

Priming the Risk Attitudes of Professionals in Financial Decision Making*

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Abstract. We explore the influence of priming on financial decisions by reinforcing subjects' risk-seeking behavior under uncertainty and comparing it to behavior in control groups. We focused on professionals: commercial banks' investment advisors and accountants in CPA firms. Results indicate that priming affects subjects' risk attitudes and investment decisions. Professionals' decisions were affected more than undergraduates', suggesting they employ a more intuitive and less analytic approach in making their decisions. Our work is related to field-data research documenting correlations between returns (investors' decisions) and situational factors, (i.e., weather) by suggesting controlled tests of professionals' behavior vis-a-vis the complexity inherent in field data.

JEL Classification: D01, D81, D84, G11, G24.

1. Introduction

Virtually all decision making theories employ a cognitive perspective. Basically, there is an underlying assumption that decisions are driven by an assessment of the possible outcomes via some type of cost-benefit analysis. Theories of choice under risk or uncertainty are generally built under the presumption that, to arrive at a decision, individuals employ some kind of expectation based

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calculus on an underlying utility function which describes all the relevant information regarding the decision maker's preferences, or "type" (Expected Utility (EU), von Neumann and Morgenstern, 1944). Descriptive models of deviations from economic rationality are also likely to employ various sets of cognitive rules. A most prominent set of such rules is described by Prospect Theory (PT), (Kahneman and Tversky, 1979a) and Cumulative Prospect Theory (CPT), (Tversky and Kahneman, 1992).

Human behavior is sustained in several different levels of consciousness, meaning that some decisions take place, at least partially, outside of consciousness.¹ Accordingly, in this research we would like to shed light on some aspects of the decision-making process by examining subconscious effects on economic decision making. We focus on financial decisions taken under risk and uncertainty, proposing that preferences may be affected by priming, a process of activating particular connections or associations in memory prior to carrying out an action or task. The associations, often regarded as unconscious, occur when a certain stimulus or event increases the availability of a specific informative category, which influences information processing and, as a result, affects decision making. As a consequence of the priming effect, the notion of "type" is insufficient for describing and predicting behavior. It also implies that the decision-making process is partly situational. Specifically, we aim at testing the susceptibility to priming of a specific feature of preferences, namely, investors' risk attitudes. To do so, we expose subjects to substance reinforcing risk-seeking behavior and compare their investment decisions to those of subjects in control groups. We focus on uncertainty, rather than merely on risk, as virtually all economic decision scenarios involve uncertain situations.

Our study investigates decision making by professional investors, namely, investment advisors in large commercial banks and accountants in CPA firms. To do so, we (i) test the effect of priming stimuli on professionals' risk attitudes, and (ii) compare it to the priming effect on Economics undergraduates.

The results of the experiments indicate that priming manipulations affect subjects' risk attitudes and, hence, their investment decisions. Captivatingly, the investment decisions of the professionals are affected more significantly by the priming stimuli than the decisions made by the undergraduate participants.

There is evidence that professionals exhibit behavioral tendencies, perhaps even to a greater extent than students. For example, professional decision makers often make systematic misjudgments when developing future plans (Planning Fallacy, Kahneman and Tversky, 1979b). Experimental analysis

¹ For instance, contextual factors may change the accessibility of some decision rules and thereby affect decisions and revealed preferences (Payne et al., 1993).

showed that professional futures and options pit traders exhibit myopic loss aversion more than undergraduates (Haigh and List, 2005) and professional traders perform lower than students in exploiting arbitrage opportunities in option trading (Abbink and Rockenbach, 2006). Note that the aforementioned studies deal with decision makers' inability to avoid hidden traps in the trading setup: myopic loss aversion is a reflection of investors' tendency to employ narrow framing when judging decisions, and inferior arbitrage exploitation, as was explained by the authors, arises from a more intuitive and less analytic approach used by the professionals. Our study contributes to the understanding of professionals' behaviors by exploring another aspect of the decision-making process, namely the possibility that preferences are situational, or that, at a fundamental level, the concept of "type" is unsatisfactory for capturing decision makers' attitudes.

There is a growing body of literature employing field data suggesting correlations between stock returns, the reflection of investors' decisions, and situational factors, such as weather conditions (e.g., Saunders, 1993; Hirshleifer and Shumway, 2003).² Since field data are, by nature, highly complex, they might exhibit spurious connections among the observed variables. Our article aims at dealing with this issue by suggesting an independent test of professional traders' behaviors within a controlled setting. Our finding that investors' risk attitudes may be primed to affect their financial decisions validates an underlying psychological mechanism generating this observed phenomenon. To elaborate, the existence of priming effects on investors' risk attitudes may strengthen Hirshleifer and Sumway's claim that people in good mood, caused by nice weather, find positive material more salient and psychologically available than negative material and are, therefore, more willing to invest in uncertain assets traded in the financial markets.

