The Foresighted Outcome Effect: The Influence of Anticipated Outcome Knowledge on Foresight Judgment in Principal-Agent Relations

Thesis submitted for the degree of "Doctor of Philosophy"

By Michal Lerer

Submitted to the Senate of the Hebrew University of Jerusalem

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This work was carried out under the supervision of Prof. Raanan Sulitzeanu-Kenan

<u>שלמי תודות</u>

טייס אחד נקלע למצב חירום באוויר והבין שבפניו עומדות שתי אפשרויות: האחת, לנטוש את המטוס, לפתוח את המצנח ולנחות בשלום, והשנייה, לנסות להנחית את המטוס נחיתת חירום, בתקווה לצלוח אותה בשלום. במאיות השנייה של ההתלבטות, המחשבה שחלפה בראשו הייתה: עדיף שאלמד מה תאמר ועדת החקירה, ולפי זה אקבל החלטה.

בדיחה או דילמה היפוטתית זו סופרה לי על ידי מנחה העבודה, פרופ׳ רענן סוליציאנו־קינן, והיא שהולידה את נושא דוקטורט זה. דרך העבודה עם פרופ׳ סוליציאנו־קינן למדתי להטיל ספק גם במה שנראה מובן מאליו, לשאול שאלות ולחשוב באופן ביקורתי - דפוס חשיבה פורה, שהניב רעיונות למחקרים רבים. נדיבותו ומעורבותו אפשרו לשאול בלי לחשוש ולהתייעץ בלי להסס, ומאגר הידע הרחב שלו ויכולותיו המתודולוגיות העניקו למחקר אופקים חדשים. סבלנותו לאורך הדרך לנסיבות חיי המשתנות ובעיקרן להרחבת המשפחה, היא שאפשרה לי לסיים את המחקר בהצלחה.

פרופ׳ תהילה קוגוט הייתה שותפה חשובה לדרך, גם מבחינה מחקרית וגם מבחינה אישית, ודלתה הייתה פתוחה בפניי תמיד. פרופ׳ קוגוט עזרה לי להתגבר על מהמורות רבות, חתרה כל העת להבאת המחקר לידי שלמות, וזאת מתוך מקצועיות, ידענות, הקשבה ואכפתיות. על כל אלה נתונות לה הערכתי ותודתי.

פרופ׳ אילן יניב מהחוג לפסיכולוגיה ופרופ׳ ענת גופן מביה״ס למדיניות ציבורית היו שניהם חברים בוועדה המלווה של הדוקטורט. כל אחד, מזווית ראייתו, תרם רבות להעשרת העבודה והעניק לה פנים חדשות ומגוונות. לצד דרישות מקצועיות גבוהות, תמיד היו נכונים להעניק עצה טובה ועל כל אלה נתונה להם תודתי הגדולה.

קבוצת המחקר שייסד פרופ׳ סוליציאנו־קינן, וכללה את ד״ר ענבל הקמן, ד״ר עומר יעיר, ליאור יאדו, ירדן ניב, נמרוד צוקרט ומיכל גורדון, היוותה עבורי סביבת עבודה אינטלקטואלית, מאתגרת ודורשת, ובה בעת תומכת ומפרגנת. חברי הקבוצה עזרו לי להתוות את הדרך, להיחלץ מכשלים, לחדד את הרעיונות, והכל תוך הרבה צחוק ושמחה, והפכו לחברים לחיים.

ד״ר אילנה שפייזמן שימשה לי כמקור ידע ואוזן קשבת בתחומים רבים שעלו לאורך המחקר. נכונותה לתרום מזמנה ומידיעותיה סייעו לי בצמתים חשובים, והחברות שצמחה בינינו מוסיפה ללוות אותי.

בית הספר למדיניות ציבורית באוניברסיטה העברית היווה עבורי בית חם בשנים אלה. זכיתי להכיר חברי סגל רבים ולעבוד עמם, וביניהם פרופ׳ מומי דהן וד״ר ענת גופן, מומחי כלכלה ומדיניות, שתרמו לי ממומחיותם. המלגות שקיבלתי לאורך הדרך מביה״ס אפשרו לי להתמסר למחקר, ועל כך תודתי.

דניאל ששר, ראש מחלקת הנוער במחלקת הפועל ירושלים כדורסל, פתח בפניי את האפשרות להעביר ניסוי ״מעבדה בשדה״ בקרב מאמני המחלקה. יחד עם רן וקסלר ורבקי רוזנר, הם סייעו לי לתכנן ולעצב את הניסוי, ולראשונה להוציא את המחקר כולו אל מחוץ למעבדה. בניסוי השתתפו עשרות מאמנים של הפועל ירושלים, ולכולם תודתי על הזמן והמחשבה שהקדישו לניסוי. בהקשר זה, תודה גם לסטודנטים רבים באוניברסיטה העברית ובאוניברסיטת בן גוריון, אשר השתתפו בניסויים השונים.

פרופ׳ בני לרר, חמי, עזר לי לקבל את ההחלטה לצאת לדרך הדוקטורט, לאורך הדרך הוא עזר לי בעצותיו החכמות וחלק עמי מניסיונו האקדמי העשיר, ובסיום הדוקטורט עבר עליו לכל אורכו והידק את הניסוחים. בפן האישי, למרות זמנו המוגבל, תמיד הזמין אותי להתייעץ, ובדרכו הרציונלית אך החמה, סייע לי לשמור על מצוינות. באותה הזדמנות, אבקש להודות גם לחמותי, ציונה, ולשאר בני המשפחה - שריאל, שירה ושרון - על ההתעניינות המתמדת בהתקדמות המחקר.

וכמעט אחרונים אך ראשונים, תודה לוותיקים בחיי מכל - הוריי, מקס ועליזה לבנת. מאז שאני זוכרת את עצמי, אבא שלי היה עם ספר ביד ואמא שלי בגישתה הפרגמטית דחפה למצוינות. יחד הם העניקו לי סל יכולות ותכונות ששירתו ומשרתות אותי בדרך לדוקטורט ובחיים בכלל: פתיחות לעולם, חתירה לידע, אהבת אדם, יכולת הקשבה והכלה. ובמישור המעשי, לאורך כל השנים הם לא הפסיקו להציע עזרה בבית ועם הילדים על מנת לאפשר לי להתפנות לקידום המחקר, ולא חדלו להתעניין בו. תודה גם למשפחה שלי, קובי ואודרי, רחל וגדי, יעל ומייקל, על שהיו ועודם שם בשבילי בדוקטורט כמו גם בכל עניין אחר.

ולבסוף, תודה לבן זוגי, אלעד, שלאורך שנות המחקר חבש כובעים שונים ומגוונים, ככל אשר נצרכתי לו, החל מעוזר מחקר, דרך פסיכולוג ועד ל׳דד-ליין אנושי׳, תומך ומדרבן גם יחד. הוא נשא בחלק ניכר ממטלות הבית, על מנת לפנות לי זמן למחקר, והאמין בי לאורך כל הדרך. לצד ההתקדמות במחקר, גם משפחתנו התרחבה וצמחה, וילדינו – רוני, מתן, יאיר ותמר – הכניסו לחיינו הרבה משמעות ושמחה. דרך עיניהם הילדיות חוויתי תמיכה, התלהבות ואופטימיות לאורך המחקר, ואושר אמיתי מהגעתי לקו הגמר. על כל אלה, ועל עוד הרבה, תודתי ואהבתי ללא גבול.

Abstract

Many important dilemmas involve decision making under uncertainty - decision making in circumstances of imperfect information and unknown outcomes. However, when these decisions are judged in retrospect, while outcome knowledge is made available, there exists a tendency to dismiss the prior conditions of uncertainty and to take such outcome knowledge into account, in a way that is irrelevant to the true quality of the decision. This phenomenon which has been termed outcome bias in the psychological literature has been researched extensively and was demonstrated in various domains including the monetary and the medical domains, in military investigations, in issues of legal responsibility, in ethical judgments and more. However, the research on outcome bias hitherto has concentrated on the person who judges in retrospect. In this dissertation we adopt a different point of view – that of the decision maker who expects to be judged or evaluated based on outcome knowledge within principal-agent relations. Our goal is to understand whether the decision maker is aware that a retrospective judgment of her decision by others could be subject to outcome bias, and to examine how such awareness may ex-ante affect the decision.

In this dissertation I focus on several questions that lay at the heart of this topic. In the first chapter I ask the main research question: does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so – in what way? this study had two main roles: a theoretical role and a methodological one. The theoretical role was to provide an initial answer to this main research question and the methodological role was to identify a setting in which principal-agent relations are not expected to involve outcome knowledge, in order to allow for a comparison between decision-making behavior under outcome-knowledge based principal agent relations and under no outcome-knowledge based principal agent relations. After laying this basis, in chapters 2-5 I tackle four additional questions derived from the main research question: *Do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known?; Can the foresighted outcome effect be explained by an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative?; Do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives; and what is the psychological mechanism underlying the foresighted outcome effect?*

This dissertation thus consists of five chapters [three of these chapters have been taken together and published in a peer-reviewed academic journal], with each chapter addressing one important question pertaining to the social situation of outcome knowledge-based principal-agent relations. In these five chapters, I employ various types of research

methodologies, mainly laboratory experiments using actual monetary incentives (chapters 1,3 and 4), but also a 'lab in the field' experiment (chapter 2) and a survey experiment that simulates in a hypothetical manner the scenarios from the laboratory experiments (chapter 5).

The first chapter, or Study 1, asks: **Does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so – in what way?** This question draws on the literature regarding both agency theory and outcome bias, and offers to potentially extend their scope by investigating *the effect of knowing that one's decision will be judged while its outcome is known, on an agent's ex-ante behavior.* To answer this question, I made use of a laboratory experiment which simulated an investment game in which subjects were required to make financial decisions involving a choice between a sure and a risky option. The experimental conditions manipulated two types of principal-agent relations: with and without outcome knowledge, and the dependent variable was defined as the propensity for risk taking. The results of this experiment provided initial support to our hypothesis that the availability of outcome knowledge in principal-agent relations increases ex-ante risk aversion of accountable agents. We term this behavior, the *foresighted outcome effect.*

The second chapter, or study 2, asks: **do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known?** To answer this question, I employed a 'lab in the field' experiment with basketball coaches from "Hapoel Jerusalem Basketball Youth Club" using scenarios from their everyday professional lives. The results of this experiment revealed findings consistent with those obtained in study 1: the expected availability of outcome knowledge in principal agent relations affects the ex-ante behavior of experts as well, by increasing their risk aversion in professional decisions.

The third chapter, or study 3, asks: **does the risk-avoidance that results from expected availability of outcome knowledge in principal-agent relations stem from an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative?** This study aimed at examining an alternative explanation to the risk averse behavior found in accountable agents, from the literature on regret. It investigated whether such a motivation might bring agents to anticipate regret on the part of their principals, and thus to act strategically in order to limit the possibility of such a comparison by opting for the safe option. To answer this question, we made use of the laboratory experiment from study 1, only aside from manipulating outcome knowledge, we manipulated also the availability of information regarding the foregone outcome in order to examine whether the increased risk aversion effect observed in the previous two studies holds even when outcome knowledge includes foregone payoffs. Results of this experiment continued previous findings and demonstrated that outcome knowledge-based

principal-agent relations increase risk aversion, even when forgone outcome information is available.

The fourth chapter, or study 4, asks: **do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives?** Throughout the first three studies, we equipped the principal with a sanction measure as a means to hold his agent accountable. In this study we changed the principals' sanction measure to a reward measure in order to examine whether agents assign more weight to the outcome (positive or negative), according to the type of incentive held by the principal (reward or punishment). The experiment we used to answer the research question asked here was based on the original one of study 1, only as mentioned above, altered the principals' measure to a positive one. The results of this experiment showed that the increased risk aversion of agents in the OK condition observed under negative incentives, is not apparent under positive incentives.

