On the robustness of description and experience based decision tasks to social desirability

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RUNNING HEAD: Decision tasks and social desirability

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ABSTRACT

We compared the sensitivity of two classes of decision tasks to social desirability: Description-based tasks and experience-based tasks. Participants completed a battery of decision tasks in two conditions: A Control condition in which they were asked to perform their best, and an Impression condition in which they were required to impress judges in the context of hiring decisions. The Impression condition was predicted to elicit relatively lower levels of risk taking than the Control condition. This was confirmed for the description-based tasks while the experience-based tasks were fairly robust to the impression manipulation. This finding points to the potential of experience-based tasks' for assessing individual differences, particularly in situations where social desirability is prevalent. A second finding is that risk taking levels showed consistency across the description-experience divide, but in line with the different sensitivity of the tasks to social desirability, this was only observed in the Control condition.

Keywords: Social desirability, decision making, personality, individual differences

INTRODUCTION

The current study examines the degree to which two types of decision tasks - description-based and experience-based tasks – are resistant to social desirability. The classification of decision tasks into these two categories is often made in the literature (Barron & Erev, 2003; Hertwig, Barron, Weber & Erev, 2004; Newell & Rakow, 2007). In *description-based* decisions, explicit information about the nature of the alternatives is available to the decision maker (particularly the magnitudes of the potential payoffs and the probabilities of their occurrence). In *experience-based* decisions, the only available information is the outcomes of the participant's own choices. With repeated choices, decision makers learn about the payoffs associated with each alternative.

While initially these two types of decisions tasks were used as experimental models of human behavior (e.g., Kahneman and Tversky, 1979; Roth & Erev, 1995), recent findings point out their potential for evaluating individual differences in relevant constructs, including risk taking, maximization, and exploration (e.g., Bechara, Damasio, Damasio, & Anderson, 1994; Fehr-Duda, De Gennaro, & Schubert, 2006; Figner, Mackinlay, Wilkening, Murphy, & Weber, 2006; Stout, Rock, Campbell, Busemeyer, & Finn, 2005; Weller, Levin, Shiv, & Bechara, 2007; among many others). Although few direct comparisons of the two task types have been conducted in studies of individual differences, the findings so far suggest that experiential task components increase task sensitivity to stable individual differences (Figner et al.,2006; Stout et al., 2005; Weller et al., 2007). For example, Figner et al. (2006) examined the decision style of adolescents and adults in two types of decision tasks: One involving descriptions only, and the other having additional experiential components (repeated decisions with the addition of feedback). They found that

adolescents, who are known to be at the peak of their risk taking propensity (Zuckerman, 1994), took more risk than older adults only in the task with the experiential components. In another study (Stout et al., 2005) adding *descriptions* of the probabilities and outcomes to an experience-based task (the Iowa Gambling Task; Bechara et al., 1994) was found to decrease the difference between college drug abusers and non-abusers in task performance. Indirect comparisons support these results. For example, individuals with orbitofrontal brain lesions, which impair decision making in real-world circumstances, exhibit high risk levels in experience-based decision tasks (see Bechara et al., 1994; Shiv et al., 2005; Weller et al., 2007) but not in description-based tasks (Leland & Grafman, 2005).

One explanation proposed for these findings is that the temporal proximity between choices and outcomes in experience-based tasks results in significant emotional responses, and these are also implicated in naturally occurring behaviors (Figner et al., 2006; Weller et al., 2007). In the present research, we propose and evaluate another difference between task types that potentially affects their degree of sensitivity to individual differences. We hypothesize that description-based decisions are more sensitive to social desirability, the tendency to respond to psychological testing inaccurately or dishonestly, consequently presenting oneself in a manner believed to be desired by an observer (Ellingson, Smith, & Sackett, 2001). Specifically to the issue of risk taking, we hypothesize that (1) social desirability leads individuals to adjust their level of risk taking to social/normative demands, thus masking their true tendencies; but (2) in experience-based tasks such adjustments are more difficult to make because risk levels are not explicitly presented and because risky alternatives do produce higher payoffs in some of the trials. Hence, in the

experience-based tasks we expect social desirability to have a smaller effect on the level of risk taking.

The proposed account also has implications for the consistency of risk taking behavior between the different paradigms. Under the assumption that the two types of tasks assess common risk-related constructs, individuals are expected to demonstrate consistency across task types. However, lower consistency should appear when social desirability motivations come into play, as these mainly distort the responses to description-based tasks.[1]

Note though that the assumption that the two tasks assess common constructs has been contested (see e.g., Hau, Pleskac, Kiefer, & Hertwig, 2008). Indeed, many differences in choice behavior have been found between the two types of tasks (see review in Erev & Barron, 2005). One of the most notable differences is that decision makers tend to overweight small-probability outcomes presented in descriptions (Kahneman & Tversky, 1979), but underweight them in experience-based decisions (Barron & Erev, 2003; Hertwig et al., 2004; Hau et al., 2008). The notion that choices in two task types are modulated by independent constructs can explain why the same individuals are recorded to behave differently in each paradigm. This notion follows the general approach that human behavior is only consistent and stable in specified situational conditions (Mischel and Shoda, 1995; Shoda, Mischel, and Wright, 1989). As indicated above, while choice outcomes in description and experience based tasks could be the same, the manner in which information is acquired (i.e., via feedback or symbols representing probabilities and values) is completely different. Thus, the alternative hypothesis is that the two decision paradigms represent contexts that are different enough so as to elicit no consistent behavior across tasks, either in the presence of social desirability or in its absence.

PREVIOUS FINDINGS AND A PRELIMINARY STUDY

Because of the high relevance of social desirability to issues of personnel selection (Barrick & Mount, 1996; Ones & Viswesvaran, 1998; Rosse, Stecher, Miller, & Levin, 1998), we decided to focus our investigation on this context. In the main experiment, we use the cover story of a job application for encouraging the participants to present themselves favorably.

Previous studies that investigated the association between social desirability and risk taking have yielded mixed findings (Pleskac, Yechiam, & Lejuez, 2008; Ronay & Kim, 2006; Weber, Blais, & Betz, 2002; Weigold & Schlenker, 1991). For example, Weigold and Schlenker (1991) found that in a condition where they had to explain their choices to others (and possibly make a good impression on them), decision makers who had rated themselves as risk averse generally took less risk. However, self-rated risk seekers showed a trend in the opposite direction. Weber et al. (2002) studied the association between self-reported risk attitudes and impression management (the deliberate attempt to create a favorable impression; Paulhus, 1984) on a self-report questionnaire. Impression management was found to be negatively associated with risk attitude, but only in the contexts of health/safety risks and ethical risks.

