1967). However, it is now recognized that speculation in the stock market is no longer the prerogative of a small wealthy subculture, as it was in the early 1900's (Engel, 1962). The quality of speculation has changed dramatically in the intervening years. Today, there are an awful lot of uninformed and definitely unsophisticated individuals speculating on Wall Street--individuals who are ill-equipped to financially afford the risks that they are taking (Engel, 1962; Fuller, 1962; Smith, 1969).

The present study is concerned, not only with the relationship between the investor's personality correlates and his success in stock market speculation, but also with the role of personality correlates as a determinant in the composition of an investor's portfolio. To date, there has been no specific research devoted to studying an investor's personality characteristics and their affect on the kind of stocks that he chooses to include in his portfolio. There are three types of data that pertain to how an individual selects his stocks: anecdotal data, data that has been

derived from decision-making models and theories, and data that has been contributed by the relatively new theory of portfolio selection.

Anecdotal literature relates two primary means of selecting stocks. First, there is the easily procurred indirect tip, "that you get, say, from Henrietta Whimple's husband--you know the short fat one with the bad teeth--who has a brother in somebody's office--anyway, it's in Wall Street--who has a secretary who has a friend who works in Morgan's who said she'd just made a date for the Old Man to have lunch with J. W. Tickle of Tickle's Gum Arabic--which must mean something (Dayton, 1929, p. 30)." Then there is the sure-fire method of selecting stocks while blindfolded.

The traditional normative decision-making theory (Normative theories predict what an individual should do rather than what he actually does do.), that is concerned with making choices among bets, predicts that a gambler will choose that bet which has the highest expected value (EV). In the above discussion the expected value (EV) of a bet is the amount which the gambler will receive if he wins a particular bet.

Do individuals actually make bets in accordance to an "expected value" theory? Edwards (1955) believes that people not only do not bet according to this scheme, but it is even doubtful that they should. Bernoulli (1738, translated by Sommer, 1954) suggests that a gambler will choose

that bet which he believes has the highest expected utility (EU). The expected utility (EU) of a bet is represented as: $EU = \Sigma_i p_i u_i$. In this equation u_i is the utility or the subjective value of the $_i$th outcome of a particular bet. Simply stated, Bernoulli believes that the utility or the subjective value of a bet can be substituted for its objective value when calculating the expected value (EU) of the particular bet.

Von Neumann and Morgenstern (1947) have only recently made an attempt to revive Bernoulli's suggestion. They have assumed that expected utility (EU) maximization is a theory which actually describes what people will do in a given choice situation, rather than simply describing what people should do. Following in the footsteps of von Neumann and Morgenstern (1947), Mosteller and Nogee (1959) assumed the validity of the expected utility (EU) maximization model and then subsequently used it in order to experimentally measure the utility of relatively small amounts of money. Subjects did not demonstrate the high degree of consistency, with regard to their preferences and indifferences, as was previously postulated by von Neumann and Morgenstren (1947). Instead, subjects revealed a graded response--gradually increasing their frequency of risk-taking behavior, as the monetary value of the risk increased. An additional, and very interesting finding was that some subjects, despite extensive instructions and experiences, continued to make wagers which led to monetary losses in the long run.

Friedman and Savage (1948) have used a relatively simple extension of the orthodox utility analysis to explain the behavior of individuals in a risk-taking situation. Their basic assumption is that individuals frequently must choose between alternatives, which differ in terms of the degree of risk. The clearest example of such a "choice" situation is provided by insurance and gambling. When someone buys fire insurance on his home, he is accepting a certain small loss (the insurance premium) in preference to the small risk of a large loss (the value of the home). Thus he is choosing certainty in preference to uncertainty. On the other hand, the individual who gambles i.e. buys a lottery ticket, is choosing uncertainty in preference to certainty. This individual is subjecting himself to a large chance of losing a small amount (the price of the lottery ticket) and the small chance of winning a large amount (the prize). Friedman and Savage (1952) have attempted to make the "expected utility hypothesis" a scientific hypothesis i.e. one that would enable correct predictions to be made about an individual's behavior. Presently, the available evidence does not contradict this hypothesis. However, it must be emphasized that the opportunities for contradiction have been few and direct evidence in favor of the hypothesis has been meager.