In the fifth and last chapter of this dissertation we wished to examine the underlying mechanism of our main findings, and asks: **what is the psychological mechanism underlying the behavior of agents who expect to be judged based on the availability of outcome knowledge?** The aim of this study was to examine whether when considering risky choices under uncertainty within outcome knowledge-based principal-agent relations (OK-based PA relations), decision makers are more affected by their assessment of the probability of a negative than of a positive outcome. To answer the research question asked here, we made use of questionnaires which hypothetically detailed the investment game of Study 1 and which included also questions aimed at capturing participants' subjective probability of losing/winning under outcome-based principal-agent relations. The results revealed that the role of subjective perceptions of losing in the choice between a safe and a risky option is greater under outcome knowledge-based principal-agent relations, than when no outcome knowledge is expected.

The findings gained from all of the studies presented here, carry important implications for many social and political settings and are of particular relevance to individuals who face the need to take decisions under uncertainty in their professional life. The general discussion of this dissertation analyzes in depth these implications and also offers way to mitigate the *foresighted outcome effect*. In addition, I believe that this dissertation offers an empirical and theoretical contribution both to the study of agency theory and to the study of outcome bias.

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תקציר .....

Introduction

Consider a surgeon who encounters, during an operation, an unexpected dilemma that requires an immediate choice between two surgical alternatives: one with a relatively low mortality rate but with a high probability of serious chronic side effects, and the other with a higher mortality rate but, on the other hand, complete recovery if the patient survives the operation. When is the surgeon more likely to choose the riskier option: knowing that the decision will be judged immediately, before it is implemented, or knowing that the decision will be judged after the results of the operation are revealed?

This scenario epitomizes a more general problem that is relevant to many practical decisions that influence large publics across a variety of domains, such as public health, financial markets, legal and judicial practice, military operations, etc. At issue are *choices taken under uncertainty within principal-agent relations*. While the decision itself is made under uncertainty, it is nearly always judged in retrospect – when the outcomes are already known. Research on outcome bias demonstrates that knowing the outcome leads one to take it into account in a way that is irrelevant to the true quality of the decision (Baron and Hershey, 1988; Clarkson, Emby and Watt, 2002). However, some important implications of such ubiquitous situations have yet to be examined, for example: (a) whether the decision maker is aware that a retrospective judgment of her decision by others could be subject to outcome bias, or (b) how such awareness may ex-ante affect the decision. In this dissertation I will focus on the situation described above, or as we refer to it throughout this research –*outcome knowledge-based principal-agent relations* (henceforth OK-based PA relations). My intention is to provide a comprehensive understanding of this social situation by examining it from five different angles, depicted in five studies (N=413), as will be detailed shortly.

The central research question I ask in this dissertation is as follows: Does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so – in what way? After laying the theoretical background to understanding this situation, the first chapter of this dissertation (study 1) aims to provide an initial answer to this question. This question draws on the literature regarding both agency theory and

outcome bias, and offers to potentially extend their scope. Indeed, while the generic situation addressed in this study is within the theoretical context of principal-agent relations, the studies arranged around this structure haven't addressed so far the potential consequences of the expected availability of outcome knowledge on ex-ante behavior of agents. As for outcome bias, the research hitherto, as will be detailed further on, has only addressed the implications of outcome knowledge for retrospective judgments passed by individuals who possess such information. The current study explores principal-agent relations while focusing not on retrospective judgment, but on *the effect of knowing that one's decision will be judged while its outcome is known, on an agent's ex-ante behavior.*

In order to answer the main research question presented above and the additional questions derived from it, as will be detailed shortly, we make use of laboratory experimental methodology. The use of lab experiments to investigate the research questions mentioned above was done due to the many advantages they possess: lab experiments offer an opportunity to include the independent variable of theoretical interest while excluding irrelevant or confounding variables (Webster and Sell, 2014); they allow to derive causal inferences and enable to break down and investigate complex processes into smaller tractable units (Grossman, 2011); they offer possibilities to control decision environments in ways that are hard to duplicate with the use of naturally occurring settings: the experimenter knows and controls the material payoffs, the order in which the different parties can act, the information parties possess when they make choices and whether the game is repeated or one shot (Falk and Heckman, 2009). Lab experiments also provide opportunities for other investigators to replicate the results obtained in different settings, in a way that may allow for future comparisons (Webster and Sell, 2014).

The experiment we employ in this first study is based on an investment game in which subjects are required to make financial decisions involving a choice between a sure and a risky option (N=81). The experimental conditions manipulate two types of principal-agent relations: with and without outcome knowledge, and the dependent variable is defined as the propensity for risk taking, measured as the percentage of participants who chose the risky option in each condition. We test a simple hypothesis that outcome knowledge-based principal-agent relations reduce risk taking behavior of agents.

The results of this experiment provide initial support to our hypothesis that the availability of outcome knowledge in principal-agent relations increases ex-ante risk aversion of accountable agents. This risk-averse behavior which is observed in accountable agents is explained by the participants' belief that outcome knowledge might give rise to a judgment different to one likely to be passed in the absence of such information.

The second chapter of this dissertation (study 2) aims at answering the same research question described above, only with experts. Specifically, we ask: do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known? This study wishes to address two aims: to examine whether the findings obtained from study 1 hold also with experts; and to take a further methodological leap to examine this research question via a 'lab in the field'. Because laboratory experiments have artificial features, they may not reflect real settings and may not be representative of a particular empirical population (Webster and Sell, 2014). In order to cope with this caveat, we conduct a 'lab in the field' experiment with basketball coaches from the "Hapoel Jerusalem Basketball Youth Club" (N=44), using scenarios from their everyday professional lives. The results of this experiment reveal findings consistent with those obtained in study 1: the expected availability of outcome knowledge in principal agent relations affects the ex-ante behavior of experts by increasing their risk aversion in professional decisions.

Following the first two chapters, the third chapter (study 3) examines an alternative explanation for the findings obtained from the first two studies, stemming from the literature on regret and anticipated regret, and asks the following: does the risk-avoidance that results from expected availability of outcome knowledge in principal-agent relations stems from an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative? This study aims to investigate whether such a motivation might bring agents to anticipate regret on the part of their principals, and thus to act strategically in order to limit the possibility of such a comparison by opting for the safe option.

To answer this question, we make use of the original laboratory experiment from study 1, only tailoring it to fit the hypothesis of this study (N=111). More specifically, the

experimental conditions of this experiment manipulate outcome knowledge and the availability of information regarding the foregone outcome in order to examine whether the increased risk aversion effect observed in the previous two studies holds even when outcome knowledge includes foregone payoffs (i.e. when the outcome of the risky option is exposed to the principal, even if the agent chooses the safe option), thus eliminating any motivation to opt for the safe option for the purpose of limiting forgone outcome information.

The results of this study added more support to our previous findings and reveal that outcome knowledge-based principal-agent relations increase risk aversion, even when forgone outcome information is available. Thus, these findings enable us to reject the possibility that regret avoidance accounts for the results and not anticipated outcome knowledge.

The three studies I mentioned until now had the principal equipped with a sanction measure as a means to exercise his/her authority over the agent. The fourth chapter of this dissertation (study 4) alters the principal's measure into a positive one (reward) in order to ask the following question: do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives? (N=83). The rationale underlying this question lay in the assumption that agents may assign more weight to the outcome (positive or negative), according to the type of incentive held by the principal (reward or punishment). In other words, whether a reward might bring an agent to assign more weight to the positive potential outcome and a sanction might bring an agent to assign more weight to the negative potential outcome.

The experiment used to answer this question was based on the original investment game, used in study 1, only alternating the principals' measure from a negative to a positive one. The results of this experiment did not provide support to either of these hypotheses.

The fifth and last chapter of this dissertation (study 5) wishes to explore the underlying mechanism of our main findings, and asks: What is the psychological mechanism underlying the behavior of agents who expect to be judged based on the availability of outcome knowledge? (N=94). In this study, we examine whether when considering risky choices under uncertainty within OK-based principal-agent relations,

decision makers are more affected by their assessment of the probability of a negative than of a positive outcome.

Contrary to the experimental methodology used in studies 1-4, this study is based on questionnaires detailing the hypothetical scenario of the investment game used in study 1, followed by questions. These questions aim at capturing participants' subjective probability of losing/winning under outcome-based principal-agent relations. The results of this study reveal that the role of subjective perceptions of losing in the choice between a safe and a risky option is greater under outcome knowledge-based principal-agent relations, than when no outcome knowledge is expected.

In what follows, I will provide a theoretical background relevant for understanding the effect of foresighted outcome knowledge within principal-agent relations. This theoretical background will include a literature coverage of the following: principal-agent relations, outcome bias and hindsight bias as well as the relation between the two, blame avoidance and anticipatory blame avoidance. More literature coverage will be provided throughout the dissertation, in the relevant places. This will include a comparison of decisions made in the laboratory and decisions made in natural environments in order to examine the generalizability of the decisions made in the lab, experts' decision making, regret and anticipatory regret, and incentives – punishments and rewards and their influence on behavior.

Theoretical Background

Principal – Agent Relations

Principal-agent theory, otherwise known as agency theory, revolves around the "agency problem" – a general characteristic of social, economic and political life (Boston, Martin, Pallot and Walsh, 1996) which arises whenever one party (the principal) delegates authority to another party (the agent) and the welfare of the first is affected by the choices of the second (Arrow, 1985; Eisenhardt, 1989; Scott, 1998). In this principal-agent relationship, an agent usually has an informational advantage over the principal but the latter has the formal authority to impose incentives on the agent. Principal-agent theory focuses, amongst others, on the leverage that these incentives give the informationally disadvantaged principal (Miller, 2005).

The theory rests on a few assumptions at the individual and organizational levels. Respectively, individuals are assumed to be self-interested, rationally bounded and risk averse and organizations are assumed to include partial goal conflict among participants, to pursue efficiency as the effectiveness criterion and to be based on a model of information asymmetry between principals and agents (Eisenhardt, 1989). In short, the domain of agency theory comprises relationships that mirror the basic agency structure of a principal and an agent who are engaged in cooperative behavior but have different goals and differing attitudes towards risk. Such differences in risk preferences may also yield differences in preferred courses of action (Eishenhardt, 1989).

This principal-agent relationship is usually articulated in a form of a contract in which, as noted earlier, agents carry out certain undertakings on behalf of principals (Vanhuysse and Sulitzeanu-Kenan, 2009). Determining the optimal contract, whether it should be behavior-oriented or outcome oriented, lies at the center of the principal-agent literature (Eisenhardt, 1989). Such a decision is usually based upon the question which is most efficient under varying levels of outcome uncertainty, risk aversion and information – as a few examples. Due to these open questions and the differences attributed to the two sides of the principal-agent relationship, the principal may want to minimize agency costs

– the losses imposed on the principal by an inability to align the agent's self-interest with that of the principal, by manipulating the agent's incentives (Miller, 2005). However, having said that, as Miller and Whitford (2007) have pointed out, most organizations, and in particular public agencies, rely very little on pure incentive contract and instead use coercive mechanisms of monitoring and sanctioning. A potential explanation for this behavior is offered by Harris and Raviv (1979) as well as by Holmstrom (1979) and concerns the combination between risk aversion and information asymmetry. According to them, the combination between risk aversion of agents and information asymmetry between the two sides, makes it impossible to replace monitoring of agent behavior with an equally efficient system of incentives based on easily observed outcomes. In this sort of situation, the outcome-based incentives needed to guarantee efficient actions from the agent necessarily undermine the efficiency of risk sharing (Harris and Raviv, 1979; Holmstrom, 1979).