In light of the apparent context-specific effect of social desirability on risk taking, we proceeded to evaluate its impact in the current context of job applications. For this purpose, we ran a preliminary study in which we examined participants' beliefs concerning the expectations of potential employers with respect to risk taking behavior (Item 1 in Table 1), and the behavioral patterns addressing these expectations (Item 2 in Table 1). A questionnaire was administered to Technion students who attended an on-campus job fair. The fair featured student and full-time

positions in the fields of engineering, science, and technology. Job-seekers were approached by an experimenter and asked to indicate their level of agreement with 14 statements regarding job interviews and the qualities which applicants should demonstrate in them. Each statement was followed by a 5-point scale ranging from 1: "fully disagree" to 5: "fully agree", with a mid-scale point 3: "neutral". Two of the statements were risk-related target questions. Eighty five students participated (the response rate was about 70%).

Half of the participants were told that the questionnaire concerns applications for large government organizations, and the others were told that it concerns Hi-Tech company applications.[2] The results are summarized in Table 1. As can be seen, on average participants were inclined to believe that government organizations would not prefer risk-taking individuals in their hiring decisions. Participants also stated that in a job interview for these organizations, they would not take risk in a decision task. In contrast, Hi-Tech companies were considered to prefer applicants who take risks. Interestingly, for these companies participants did not display a clear preference towards making a risky decision in the context of a job interview.

These pilot data demonstrated that when explicitly asked, participants could modify their stated risk levels in accordance with the perceived effect on external judges. The results were also useful for constructing the conditions of the main study, in which we evaluated the impact of having to impress judges on performance in experience and description-based tasks. We chose the cover story of an application for a government organization, where it could be predicted that participants would want to present themselves as risk avoidant in order to make a good impression. We also added a similar cover story of an interview for an institutional delegation so as to ensure that the results were replicable across similar contexts.

MAIN STUDY

Participants were administered a battery of experience and description-based tasks. The experience-based tasks included *Two-Button* tasks devised by Ert and Yechiam (2009; See Table 2 and Method section). These tasks involve two choice alternatives presented as virtual buttons, one producing a constant outcome and the other yielding one of two equiprobable outcomes. There were four such tasks in the battery. In two tasks, referred to as the Mixed tasks, the risky alternatives produce mixed gains and losses (e.g., either -100 or 100 with equal likelihood), while the safe alternatives always yield 0 (no gain and no loss). In the other two tasks, referred to as the Gain tasks, both alternatives produce outcomes in the gain domain only (e.g., the safe alternative always yields 100, and the risky one yields either 0 or 200 with equal likelihood). Ert and Yechiam (2009) found consistent risk taking levels within Mixed tasks and within Gain tasks but not across these domains. They suggested that these tasks tap two separate constructs of risk taking: sensitivity to losses, or the weighting of losses compared to gains; and sensitivity to risk in the gain domain.[3] For our purposes it was important to examine the sensitivity of both factors to social desirability, as well as their consistency across the description-experience divide.

Variants of the tasks were delivered as description-based decisions (see bottom two rows of Table 2), allowing us to directly compare the two task types. These items were presented within the description-based task: an inventory consisting of the original prospects employed by Kahneman and Tversky (1979; see Table 2).

In addition to these measures, we administered the Iowa Gambling Task (IGT; Bechara et al., 1994), a popular experience-based task used for assessing decision making style. The IGT has been shown to predict a variety of naturally occurring risky behaviors, such as risky driving (Lev, Hershkovitz, & Yechiam, 2008), risky

sexual conduct (Martin et al., 2004), and drug abuse (Stout, Busemeyer, Lin, Grant & Bonson, 2004; Stout et al., 2005). We thus found it important to assess its sensitivity to social desirability along with the more novel experience-based tasks described above. Additionally, a comparison of the Prospects tasks with the IGT allowed us to re-evaluate the basic differences found previously between description and experience-based tasks in the weighting of small-probability outcomes.

The sensitivity of the decision tasks to social desirability was examined in the following way. The participants were allocated into two conditions using a between-subjects design. In the Control condition the participants were given instructions to perform as well as they could. In the Impression condition the instructions were to try and make a good impression on a team of judges. The latter condition was further divided into two subconditions, each bearing instructions to make the good impression in a different context. Participants in subcondition "Job" were instructed to take the experiment as if it was part of a selection process for a job in a government organization. Participants in subcondition "Delegation" were given similar instructions with the evaluation being for a funded student delegation to the USA.

It was predicted that in the description-based tasks participants would show decreased risk taking in the Impression condition. This was not predicted to be the case in the experienced-based tasks. Risk levels are not explicitly presented in these tasks (the payoff distributions are not shown), and there are factors confounded with risk on each individual choice trial (for instance, the favorable outcomes produced by risky alternatives in some of the trials) which possibly further mask the risk level. These two features make it difficult for participants to figure out what would be considered risky and adjust their choices accordingly. Hence, we expected the Impression manipulation to have a smaller effect on performance in experience-based

tasks. In addition, it was predicted that participants would exhibit consistency in risk taking across the description-experience divide, but only in the Control condition where social desirability would be less pertinent.

As a benchmark to decision tasks, participants were also administered a self-report personality inventory, the Eysenck Personality Questionnaire – Revised, in its short version (EPQ-R-S; Eysenck, Eysenck, & Barrett, 1985). This inventory yields scores on three personality dimensions: Extraversion, Neuroticism (or Emotionality), and Psychoticism (or Tough Mindedness). A fourth scale – the Lie scale – serves as a measure of social desirability (Birenbaum & Montag, 1989). Based on previous findings (see Viswesvaran & Ones, 1999), we hypothesized that the requirement to make a good impression would lead to higher Lie scores, as well as to inflated scores in the different personality dimensions. Such results would indicate that our experimental manipulation had been successful in increasing social desirability levels among the participants who were required to impress the judges favorably.

Method

Participants

One-hundred and eight Technion students (55 men and 53 women) were recruited by email ads sent through various Technion internal mailing lists. Fifty-four participants were randomly assigned to each condition. As the experimental condition consisted of two subconditions, there were twenty-seven participants in each of them. The proportion of women was about equal in the different groups (Control: 50%; "Job": 48%, "Delegation": 48%). The mean age in the sample was 24. Payments ranged between NIS 30 – 60 (approximately $ 7.30 – 14.60), contingent on the participants' performance.

Measures

Two-Button tasks. Four Two-Button tasks (Ert & Yechiam, 2009) were used to evaluate the decision-making dimensions of loss sensitivity and sensitivity to risk in the gain domain. The display in these computerized tasks consists of two rectangular buttons, which are labeled only as "A" and "B". In reality, one of the buttons is a Safe button, which yields the same outcome constantly, and the other is a Risky button, which yields two outcomes with equal probability (see Table 2 for a complete description of the payoffs). On each trial, the decision maker selects one of the buttons by mouse-clicking. The amount won or lost is then displayed on the chosen button. The cumulative payoff is constantly updated at the bottom of the display.