Literature also documented that people may assign positive images to industries, such as cosmetics, just because they associate them with "health," "beauty," or "cleanliness," and negative images to others, such as the railroad industry, because they associate them with descriptions such as "old" or "dirty." MacGregor et al. (2000) tested a related hypothesis by asking business students to write three images that came to their mind regarding 40 industries. In addition, the students were asked to evaluate the industries' performance in the preceding and current year and to indicate their willingness to purchase stocks of firms in these industries. The students' evaluations and their willingness to purchase stocks from the different industries were

² Kamstra et al. (2003) find that stock returns are negatively correlated with daylight hours, presumably due to a phenomenon termed Season Affective Disorder, an impact of sunlight exposure on people's mood which might be occasionally pathological. Kliger and Levy (2003) document an empirical relation between cloud coverage and option implied risk preferences.

positively correlated with the images they had about them, while only weakly related to indicators of actual performance. Additional research suggested that assets' names might affect investors' decisions (Cooper et al., 2001; Rau et al., 2003; Cooper et al., 2005). The issue of name changing received attention at the popular press as well. For example, the *Wall Street Journal* (Emshwiller, 1999), reported that companies who added the suffix "dotcom" to their names, gained as a result extremely large returns. These results suggest that the evaluators employed some mechanism of overconfidence in their judgment process, based on subconscious retrieval of positive or negative associations. We argue that such a process may invade into investors' information processing and affect their risk attitude.

2. Theoretical Framework

Priming is an unconscious remembering process, which occurs when certain stimuli or events increase the availability of specific information categories. It is considered an important aspect of social thought (e.g., Higgins and King, 1981; Higgins et al., 1977). Priming may affect information processing and, as a result, also decision making (Baron and Byrne, 1997, Chapter 3). Cramer (1968) defined priming as changes in preliminary conditions which increase the probability that a certain response will follow a specific stimulus. Tulving (1983) defined priming as facilitation of the performance of one task on the performance of a following identical or similar task. Many priming instances occur in everyday life. For example, watching a horror movie may intensify reactions to stimuli such as a wind blow, a crack of a door, and alike. What stands in the basis of the priming effect? Bruner (1957) suggested that as the availability of a specific categorical knowledge stored in memory increases, so does the probability of using it to catalogue and interpret accessible information.

In the laboratory, the priming procedure usually takes place in two stages: *exposure*, in which subjects are exposed to a stimulus, and *testing*, where the subjects are requested to fulfill a specific action such as completing a sentence, making a decision, interpreting a situation, or evaluating a person or a subject. The priming effect functions regardless of subjects' ability to recognize the stimulus they were exposed to. That means that exposure may be subconscious, in a procedure known as automatic priming (e.g., flashing words or pictures very briefly such that the participants are not aware of them), or conscious, with subjects' full awareness (e.g., letting the subjects read a story or a word list). Either way, even though the stimuli may be conceptually connected to

the actions in the testing stage, the subjects are given no specific instructions to use them.

In our study we employ conscious exposure procedures, since we believe that conscious exposure is common in daily situations. We test whether exposing subjects to certain stimuli with risk attitude content influences their risk preferences and, consequently, investment decisions. The selected stimuli are embedded into advertisements and written articles so as to mimic the exposure in realistic everyday situations. We employ a technique similar to that of Higgins et al. (1977), who exposed subjects to priming stimuli in a preliminary task, ostensibly unrelated to the task in the testing phase. Their subjects were asked to participate in two studies, the first of which (designed to expose the subjects to the priming stimuli) was reported to test the effect of information processing on perception. The priming stimuli were hidden as “memory” words the subjects had to repeat after naming background colors of slides they were shown. A similar exposure mechanism was employed by Erb et al. (2002), where subjects were given lists of words to prime risk attitudes. In the risk seeking set, the list contained adjectives with positive connotations for risk seeking (risk loving, enterprising, daring, adventurous); negative connotations for risk avoidance (anxious, worried, timid, over-anxious); and additional distracting adjectives. In the risk avoidance set, the list contained adjectives with negative connotations for risk seeking (thoughtless, rash, thoughtless, risky); positive connotations for risk avoidance (conscientious, responsible, careful, well-considered); and the same distracting adjectives as in the risk seeking set. To make sure the participants had encoded the words, they were requested to rank the frequency of occurrence in ordinary speech in their native language (French).

The testable hypotheses we propose in this work are reinforced by the Somatic Marker Hypothesis (SMH), (Damasio, 1994; Damasio et al., 1991), providing a framework for the effect of emotions on decision making. Building on SMH, Bechara and Damasio (2005) present a neural model for economic decisions, in which emotions play a leading role in the interaction between environmental conditions and the decision processes. They also bring preliminary evidence suggesting that the induction of strong emotions reduced performance in a subsequent gambling task. Experimental evidence suggesting that the presence of unrelated emotions and stress are capable of influencing decisions may also be found in Gray (1999). Another related study is by Loewenstein et al. (2001), who propose the risk-as-feelings hypothesis according to which emotions affect decision making, especially when the outcomes involve risk. They postulate that one of the reasons that people may be overconfident about their financial forecast is having a “good feeling” about the outcome.