The principal-agent theory has been used by scholars in various domains (such as accounting, economics, political science, organizational behavior and others) and settings ranging from macrolevel issues to microlevel dyad phenomena (Eisenhardt, 1989). Standing out from these diverse uses are the different interpretations of the theory, according to the discipline at stake. For example, the simple principal agent structure theory includes easily measured outcomes and an agent who is more risk averse than the principal (which is usually characterized as risk neutral). However, unlike this classical economic home of the principal-agent structure, Shapiro (2005) points to the wide context in which such principal agent relationships exist. He points to the fact that these relationships aren't static but rather evolve over time as they are influenced by various external factors such as other agency relationships, competitors, interest groups, legal groups and so forth. Such circumstances offer principals and agents occasions to gather information about one another. In this sense, agents learn more about the preferences of the principals they serve. The two sides develop reputations and the relationships become embedded as parties develop histories and personal relationships and become entangled in social networks (Granovetter, 1985).

Continuing this line of thought, it is interesting to note that within the positivist stream of principal-agent theorists who aim at identifying the governance mechanisms that may solve the agency problem, it is proposed (amongst others) that outcome-based contracts may be effective in curbing agent opportunism (Eisenhardt, 1989). The logic standing behind this proposition is that such contracts may bring agents to engage in speculating their principals' preferences concerning a given situation and to adjust their preferences accordingly. Because the rewards for both depend on the same actions, the conflict of interest between the principal and the agent is reduced (Eisenhardt, 1989). However, it is interesting to note that despite the literature on outcomes and their measurement in the relationship dynamic, no consideration has been given until now regarding the agent's anticipation of being judged in retrospect, after the outcomes of his decisions are known.

In this sense, a decision maker who wishes to please her audience but lacks real knowledge of its preferences might rely on naïve beliefs in this regard. Research examining subjective perceptions of others' preferences reveals consistent discrepancies between actual preferences and people's beliefs concerning them. In respect of risk taking, it has been shown that people tend to perceive others as more risk seeking than themselves (Hsee and Weber, 1997; Kogut and Beyth-Marom, 2008). These findings have been demonstrated on abstract generalized others only (for example – "other students"). When dealing with more concrete particular others, such as "the person sitting closest", people have predicted more accurate risk preferences. The reason for this difference, as suggested by Lowenstein et al (2001) lies in the fact that when predicting generalized others' preferences, we underestimate the role of affect in the decision-making process (Loewenstein, Weber, Hsee, and Welch, 2001). Conversely, when making decisions for concrete real others, "sitting close by", people have a greater tendency to empathize and to reflect their own feelings towards risk, on them as well. It should be noted that these findings were obtained from experiments using a lottery choice in which luck determined the outcome, and not one's abilities (Hsee and Weber, 1997).

As for the decision-making stage, there seems to be mixed evidence regarding the manner in which people actually make decisions for others, as opposed to the self alone.

Earlier studies have shown that decisions tend to be less risky when made on behalf of others (McCauley, Kogan and Teger, 1971; Teger and Kogan, 1975), while more recent studies have demonstrated the opposite – that decisions tend to be more risky when made on behalf of others (Beisswanger, Stone, Hupp and Allgaier, 2003; Stone, Yates and Caruthers, 2002; Wray and Stone, 2005). However, taking risks may be costly, so in cases where a decision is expected to be judged retrospectively, people may attempt to avoid the cost by choosing a safer option.

To sum up this section, principal-agent relations refer to situations in which one party delegates authority to the other, and the welfare of the first is affected by the choices of the latter. As the principal-agent literature has shown, these relationships are usually framed in a form of a contract, some emphasizing an agents' behavior and some placing more emphasis on the outcome of the agent's choices. However, when discussing outcomes, no literature hitherto has raised the possibility that such reliance on outcome judgment within principal-agent relations, may be prone to outcome bias – a robust psychological phenomenon, to which I turn next.

On outcome bias, hindsight bias and the relation between the two

Outcome Bias

A central element of the principal-agent relation structure is the reliance on retrospective evaluation of one's performance. Yet, while the choices involved are often made under risk or uncertainty regarding their outcome, retrospective evaluations typically include the availability of outcome knowledge. To the extent that ex-post evaluations of decisions are carried out after the consequences of the latter are known, they are subject to a tendency to take outcome knowledge into account in a way that is irrelevant to the true quality of the decision – a robust psychological phenomenon known as outcome bias (Baron and Hershey, 1988; Clarkson, Emby and Watt, 2002). Research on outcome bias typically describes a decision made under risk, which is followed by either a negative or a positive outcome. Respondents are then asked to evaluate the quality of the decision, or the decision

maker's abilities and characteristics (Pezzo, 2011). For example, Baron and Hershey (1988) conducted five experiments on the evaluation of medical and monetary decisions. They found that outcome information consistently influenced evaluations of decision quality, the competence of the decision maker and the willingness to let the decision makers make decisions on their behalf. Respondents' evaluations were more positive when the outcome was favorable than when it wasn't, despite their expressed opinion that one should not consider the outcome when making such an evaluation (Baron and Hershey, 1988; Henriksen and Kaplan, 2003). Aside from the medical and monetary domains, the outcome effect has been demonstrated in many other fields, adding strong evidence for its robustness. Here are a few examples: military investigations and legal responsibility (Broude and Levy, 2020); audit quality (Peecher and Piercey, 2010), evaluation of sales person decision making (Marshall and Mowen, 1993), attributions for harmful events (Mazzocco, Alicke and Davis, 2004), ethical judgments (Gino, Moore and Bazerman, 2008) and medical negligence (Hugh and Dekker, 2009).

These studies have exemplified, each one in its own domain that an outcome bias occurs when an evaluator allows the outcome of the decision to influence the ratings of both the decision made and the decision maker, instead of relying solely on the appropriateness of the decision itself (given its full context). The outcome effect may be seen as a source of irrationality in social judgments (Mazzocco et al, 2004) and may lead to some very important implications, amongst these: a tendency to confuse evaluations of decisions with the evaluations of the consequences themselves (Baron and Hershey, 1988); a tendency to blame others too harshly for reasonable decisions that resulted in bad outcomes, due to luck or other environmental factors (Gino, Moore and Bazerman, 2008); a development of suboptimal decision making (Gino et al., 2012; Moore, 2006) and more.

Some scholars have attempted to examine the conditions under which outcomes cause bias judgments. In this regard, it seems as if a major determinant of the outcome effect derives from motivated reasoning: Agrawal and Maheswaran (2005) demonstrated how the processes underlying outcome bias effects varied, amongst others, according to the motivational goal, and compared among accuracy goals, defense goals and impression goals. Their findings demonstrated the robustness of outcome bias for impression goals

across multiple contexts: impression motivated individuals tended to agree more with the outcome, when they perceived it to be a 'shared reality' with the expectations of others and biased the subsequent systematic processing resulting in outcome-based judgments (Agrawal and Maheswaran, 2005).

Experimental attempts to de-bias or at least mitigate the effect of outcome knowledge have shown that merely instructing or warning the evaluator about the potential biasing effect of outcome information was not effective (Petty and Wegener, 1997; Wilson and Brekke, 1994; Clarkson, Emby and Watt, 2002). In addition, it is interesting to note a recent study conducted by Brownback and Kuhn (2019) which has demonstrated the importance of detaching between effort and luck when evaluating outcomes. They have shown that even in conditions of transparent environments where the effort carried out by the agent was perfectly observable, the principals' judgements were still biased by the effect of luck. This finding, as suggested by the authors, projects on the power of incentives to stimulate effort. This study also investigated two other potential solutions in order to cope with the outcome bias: information control and outsourcing judgment to independent third parties. However, both of these potential solutions were found ineffective: when principals are given the opportunity to avoid information about luck, they fail to do so; and when agents are given control of information, they strategically reveal information about luck before the principal has made his choice regarding possible punishment. In other words, agents predict principals to exhibit outcome bias and therefore manipulate the information they possess in order to minimize punishments. As mentioned earlier, the second potential solution offered – to outsource judgment to independent third parties, has also been shown to be ineffective since the latter demonstrate outcome bias as well, regardless of their "neutral" position being uninvolved (Brownback and Kuhn, 2019).

Contrary to the ineffective debiasing techniques, some studies have demonstrated valuable effective findings. For example, instructions that stressed either the cognitive non-normativeness of the outcome effect or the seriousness and gravity of the evaluation ameliorated the bias significantly (Clarkson, Emby and Watt, 2002). Also, it appears that making intentions underlying the decision-making process more salient is an effective method of mitigating the outcome bias, particularly in joint-evaluation contexts (Sezer et

al, 2016). Information about intentions was more influential when participants evaluated one option at a time as compared to when evaluating multiple decisions simultaneously. Complementing this finding is an opposite one which has shown how a joint evaluation exacerbates outcome bias due to the fact that evaluators are less attentive to their partners' intentions. Together with other research, we learn that not only do individuals tend to neglect information about procedures and decision quality when equipped with outcome knowledge (Mazzocco et al, 2004; Robbennolt, 2000), but they also neglect information about intentions, particularly when making joint comparisons (Sezer et al, 2016).

Hindsight Bias

A concept very close to outcome bias is hindsight bias. This bias refers to one's tendency to retrospectively overestimate the probability of a particular outcome after learning that it did indeed happened. Moreover, it has been found that people are not aware of this effect when passing a judgment, not even when they are prompted to consider it (Fischhoff, 1975; Fischhoff and Beyth, 1975, Slovic and Fischhoff, 1977; Hawkins and Hastie, 1990; Blank et al., 2007).

This finding has been confirmed by numerous studies. Some of these identified factors that moderate the hindsight-bias effect; however, only in rare cases could it be eliminated altogether or even substantially reduced (Arkes et al. 1988; Hawkins and Hastie, 1990; Hoch and Loewenstein, 1989; Pohl and Hell, 1996; Wasserman et al. 1991).[1] The mechanism suggested to underlie this phenomenon is that the assimilation of the outcome information increases a perceived correspondence between that outcome and a sub-set of events which preceded it – referred to by the term "creeping determinism" (Fischhoff, 1975). This mechanism makes it difficult to imagine how things could have transpired differently. Slovic and Fischhoff (1977) found empirical support for the idea that hindsight is conducive to the conception of a particular outcome as the only possible one, whereas

[1] More recent studies have observed this bias in visual perception as well (Bernstein et al. 2004, Birch et al. 2007).

foresight knowledge leads one to consider many possible outcomes (Hawkins and Hastie, 1990).

An interesting discussion regarding the problematic influence of hindsight bias on the evaluation of decisions is manifested in a written dialogue between psychologists Prof. Ruth Beith-Marom & Dr. Dan Zakai and lawprofessor, Yisrael Liblich, regarding the value of commissions of inquiry, given their appointment after the consequences of a certain matter are known. The discussion took place on the pages of Ha-Praklit journal after the Kahan Commission of Inquiry convened to investigate the events in the Beirut refugee camp (1983). After learning about hindsight bias, Prof' Liblich wrote an article by the name of *"Commission of Inquiry from the psychological view, or the inadequacy of retrospect."* He comes to the severe conclusion that there is no psychological justification for the existence of commissions of inquiry, the reason being their inability to ignore updated information and to stay objective in their retrospective evaluation of the decisions, and the considerations that underlay them, as they were understood in a state of uncertainty. In their answer, Prof' Beit-Marom and Dr Dan Zakai claim that Prof' Liblich has exaggerated the conclusions he derived from the findings on hindsight bias and express their opinion that commissions of inquiry hold considerable potential for important lessons to be learned. They assert that commissions of inquiry should concentrate on the decision-making procedures, as opposed to the decision-making outcomes, while comparing these standards to a normative standard. In this regard, they point to several questions the commission should ask: has the problem been well defined? Have there been a few operating alternatives? Has the benefit of each one been considered? Have the probabilities for each one been calculated? Has the decision maker made good use of all the information he possessed at the time? and so forth. In their answer, Prof. Beit-Marom and Dr Zakai argue that such questions may lead to a practical and professional examination of the matter at stake, contributing to the evaluation process of the quality of the decisions made, while staying free of the influence of hindsight bias.