Edwards (1955) presents a relatively simple mathematical model in order to predict choices among bets. This model is based on the concepts of utility, subjective

probability, and the theory of games. He (Edwards, 1954) has been able to demonstrate that a subject will prefer to bet at certain probabilities, as opposed to others, and that a subject's preferences will generally be independent of the value of the money involved, as long as the monetary value does not get too large and as long as all the bets that are being considered have the same expected value (EV). An additional finding was that a subject will prefer less favorable bets which have preferred probabilities, as opposed to more favorable bets which have less-preferred probabilities. Two patterns of probability preferences were discovered: one for bets having a positive expected value (EV) and one for bets with a negative expected value (EV). Using the subjectively expected utility maximization model, Edwards (1955) found that subjective probabilities are a more important determinant, than are utilities, in predicting an individual's choice among bets. These results are inconsistent with the more traditional expected utility (EU) model.

The current research dealing with the theory of portfolio selection provides specific data about why an individual selects a particular investment portfolio. Markowitz's (1959) theory of portfolio selection assumes that if the investor has a choice between two portfolios, he will prefer that portfolio with the lowest standard deviation. If both portfolios have the same standard deviation, the investor will prefer the one with the highest mean

rate of return. The above theory is more than just a device for computing the most efficient portfolio; it also demonstrates the tendency of the successful investor to avoid risk. It is predicted that the investor who is indifferent to risk-taking or who actually prefers risk-taking will put all his money into a single security. If the investor is completely indifferent, he will put all his money in the security with the highest rate of return, regardless of the risk.

Sharpe (1963) has extended Markowitz's (1959) work on portfolio analysis. Obviously, portfolio analysis requires a large number of comparisons between various sets of securities. Thus any set of assumptions which can reduce this computational task will greatly facilitate the practical application of portfolio theory. One such set of assumptions is provided by the diagonal model. The major advantage of this model is that it enables the investigator to account for the interrelationships among various securities.

To date, no objective indice has been developed to accurately predict whether or not a given individual will be successful in investing in the stock market. There has been absolutely no scientific research with respect to marketplace psychology. Is it possible that an indice can be developed to predict the likelihood that a potential investor will be successful in the stock market, i.e. are there certain personality correlates which can be used to differentiate the

potentially successful investor from the potentially non-successful investor? The present research is concerned with identifying the distinguishing personality correlates, or the personality profile, of the successful investor. These research findings will pertain not only to the private investor, but also to the broker or account executive, who is hired by the brokerage firm to invest money for its clients. Brokerage firms have only recently begun to research the emotional sphere of the marketplace. Presently, they are primarily concerned with the selection of trainable, potential brokers i.e. individuals who will have a high probability of succeeding in the firms training program. However, just because an individual is successful in a training program does not mean that he will succeed in making money for the firm's clients. Thus, trainability is not necessarily a good predictor of ultimate success as an investor. The ultimate criterion of successful investing for both the private investor and the broker will be how much profit he makes, whether it be for himself or for his clients. As there are as yet no tools available for accurately predicting the probable success of a potential investor, the development and subsequent application of such an indice could have far reaching economical benefits for individual investors, as well as brokerage firms.

The present study is thus primarily concerned with scientifically investigating the relationship between

personality correlates and stock market speculation. Two major hypotheses are to be tested:

1. It is expected that there will be a difference between those subjects who are successful investors and those subjects who are nonsuccessful investors, in terms of their personality correlates.

2. It is expected that there will be a difference between those subjects who are risk-takers and those subjects who are nonrisk-takers, in terms of their personality correlates.