Henceforth, we delineate the experiments and report the obtained results. Experiment 1 explored the priming effect on professional investors and compared it to the effect on undergraduate subjects, and Experiment 2, conducted on undergraduate subjects, tested the priming effect in a setup where the questions and the payoff evoke incentive compatible answers.³

3. Experiment 1

3.1 EXPERIMENTAL DESIGN

Experiment 1 was structured according to a 2×2 , between subjects, design. The first dimension consisted of two populations: (i) 44 investment advisors in large commercial banks and accountants in CPA firms (35 males and 9 females, aged 26–59), and (ii) 52 Economics undergraduates (33 males and 19 females, aged 20–30). The second dimension consisted of randomly assigning each population's participants into either a Risk Seeking (RS) or Risk Aversion (RA) group.⁴

All the participants received the following general description:

“In the experiment, you will be requested to answer two questionnaires. The first contains economics questions, and the second memorization questions. For the first questionnaire, we will show you financial information of a specific stock, whose name is kept with us, which was published in economics sites. In this questionnaire, you will be requested to answer several questions regarding investment in the stock. In the second questionnaire you will be asked to identify adjectives from a short story which we will show you. The story will be presented before the first question set. Please note, in the memorization questionnaire (the second questionnaire in the experiment) you will be asked to recollect as many adjectives as you can, while coping with the time gap between reading the story and marking your answers.”

The stories given to the RS and RA groups were aimed at advocating risk-seeking and risk-averse behaviors, respectively. The RS story was about a daring person who had chosen to gamble in a casino, and consequently gained lots of money. The story given to the RA groups was about a responsible person who had chosen to avoid taking the risk at the casino, an action which prevented a large monetary loss.⁵ The financial questions

³ A confirmatory experiment (not reported here) verified that the words and the verbal inserts, which were employed for priming subjects' risk preferences, were associated with the notion of risk as hypothesized.

⁴ The undergraduate subjects received 45 NIS, while the professionals were not paid, for participation. The exchange rate during the experiments was roughly 4.5 NIS to 1 US Dollar.

⁵ The stories appear in Appendix A.

were based on the stock of MagStar Technologies Inc (MGST.OB). The financial information given to the subjects was extracted from Yahoo! Finance (<http://finance.yahoo.com>). It consisted of the company profile (MagStar is a prototype developer and manufacturer of centrifuges, conveyors, medical devices, spindles and sub assemblies), short annual financial reports (balance sheet and income and cash flow statements) and a graph exhibiting the stock's price fluctuations in the preceding 330 days with a comparison to the S&P and the NASDAQ indices.

The economics questionnaire consisted of six questions: five Stock Related Investment Questions, followed by a request to rank the degree of risk which they attributed to investing in the stock, on a Likert scale of 1 (not risky at all) to 7 (highly risky). In each of the Stock Related Investment Questions, the subjects were requested to choose between (i) investing in a binomial lottery yielding 75 NIS or 0 depending on the stock's return by the subsequent month, and (ii) getting a certain sum of money, marked by "X." The subjects were requested to assign a value to X for which they were indifferent between the two alternatives, as well as to assess the probability the lottery would yield 75 NIS.⁶ The Stock Related Investment Questions were constructed according to two cutoff returns, of -15% and 18%.⁷ The memorization questionnaire which concluded the experiment contained an adjectives list the subjects were asked to check according to their recollection of the adjectives in the story they read. Some of the adjectives in the stories were excerpted from Erb et al. (2002).

3.2 HYPOTHESES

Overall, we expect the two stories, RS and RA, to prime risk seeking and risk aversion, respectively. That is, we expect that the RS subjects would be willing to state higher monetary certainty equivalents for the gambles on the stock's performance, as well as to assign higher probabilities to the stated events.⁸ Also, we expect to find a difference between the ways in which RS and RA subjects regarded the ranking of the stock's risk. Although intuition may lead to expect that RS subjects would consider the investment in the fund as less risky, there is a reasonable ground to speculate the opposite,

⁶ Technically, for each question, the subjects were provided with a table whose rows stated different X values ranging from 0 to 75 NIS and were requested to select the preferred alternative, (i) or (ii), for each value of X. Subsequently, the subjects were requested to state the exact amount for which they were indifferent between the alternatives.

⁷ A schematic description of the questions is given in Figure 1.

⁸ Differences in subjects' risk attitudes may be due to the way they process probabilities. For instance, Harbaugh et al. (2002) and Fehr-Duda et al. (2006) find that differences in probability weighting schemes explain the different risk attitudes of children and adults, and men and women, respectively.

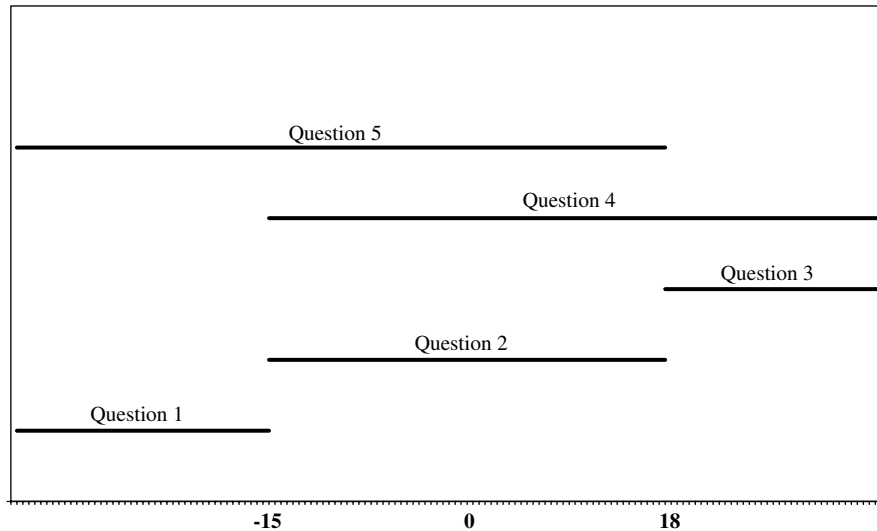


Figure 1. Experiment 1: a schematic description of the stock related investment questions.