Returning to the two constructs – outcome bias and hindsight bias, it therefore appears that they are similar phenomena – both in their implications and in the cognitive mechanism that explains them. It emerges from the literature that the key difference

between the two lies in the object whose evaluation is affected by the exposure to the outcome knowledge. Outcome bias centers on the evaluation of the ex-ante decision and the individuals who took it, while hindsight bias pertains to the retrospective likelihood of the outcome (see also: Pezzo, 2011). Beyond this distinction in the object of evaluation, there appears to be mixed evidence regarding the mediation relationship between hindsight bias and outcome bias. It has been demonstrated that outcomes influence evaluations of responsibility directly, as well as through biased retrospective likelihood assessments (Baron and Hershey, 1988; Carli, 1999). Thus, outcome bias appears to be exacerbated by hindsight bias, but may also occur independently from it (Brown and Solomon, 1987; LaBine and LaBine, 1996; Mitchell and Kalb, 1981; Carli, 1999; Clarkson, Emby and Watt, 2002; Caplan, Posner and Cheney, 1991; Baron and Hershey, 1988).

It is interesting to mention, that because of the great similarity between these two concepts, some prominent scholars, Daniel Kahneman for example, use them interchangeably:

"Hindsight is especially unkind to decision makers who act as agents for others – physicians, financial advisers, third-base coachers, CEOs, social workers, diplomats, politicians. We are prone to blame decision makers for good decisions that worked out badly and to give them too little credit for successful moves that appear obvious only after the fact. There is a clear outcome bias. When the outcomes are bad, the clients often blame their agents for not seeing the handwriting on the wall – forgetting that it was written in invisible ink that became legible only afterwards. Actions that seemed prudent in foresight can look irresponsibly in hindsight.

(Prof' Daniel Kahneman, "Thinking Fast and Slow")

Anticipatory Blame Avoidance

As mentioned at the beginning of this introduction, this research centers around choices which are made under uncertainty within principal-agent relations, but which are expected to be judged in retrospect, when the outcomes of these choices are already known. This situation is prevalent in many domains, amongst them also the political arena, in which decision-making serves as a major component of the work of elected officials. Literature in the social sciences has shown that people allocate greater weight to negative outcomes than to positive ones, a phenomenon which has been given different names including loss aversion and negativity bias (Kahneman and Tversky, 1979; Thaler, 1980; Soroka, 2014). This theory has been demonstrated in the field of political science through the understanding that the policy of elected officials is motivated by blame avoidance more than it is by good policy or credit claiming (Hood, 2010; Weaver, 1986). Politicians are thought to anticipate the dissatisfaction among voters and to therefore produce proportionately higher levels of activity and changes in comparison to corresponding levels of satisfaction (Hood, 2011).

Sulitzeanu-Kenan and Hood (2005) have suggested a moderation model of blame attribution which is based upon the resulting interaction between two elements: a perceived negative experience or perceived loss and an attribution of the responsibility for this experience to a particular agent or agency. Thus, blaming isn't independently determined by the extent of the perceived loss but rather by the interaction of perceived loss, the degree to which the event may be directly attributed to an agent and the salience of the issue at stake (Sulitzeanu-Kenan and Hood, 2005).

Continuing the literature on blame avoidance, an important classification of this concept has differentiated between relevant periods of time: reactive and anticipatory (Sulitzeanu-Kenan and Hood, 2005; Sulitzeanu-Kenan, 2006, 2020). Reactive blame avoidance manifests after a problem has moved onto the public agenda and related blame has to be dealt with; anticipatory blame avoidance aims at keeping problems and pitfalls off the agenda. It is based on the identification of potentially blameworthy events in one's responsibility sphere and the careful allocation of resources to modify agency and policy

dimensions (Hinterleitner and Sager, 2017). In the words of this dissertation, the political act associated with anticipatory blame avoidance may be seen as a possible consequence of the foresighted outcome effect. Decision makers who need to make decisions on risky policy issues and know in advance that they will be judged based on the outcomes of these decisions, might act to avoid blame and opt for risk-averse decision-making strategies.

Going into greater detail, anticipatory blame avoidance can be triggered by certain circumstances that point to the blameworthiness of an event (Arnold, 1990; McGraw, 1991). For example – when an issue is at the focus of public attention and media coverage, when policies force responsible officeholders to take unpopular decisions, or when officeholders are appointed by their superiors to deal with difficult policy problems. Such circumstances may bring officeholders to rapidly realize that they have to work under risky conditions and that damage might be significant if something goes wrong (Hinterleitner and Sager, 2017).

Hood identifies three main ways that politicians exercise blame denial or blame minimization: by presentational strategies or the use of justifications and excuses, by policy strategies which aim at adjusting the content of policies, and by agency strategies or the choice of institutional arrangements expected to allocate differently formal responsibility (Hood, 2002). Continuing this line of thought, examples of policies which can affect future blame include for example, altering regulatory arrangements to make them less effective, undermining interest groups by reducing their funding and preventing research into problems (Howlett, 2000, 2017).

According to Leong and Howlett (2017), reactive avoidance of blame, is more problematic than anticipatory blame avoidance and is much more difficult to execute. The reason lies in the fact that ex-post blame is less dependent on the actual content of policy decisions, and more on external factors or other contingency strategies.

Summing this section on blame avoidance, we suggest to see the anticipatory blame avoidance strategy as a possible consequence of the foresighted outcome effect. The fear of being judged in retrospect based on the outcomes of risky decisions, may bring politicians to act in advance in a defensive manner for the purpose of minimizing blame.

In the next section, I will describe in detail each one of the five studies which were conducted for the purpose of understanding the foresighted outcome effect. Every study is built around the same order: first, the aim of the study is presented; second, there is a detailed description of the participants and research design; third, the results are presented; and last, there is a discussion of the findings relevant for each individual study. After presenting the five studies, a wide-ranging discussion will be presented regarding the findings from all the studies, as well as a discussion about the importance and implications of these findings. To conclude, possible limitations in this research will be pointed out as well as directions for future research.

Study 1: Does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so – in what way?

Being the first of the studies in this research, this study had two main roles: a theoretical role and a methodological one. The theoretical role was to provide an initial answer to the main research question stated above: Does the expected availability of outcome knowledge (OK) in principal-agent relations affect ex-ante behavior, and if so – in what way? We tested a simple hypothesis that OK based principal-agent relations reduce risk taking behavior of agents. As noted earlier, principal-agent relations evolve over time, offering the two sides various occasions to gather data about one another, including for example knowledge of the preferences their principals hold (Shapiro, 2005). This finding, together with the assumption that OK-based PA relations are likely to involve outcome bias, leads us to expect agents to "mirror" their respective principals' anticipated biases. More specifically, since the agent in such an arrangement performs a task on behalf of his principal, and is therefore expected to provide adequate results, the principal can enforce the contract between the two sides either by rewarding compliance or by punishing breaches (Noreen, 1988). Thus, when the agent knows that the principal's choice whether or not to sanction her, will not be based on outcome knowledge, the agent's decision will be guided by her own risk preference and the risk preference she attributes to the principal. Conversely, when the agent knows that her evaluation will be conducted in the presence of outcome information, she may expect the principal's tendency to impose the sanction to be primarily outcome-based, as outcome bias suggests. In this latter case, the agent is expected to "mirror" her principal's anticipated outcome bias and become more concerned with minimizing the likelihood of the worst outcome – as suggested by the maximin principle (Kameda et al. 2016).

The methodological goal was to identify a setting in which principal-agent relations are not expected to involve outcome knowledge, in order to allow for a comparison between proportions of risk taking under OK based principal agent relations and under NO-OK based principal agent relations.

Research design

This study was based on an investment game in which subjects were required to make financial decisions involving a choice between a sure and a risky option. The financial outcome of the game directly affected the subjects' and their respective partners' real monetary reward (the same monetary units were used in the game and in the real reward). Three experimental conditions were used: two involved the two types of principal-agent relations – with and without outcome knowledge – while the third was control. The dependent variable was the propensity for risk taking, measured as the percentage of participants who chose the risky option in each condition.[2]

Participants

Eighty-one undergraduate students from diverse academic disciplines in social sciences, humanities and law participated in the study, of them 41 females and 40 males, with an average age of 25.8 years. These students had voluntarily signed up for the experiment, advertised on billboard notices. Participants were randomly assigned to one of three experimental conditions: (1) Control group (N=20); (2) No-OK + sanction option (N=31); (3) OK + sanction option (N=30). All subjects were told that they were to participate in an investment game with two players – an investor and a partner. Subjects drew a slip of paper indicating their role in the game, thus working under the impression that the roles were assigned randomly.[3] In actuality, all the notes were inscribed "investor," and the subjects were told that their respective partners were in an adjoining room.[4] Each participant received NIS 50 (about US $14.5), and was told that this endowment was now jointly owned by herself and her "partner." Next, participants were informed of the conditions of the game, which varied depending on the experimental condition to which they were assigned. As an "investor," each participant was then asked to choose between two

[2] This experiment as well as the others described in this dissertation were reviewed and approved by the Ethics Committee of the Faculty of Social Sciences of the Hebrew University of Jerusalem.
[3] The purpose of this stage was to simulate the existence of a partner, and impress upon the subjects that they had an equal chance of being assigned either role.
[4] The actual setting did not include a real "partner," as the study is concerned with the investor's behaviour alone. The sanction option was presented to the subjects as their "partner's" decision, but in fact was randomly determined. The experiments were approved by the Ethical Review Board at the University.

alternatives: either to invest the NIS 50 with a 50% chance of receiving NIS 80 (US $23.2) and a 50% chance of receiving NIS 20 (US $5.8), or not to invest the money at all[5]. Subjects were told that, irrespective of the outcome, the payoff would ultimately be divided equally between the investor and her partner, thus making the investor's decisions relevant for both. These explanations were identical for all three experimental conditions.

The independent variable – availability of outcome knowledge – was manipulated using three experimental conditions. In the *control condition* the investor acted on behalf of herself and her putative partner, and the partner had no power to sanction the investor in any way. In the *PA relations without outcome knowledge condition (no-OK)* the putative partner had the option to sanction[6] the investor after learning about her decision, but crucially, *before* learning the outcome of her decision.[7] This condition enabled us to distinguish between a principal-agent relationship which is based on the decision alone and a principal-agent relationship which is based on the decision and its outcome. The *PA relationship with outcome knowledge condition (OK)* is identical to the *no-OK* condition, but the putative partner had the option to sanction the investor *after* learning the outcome of her choice. The structure of each experimental condition was explained orally and graphically to each participant before starting the investment game. These experimental conditions are graphically demonstrated in figure 1, and a detailed description of this structure may be seen in Appendix A. Our main interest was the difference between the proportions of risk taking under the *OK* condition compared with *no-OK* condition.