The following hypotheses have no bases in previous literature, but are considered in the present study as ancillary hypotheses:

3. It is expected that male subjects will be greater risk-takers than female subjects.

4. It is expected that female subjects will be more successful than male subjects as investors.

5. It is expected that those subjects who are nonrisk-takers will be more successful investors than those subjects who are risk-takers.

The .10 level of significance was necessary to reject the null form of the above hypotheses.

CHAPTER II

METHOD AND PROCEDURE

Subjects

The subjects were 64 students enrolled in two sections of an Introductory Psychology course at the University of Oklahoma. Of the 152 students who originally began the study (i.e. those who selected stocks on the first day of the study), only those 21 male and 43 female students who were present for all eight testing sessions were used in the final analyses.

Materials

The materials consisted of one test booklet per subject. Each booklet contained instructions, information about sixteen stocks which had previously been selected by the experimenter, a questionnaire, an investment sophistication test, and additional sheets which were used for inventorying weekly stock transactions and determining each subject's net worth[1] for a particular week.

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[1] A subject's total net worth is equal to the market value of his stocks plus his cash balance.

Stock list

Four stocks were selected from each of four investment categories (i.e. a total of sixteen stocks). These stocks were all chosen from either the New York or American Stock Exchange. The investment categories and the criteria for selecting those stocks within each category were as follows:

1. Exceptional Growth

   A. The stock must have maintained a minimum 10% average annual rate of growth, in per share earnings, over the last five years.

   B. The stock must indicate a capability of extending its 10% average annual rate of growth (i.e. estimated 1969 earnings per share[2] must show a minimum increase of 10% over actual 1968 earnings per share).

   C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 12%.

   D. The current yield of the stock must not be greater than 2%.

   E. The stock must have a P:E ratio of at least 25.

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[2]Estimated 1969 earnings per share were obtained from analysts at Francis I dupont, One Wall Street, New York City, New York.

2. Conservative Growth With Current Income

   A. The stock must have maintained a minimum 5.5% average annual rate of growth, in per share earnings, over the last five years.

   B. The stock must indicate a capability of extending its 5.5% average annual rate of growth (i.e. estimated 1969 earnings per share (see Footnote 2) must show a minimum increase of 5.5% over actual 1968 earnings per share).

   C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 12%.

   D. The current yield of the stock must not be less than 2.7%.

   E. The stock must not have a P:E ratio greater than 12.5.

3. High Risk

   A. The stock has not maintained a minimum average annual rate of growth, in per share earnings, over the last five years.

   B. The stock does not need to indicate a capacity of extending any minimum average annual rate of growth (i.e. estimated 1969 earnings per share (see Footnote 2) do not need to show any minimum increase, and may show a decrease, over actual 1968 earnings per share).

C. The stock does not need to have a minimum combined return (annual per share earnings growth rate plus current yield).

D. The current yield of the stock must not be greater than 1%.

E. The stock must have a P:E ratio of at least 25.

4. Low Risk With High Current Return

A. The stock must have maintained a minimum 3% average annual rate of growth, in per share earnings, over the last five years.

B. The stock must indicate a capability of extending its 3% average annual rate of growth (i.e. estimated 1969 earnings per share (see Footnote 2) must show a minimum increase of 3% over actual 1968 earnings per share).

C. The stock must have a combined return (annual per share earnings growth rate plus current yield) of at least 8%.

D. The current yield of the stock must not be less than 4.5%.

E. The stock must not have a P:E ratio greater than 15.

For the purposes of data analyses, categories 1 and 3 were combined to represent those stocks with risk oriented investment objectives, and categories 2 and 4 were combined

to represent those stocks with conservative investment objectives.

Procedure

Each subject was given $50,000 (hypothetically) with which to invest in one or more of sixteen stocks. Those stocks were divided into four categories according to the investment objectives usually associated with purchases of them. The stocks were then numbered to prevent their names from biasing the subject's selections (refer to APPENDIX C for the actual names of the sixteen stocks), and a brief description was given regarding the principal business of each stock. Additional information about each stock's present price, price range during 1969, present yield, and actual per share earnings for the previous five years along with estimated per share earnings for 1969 (see Footnote 2) was presented.