The figure portrays the conditions for the binomial lotteries stated in the Stock Related Investment Questions to yield 75 NIS. The lottery described in each of the five questions would yield 75 NIS (otherwise, 0) in case the stock return by the subsequent month belongs to the interval marked by the respective segment.

because acting in a risky way does not necessarily mean that the situation is being perceived as less risky. With respect to the two populations, we expect professionals' decisions to be affected by the priming manipulation more than the undergraduates' (cf. Haigh and List (2005) and Abbink and Rockenbach (2006)), possibly because professionals tend to use a less analytic and more intuitive approach in decision making.

3.3 RESULTS

The results of Experiment 1 are summarized in Table I. Panels A1 and A2 describe the replies to the Stock Related Investment Questions by the professionals and the undergraduates, respectively. In a nutshell, both populations' risk attitudes were affected by the priming stimuli. First, we examine subjects' overall willingness to take risky positions by looking at the aggregated certainty equivalent they assign to the investments. Across all the investment questions, the aggregated average investment of the RS subjects was significantly higher than that of the RA subjects by NIS 42 (probability 0.01) for the professionals, and NIS 24 (probability 0.04) for the undergraduates. Second, checking each question separately, the average

Table I. Experiment 1 results

The table reports the results of Experiment 1. *Average monetary certainty equivalent* is the amount subjects are indifferent to receive vis-a-vis the binomial lottery stated in the question, averaged across subjects; *Average yield probability* is the respective average probability assessment that the lottery would yield 75 NIS; The columns named *RS* and *RA* provide the statistics for the risk seeking and risk aversion groups, respectively; *Difference* equals the *RS* statistic minus the *RA* statistic; *Predicted sign* is according to the research hypothesis; and *Prob.* is the one-tail (two-tail for Question 6) probability, of the relevant statistical test.

Panel A1 (Professionals): Stock Related Investment Questions								
Question	Average monetary certainty equivalent				Average yield probability			
	RS	RA	Difference	Prob.	RS	RA	Difference	Prob.
1	49.52	40.55	8.97	0.02	41.61	49.29	−7.68	0.14
2	54.90	41.67	13.23	0.02	58.04	47.62	10.42	0.10
3	32.57	23.92	8.65	0.08	31.30	27.43	3.87	0.25
4	53.72	43.86	9.86	0.03	54.57	54.76	−0.19	0.49
5	50.07	48.48	1.59	0.41	63.65	64.62	−0.97	0.46
Aggregated	240.77	198.46	42.31	0.01	249.17	243.71	5.46	0.41
Panel A2 (Students): Stock Related Investment Questions								
Question	Average monetary certainty equivalent				Average yield probability			
	RS	RA	Difference	Prob.	RS	RA	Difference	Prob.
1	39.68	35.02	4.66	0.16	54.86	45.63	9.23	0.09
2	37.84	36.50	1.34	0.40	40.25	44.29	−4.04	0.30
3	28.14	25.27	2.87	0.31	21.82	24.25	−2.43	0.33
4	50.79	44.71	6.08	0.10	63.46	57.58	5.88	0.18
5	58.68	49.69	8.99	0.04	77.68	67.88	9.80	0.09
Aggregated	215.13	191.19	23.94	0.04	258.07	239.63	18.44	0.09
Panel B1 (Professionals): Opinion Question								
Question			RS	RA	All	Mann–Whitney Value	Prob.	
6	Median ranking of the stock’s risk		5.00	6.00	5.00	1.64	0.10	
Panel B2 (Students): Opinion Question								
Question			RS	RA	All	Mann–Whitney Value	Prob.	
6	Median ranking of the stock’s risk		5.00	5.00	5.00	0.24	0.80	

monetary certainty equivalents of the RS subjects are always larger than those of the RA subjects, for both populations. The picture emerging from the replies of the professionals is more pronounced, as all the differences but one (Question 5) are larger than those of the undergraduates, and have significance levels smaller than 10%. With regard to probability assignment, while the aggregated differences are in the expected sign, we do not find any persistent pattern for any of the populations. Nevertheless, there is a high correlation (47% and 86% for the professionals and students, respectively) between the average monetary certainty equivalent differences and the average probability differences, suggesting that the increased value due to the RS priming was accompanied by an increased probability of occurrence. Comparing the two correlations, the increase in the professionals' risk taking may be a simultaneous result of an increase in the perceived probabilities and a decrease in the perceived investment risk.⁹ Lastly, the professionals (but not students) in the RS group perceive the investment in the fund as less risky than the professionals in the RA group (cf. Panels B1 and B2).

4. Experiment 2

4.1 EXPERIMENTAL DESIGN

The experiment employed a subject design with one factor, risk attitude. We built the questions on possible realizations of a real financial asset and provided subjects with relevant information on the asset's performance. The questions and the payoff were designed to evoke incentive compatible answers (Becker et al., 1964).¹⁰

Forty eight Economics undergraduates (33 males and 15 females, aged 20–30), randomly assigned into two groups, labeled Risk Seeking (RS) and Risk Neutral (RN), participated in the experiment. The subjects were given binders with financial information on a traded fund. The binders also contained advertisements with verbal inserts. The RS subjects were exposed to verbal inserts advocating risk-seeking behavior, while the RN subjects received neutral inserts. All subjects received the following general description:

“In the experiment, you will be requested to answer several questions regarding a specific fund. Before answering the questions, we will let you examine a binder

⁹ We thank an anonymous referee for observing the correlations and pointing out the possible explanations.