Two of the tasks, hereafter referred to as Mixed1 and Mixed2, include a Risky button yielding a gain or a loss with the same absolute value and a Safe button yielding zero. The other two tasks, Gain1 and Gain2, were created by adding a constant to the payoffs of the Mixed tasks, and involve no losses. Besides the possibility of losing, a second variable manipulated in these tasks is the level of risk. In tasks Mixed1 and Gain1 the risky alternative is associated with a smaller variance (SD = 100) than in tasks Mixed2 and Gain2 (SD = 200).

As noted by Ert and Yechiam (2009), the proportion of risky choices in the two Mixed tasks can be used as an indicator of the sensitivity of the decision maker to gains versus losses (their correlation in the current study was $r = 0.52$, $p < .001$). The proportion of risky choices in the two Gain tasks provides an index for the sensitivity to risk in the gain domain ($r = 0.45$, $p < .001$). Each of the two pairs of tasks was found to assess relatively independent factors (averaged across risk levels, $r = 0.19$, $p = .04$).

The minimum inter-trial interval was set to 0.5 seconds, and each task included 120 trials. The instructions were as in Yechiam and Ert (2007). Participants were informed that in each of four games they would operate a money machine, where each button press will lead to winning or losing a number of points, depending on the button they choose. The instructions conveyed no initial information as to the nature of the payoff distributions, which had to be learned from experience.

The Iowa Gambling Task (IGT). A computerized version of the task was used, based on the task devised by Bechara et al. (1994). In this task, the participant sees four decks of cards, labeled A, B, C, and D, on a computer screen. Using the mouse, the participant can select a card from any of the four decks. Each card selection yields a gain, but it can also yield a loss. The amounts won and lost are displayed on the selected deck.

Table 3 presents the payoff distributions associated with the four decks (in points). Two of the decks, referred to as the "disadvantageous" decks, yield relatively higher gains but incur even larger losses, leading to a net loss. The other two ("advantageous") decks yield relatively lower gains, but also much smaller losses, leading to a net profit. In each pair of decks, the "disadvantageous" and the "advantageous", both decks have the same expected value, though they differ in the frequency in which losses occur in them, with two decks (B, D) yielding small probability losses. A horizontal bar at the bottom of the display shows the cumulative payoffs and is updated with each trial. The minimum inter-trial interval was set to 0.5 seconds, and the game included 120 trials.

Participants were given written instructions identical to those given in Bechara, Damasio, Damasio and Lee (1999). Briefly, they were told that some decks are worse than others, and that they should avoid these decks in order to succeed in

the task. However, no initial information was provided concerning the alternatives' payoff distributions.

Prospects Task. This task includes a list of choice problems, based on the prospects studied by Kahneman and Tversky (1979; See Table 2). Participants choose between two alternatives involving different outcomes in given probabilities. The Safe column in Table 2 depicts the alternatives with lower variance, and the Risky column depicts the alternatives with higher variance.

In addition to Kahneman and Tversky's (1979) original prospects, we added another choice problem, so that problems 12 and 13 (see Table 2) would be highly similar to the Mixed and Gain Two-Button tasks (exact duplicates were not used in order to decrease the likelihood of the participants noticing the relation). These two problems were accordingly re-labeled as Prospect-Mixed and Prospect-Gain.

The choice problems were presented in the format appearing in Kahneman and Tversky (1979), and their order was randomized for each participant. Participants were told that they would play several games, in which they would select between two alternatives appearing on the screen, with each alternative leading to a gain and/or loss of points in given probabilities.

The Eysenck Personality Questionnaire – Revised, short version (EPQ-R-S) (Eysenck et al., 1985). This personality inventory consists of 48 dichotomous items, and yields scores on three dimensions: Extraversion (E) referring to gregariousness, assertiveness, and excitement seeking; Neuroticism (N), referring to anxiousness, moodiness, and emotional instability; and Psychoticism (P), denoting social withdrawal, uncooperativeness, and hostility (Eysenck & Eysenck, 1985). A fourth scale – the Lie scale (L) – measures social desirability, and contains fragments of highly unlikely virtuous behavior (e.g., "if you say you will do something, do you

always keep your promise no matter how inconvenient it might be?"). We used the Hebrew version of EPQ-R-S (Glicksohn & Abulafia, 1998). The internal consistency of the Extraversion, Neuroticism, and Lie Scales in our study was adequate (Cronbach Alphas of 0.80, 0.78, and 0.75, respectively) while the internal consistency of the Psychoticism scale was lower (Alpha = 0.44).

A background information questionnaire. This questionnaire assessed demographic variables, and also included two items evaluating the attractiveness of the objectives conveyed in the experimental subconditions (obtaining a particular job / entering a student delegation). Participants were asked to imagine that they had actually been offered these two positions (using the exact wordings as in the experimental instructions below), and to rate how interested they would be in obtaining them on a 5-point scale (ranging from 1: "Not interested at all" to 5: "Very interested").

Procedure

Experimental sessions took place in morning and afternoon hours, with up to five persons attending the lab in each session. Each participant sat at a computer station separated from other stations by a partition. The initial instructions were given in a written form and read aloud. The complete instructions appear in the Appendix section. Briefly, participants in the Control condition were told to perform as well as they could, and that their payment would be determined based on the total number of points earned. Participants in the two Impression subconditions were told to perform the experimental tasks as if they were a part of an evaluation and selection process, and that their payment would depend on the impression they make in this context. Following the specific instructions for each task and questionnaire, participants in the

Impression condition were reminded that their goal in the experiment was to make as good an impression as possible.

We created six order treatments by altering the order in which the IGT, the Prospects task, and the EPQ-R-S were presented. Namely, each potential order of the three measures was included. Eighteen randomly selected participants (9 Control, 9 Experimental) went through each order treatment. In addition, to create a gap between the two Mixed and Gain tasks so as to make the connection between them more difficult to learn, we presented them at the beginning and the end of the experiment, in random order. The background information questionnaire was always presented last. Following completion of all parts of the experiment, participants were thanked and dismissed. Payment took place in several later occasions, about which the participants were informed separately. The payment for all conditions was based on the score in the IGT and one randomly sampled prospect (see Appendix section for details). [4]

Results

The hypothetical job described in the background information questionnaire was given a mean attractiveness score of 4.10 (SD = 1.08) on the 5-point scale, and the hypothetical delegation was given a mean attractiveness score of 3.98 (SD = 1.14). This indicates that on average, participants found these positions fairly attractive. No significant differences emerged between our two experimental subconditions (Job and Delegation) in any of the experimental variables. Thus, although we graphically present the raw data from the two subconditions, all statistical analyses were performed on the participants in both subconditions as a single group hereafter referred to as the Impression condition.