The "Stock Market Game" was conducted at each of eight consecutive Wednesday class meetings. During the first session, subjects were able to make their initial stock selection(s). There were only two restrictions with regard to these initial purchases: (1) All transactions (i.e. buying and selling) needed to be in multiples of 100 shares and (2) initial stock purchases could not exceed $50,000 in total value. At each of the next six Wednesday class meetings, the current price of all sixteen stocks (based on the previous Tuesday evening's closing stock market prices) were written on

the black board. Subjects were then able to calculate the current value of their stocks and to decide whether they would like to keep their present stocks or to sell some, or all, of these stocks and buy different ones. The subjects were instructed that the sole objective of the "Stock Market Game" was to accumulate the largest amount of money possible within the investment period and that a prize of $10 was to be given to that individual, in each class, who was the most successful investor. At the eighth, and final, testing session subjects were required to sell all their remaining stocks at the previous day's closing market prices. They were then able to calculate their final total net worth (see Footnote 1).

Additional information was also obtained on the subjects during the testing sessions. Prior to the subjects selecting their initial stocks, during the first testing session, they were given a stock market sophistication test. Demographic data were obtained on each subject during the second testing session. All subjects were administered the California Psychological Inventory (CPI) on the sixth testing day.

Variables

A subject was operationally defined as a successful investor if he performed better than the Dow Jones Industrial Average, during the eight week investing period. From October 29th to December 10th, 1969, the Dow Jones Industrial

Average lost 64.6 points or was down 7.6%. Thus to be considered successful, subjects needed to have a final net worth (see Footnote 1) of at least $46,200. For the purposes of data analyses, subjects were rank ordered in terms of their final net worth (see Footnote 1). The top 27% were designated as the successful group and the bottom 27% as the nonsuccessful group. This division was made in order to establish extreme criterion groups.

A subject was operationally defined as a risk-taker if his total investments in risk oriented stocks (i.e. those stocks in categories 1 and 3) were greater than his total investments in conservative oriented stocks (i.e. those stocks in categories 2 and 4). Once again, for the purposes of data analyses, the subjects were rank ordered in terms of their total money which was invested in risk oriented stocks. The top 27% were designated as the risk-taking group and the bottom 27% as the nonrisk-taking group. This division was also made in order to establish extreme criterion groups.

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APPENDIX B

TEST BOOKLET

DISSERTATION RESEARCH

"The Stock Market Game"
Mr. Bill Baker

You will be given $50,000 (hypothetically) with which to invest in one or more of the sixteen stocks listed below. These stocks have been numbered in order to prevent their names from biasing your choices. However, all of the stocks listed actually represent real companies, whose stock is presently being traded on major stock exchanges in the United States. The sixteen stocks have also been divided into four categories, according to the investment objectives usually associated with purchases of these particular stocks, and a brief description is given regarding the principal business of each stock.

Today, you will have the opportunity to choose your stock or stocks. There are only two restrictions regarding your initial purchases. (1) All transactions (i.e. buying and selling) must be in multiples of 100 shares. (2) Your initial purchases must not exceed $50,000 in total value. Each Wednesday (starting next week) at the beginning of class, I will list the present prices of each stock. You will then be able to figure up the current value of your stocks and to

decide whether you would like to keep your present stocks or to sell some, or all, of these stocks and buy different ones. Your objective is to accumulate the largest amount of money possible within the next six weeks. You will be competing against your fellow classmates to see who can accumulate the greatest amount of wealth within this time limit. Every two weeks, I will post a rank-ordered list with your names and the total value of your present stocks on the classroom door. At the end of six weeks a prize will be presented to the individual having the most money.

Below are the sixteen stocks from which you may choose your stock, or stocks.