¹⁰ Subjects' payoff was composed of (i) 20 NIS for participation, (ii) up to 75 NIS, depending on the realization of a randomly selected investment decision, and (iii) a bonus equaling 10% of the first two parts of the payoff, granted to subjects who performed at the top 10% in the memorization test. Subjects' payoffs ranged from 20 to 105 NIS.

which we prepared to display the fund. In general, you will be asked about the contents of the binder and requested to choose between investment alternatives which depend on the fund's future performance."

The fund's name (Otzar M. Hi Tech Venture Capital) was not disclosed to the subjects. The binder contained the following details:

- (i) *Fund information:* Financial data extracted from selected financial web sites, consisting of the fund's policy, current unit price, asset distribution, cumulative returns in different time intervals, standard deviation of the return in the past 12 months, and graphs exhibiting the fund's unit price fluctuations.
- (ii) *Advertisements:* Extracted from the Wall Street Journal. The advertisements in the binder given to the RS group contained verbal inserts advocating risk-seeking behavior, such as "sometimes the greatest risk in business is doing nothing." The binder given to the RN group contained the same advertisements but with neutral inserts, such as "join us," and "let your money work for you."¹¹

Subsequent to reviewing the binder, the subjects had to answer 18 investment questions, followed by two memory questions requesting them to recollect words and describe the pictures in the advertisements. The investment questions were of three types: (i) Questions 1 and 2 dealt with lotteries with known probabilities (henceforth: "Stylized Lotteries"), (ii) Questions 3 to 14 were "Fund Related Investment Questions," involving investment decisions related to the presented fund (similar to the Stock Related Investment Questions of Experiment 1, but asking about the return by the subsequent fortnight, rather than month), and (iii) Questions 15 to 18 were evaluation questions in which the subjects were asked to state their opinion about several events relating to the fund's performance ("Opinion Questions").

4.2 STYLIZED LOTTERIES

Subjects had to designate the amount (X) that makes them indifferent between two lotteries. Question 1 involved the lotteries (60, 30, 0; 1/6, 1/6, 4/6) and (X, 15, 0; 1/6, 1/6, 4/6), and the lotteries in Question 2 were (45, 30, 0; 1/6, 1/6, 4/6) and (X, 20, 0; 1/6, 1/6, 4/6).¹²

¹¹ A full description of the advertisements appears in Appendix B.

¹² Throughout, we use the notation (x, p) for binomial lotteries yielding x NIS with probability p , and zero otherwise. Lotteries yielding x_i with probability $p_i, i = 1, \dots, n$ are represented as $(x_1, \dots, x_n; p_1, \dots, p_n)$.

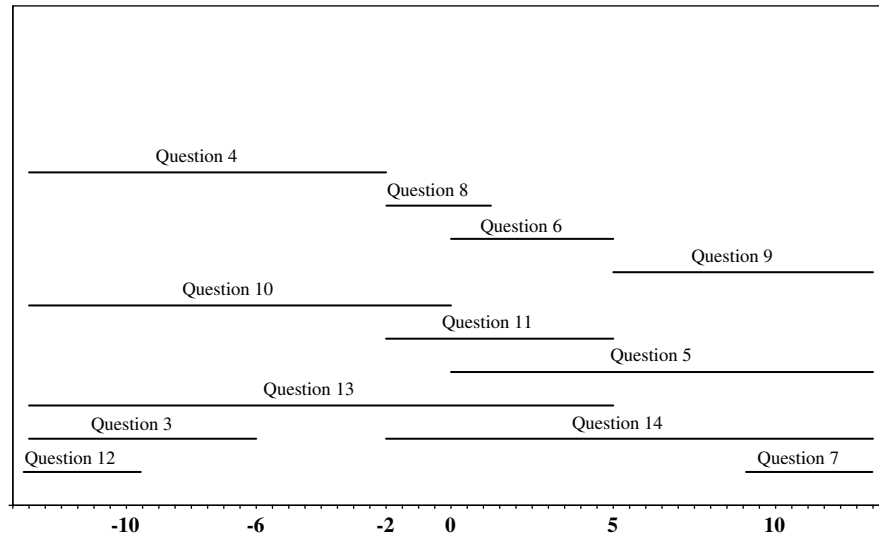


Figure 2. Experiment 2: a schematic description of the fund related investment questions. The figure portrays the conditions for the binomial lotteries stated in the Fund Related Investment Questions to yield 75 NIS. The lottery described in each of the 12 questions would yield 75 NIS (otherwise, 0) in case the fund return by the subsequent fortnight belongs to the interval marked by the respective segment

4.3 FUND RELATED INVESTMENT QUESTIONS

These 12 questions (numbered 3 to 14) were constructed as follows. The fund's possible returns were divided into four mutually exclusive ranges by the cutoff returns -2 , 0 , and 5% . Then, questions were formed on these ranges. Additionally, two questions were based on extreme events (a return of less than -10% and a return of more than 10%), and one distracting question was based on a cutoff return of -6% .¹³

4.4 OPINION QUESTIONS

Questions 15 and 16 requested the subjects to assess the probability that the fund would yield at least 65% , or a negative return, respectively, in the forthcoming year; in Question 17 subjects had to answer whether, to their opinion, the fund's performance in the forthcoming year would be better or worse than in the preceding year; and in Question 18 they were asked to rank the degree of risk which they attributed to investing in the fund, on a Likert scale of 1 (not risky at all) to 7 (highly risky).