Experience-based tasks

Two-Button tasks. The proportions of risky choices in the four Two-Button tasks are depicted in Figure 1. As can be seen, risk-taking levels in all four tasks were practically identical in the Control and Impression conditions. In order to check for potential differences between the two conditions, the results were submitted to four repeated measures ANOVAs, with condition as a between-subject variable and trial block (of 20 trials) as a within-subject variable. The results of the ANOVAs are presented in Table 4. Evidently, in the Two-Button tasks, the instruction to make a good impression did not produce a different pattern of behavior than that observed in the Control condition.

Iowa Gambling Task (IGT). The mean proportions of disadvantageous choices in the IGT are depicted in Figure 2. The overall mean proportion of disadvantageous choices was highly similar in the two conditions: 0.45 (SD = 0.20) in the Control condition and 0.41 (SD = 0.14) in the Impression condition (Cohen's d = 0.23). Both groups were also similar in their pattern of choices, making fewer disadvantageous choices as the task progressed. As can be seen though, in the last block of 20 trials, participants in the Impression condition made fewer disadvantageous choices than their counterparts. The mean proportion of disadvantageous choices in the Control condition for this block was 0.36, compared to 0.27 in the Impression condition (Cohen's d = 0.28, a small size effect).

To examine the statistical significance of this pattern, the results were submitted to a repeated measures ANOVA, with condition as a between-subject variable and trial block (of 20 trials) as a within-subject variable. The results showed a significant effect of block, $F(4, 400) = 40.06$, $p < .001$; partial $\eta^2 = 0.29$, but no significant effects for the experimental condition, $F(1,100) = 0.108$, $p = .74$; partial η^2

= 0.001; or the interaction between block and condition, $F(4,400) = 1.31$, $p = .26$; partial $\eta^2 = 0.01$.

We also examined the effect of the impression manipulation on the proportion of choices from the two decks with small probability losses (B and D), as well as for each of the four decks separately. The results showed no significant difference between conditions. Overall, participants required to make a good impression did not differ from control participants in their performance on the IGT. [5]

Description-based task (Prospects task)

In order to check for potential differences in risk taking in the description-based task, we computed the proportion of choice problems in which participants chose the risky alternative and compared the results from the two conditions. The mean proportion of risky choices was 0.49 (SD = 0.14) in the Control condition and 0.45 (SD = 0.15) in the Impression condition (the item by item results appear in Table 2). This difference did not reach significance in a t-test, $t (106) = 1.52$, $p = .13$ (Cohen's $d = 0.30$, denoting a small effect size).

Recall that we hypothesized that the requirement to make a good impression would lead to less risk taking in the Prospects task. However, notice that half of the participants completed it after performing the Iowa Gambling Task, in which risky choices are associated with significant losses. Impression and Control participants alike learned through experience to avoid the risky alternatives in this task. This may have affected their behavior in the subsequent Prospects task, and hence could have masked the hypothesized effect. In the Control condition participants who completed the Prospects task after the IGT indeed chose fewer risky prospects than the remaining participants (0.45 compared to 0.53, respectively; $t (52) = 2.16$, $p = .036$, Cohen's $d =$

0.61). In the Impression condition the effect was smaller (0.46 compared to 0.44, t (52) = 0.56, p = .58; Cohen's d = 0.14).

Accordingly, we re-analyzed the data considering only the participants who completed the Prospects task before facing the IGT. This group included fifty-four participants: 27 in the Control and 27 in the Impression condition. The mean proportion of risky choices for this subset was 0.53 (SD = 0.12) in the Control condition and 0.46 (SD = 0.12) in the Impression condition. This difference was significant in a t-test, t (52) = 2.08, p = .043 (Cohen's d = 0.58, denoting a medium effect size).

For the participants who completed the Prospects task first, we also separately examined the Prospect-Mixed and Prospect-Gain problems. In Prospect-Gain, the proportion of risky choices was 0.33 (SD = 0.48) in the Control condition and only 0.07 (SD = 0.27) in the Impression condition, z (26) = 2.34, p = .018. A similar trend, though weaker, appeared in Prospect Mixed: The proportion of risky choices was 0.59 (SD = 0.50) in the Control condition and 0.41 (SD = 0.50) in the Impression condition, z (26) = 1.36, p = .086. Notice that this pattern is quite different from the one found in the equivalent Gain and Mixed experience-based tasks, which turned out to be unaffected by the impression manipulation.

A separate examination of the participants who performed the Two- Button tasks before and after the IGT did not reveal any significant difference in risk taking between the two groups, and in both groups there were no effects of the impression manipulation on the proportions of risky choices.

Relationships between the different tasks

Another perspective of our examination was to consider the cross-correlations

between the different decision tasks. To recall, we predicted that due to the effect of the impression manipulation on the Prospects task, positive associations would emerge between risk taking constructs only in the Control condition. Accordingly, we conducted a series of Spearman correlations evaluating the consistency in risk taking in the different tasks. For simplicity, we averaged the scores across the Gain1 and Gain2 tasks and the Mixed1 and Mixed2 tasks. The results appear in Table 5.

In the Control condition risk level in the Two-Button Mixed tasks was associated with risk level in Prospect-Mixed, $r = 0.30$, $p = .028$; but not in Prospect-Gain, $r = 0.02$, $p = .87$. In contrast, risk level in the Two-Button Gain tasks was associated with risk level in Prospect-Gain, $r = 0.47$, $p < .001$; but less so with Prospect-Mixed, $r = 0.24$, $p = .071$. These results indicate that decision-makers exhibit consistency across the description-experience divide in their loss sensitivity (in the Mixed tasks) and in their sensitivity to risk in the gain domain (in the Gain tasks).

In contrast, as expected, in the Impression condition none of the associations between the description and experience-based tasks was significant (see Table 5). This was not due to a simple increase in response variance in the Impression condition, as variances were almost identical between conditions in the Prospects task (Control SD = 0.14; Impression SD = 0.15) and in the Two-Button tasks (Control SD = 0.14; Impression SD = 0.16).

Notice that our results also capture the well-documented difference between task types in the weighting of small probabilities (e.g., Barron & Erev, 2003; Hau et al., 2008). In the description-based tasks, increased weighting of small-probability outcomes leads to risk seeking in the gain domain and risk avoidance in the loss domain. In the description-based tasks, in 9 out of 9 problems where the probabilities were not 0.5, individuals indeed behaved in accordance with these predictions

(consistent with Kahneman and Tversky's 1979 results, see Table 2, problems 1-9; the differences were statistically different from .50 in a binomial test in 7 out of the 9 cases). A reverse pattern of response to small-probability losses appears in the experience-based Iowa Gambling Task. In this task two alternatives (B and D) produce small probability losses. If these losses are overweighted then these alternatives should be selected less than the equivalent alternatives without small probability losses (A and C, respectively). However, in reality decks B and D were preferred, denoting *underweighting* of rare losses (see Table 3). Specifically, deck D was chosen more often than deck C, $t(107) = 2.24$, $p = .028$; and deck B was chosen more frequently than deck A, $t(107) = 8.66$, $p < .001$ (as in Yechiam & Busemeyer, 2005). These findings were separately replicated in the Control and Impression conditions.[6] Thus, we observe large differences in the weighting of small probabilities in the two types of decision tasks. Despite this, in the Control condition we still observe consistency across the two tasks in individuals' loss sensitivity and risk taking in the gain domain.