Exceptional Growth

Stock #1....Fast food Franchiser

Present Price	Price Range (1969)	Yield
$54.00	52 1/4-35	.2%

Per Share Earnings

(est)69	68	67	66	65	64
1.30	.78	.45	.24	.11	0

Stock #2....Producer and marketer of equipment and supplies for photocopying

Present Price	Price Range (1969)	Yield
$114.88	104-85 1/4	.6%

Per Share Earnings

(est)69	68	67	66	65	64
2.05	1.73	1.48	1.24	.93	.63

Stock #3....Soft drink manufacturer

Present Price	Price Range (1969)	Yield
$50.25	54-43 1/4	1.8%

Per Share Earnings

(est)69	68	67	66	65	64
1.60	1.34	1.15	.97	.80	.63

Stock #4....Discount variety chain

Present Price	Price Range (1969)	Yield
$57.00	56 1/4-37 1/2	.8%

Per Share Earnings

(est)69	68	67	66	65	64
1.75	1.39	1.03	.85	.67	.53

Conservative Growth with Current Income

Stock #5....Producer of a broad array of materials and components essential for end products made by auto, construction, electronics, aerospace, metal, and other major industries

Present Price	Price Range (1969)	Yield
$30.38	33 1/4-23 1/4	2.6%

Per Share Earnings

(est)69	68	67	66	65	64
2.45	2.23	1.93	1.76	1.33	1.06

Stock #6....Owns a branch of banks in the United States

Present Price	Price Range (1969)	Yield
$53.25	54-42 1/4	3.7%

Per Share Earnings

(est)69	68	67	66	65	64
4.10	3.80	3.35	3.14	2.93	2.69

Stock #7....Department store operator

Present Price	Price Range (1969)	Yield
$36.88	40-30 1/2	2.9%

Per Share Earnings

(est)69	68	67	66	65	64
2.50	2.31	2.08	1.94	1.65	1.23

Stock #8....Canadian distiller

Present Price	Price Range (1969)	Yield
$43.88	44 1/2-36 1/2	2.8%

Per Share Earnings

(est)69	68	67	66	65	64
2.75	2.57	2.37	2.21	2.01	1.87

High Risk

Stock #9....Manufacturer of mobile homes

Present Price	Price Range (1969)	Yield
$30.13	38 1/4-18 1/2	.5%

Per Share Earnings

(est)69	68	67	66	65	64
1.05	.76	.26	.22	.42	.82

Stock #10....Manufacturer of environmental controls and security systems

Present Price	Price Range (1969)	Yield
$152.50	144-107 1/2	.8%

Per Share Earnings

(est)69	68	67	66	65	64
4.15	3.41	2.85	3.07	2.61	2.89

Stock #11....Manufacturer of tape and recording equipment

Present Price	Price Range (1969)	Yield
$47.50	47 1/2-32 1/2	0

Per Share Earnings

(est)69	68	67	66	65	64
1.60	1.35	.80	1.09	.91	.83

Stock #12....General construction contractor, land and community developer, owns and operates commercial property

Present Price	Price Range (1969)	Yield
$16.75	23 1/2-10 1/2	0

Per Share Earnings

(est)69	68	67	66	65	64
.70	.35	.16	-.12	-2.04	.28

Low Risk with High Current Return

Stock #13....Distributor of gas and electricity

Present Price	Price Range (1969)	Yield
$22.18	27 1/4-20 1/2	6.2%

Per Share Earnings

(est)69	68	67	66	65	64
1.78	1.68	1.58	1.48	1.39	1.34

Stock #14....United States and international oil company

Present Price	Price Range (1969)	Yield
$32.25	49-32	4.5%

Per Share Earnings

(est)69	68	67	66	65	64
3.20	3.02	2.79	2.44	2.06	1.91

Stock #15....Gas pipeline and oil company

Present Price	Price Range (1969)	Yield
$25.63	32-23 1/2	5.4%

Per Share Earnings

(est)69	68	67	66	65	64
2.40	2.21	1.95	1.88	1.70	1.52

Stock #16....Integrated natural gas system

Present Price	Price Range (1969)	Yield
$26.75	32-25 1/2	6.2%

Per Share Earnings

(est)69	68	67	66	65	64
2.65	2.53	2.39	2.19	2.05	1.87

INITIAL STOCK SELECTIONS

Stock #	Number of shares		Price/share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks = _____