¹³ A schematic description of the fund related investment questions is given in Figure 2.

4.5 HYPOTHESES

We expect the RS treatment to prime risk seeking. Specifically, we expect that: (i) in the Stylized Lotteries (Questions 1 and 2), the RS subjects would designate lower amounts for which the two lotteries are equally desirable; (ii) in the Fund Related Investment Questions (3 to 14), the RS subjects would be willing to state higher monetary certainty equivalents for the gambles on the fund's performance, as well as assign higher probabilities to the stated events;¹⁴ and (iii) in the Opinion Questions (15 to 18), the RS subjects would assign higher probabilities in Question 15 (a return of at least 65%), and lower probabilities in Question 16 (a negative return). In Question 17 (expectations for improved future performance), we expect that more RS subjects would expect the fund's performance to improve, to reflect them being more optimistic. We also expect to find a difference between RS and RN subjects in Question 18 (ranking the fund's risk).

4.6 RESULTS

The results of Experiment 2 are summarized in Table II. Regarding the Stylized Lotteries (Panel A), we did not find any significant differences between RS and RN subjects. Panel B provides the results of the Fund Related Investment Questions (3 to 14). First, we examine subjects' overall willingness to take risky positions. Inspecting the aggregated certainty equivalents, we find that RS subjects risk more money in buying the fund related lotteries than RN subjects do (difference 68.97, probability 0.03). Second, we look at the certainty equivalent differences for each question separately. The average investment amounts of the RS subjects are always larger than the amounts of the RN subjects. Moreover, the difference is significant at the 10% level in 6 of the 12 Questions (3, 6, and 11 to 14).

With respect to assigned probability assessments, the aggregated difference is in the expected sign, with a significance level of 0.08. The differences are as expected for 9 of the 12 questions, but significance is approached only in Questions 11 (probability 0.08) and 12 (probability 0.04). The hypothesis that RS subjects would assign higher probabilities to the events is, therefore, only weakly supported. Similar to Experiment 1, the high correlation (81%) between the average monetary certainty equivalent differences and the average probability differences is suggestive that increased value due to the RS priming

¹⁴ In light of the findings in a pilot experiment (not reported here), we expect to find stronger effects in the Fund Related Investment Questions than in the Stylized Lotteries, since the latter questions deal with risk whereas the former deal with uncertainty.

Table II. Experiment 2 results

The table reports the results of Experiment 2. *Average monetary certainty equivalent* is the amount subjects are indifferent to receive vis-a-vis the binomial lottery stated in the question, averaged across subjects; *Average yield probability* is the respective average probability assessment that the lottery would yield 75 NIS; The columns named *RS* and *RN* provide the statistics for the risk seeking and risk neutral groups, respectively; *Difference* equals the *RS* statistic minus the *RN* statistic; *Predicted sign* is according to the research hypothesis; and *Prob.* is the one-tail (two-tail for Question 18) probability, of the relevant statistical test.

Panel A: Stylized Lotteries					
Question	RS	RN	Difference	Predicted sign	Prob.
1	69.17	71.50	-2.33	—	0.25
2	53.43	52.72	0.71	—	0.38

Panel B: Fund Related Investment Questions								
Question	Average monetary certainty equivalent				Average yield probability			
	RS	RN	Difference	Prob.	RS	RN	Difference	Prob.
3	39.87	30.59	9.28	0.05	0.32	0.28	0.04	0.31
4	43.78	40.18	3.6	0.24	0.49	0.45	0.04	0.30
5	40.48	38.5	1.98	0.35	0.47	0.48	-0.01	0.43
6	39.92	33.23	6.69	0.10	0.40	0.37	0.03	0.32
7	26.98	22.64	4.34	0.23	0.24	0.17	0.07	0.19
8	35.43	33.41	2.02	0.36	0.39	0.40	-0.01	0.44
9	35.18	31.23	3.95	0.25	0.32	0.29	0.03	0.32
10	47.42	46.18	1.24	0.39	0.64	0.64	0.00	0.50
11	48.33	39.45	8.88	0.05	0.61	0.49	0.12	0.08
12	31.21	20.86	10.35	0.05	0.24	0.11	0.13	0.04
13	55.36	47.41	7.95	0.06	0.67	0.62	0.05	0.28
14	51.79	43.09	8.70	0.05	0.61	0.53	0.08	0.12
Aggregated	495.74	426.77	68.97	0.03	5.39	4.83	0.56	0.08

Panel C: Opinion Questions						
Question		RS	RN	Difference	Predicted sign	Prob.
15	Average probability of a return of at least 65%	0.27	0.30	-0.03	+	0.37
16	Average probability of a negative return	0.27	0.30	-0.03	-	0.32
17	Proportion expecting improved future performance	0.12	0.23	-0.11	+	0.15
18	Median ranking of the fund's risk	5.00	4.00	1.00	?	0.13

was accompanied by increased probability of occurrence. It is interesting to note that the correlation is similar in magnitude to that computed on the student population in Experiment 1.