Benchmark: the personality inventory (EPQ-R-S)

The mean scores for the two Impression subconditions and the Control condition in the EPQ-R-S are depicted in Figure 3. As can be seen in the figure, the participants in the Impression condition (both subconditions) rated themselves higher on the Extroversion (E) scale and lower on the Neuroticism (N) scale, and to some extent also on the Psychoticism (P) scale. To examine the statistical significance of this pattern, we conducted t-tests for the three personality measures, comparing the Impression (collapsed across the two sub-conditions) and Control condition. The results were significant for the E scale, $t(102) = 3.41$, $p < .001$ (Cohen's $d = 0.68$,

denoting a medium-large effect size) and for the N scale, $t(90.4) = -4.36$, $p < .001$ (Cohen's $d = 0.93$, denoting a large effect size). The results were not significant for the P scale, $t(105) = -0.94$, $p = .35$ (Cohen's $d = 0.29$). These results make sense considering that items implying sociability and liveliness comprise the E scale, and items implying instability and moodiness comprise the N scale.

We also examined the difference in the L (Lie) scale, denoting the level of social desirability in the two conditions. The difference just fell short of significance, $t(105) = 1.84$, $p = .068$ (Cohen's $d = 0.36$, denoting a medium effect size). This difference, although modest, is consistent with our prediction that participants would exhibit higher levels of social desirability in the Impression condition.

Figure 3 also includes the results for an Israeli normative sample of the EPQ-R-S (Glicksohn & Abulafia, 1998), based on 682 participants. It can be seen that the results of the Control condition were close to those of the Israeli normative sample, though the same cannot be said about the Impression condition. This reinforces our conclusion that the participants in the Impression condition were indeed keen to create the requested good impression, and that this also impacted their self-rated personality attributes. Accordingly, the finding of no difference between conditions in the performance of the experience-based decision tasks cannot be explained by a weak manipulation. Rather, they evidently reflect these tasks relative robustness to social desirability.[7]

DISCUSSION

This study examined whether the overt request to make a favorable impression affects the results obtained in decision tasks of different types. Our main finding is that this

requirement reduces the tendency to take risk in description-based tasks, while it hardly seems to affect the level of risk taking in experience-based tasks. This suggests that description-based tasks are more sensitive to self-presentation biases involved in the attempt to impress others favorably. In line with this main effect, the consistency between risk taking constructs in description and experience-based tasks (loss sensitivity and risk taking in the gain domain) only appeared in the condition where participants were not required to make an impression.

These findings highlight a possible explanation to the apparent advantage of experience-based tasks in assessing individual differences. Social desirability leads individuals to adjust their level of risk taking in accordance with perceived social/normative demands, consequently presenting people as different from their true psychological portrait. Accordingly, if a task is more sensitive to social desirability then its ability to capture cognitive style and personality constructs could be impaired. In our view, the different sensitivity of the two task types to social desirability results from their dissimilar presentation of outcomes and probabilities, and the impact of this presentation on the ability to infer risk levels. In experience-based tasks, where less explicit information is presented, it is harder for decision makers to figure out that their risk taking level is being measured and subsequently alter it in socially desirable directions.

Furthermore, we have found that the description-based task was sensitive to a situational factor involving the order in which the tasks were presented in the battery. Different levels of risk taking in the Prospects task were observed among those who completed this task before the experience-based Iowa Gambling Task, and those who completed the two tasks in the opposite order. In contrast, risk taking in the experience-based tasks was not affected by the previous completion of other tasks.

This observation serves as further evidence that description-based tasks are more vulnerable to situational influences than experience-based tasks. The reasons for this particular effect are yet to be clarified and we believe that the issue should be subjected to additional research. One possible explanation for the lack of task order effect in experience based tasks is that having feedback orients the person to respond to the task's payoff structure.

Our study also adds to the growing literature regarding the linkage between description and experience-based tasks. Since we observed consistency in risk levels across task types when participants were not required to make an impression, our findings can be interpreted to support the claim, made recently in the literature, that the classification of decision tasks into these two categories is artificial (e.g., Rakow, Demes, & Newell, 2008). However, our findings only point out to this conclusion with respect to decision problems with symmetrically distributed gain and losses. In these tasks, it was shown that two constructs affected individuals' sensitivity to risk across experience and description-based tasks: The sensitivity to losses (compared to gains), and the sensitivity to risk in the gain domain. For asymmetric risks, our findings were in fact consistent with the dissociation commonly found in the *average* weighting of rare events in each type of task (Barron & Erev, 2003; Hertwig, Barron, Weber, & Erev, 2004). However, we did not directly study the individual consistency of risk taking levels in non-symmetric risks. In non-symmetric risks there are, in theory, additional constructs that are unique to experience based decisions, particularly the tendency to focus on outcome frequency which is activated when favorable or unfavorable outcomes are typical (Yechiam & Busemeyer, 2006). Such constructs might impair the consistency between decisions from description and

experience at the individual level as well. The consistency across task types in asymmetric problems remains an interesting topic for future investigation.

Potential limitations

One limitation of our study concerns the assessment of the degree of social desirability. Using the Eysenck Personality Questionnaire (Eysenck et al., 1985), we have found vast over-reporting of Extraversion and under-reporting of Neuroticism in the Impression group, allowing us to infer that social desirability had been invoked. These findings are consistent with the literature denoting the sensitivity of personality inventories to the requirement to make a good impression (see, for example, a meta-analysis by Viswesvaran & Ones, 1999). However, the difference between Impression and Control participants in social desirability, as measured by the Lie scale, was relatively modest. A possible explanation for this is that the virtuous behaviors portrayed in some of this scale's items were seen as too unrealistic to claim, even by those attempting to impress others favorably.

Another explanation may be that the Lie scale measures other factors in addition to situation-specific attempts to make a good impression. This explanation matches Paulhus's (1984) division of social desirability into two constructs, impression management and self-deception: the former being intentional, and relatively controlled and context-dependent; and the latter being a more stable individual characteristic, less intentional and rather unaffected by situational factors. The Lie scale is known to correlate highly with measures dedicated to impression management (see Paulhus, 1984), and hence was considered suitable for our current purposes. Nonetheless, a two-factor measure of social desirability may provide further insight into the nature of the mechanism invoked by our experimental manipulation.