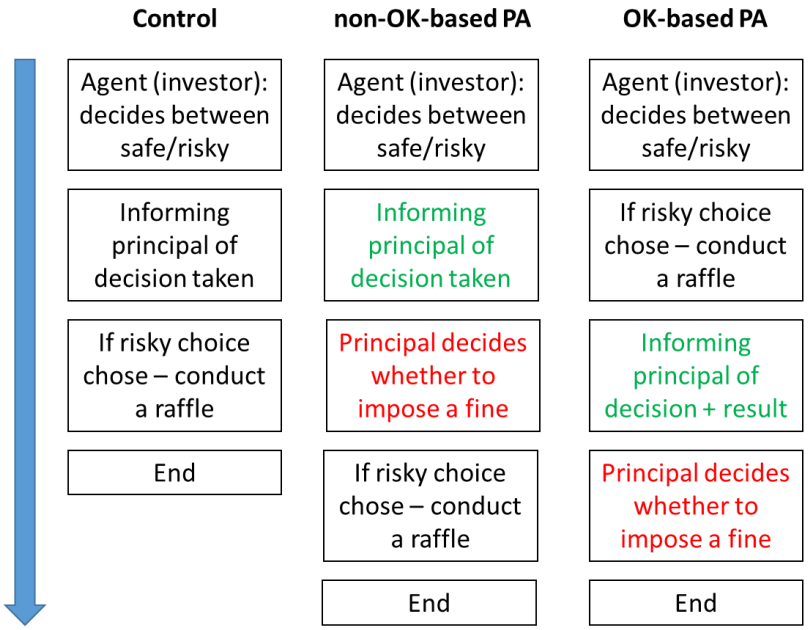
[5] In order to clearly estimate the effect of anticipated outcome bias we follow the example of Baron and Hershey's (1988) and provide our respondents with explicit quantitative probabilities for the possible outcomes. This method excludes the expected informative value of the outcome from the ex-ante considerations of the decision makers.

[6] The sanction was a fine of NIS 10 (about $2.3)

[7] In order to clarify that the partner has no incentive to sanction the investor other than for the purpose of signalling her discontent at the decision (the game was played twice), the instructions explicitly stated that the sanction meant a reduction in the share of the investor, but this reduction was not to be gained by the partner. This game was played twice also in order to study the effect of learning. In practice, we used only the decisions which were carried out in the first round – when respondents did not know their principal's preferences.

Figure 1

Experimental Design



Results

The proportion of risk taking for all subjects was 60.5% (n=81, SE=.055). To test our hypothesis, we conducted a simple cross-tabulation of risk-taking proportion across the three experimental conditions. Results of a chi-square analysis suggest a significant difference across the three experimental conditions (χ^2= 6.13, p = .046): *control* – 75%; *no-OK* – 67.7%; and *OK* – 43.3%. In order to estimate the effect of outcome knowledge on risk taking more rigorously, we conducted a set of logistic regression analyses, which are reported in Table 1. Model 1 presents a bare-bones specification, involving only two dummy variables – *control* and *OK* – with *no-OK* serving as reference. Coefficients are reported in odds-ratio values. The statistically insignificant coefficient of the *control* variable (p = .579) suggests that merely introducing a sanction option did not result in a significant reduction in risk-taking. However, the pivotal indicator is the coefficient for the *OK* variable. This result suggests that introducing outcome knowledge to the principal-

agent relationship reduces the odds of risk-taking by .364 (p = .058). Models 2 and 3 add individual-level covariates to the analysis, namely, the subject's gender, age, and major degree.[8] Controlling for these personal characteristics improved the overall model fit. The main finding – the reduction of ex-ante risk-taking due to anticipated outcome knowledge (controlling for the effect of the sanction option in principal-agent relations) – was robust and statistically significant. The findings of this study are graphically displayed in Figure 2. These results provide initial support for our hypothesis regarding OK-based principal-agent relationship: The investor's awareness that her partner would be able to sanction her after learning the outcome of the transaction significantly decreased risk-taking (by 24.4 percentage points).

Table 1: Logistic regression with risk-taking as the dependent variable

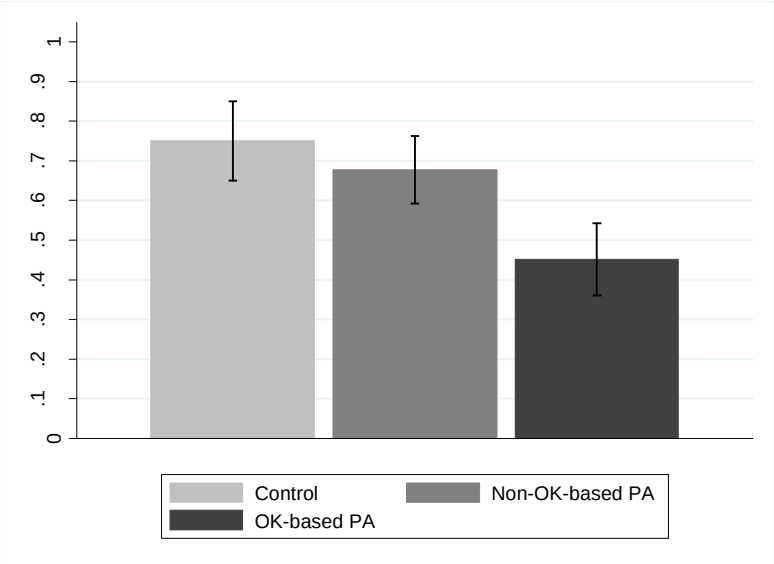
	Model 1	Model 2	Model 3
Treatment effects			
Control	1.43 (.920)	1.46 (.953)	1.45 (.981)
OK-based accountability	.364 (.194)†	.266 (.153)*	.294 (.175)*
Individual-level covariates			
Gender (male)		1.32 (.651)	.916 (.499)
Age		1.15 (.081)*	1.19 (.092)*
Psychology major			.837 (.693)
Economics/business major			6.64 (5.88)*
Chi-squared	6.16*	11.46*	17.68**
Pseudo R-squared	.057	.105	.163
N	81	81	81

Note: † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Standard errors are in parentheses.

[8] Major degree was represented by two dummy variables: "psychology" and "economics/business," with "other" as a reference category. The addition of these controls revealed a higher propensity for risk-taking for older subjects as well as (unsurprisingly) for students majoring in economics or business.

Figure 2

The effect of anticipated outcome knowledge on agents' risk-taking



Note: Raw proportions of risk-taking in each experimental condition. Error bars are ±1 SE

Discussion

The results of Study 1 provide initial support for our hypothesis that the availability of outcome knowledge in principal-agent relations increases ex-ante risk aversion of accountable agents; we term this phenomenon the *foresighted outcome effect*. This phenomenon builds upon previous findings from the literature on outcome bias which have demonstrated that agents predict principals to exhibit outcome bias and therefore manipulate the information they possess in order to minimize punishments. The foresighted outcome effect takes a further step by suggesting that this prediction also affects agent's ex-ante choices.

As noted above, participants in the *no-OK* condition made their choices under the assumption that they would be judged on merit alone, when the outcome knowledge was not yet available. Their behavior was guided by the premise that their principal would choose whether to sanction them based on the gap between their choice and the principal's own preference. Since participants lacked *a-priori* knowledge regarding their respective

principals' preferences, the resulting distribution reflects both the participants' own preferences (evident from the coefficients of some individual-level characteristics such as age and major degree), and their speculation regarding their respective principals' preferences. Participants under the *OK* condition, on the other hand, knew in advance that they would be judged based on the *results* of their choices as well. The risk-averse behavior that was evident in this condition can be explained by the participants' belief that outcome knowledge might give rise to a judgment different to one likely to be passed in the absence of such information, as under the *no-OK* condition.

Nearly all principal-agent relations involve outcome knowledge, thus the ubiquity of risk aversion under these settings should not come as a surprise. What is intriguing however, is the similar levels of risk-seeking in the *no-OK* principal-agent relations regardless of the option to sanction the decision maker, suggesting that it is uniquely the interaction of availability of outcome knowledge along with a sanction option that accounts for risk-aversion in principal-agents relations, rather than the establishment of principal-agent relations per se. The statistically insignificant effect of introducing the sanction option suggests that the role of sanctions in principal-agent relations may be overestimated in the literature. It is only when introducing outcome knowledge as a potential factor in the principal's anticipated decision whether or not to sanction the agent that a substantive, and statistically significant effect on the agent's behavior is observed. Given that practically all principal-agent relations involve outcome knowledge, this finding appears to be a potential explanation for reduced risk-taking in principal-agent relations.

Study 2: Do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known?

This study seeks to extend the findings obtained in the first experiment and to examine whether the foresighted outcome effect holds, in addition to laypersons, among experts as well. Thus, the central question of this study is: Does the expected availability of outcome knowledge in principal agent relations affect the ex-ante behavior of experts? In other words, this study wishes to focus on the effect of knowing that one's decision will be judged while its outcome is known on an expert's ex-ante behavior. Contrary to the financial decisions participants needed to make in study 1, in this study participants made professional decisions regarding the management of a sports challenge.

The examination of this research question also seeks to serve another purpose: to check the generalizability of the findings obtained from the laboratory in a real-world setting. The fact that the previous effect was observed in regard to students' decision making may raise questions regarding its external validity, mainly since they aren't real decision makers, with expertise in the decision domain, and the results were obtained in a laboratory setting. Generally, while conducting experiments with student samples has its advantages, such as reducing noise and simplifying the option of replicating the experiment (Gneezy and Imas, 2017), a question remains whether decisions made under such circumstances make up for a good representation of the types of decisions carried out by professionals in their every-day decision making settings (Gneezy and Imas, 2017). As mentioned above, the issue of generalizability serves as the second purpose of this study.

This chapter is built as follows: first I will provide a literature coverage of studies which have compared decisions made in the laboratory and decisions made in natural settings; then I will provide a literature coverage of experts' decision making. Following these theoretical sections, I will detail the research design we implemented in order to examine the research question of this study, closing with a results section and a discussion of the main findings.

Generalizability of laboratory experimental findings

A critical aspect of laboratory experiments is their generalizability, i.e., that insights gained in the lab can be extrapolated to the world beyond (Levitt and List, 2007). In this regard, some scholars in the social sciences claim that laboratory studies are high on internal validity (Brewer, 2000; Shadish, Cook and Campbell, 2002) but low on external validity (Anderson et al, 1999) or that the accuracy of experimental research is purchased at the price of the generalizability of results (Wilson, Aronson and Carlsmith, 2010). Examples of domains where this concern arises frequently include aggression (Anderson and Bushman, 1997), leadership (Wolfe and Roberts, 1993) and management (Griffin and Kacmar, 1991).

However, when considering such generalizability, an important question that arises is what is actually supposed to generalize from the transfer between laboratory experiments and real-world settings? Answers given to this question from different perspectives such as organizational research or psychology point to the understanding of the process of causality. This means that researchers are usually interested in the generalization of theoretical relations among conceptually dependent and independent variables, not the specific instantiations of them (Anderson, Lindsay and Bushman, 1999). As Schlenker and Bonoma (1978) claim, *"theories are the vehicles which allow generalization to the real world. No one experiment and no series of data can be generalized directly to anything. Only theoretical propositions can allow generalization."*

The literature which compares decisions made in the laboratory and decisions made in natural environments in order to examine the first's generalizability is plentiful. Different studies have checked for such differences or similarities in various domains including economics, morality and ethics, risky financial decisions, tax compliance, industrial-organizational psychology and so forth. The different studies point to mixed evidence regarding the ability to generalize from the laboratory to natural environments, depending on various factors including for example the issue of domains. Following is a literature overview of the relevant research, beginning with meta analyses which have

compared effect sizes from the lab and from the field, and thereafter delving into more specific examples which will shed light on the issue of generalizability.

Studies from the past two decades have compared effect sizes from laboratory and field studies in different research areas. Anderson, Lindsay and Bushman (1999) examined the comparability of findings from the lab and field across several domains and asked whether the effects of the same conceptual independent variables on the same conceptual dependent variables tended to be consistent in both settings. Results of this research, which was based upon a dataset representing 38 pairs of lab and field effects compiled in 21 meta-analyses, revealed considerable consistency between laboratory and field effects (r=.73). This strong result is attributed, at least partially, to the fact that the authors of this research investigated only research domains that have had sufficient research attention to allow for meta-analyses. In other words, these studies have usually been successful research domains in which the underlying theories and methods have been accurately articulated and demonstrated over several studies (Anderson, Lindsay and Bushman,1999).