Regarding the Opinion Questions (Panel C), only the responses to Question 18 are weakly different between the groups, indicating that RS subjects evaluate the investment in the fund as riskier than RN subjects do.

5. Conclusion

The purpose of our work was two-fold: (i) to examine the hypothesis that risk attitudes and, hence, decision making, may be influenced by priming, and (ii) to explore the effect of priming on professionals' financial decisions.

Our study contributes to the understanding of investors' behavior by showing that the economic notion of "type" might be insufficient for capturing all the aspects of decision making. The observation that preferences and, hence, economic decisions may vary is supported by the celebrated SMH and, specifically, the neural model for economic decisions suggested by Bechara and Damasio (2005), in which emotions affect the interaction between environmental conditions and the economic decision processes.

Our article adds to the existing research, employing field data to document correlations between market prices (which are a reflection of investors' decisions) and weather conditions. While the correlations observed in such studies might be spurious due to the complicated quality of field data, our results shed clearer light on the issue, because we employ a controlled laboratory setup to test the traders' behaviors.

We focused on financial decisions under uncertainty, rather than on risk, as uncertainty is a salient characteristic of real financial situations. Experiment 1 tested the effect of priming risk attitudes on a population of professionals composed of investment advisors in large commercial banks and accountants in CPA firms, and compared it to the effect on a population of Economics undergraduates. In Experiment 2, subjects' payoffs were designed to provide incentive compatible answers. We exposed the subjects to financial information and investigated the influence of verbal inserts in accompanying financial advertisements on their investment decisions.

The results strongly confirmed our hypotheses. First, RS participants assigned higher monetary values to investments than control group participants did, corroborating thereby our conjecture that investors' risk-seeking behaviors may be primed, that is, risk preferences may be affected by specific situational characteristics. Second, the priming effect on professionals' risk attitude was found to be stronger than on students (cf. Haigh and

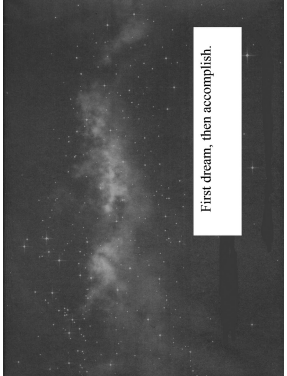
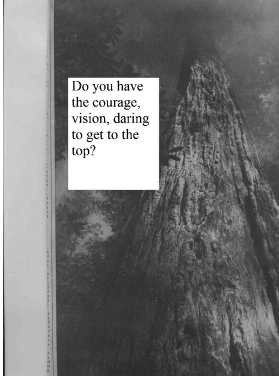
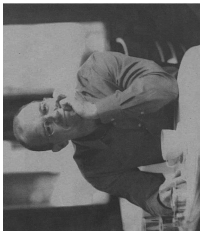
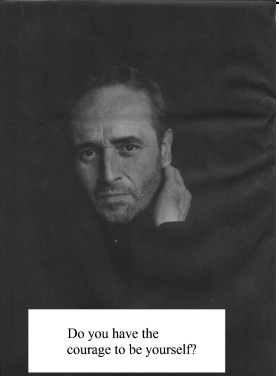
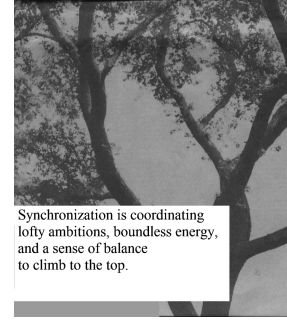
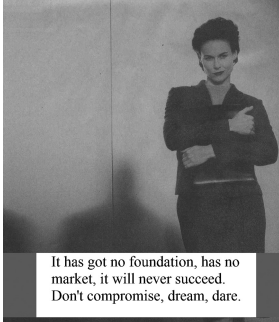
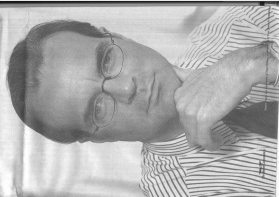
List (2005) and Abbink and Rockenbach (2006)), possibly because of the professionals' tendency to use a less analytic and more intuitive approach when making investment decisions.

Another interesting finding is in subjects' risk ranking. In the context of priming employed in Experiment 1, the professional RS investors viewed the investment in the stock as less risky than the RA investors did. Thus, risk-seeking behavior was the outcome of attenuating the risk perception. In the context of priming employed in Experiment 2, however, RS subjects ranked the investment in the fund as riskier than RN subjects did, despite their increased willingness to invest. This finding highlights an interesting aspect of risk-seeking behavior, as it was not the outcome of disregarding the investment risk. Rather, subjects adopted risky positions in spite of the assessed risk.