The current study is also limited in that it involved only one particular context in which people try to impress others favorably. It may well be that in other contexts, social desirability would have different influence on decision makers. We have selected the context of job applications because it is a situation where attempts to impress others are pertinent (e.g., Rosse et al., 1998). In our preliminary study, people reported that in order to make an impression they would take less risk in this situation. Indeed, this prediction was translated to behavior in the description-based task but not in experience-based tasks.

Conclusions

As pointed out by several researchers in the past (e.g., Piedmont, McCrae, Riemann & Angleitner, 2000; Rosse et al., 1998), individuals who deliberately try to create a false favorable impression and genuinely well-adjusted individuals often respond in a similar fashion, and telling them apart based solely on social desirability scales may not always result in accurate outcomes. The results of the present study suggest that experience-based decision tasks have increased potential in situations where social desirability is prevalent. The results also point out possible ways that could improve the sensitivity of description based tasks to individual differences. These include having payoffs that are less easily categorized as being safe or risky, and the addition of choice feedback.

Appendix: Instructions and payment procedure

The instructions to the Control condition participants were: "We are collecting data for research purposes. You will be presented with several questionnaires and tasks. Your goal in the experiment is to perform as well as you can. Your choices throughout the experiment will be recorded. In the end, the computer will issue a report that will show your answers and responses. Two independent judges from the research team will review the report and give you an assessment score *according to the number of points collected* during the experiment. For your participation you will receive NIS 30, and another amount between NIS 0-30 depending on your performance during the experiment".

The instructions in subcondition Job were: "You are requested to imagine that you have graduated, and that you are now trying to get hired for a prestigious job in a big government organization. You will be presented with several questionnaires and tasks. You are requested to act as if these are part of an evaluation and selection process for this position. Your goal in the experiment is to make as good an impression as possible on the organization's management representatives, in order to be hired. Your choices throughout the experiment will be recorded. In the end, the computer will issue a report that will show your answers and responses. Two independent judges from the research team will review the report and give you an assessment score *according to the impression you have generated*. For your participation you will receive NIS 30, and another amount between NIS 0-30 according to the impression you would make".

The instructions in subcondition Delegation were: "You are requested to imagine that you are trying to get accepted to a student delegation organized by the Ministry of Foreign Affairs that will visit the USA in the next summer. Those admitted will be students possessing high social and intellectual capabilities, who will represent the state of Israel well in various formal events. The trip will last two weeks and all expenses will be paid by the organizers". The rest of the instructions was similar to the Job subcondition, emphasizing the need to make a good impression.

The instructions ended by letting the participants know that payments would take place at certain later dates, about which the participants would be notified by email. The payment procedures were as follows: For all conditions, those who earned more than 2500 points on the IGT received a bonus of NIS 15 (n = 28). Those who earned more than 4000 points (n = 4) received NIS 30. Then, for each participant in the sample, one Prospect was chosen at random and played once. The amount won or lost was divided by 1000, and the result was considered as a sum in NIS and added to the total payment. However, losses were not deducted from the basic fee of NIS 30, keeping this amount as the minimum payment.

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Biographical note

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Table 1: Mean ratings in the preliminary study in the two questionnaire versions: Interviews for a government organization and for a Hi-Tech company (standard deviations appear in parenthesis). Also included are one-sample t-tests results, comparing the average answers to the neutral rank (3.0).

	Government	**Hi-Tech**
1. These organizations prefer to hire employees who tend to take risks.	2.71+ (0.99)	3.44 * (1.14)
2. If the applicant is presented with a decision-making choice dilemma, he/she better choose an option entailing *small potential gain + no risk* over an option entailing *high potential gain + risk*.	3.38** (0.91)	2.97 (0.96)

* * = p < .01 ; * = p < .05; + = p < .1;

Table 2. The payoffs associated with the two alternatives of the Two-Button tasks and Prospects task. The right most columns show the average proportion of risky choices in the Control and Impression conditions (collapsed across subconditions).

Two-Button tasks

Problem name	Safe alternative (S)	Risky alternative (R)	P(R) Control	P(R) Impression
Mixed1	Win 0 with certainty	50% to win 100, lose 100 otherwise	**0.55**	**0.52**
Mixed2	Win 0 with certainty	50% to win 200, lose 200 otherwise	**0.51**	**0.48**
Gain1	Win 100 with certainty	50% to win 200, win 0 otherwise	**0.32**	**0.36**
Gain2	Win 200 with certainty	50% to win 400, win 0 otherwise	**0.36**	**0.39**

Prospects task

Problem no.	Safe alternative (S)	Risky alternative (R)	P(R) Control	P(R) Impression
1	Win 3000 with certainty	80% to win 4000, 0 otherwise	**0.22**	**0.17**
2	Lose 3000 with certainty	80% to lose 4000, 0 otherwise	**0.61**	**0.69**
3	34% to win 2400, 0 otherwise	33% to win 2500, 0 otherwise	**0.80**	**0.63**
4	25% to win 3000, 0 otherwise	20% to win 4000, 0 otherwise	**0.57**	**0.57**
5	25% to lose 3000, 0 otherwise	20% to lose 4000, 0 otherwise	**0.43**	**0.39**
6	90% to win 3000, 0 otherwise	45% to win 6000, 0 otherwise	**0.09**	**0.17**
7	90% to lose 3000, 0 otherwise	45% to lose 6000, 0 otherwise	**0.80**	**0.70**
8	0.2% to win 3000, 0 otherwise	0.1% to win 6000, 0 otherwise	**0.61**	**0.56**
9	0.2% to lose 3000, 0 otherwise	0.1% to lose 6000, 0 otherwise	**0.28**	**0.31**
10	Lose 500 with certainty	50% to lose 1000, 0 otherwise	**0.69**	**0.69**
11	Win 1500 with certainty	50% to win 1000, win 2000 otherwise	**0.57**	**0.43**
12* (Mixed)	Win 0 with certainty	50% to gain 1000, lose 1000 otherwise	**0.46**	**0.39**
13* (Gain)	Win 500 with certainty	50% to win 1000, 0 otherwise	**0.22**	**0.13**

Table 3. The payoffs associated with the four decks of the Iowa Gambling Task. The right most columns show the average proportion of deck choices in the Control and Impression conditions (collapsed across subconditions).

Deck	Type	Wins	Losses	P(Deck) Control	P(Deck) Impression
A	Disadvantageous	100 for sure	50% to lose 250	**0.14**	**0.16**
B	Disadvantageous	100 for sure	10% to lose 1250	**0.29**	**0.25**
C	Advantageous	50 for sure	50% to lose 50	**0.24**	**0.27**
D	Advantageous	50 for sure	10% to lose 250	**0.31**	**0.32**

Table 4. Results of the Repeated measures ANOVA[a] for each of the Two-Button tasks, with Condition as a between-subject variable and Block as a within-subject variable (blocks of 20 trials).