Another study conducted by Gregory Mitchell (2012), replicated and extended Anderson and his colleagues' results through using 217 lab-field comparisons from 82 meta-analyses. Results of this research also found general consistency between lab and field effects (r=.71); also finding, however, that the external validity of laboratory research differed considerably by psychological sub-field, research topic and effect size. The two sub-fields with the greatest number of paired effects were industrial-organizational psychology and social psychology; these differed immensely in the degree of correspondence between the lab and the field. While the first demonstrated a high degree of correlations between the two settings (r=0.89), the latter showed a lower correlation (r=0.53). The lower correlation found in the field of social psychology was attributed, at least partially, to a disproportionate focus on small effect sizes. Small effect sizes studied in this lab varied more in the field, in comparison to medium size effects, and small laboratory effects were less likely to be replicated in the field than larger effects. As for the influence of research topics, large differences were found in the relative magnitude of laboratory and field studies across research topics. For example, although results from industrial-organizational psychology tended to be good predictors of field results,

industrial-organizational laboratory studies of performance evaluations were less predictive than studies of other topics. Another example is that of the study of leadership. Such studies within industrial-psychology were less predictive compared to leadership studies within social psychology (Mitchell, 2012).

To sum up the literature so far, it is important to emphasize that the external validity of psychological laboratory research shouldn't be perceived as an undifferentiated whole. Although many results may be replicated in the field, these effects often differ in their size and sometimes, even in their direction. Thus, when considering exiting the lab and performing field studies, or implementing policies based on laboratory experimental research, it is important to consider the different factors which influence external validity.

After discussing these general findings, I will delve into specific domains which have examined different behavior across the two settings, these include pro-social behavior and charitable giving, risk attitude and tax compliance.

In the domain of pro-social behavior, Levitt and List (2007a, 2007b), present a theoretical model which illustrates three central differences between the lab and the field which can result in different individual behavior. These differences include (a) stakes – subjects in the laboratory decide upon sums of money they have just received and thus aren't really endowed by them, whereas in a field setting, the sum is earned by them one way or another; (b) social norm – these might be triggered differently in a neutral context of a laboratory setting and in a rich context of an environmental setting. Although in laboratory settings, the variables of interest may be isolated from confounding factors, these settings lack the rich real-life context which may be important for behavior in the field (Bardsley, 2005); (c) scrutiny – the presence of an experimenter in the laboratory may influence subjects to act in ways that do not reflect their true behavior outside of the lab. For example, subjects who are ungenerous in a field setting might start to contribute in an experiment in order to please the experimenter or because they assume this is expected behavior (Carpenter et al, 2005).

The combination of the situational differences stated above along with the possibility that pro-social traits may characterize as unstable across situations may influence the behavior observed in the lab and in the field to generate different levels of

pro-social behavior. Evidence from this research domain has shown that pro-social preferences are more important in the lab than in the field and in accordance, the levels of pro-social behavior measured in the lab are higher (List, 2006). Moreover, the levels of pro-social behavior may not correlate between the two settings. In this case, pro-social behavior in a laboratory experiment does not generalize to the real world.

Continuing research in this domain, Benz and Meier (2008) have examined how individuals behave in donation experiments and how the same individuals behave in naturally occurring decision situations on charitable giving. In other words, this research tried to answer the question of whether people behave in an experimental setting as they do in the field. The findings of this research provided suggestive evidence which showed that while pro-social behavior is more emphasized in the lab than it is in the field, pro-social behavior in experiments is positively correlated with behavior in the field, ranging from 0.25 to 0.4. Additional findings point to a large variance in behavior, probably due to the traditional influences of person vs. situation (Benz and Meier, 2008).

Contrary to Benz and Meier (2008), another study conducted by Galizzi and Navarro-Martinez (2019) also on the issue of social preferences and behaviors in the two settings, has reached different conclusions. These authors employed a lab-field experiment that aimed to evaluate social preference games (such as the dictator and ultimatum games) against actual social behaviors in the field, and self-reported social behaviors from the past, using the same individuals. The results of this research demonstrated that experimental social preference games do not explain very well both social behaviors in the field and social behaviors from the past. In fact, these games do not explain to any significant extent any of the behaviors observed in the field and thus hold no predictive power for behavior in naturally occurring settings.

Moving on to the research on risk, an interesting recent study has evaluated if experimental measures of risk attitude are able to explain risky behavior in both experimental settings and naturally occurring settings (Charness, Garcia, Offerman and Villeval, 2020). This research examined the external validity of five risk-preference-elicitation procedures based on two different types of risk related behavior: laboratory financial decisions and naturally-occurring field behavior that reflects the risk exposure

that individuals are willing to bear in their everyday lives. Risk attitude in the field was evaluated based on insurance decisions, employment decisions, and investment decisions (monetary or in property). The results of this study reveal that the risk measures used in this research hold some predictive power on behavior in experimental settings, however no correlation was found between these risk measures and field behavior. In other words, while measures of risk attitude can explain behavior in the laboratory, they fail to explain behavior in external settings. The authors offer possible explanations for these results, including, domain-specific nature of risk attitudes, different drivers of risky behavior in the field, weaknesses of the expected-utility theory paradigm on which most measures are built and cognitive processes.

A last example which I will provide in this section of a domain which has examined the external validity of experimental research is that of tax compliance behavior. This domain, as it is investigated in the laboratory, is perceived with skepticism regarding the possibility to generalize to the greater population. This is due to the following types of criticism: student subjects typically used in experiments may not be representative tax payers as they have little experience in filling tax forms and their economic background may differ from that of taxpayers; also, it is claimed that the context of laboratory compliance experiments doesn't closely enough resemble the context in which actual compliance decisions are made (Alm, Bloomquist and McKee, 2015).

This research aimed at answering two questions: do participants in laboratory experiments exhibit different patterns of behavior than individuals in a similar naturally occurring setting; and, do students behave differently from non-students in identical laboratory experiments. The first question was answered in the research through the use of a data set from the U.S Internal Revenue Service (IRS) assembled as part of its National Research Program (NRP). The second question was answered through conducting further analysis to previous experimental data which has compared the decisions of a population of adults with those of undergraduate students; both participated in the same laboratory experiment (Alm, Bloomquist and McKee, 2015).

The results of this research revealed that compliance behavior in the laboratory generalizes to other populations: Individual tax payers in the field behaved similarly to

undergraduate students in the laboratory in comparable decisions. It has also been found that despite small differences in responses to policy treatments, students and non-student subjects manifest similar behavior in the laboratory. These differences relate for example to a situation when the policy treatment may incorporate a substantial level of external experience. The authors of this research have found that students respond differently to the presence of tax liability answers (Alm, Bloomquist and McKee, 2015).

Returning to the subject of this dissertation, the aim of this chapter is to "exit the lab" and examine whether the foresighted outcome effect we observed among students can be also found amongst real decision makers in their natural professional settings. For this purpose, we conducted a "lab in the field" experiment.

Gneezy and Imas (2017) define a 'lab in the field' study as one conducted in a naturalistic environment, targeting the theoretically relevant population but using a standardized, validated lab paradigm. As such, lab in the field experiments combine elements of both lab and field experiments and therefore provide researchers with a tool that enables on the one hand to minimize costs, and on the other – to enjoy the benefits of both methodological worlds (Gneezy and Imas, 2017). These benefits pertain to the following: they enable to elicit behavior and preferences with nonstandard populations that are closer to the theoretically relevant target population; they enable to collect covariates as compliments to randomized control trials and for targeting policy; they have the ability to make direct comparisons between different populations and contexts; and they are able to test for the external validity of commonly used measures (Gneezy and Imas, 2017).

The 'lab in the field' experiment we conducted in this study was carried out with basketball coaches, who were presented with scenarios from their every-day professional lives on the court. As will be elaborated further on, we structured basketball game scenarios within the context of principal-agent relations and examined whether the behavioral micro-foundation of agents' risk aversion found among students is also observed in the context of professional experts in their field. In other words, we examined the external validity of the foresighted outcome effect in natural environmental settings. Before moving on to describing the research design of this study, I will provide a short theoretical background on expert decision making – the research population of this study.

Expert decision-making

Herbert Simon in his seminal work about "bounded rationality" describes expertise as based on extensive knowledge. Equipped with this body of knowledge, "the expert is prepared to respond to many situations "intuitively" – that is, by recognizing the situation and evoking an appropriate response and also to draw on the stored productions for more protracted and systematic analysis of difficult problems" (Simon, 1991).

Theoretically, there is reason to believe that because experts within a field possess such extensive knowledge as well as prior experience and opportunities to receive feedback and to learn from the past, their decision-making behavior will be less influenced by judgment errors and biases and more guided by their understanding of the situation at stake. Following this line of thought, indeed, many studies have confirmed the advantages that experts possess in decision making processes. These advantages include for example the following: getting the most out of the knowledge they possess (Sniderman, Brody and Tetlock, 1991), employing certain cognitive heuristics more appropriately (Lau and Redlawsk, 2001), understanding problem situations and making decisions rapidly (Klein, 1989, 1998; Klein, Orsanu, Calderwood and Zsambok, 1993) and more. The latter advantage has been observed in various domains including physics (Larkin, Mc Dermott, Simon and Simon, 1980), nursing (Crandall and Getchel-Reiter, 1993) and management (Patton, 2003), to mention just a few.

However, despite these advantages, other studies in the literature on expertise and decision making have shown that experts are not free from errors of judgment and biases. In fact, these studies have shown that many such errors are shared by experts and laymen alike (Kahneman and Tversky, 1977; Montibeller and Winterfledt, 2015). This has been demonstrated throughout many types of expertise. A dominant example is that of Tetlock (2006) which has illustrated how political experts do very poorly at predicting future political events, practically no better than chance. Similar findings have been shown on stockbrokers, electrical engineers, intelligence analysts, physicians and more and in

different examples of biases: the confirmation bias, the anchoring bias and the availability bias, to name a few (Kahneman and Tversky, 1977).

Moving closer to the field of this paper and to the research question at stake, many studies address the existence of hindsight bias, a very close construct to outcome bias, among experts. These studies have found hindsight effects in samples of subjects with experience or expertise in different domains, such as: finance (Bukszar and Connolly, 1998; Biais and Weber, 2009), accounting (Andersen, Lowe and Reckers, 1983), law (Andersen et al, 1997; Rachlinski, Guthrie and Wistrich, 2011; Jennings, Lowe and Reckers, 1998) and medicine (Arkes et al, 1981; Caplan, Posner and Cheney, 1991). However, it has also been found that when comparing between hindsight bias among laypersons and hindsight bias among experts, it seems that the bias is mitigated in the latter population (Christinsen-Szalanski and Willham, 1991). As for outcome bias, a recent study conducted by Broude and Levy (2020) has compared how laypersons, legal experts and people with field experience differ in their susceptibility to cognitive outcome bias, in the case of military investigations conducted under humanitarian law. The results affirm the existence of outcome bias in *ex post* evaluations of operational decisions, both in laypersons and in experts – however to a lesser extent.

Continuing this line of thought in which the literature on the ex-post behavior of experts demonstrates their susceptibility to outcome bias, we would like to return to the main research question of this paper and ask: do experts who take part in principal-agent relations adjust their *ex-ante* behavior when they expect to be judged after the outcome and the consequences of their decision are known?