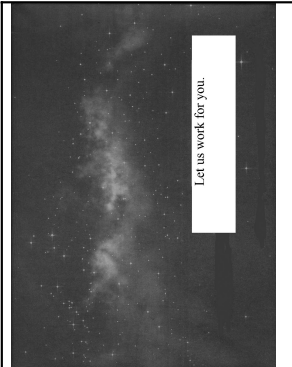
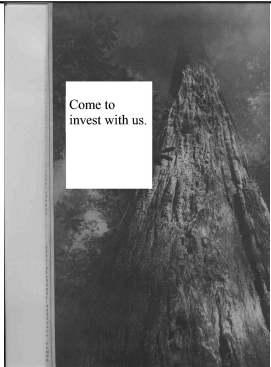
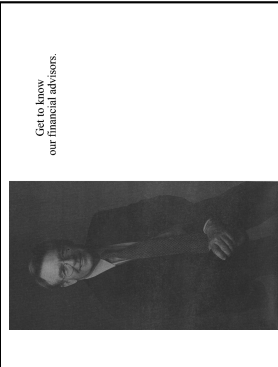
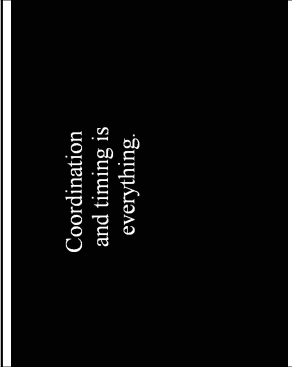
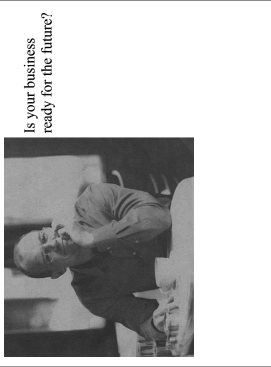
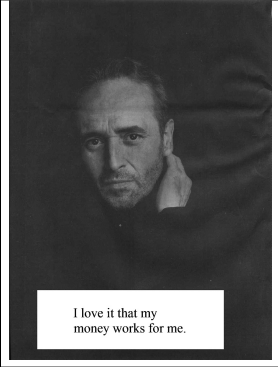
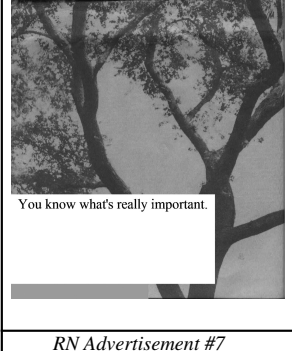
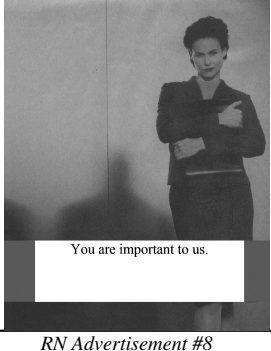
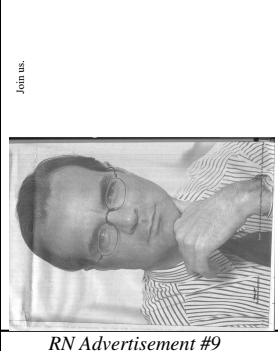
Appendix A: Rs and Ra Stories (Experiment 1)

RA story: *"Danny is a responsible, reasonable, and reliable person, who is trustworthy and level-headed. In his last journey, he has chosen to go to a Greek island. In the first evening, he decided to join a guided tour provided by his hotel for the visitors. During the tour, the visitors arrived at a casino. While the other visitors decided to bet at the casino, Danny decided to avoid betting, and go sight seeing instead. When he reunited with the visitors who went to the casino he found out that they lost a lot of money, and will therefore have to end their vacation sooner than they had planned to. Danny was satisfied with his reasonable decision not to go to the casino, his prudence made the rest of his joyful stay at the island possible, in contrast to the rest of the group."*

RS story: *"Danny is an adventurous, courageous, and initiatory person, who is fond of new experiences, likes thrills and does not hesitate to take risks. In his last journey he went to Turkey and, one evening, he decided to go betting at a casino. He entered the casino with \$4,000 and, as suitable for a daring person, decided to play the roulette, a game with a high risk factor. He was lucky that day, and collected \$30,000. Danny left the casino satisfied by the initiative he has taken. He decided to celebrate with a fancy dinner at the hotel's bar, and afterwards went up to his room happy and satisfied."*

 First dream, then accomplish.	 Do you have the courage, vision, daring to get to the top?	Sometimes the greatest risk in business is doing nothing. 
<i>RS Advertisement #1</i>	<i>RS Advertisement #2</i>	<i>RS Advertisement #3</i>
Adventurousness, daring, vision, are the materials success is made of.	Ambitiousness, innovation, and being initiative are the things we believe in. 	 Do you have the courage to be yourself?
<i>RS Advertisement #4</i>	<i>RS Advertisement #5</i>	<i>RS Advertisement #6</i>
 Synchronization is coordinating lofty ambitions, boundless energy, and a sense of balance to climb to the top.	 It has got no foundation, has no market, it will never succeed. Don't compromise, dream, dare.	Do you know to recognize an opportunity when you meet one? 
<i>RS Advertisement #7</i>	<i>RS Advertisement #8</i>	<i>RS Advertisement #9</i>

Appendix B: Rs Advertisements (Experiment 2)

 Let us work for you.	 Come to invest with us.	 Get to know our financial advisors.
<i>RN Advertisement #1</i>	<i>RN Advertisement #2</i>	<i>RN Advertisement #3</i>
 Coordination and timing is everything.	 Is your business ready for the future?	 I love it that my money works for me.
<i>RN Advertisement #4</i>	<i>RN Advertisement #5</i>	<i>RN Advertisement #6</i>
 You know what's really important.	 You are important to us.	 Join us.
<i>RN Advertisement #7</i>	<i>RN Advertisement #8</i>	<i>RN Advertisement #9</i>

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