Task	F values			Cohen's d
	Condition	**Block**	**Condition × Block**	**Condition**
Mixed1	0.56	3.09**	0.49	0.14
Mixed2	0.40	2.70*	0.87	0.12
Gain1	0.63	5.37**	0.37	-0.15
Gain2	0.41	3.39**	0.29	-0.12

[a] In tasks Mixed1, Gain1, and Gain2: *df* were (1, 105) for Condition and (5, 525) for Block and Condition × Block ; In task Mixed2, *df*s were (1, 105) and (5, 530), respectively.

** = $p < .01$; * = $p < .05$

Table 5. Spearman correlations for the Control and Impression conditions: Consistency of risk taking in the Prospects task and in the Two-Button tasks.

		Prospect-Mixed	Prospect-Gain	2-Button Mixed
Control Condition	**Prospect-Gain**	0.22		
	2-Button Mixed	0.31*	0.02	
	2-Button Gain	0.24	0.46**	0.17
Impression Condition	**Prospect-Gain**	-0.20		
	2-Button Mixed	0.07	-0.19	
	2-Button Gain	-0.03	-0.20	0.24

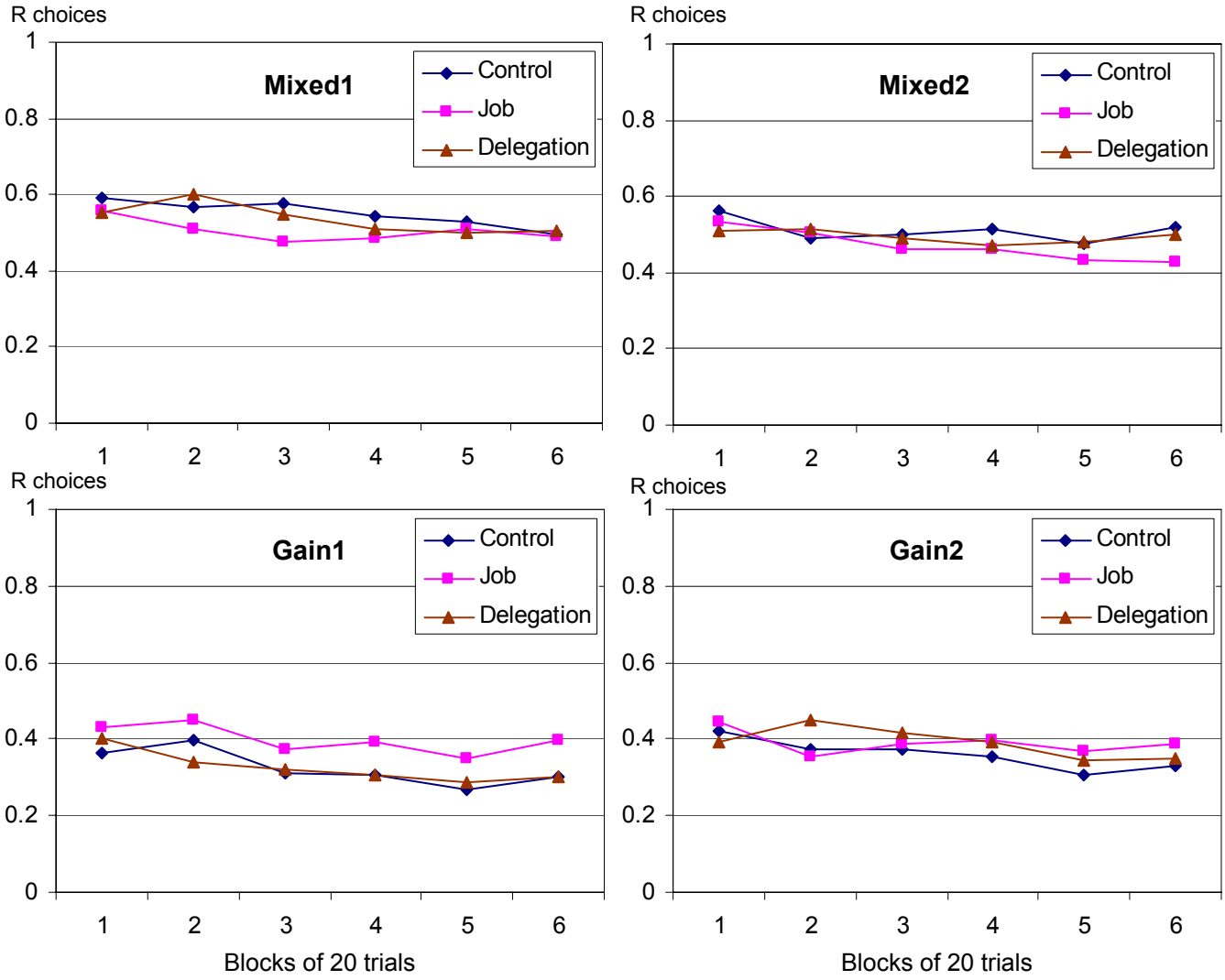
** p < .0l ; * = p < .05

Figure captions

Figure 1. Mean proportions of risky choices in the four Two-Button tasks (Mixed1, Mixed2, Gain1, and Gain2) in the two Impression subconditions and Control condition. Risky alternatives yielded both gains and losses in the Mixed tasks and gains only in the Gain tasks (as described in Table 2).

Figure 2. Mean proportions of disadvantageous choices in the Iowa Gambling Task in the two Impression subconditions and Control condition.

Figure 3. Mean scores and standard deviations of the Eysenck Personality Questionnaire – Revised scales (E=Extraversion, N=Neuroticism P=Psychoticism, L=Lie) in the two Impression subconditions (Job and Delegation) and in the Control condition. In addition, an Israeli normative sample (Glicksohn and Abulafia, 1998) is given for comparison.