We posit that in outcome-knowledge based principal-agent relations (OK based PA), experts, as laypersons, "mirror" their respective principal's anticipated outcome bias and adjust their ex-ante behavior accordingly. Specifically, when experts expect their decision to be judged by their principals before their outcomes are known, their decision-making strategy will be based on their own risk preferences and the risk preferences they attribute to their principal. Conversely, when experts expect their decisions to be judged after their outcomes are known, they will become more risk averse in their decision-making behavior and concerned with the wish to minimize the likelihood of the worst outcome.

Hence, similar to study 1, our hypothesis is that OK based PA relationships taking place with experts increases risk aversion. The novelty of the experiment we used to test this hypothesis, apart from using experts and scenarios from their professional lives, lies in the use of non-monetary tasks.

Research Design

As mentioned in the literature review, the principal-agent theory revolves around relationships that mirror the basic agency structure of a principal and an agent who are engaged in cooperative behavior but have different goals and differing attitudes towards risk (Eishenhardt, 1989). As mentioned earlier, we chose to examine the hypothesis of this chapter via a 'lab in the field' experiment – an experiment conducted in a naturalistic environment targeting the theoretically relevant population but using a randomized experimental paradigm (Gneezy and Imas, 2017). We employed this methodology on basketball scenarios which frequently occur in real games, and which require team coaches to make a decision between a sure and a risky option. Two experimental conditions were used – simulating different types of decisions within a principal- agent relationship – with and without outcome knowledge. The dependent variable was the propensity for risk taking, measured by the percentage of subjects who chose the risky option in each condition.

Participants and Design

44 participants (all male, mean age: 33.8) were recruited for this experiment, all of them were basketball coaches, most belonging to the "Hapoel Jerusalem Youth Basketball Club", and some to other Youth Basketball Clubs in Israel. Before being assigned to one of the conditions, participants were asked to fill in a form, composed of two parts: a consent statement approving their participation in the experiment and five questions gauging their

time and risk preferences (Frederick, 2005): We included these questions in order to be able to control for pre-test characteristics. The questions were as follows:

Which option do you prefer between the following two options?

(1) To receive 3,400 NIS this month or to wait until the next month and to receive 3,800 NIS?
(2) To receive 1,000 NIS this month or to wait until next year and to receive 1,400 NIS?
(3) To receive 1,000 NIS or to take a 75% risk of receiving 4,000 NIS?
(4) To lose 500 NIS to take a 75% risk of losing 1,000 NIS?
(5) Imagine you had bought a book at an online store at the cost of 60 NIS and the regular delivery time is two weeks. How much would you be willing to pay in order to receive the book within a day?

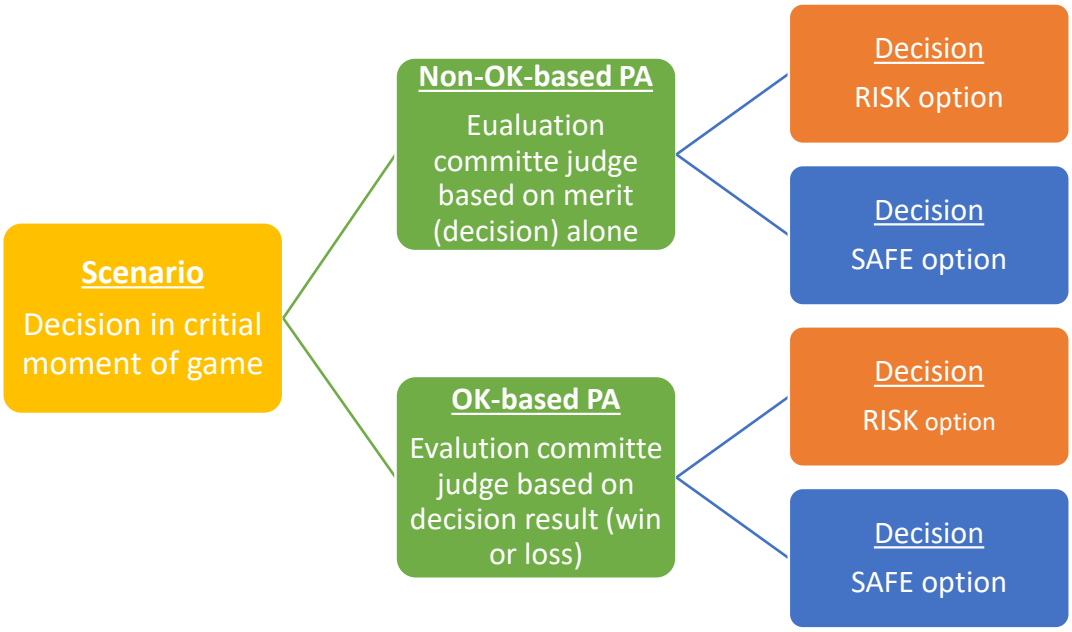
After answering this set of questions, participants were asked to imagine they were taking part in a mock audition in which they were applicants for a competitive position of a basketball coach in a top basketball club (more prestigious than their current position). As part of the examination stage, these participants were presented with two scenarios from the field which required them to make a choice between a safe and a risky option, and were told that their decisions would be judged by an evaluation committee. The details of the two scenarios will be given shortly. The independent variable was the availability of outcome knowledge to the evaluation committee, which served as the principal in the principal-agent relationship. Participants were randomly assigned to one of two conditions: (1) Non-OK based PA (N=22); (2) OK based PA (N=22). These two conditions follow the ones appearing in the original experiment of study 1 (the investment game), while being applied to the basketball context: making a decision between a sure and a risky move at a critical moment of an important game.

In the first condition, Non-OK based PA, participants knew that the evaluation committee would judge their decision immediately, based on its merit alone, while in the second condition, OK based PA, participants knew that the evaluation committee would judge their decision according to the result of the game or in other words - after understanding whether this decision led to a win or a loss.

The relationship between the group's coach and the owners of the club to which the group belongs, may also be framed in terms of principal-agent. The basketball club owner (the principal) delegates authority to the coach of the group (the agent) and the welfare of the first is affected by the choices of the second. Basketball club owners do not always have the same goals and interests as the coach they hired for the club's group.

Participants in both conditions were asked to imagine that they had reached the last stage of the examination procedure, in which they were asked to watch a video of a semi-final basketball game they weren't familiar with, during the last critical minutes of the game. They were told the coach of the group during these minutes decides to take a time-out in order to decide upon his next strategic choice and the video is stopped. Two alternative scenarios describing the current situation on the court, were given to the participants. In each scenario, the participants were told that the coach on the court is considering two alternative moves – one is characterized as a sure move and the other as risky; they were asked to decide what they would have done, had they been placed in his shoes. These decisions were made by the participants immediately following every scenario; in other words, these scenarios weren't presented to them consecutively. The explanations mentioned above were identical for both experimental conditions.

The following diagram summarizes the experiment structure:



The scenarios that were presented to the participants were taken from the coaches' everyday professional lives on the court. These scenarios were both established and worded in consultation with two senior basketball coaches at the "Hapoel Jerusalem Youth Basketball Club", who agreed that these scenarios represent clear cases of a risky versus a safe option. These two coaches did not participate in the experiment. The specific scenarios which will be detailed shortly, were chosen since they present a choice between a clearly safe versus a risky choice in the context of a basketball game. As such, they allowed us to embed them in the experimental design of outcome knowledge and non-outcome knowledge principal-agent conditions, which were operationalized by the knowledge of the committee. The dilemmas which were chosen, intentionally, don't come with a standard answer for the accepted practice in these situations.

Basketball games are typically judged by their result, however would a coach's strategic behavior change and become riskier if he knew that he'd be judged – not by the outcome of his choices but by their merit?

Following are the two scenarios which were given to the participants, describing the situation on the court[9]:

(1) Two minutes to the end of the game the score is tied at 81 each. The coach of the team that led the game until this point decided to take a time-out, after the opposing team ran during the last 1:40 minutes and scored 7-2, equalizing the score. The coach on the court is deliberating whether to substitute between two of his players. Description of the two players is as follows:

Player A: A leading and experienced player, season averages: 17.3 Points in 35 minutes per game (56.5% from two-point range, 44% from the three and 91% from the free throw line) isn't going through a good evening. Until now he shot 4/15 from the field, turned the ball over a few times and, in general, doesn't seem to be concentrating. During his last minutes on the court, he shot ¼ and turned the ball over once.

[9] The participants didn't know a head of time they will be given two scenarios.

Player B: A young but promising player, is currently sitting on the bench. Season averages: 7.8 points in 20 minutes per game: (31% from two-point range, 47% from the three and 90% from the free throw line). During the first half of the game played 8 good minutes: shot ¾ from the field, passed two assists and stole a ball.

Considering these circumstances, the participant was asked: Had you been the teams' coach, what would you have chosen to do?

1. Stay with player A [the safe alternative]
2. Substitute player A with player B [the risky alternative]

(2) Four minutes to the end of the game, one of the teams is leading by only 2 points, after it has already led the game by 11; the opponents made a 9-0 run during the last 2:40 minutes. Throughout the game and up to this point in time, the leading team played a 'man to man' defense tactic. The last 9 points scored by the opposing team during the last 2:40 minutes of the game, which minimized the gap between the two teams, were scored in set offense and not via fast breaks. Two of the baskets scored were of three points. The season average of the opponent team from three-point range is 31%, and in the current game they scored 7/18 (38%) from that range.

Your team is very familiar with the 'man to man' defense tactic and with the 3-2 zone defense. Considering these circumstances, the participants were asked: Had you been the group's coach, what would you have chosen to do?

1. To stay with the 'man to man' defense tactic [the safe alternative]
2. To switch to zone defense [the risky alternative]

These two scenarios and their instructions were identical for both experimental conditions, which differed one from the other by the main independent variable – availability of outcome knowledge to the principal. Next, participants received two different explanations about the information their evaluation committee possess, which varied according to the experimental treatment to which they were assigned. In the no-OK based PA condition, participants were told that the members of their evaluation committee were looking with them at the video of the game for the first time, and weren't aware of the results of the game, thus judging them solely by the merit of their choices. In the OK based PA condition, participants were told that the members of their evaluation committee were

familiar with the games and were judging their choices not only by the merit of their choices but also by the results of the games, which were known to them. The structure of each experimental condition was explained orally and graphically to each participant before starting the experiment (see appendix B).

As mentioned above, the dependent variable of this research was the propensity for risk taking – measured by the likelihood of choosing the risky alternative in each dilemma. This design allows us to test our main research question: do experts who take part in principal-agent relations adjust their ex-ante risk-taking behavior when they expect to be evaluated based on the outcome of their decision?

Results

The proportion of risk taking for all the decisions made by participants (n=88) was 34%. The first dilemma (replacing a player) had a higher rate of risk-taking (43.2%) compared to the second dilemma (changing defense tactic) (25.0%, $p = .072$). In order to estimate the effect of outcome knowledge on risk taking we conducted two logistic regression analyses – presented in Table 2. Model 1 included only one independent variable - the experimental treatment of outcome knowledge. In order to account for the fact that each respondent provided two decisions – for each of the two dilemmas –standard errors are clustered at the individual level. The effect of outcome knowledge on the likelihood of risk-taking of basketball coaches is negative and marginally significant ($p = .057$, single-tail test) – in line with our hypothesis. Given that the two dilemmas elicited different levels of risk-taking, Model 2 adds a dummy variable indicating the second dilemma. The coefficient for outcome knowledge effect remains substantively the same.

Table 2: Estimating the effect of OK-based evaluation on risk-taking

	(1) risk	(2) risk
OK-based PA	-0.824*	-0.858*
	(0.521)	(0.543)
Dilemma		-0.858**
		(0.396)
Constant	-0.274	0.142
	(0.358)	(0.415)
N	88	88

Clustered standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$

Discussion

This study looks at the role of anticipated outcome knowledge in decision making under uncertainty in the context of tactical decisions of basketball coaches. Specifically, we placed the focus on experts, and examined how the awareness that one's decision will be evaluated based on its outcome affects ex-ante risk taking. The results reveal that expected availability of outcome knowledge in principal agent relations affect the ex-ante behavior of experts by increasing their risk aversion in professional decisions.