Plus Cash = _____

Should Total to $50,000

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share		Amount
SELL			X		=	
			X		=	
			X		=	

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share		Amount
BUY			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share		Amount
SELL			X		=	
			X		=	
			X		=	

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share		Amount
BUY			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share	Amount
BUY			X		=
			X		=
			X		=
			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share		Amount
SELL			X		=	
			X		=	
			X		=	

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share		Amount
BUY			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share		Amount
SELL			X		=	
			X		=	
			X		=	

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share		Amount
BUY			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Value of your Present Stocks

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Transactions

	Stock #	Number of Shares		Price/Share	Amount
SELL			X		=
			X		=
			X		=
			X		=
			X		=
			X		=

Transactions continued

	Stock #	Number of Shares		Price/Share		Amount
SELL			X		=	
			X		=	
			X		=	

Total Amount of Stocks Sold _____

Plus Cash _____

Buying Power _____

	Stock #	Number of Shares		Price/Share		Amount
BUY			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	
			X		=	

Total Amount of Stock Bought _____

Plus Cash _____

Value of your Present Stocks After Transactions

Stock #	Number of Shares		Price/Share	Amount
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=
		X		=

Total Amount of Stocks _____

Plus Cash _____

Total Net Worth _____

Name _____

Date _____

Final Value of your Stocks

Stock #	Number of Shares		Price/Share		Amount
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	
		X		=	

Total Amount of Stock _____

Plus Cash _____

Final Total Net Worth _____

Stock Market Sophistication Sheet

What does it mean to "buy on margin?"

What does it mean to "sell short?"

What is a "warrant?"

What does "P:E ratio" mean?

What is the "Dow Jones Industrial Average?"

Do you own any stocks?

Have you ever talked to a broker with regards to buying or selling stocks?

Does your family own any stocks?

Questionnaire

1. What is your age? _____

2. What are the ages of your brothers and sisters? _____

3. Where is your home town? _____

4. What is your Father's occupation? _____

5. What is your Mother's occupation? _____

6. Approximately, what is your Father's income per year?____

   A) $0-5,000
   B) $5,001-10,000
   C) $10,001-15,000
   D) $15,001-20,000
   E) $20,001 and above

7. Approximately, what is your Mother's income per year?____

   A) $0-5,000
   B) $5,001-10,000
   C) $10,001-15,000
   D) $15,001-20,000
   E) $20,001 and above

APPENDIX C

STOCK LIST

	Name of Stock	Price (Oct. 29)	Price (Dec. 10)	Percent Change
#1	Kentucky Fried Chicken	54.00	46.50	-13.9
#2	Xerox	114.88	105.25	- 8.4
#3	Dr Pepper	50.25	48.00	- 4.5
#4	S S Kresge	57.00	56.00	- 1.8
#5	Eagle Pitcher	30.38	27.88	- 8.2
#6	Chase Manhattan Bank	53.25	51.25	- 3.9
#7	Macy R. H.	36.88	33.50	- 9.2
#8	Walker Hiram	43.88	48.63	+10.8
#9	Champion	30.13	22.63	-24.9
#10	Honeywell	152.50	145.00	- 4.9
#11	Ampex	47.50	43.00	- 9.5
#12	Del Webb	16.75	10.75	-35.8
#13	Washington Water and Light	22.18	19.75	-11.0
#14	Gulf Oil	32.25	28.00	-13.2
#15	Tenneco	25.63	22.25	-13.2
#16	Columbia Gas System	26.75	25.25	- 5.6