R choices
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Control
Job
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R choices
Mixed2
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Control
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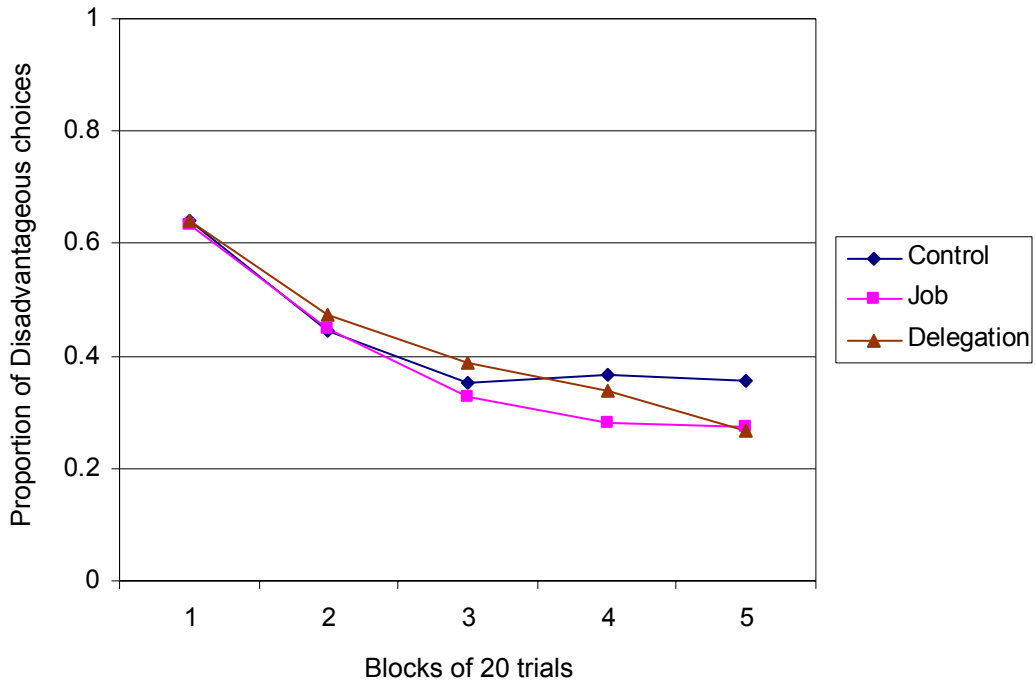
Blocks of 20 trials
R choices
Gain2
Control
Job
Delegation
Blocks of 20 trials


Proportion of Disadvantageous choices
1
0.8
0.6
0.4
0.2
0
1
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3
4
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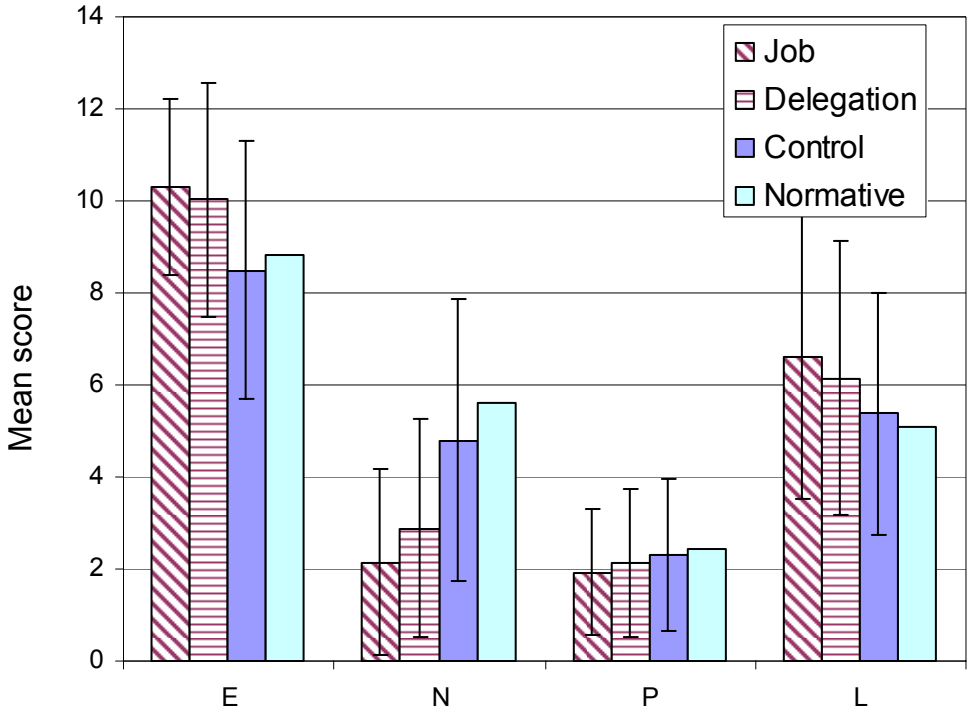
Blocks of 20 trials
Control
Job
Delegation


14
12
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Mean score
Job
Delegation
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Footnotes page

[1] Lack of consistency in this case does not necessarily imply that separate constructs determine behavior. Rather, the effect of social desirability could be considered simply as an additional variable confounding the measure.

[2] It was predicted that for government organizations, participants would associate making favorable impression with risk avoidance whereas for Hi-Tech companies, given their relatively entrepreneurial standing in the Israeli economy (Dashti, Schwartz, & Pines, in press), good impression would be associated with risk seeking.

[3] Ert and Yechiam (2009) found that risk taking in the gain domain was associated to a degree with risk taking in the loss domain, thus suggesting that individual differences in these tasks do not reflect consistent diminishing sensitivity, but rather the willingness to forgo a sure amount for a high variance (i.e., high risk) prospect.

[4] Due to a technical error, there was one missing subject for each of the Gain1, Gain2, and Mixed1 tasks, leaving 107 participants in each. Additionally, in the IGT seven participants got below the minimum score (-20) before completing 100 trials (on average, in trial 78), and ended the task at this point. The results of these participants were included in the analysis up to the number of trials they had reached.

[5] In order to examine additional psychological components that may underlie risk taking in the experience-based tasks, we fitted the Expectancy Valence model (Busemeyer & Stout, 2002) for each participant in each task by using the MLE criterion. We then examined the differences between our two conditions in the three model components (reflected by the fitted parameters): sensitivity to gains-losses, sensitivity to recent payoffs, and choice consistency.

No differences were found between the Impression and Control condition in all five tasks in any of the parameters.

[6] We also examined the association between the IGT decks yielding small probability losses (B, D) and individual prospects. No significant correlation was found between deck B and D choices and any of the prospects in our battery.

[7] Lie scale scores also weren't correlated with risk levels in any of the tasks, neither in the Control nor in the Impression condition. In fact, very few correlations were found between risk-taking variables and EPQ-R-S scales. In the Control condition, Extraversion correlated positively with Risky choices in Prospect Gain ($r(52) = 0.28$, $p = .044$), and to a lesser extent with risk taking in the Two-Button Gain tasks ($r(51) = 0.24$, $p = .095$). This suggests the potential contribution of this trait to risk sensitivity in the gain domain. Neuroticism was also somewhat associated with risk taking in the Two-Button Gain tasks ($r(50) = 0.26$, $p = .07$). Psychoticism was somewhat associated with Disadvantageous choices in the IGT ($r(53) = 0.25$, $p = .075$), but given the low internal consistency obtained for this scale, this result is hard to interpret. In the Impression condition, no such correlations were observed, as can be expected based on the large distortions in the EPQ-R-S scales found in this condition.