The results reported here were gained through a "lab in the field" experiment in which we examined real basketball coaches' choices, as they were motivated by the hypothetical possibility of winning a competitive position of a basketball coach in a top basketball club. The basketball coaches' evaluations based on descriptions of the scenarios played out in the study were taken from their everyday professional lives. However, despite their expertise in the situations at stake, based on knowledge they possess, their prior experience and past opportunities from which they received feedback and learned, they

still demonstrated susceptibility to the *foresighted outcome effect* – the increased risk aversion caused by the expectation that one's decision, although made under uncertainty, will be judged based on its outcome. The results of this study add to the previous study conducted and highlight that not only laypersons are susceptible to this effect but also experts in their fields. This study also provides a demonstration that FOE occurs also in non-monetary decisions. Lastly, it contributes to the literature on biases and experts which show that many errors of judgment and biases are shared by experts and laymen alike.

These findings carry important implications for many types of experts who need to make decisions in their everyday professional lives. Instead of placing the main focus on the situation at stake – to which experts can contribute to from their expertise and their decision-making capabilities, excessive weight is placed on the exposure to irrelevant contextual information, in this case – the anticipation of being judged based on the outcome of the decision and not on the decision itself and its merit. Experts who are subject to such a regime, mirror the outcome bias they anticipate being expressed in their principals, by acting defensively in a risk averse manner.

As mentioned earlier, this study was a first attempt to examine the *foresighted outcome effect* outside the lab, on real decision makers. In this regard, basketball coaches served us as a good sample of decision makers to test the hypothesis presented in this study, due to the fact that this sport field (as most others) is very much guided by the importance of the outcome. However, although the sample that was analyzed was based on 88 decisions, these decisions were carried out by only 44 basketball coaches and there is room to test the findings on a bigger sample. In addition, a question remains regarding other decision-making domains in which less weight is placed on the outcome, but on the process as well. Will the *foresighted outcome effect* be mitigated in these domains? In general, we encourage further research which will examine the existence of the foresighted effect on other types of experts – in the social or political domains, to name a few, which will shed light on differences in its' existence, mechanism and consequences in changing settings.

Taken together, the findings we obtained from the first two experiments we conducted until this point, assumed that the *foresighted outcome effect* takes place due to the agent's expectation to be judged by his principal (be it his partner to the investment

game or the evaluation committee) based on the outcome of his choices. The next study challenges this assumption and examines an alternative one based on the literature on regret and anticipated regret.

Study 3: Can the foresighted outcome effect be explained by an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative?

The results of Studies 1 and 2 provide support for our hypothesis that the availability of outcome knowledge in principal-agent relations increases ex-ante risk aversion of accountable agents. This risk-averse behavior which was observed in accountable agents was explained until this point by the participants' belief that outcome knowledge might give rise to a judgment different to one likely to be passed in the absence of such information. As a result, agents acted strategically in order to cope with the expected bias via demonstrating risk-averse decision-making behavior.

However, these results may also conform to an alternative explanation. It is possible that the increased risk aversion of individuals under the 'OK-based principal-agent relationship' condition did not stem from the anticipation of the effect of outcome knowledge on their respective principals, but rather from their motivation to minimize their principals' ability to compare the outcome of their chosen choice with the outcome of the foregone alternative – as the literature on regret and anticipated regret may suggest. Before elaborating on this hypothesis and the methodology we chose for examination, I will provide a short literature overview on the subject of regret.

Regret is a negative, cognitively based emotion that we experience when realizing or imagining that our present situation would have been better, had we decided differently (Zeelenberg, 1999; Zeelenberg and Pieters, 2007). When experiencing regret, people feel that they should have known better, think of the mistakes they have made and attempt to undo the action that caused regret (Zeelenberg, Van Dijk, Manstead and Van der Pligt, 1998). In certain circumstances, regret may be confused with other emotions – such as anger, disappointment, guilt, shame and others; however it stands distinct due to its phenomenology and behavioral consequences (Zeelenberg and Pieters, 2007). In this regard, Zeelenberg and Pieters have commented that regret is unique in relation to decision making and hence responsibility: while other negative emotions can be experienced without choice, regret cannot. An individual only experiences regret over a bad outcome

when at one point in time he could have acted otherwise in order to prevent that outcome from happening (Zeelenberg and Pieters, 2007). In other words, decision regret is the emotion felt as a consequence of a decision which, after the fact, appears to have been a wrong or poor decision (Bell, 1982).

A meta-analysis on the subject of regret, conducted by Roese and Summerville (2005) on the American population, has examined which domains in life produce the greatest potential for regret and attempted also to answer the question of why those domains were specifically found. Through the use of archival and laboratory evidence, the authors first demonstrate their main finding that greater perceived opportunity within life domains evokes more intense regret. The two mechanisms which explain this finding rest upon the fact that a foreclosed opportunity activates processes of cognitive dissonance reduction (Gilbert and Elbert, 2002), and that regret itself drives corrective action, encouraging individuals to change decision strategy, plans and behavior in order to improve their life circumstances (Zeelenberg, 1999). The latter is feasible only when opportunities remain open. In accordance with these findings, a meta-analysis of 11 regret ranking studies revealed that the top six domains which evoke the strongest feeling of regret in life are education, career, romance, parenting, the self and leisure. Concentrating on education, the authors note that the reason for this domain being the most regret evoking, lies in the fact that it serves as a means to achieving several other important ends, for example higher income or a wider and more diverse social network. In regret terms, any of these other ends which may have gone astray, may have been addressed with more education. In this regard, an interesting question raised by the authors concerns other societies, such as caste-based ones, in which the domain of education doesn't leave individuals much freedom of choice since it is constrained at birth. It is plausible that such individuals experience fewer life regrets concerning education since the options are objectively limited.

The difference between action and inaction (Knobe, 2003; Thomson, 1976) has been a central concern of regret literature (Gilovich and Medvec, 1995). It appears that people experience more regret over negative outcomes that stem from actions than from equally negative outcomes that result from actions forgone. inactions (Gleicher et al, 1990;

Kahneman and Tversky, 1982). Gilovich and Medvec (1995) add important evidence to this research, identifying that there is a temporal pattern to the experience of regret. While actions or errors of commission generate more regret in the short term, inactions or errors of omission, produce more regret in the long term. Trying to explain these findings, the authors point to three psychological processes that together give rise to this temporal pattern. These psychological processes (a) decrease the pain of regrettable action over time; (b) bolster the pain of regrettable inaction over time; (c) and differentially affect the cognitive availability of a person's regrettable commissions and omissions. These latter elements do not influence the intensity at which regret is experienced over actions and inactions but affect how often one is reminded of such regrets and therefore how often they are experienced (Gilovich and Medvec, 1995).

While regret can serve as a consequence of decision making, as described above, it can also serve as an antecedent of decision making (Connolly and Zeelenberg, 2002). In this regard, the research on regret aversion has been concerned with its influence on which option is chosen. Decision makers, rather than evaluating every option in itself as in traditional expected-utility theory, evaluate options in a comparative fashion (Reb, 2008). Savage proposed already in 1951, the minimax regret rule for decision making under uncertainty. This rule seeks to minimize the possible post-decisional regret for having chosen the relatively worst option and is based on the following underlying assumptions: (1) Decision makers are regret averse and therefore have an incentive to avoid it; (2) Regret is considered anticipatable and in order to avoid it in advance, decision makers are thought to predict its intensity for the different options put into consideration, and use this understanding for choosing the regret minimizing option; (3) Anticipated regret is a function of predicted decision outcomes; (4) The intensity of anticipated regret associated with an outcome is driven by a comparison of that outcome with the outcome that would have resulted from the foregone alternative.

This latter comparison between outcomes lies at the heart of the economic regret theory, which serves as a modified version of expected utility theory (Loomes and Sudgens, 1982). These scholars define regret as arising from the post-decisional thought of the decision maker that his position would have been better had he chosen differently. This

regret theory suggests that decision makers choose on the basis of a basic expected utility component and a component of expected regret. However, as time evolved, both the minimax regret rule and regret theory have not been proven to serve as good descriptive models of choice (Reb, 2008). Having said that, the broad idea that individuals tend to prefer the regret minimizing option has been widely supported (Larrick and Boles, 1995; Zeelenberg and Pieters, 2004; Zeelenberg and Beattie, 1997).

Arising from these bodies of literature is the understanding that feedback plays a central role in regret theory since it enables the decision maker to compare the outcome of the chosen choice with that of the foregone alternative. In this regard, it has been found that people are motivated to make choices that shield them from regret inducing feedback regarding foregone courses of action (Zeelenberg, 1999).[10] This phenomenon has been termed in the literature anticipated regret.

Anticipated regret refers to a situation in which one considers the possibility of regret before making the decision. Several studies have emphasized the role of anticipated regret in behavioral decision making through bringing the feeling of future regret to the attention of the decision maker at the time the decision is made. This has been exemplified in various domains such as gambles (Ritov, 1996), negotiations (Larrick and Boles, 1995), consumer decisions (Simonson, 1992), interpersonal relationships (Richard et al, 1996), and driving habits (Parker, Stradling and Manstead, 1996). In order to shed more light, I will focus for a moment on two examples: consumer decisions and driving habits. In the field of consumer decisions, Simonson (1992) asked consumers about the regret they would feel if they were to realize they have made the wrong decision. Such a question brought consumers to purchase items that would shield them from future regret over other riskier alternatives, concentrating on well-known higher priced brands. Another study in the field of consumption, has shown that when consumers were asked, before they made their decision, to take into account the potential feeling of regret they might feel as a result of their choice, there seemed to be an increase in the preference for conventional options and

[10] For example, faced with a choice between safe and risky options, choosing the risky option entails feedback information on the outcome of the chosen option, and the forgone safe option – thus maximizing the potential for regret. However, choosing the safe option may limit the information regarding the outcome of the forgone risky choice.

status quo choices (Lemon, White and Winer, 2002). Similarly, in the field of driving habits, Parker, Stradling and Manstead (1996) showed participants four videos which aimed at preventing them from committing driving violations. One of these videos attempted to focus drivers on the regret they may feel after exceeding the speed limit and demonstrated significant changes in beliefs and attitude regarding unsafe driving.

Additional studies have also demonstrated the influence of anticipated regret on the quality of decision processes (Reb,2008). For example, continuing this latter research, Reb (2008) has experimentally varied regret salience by manipulating whether decision makers expected full outcome feedback (on the chosen and forgone options) or partial outcome feedback (on their chosen option alone). Results of this study have demonstrated that increased regret aversion leads to more vigilant decision making; when regret was made salient, decision makers took about 25% longer on average to reach a decision and searched about 20% more information.

Another example may be found in a research carried out by Wong and Kwong (2007) which examined whether people are motivated to reduce future regret under escalation situations, situations which refer to failing courses of action. Brockner (1992) and Staw and Ross (1987) define such situations according to three characteristics. These are: (1) a large amount of resources (for example: time, money, effort) which have already been invested (sunk costs); (2) the original course of action turns to be unsuccessful (negative feedback); (3) and the situation allows the decision maker either to continue with further investment as an attempt to recover the previous costs or to withdraw entirely from the course of action. The term escalation of commitment has been given to describe the tendency to invest further in the losing course of action (Brockner, 1992). The results of this study reveal that people in escalating situations are influenced at the same time both by the emotions they expect to experience in the future (anticipated regret) and by events which have happened in the past (responsibility for initiating previous decisions). Furthermore, it has been found that escalation of commitment was stronger when the possibility of experiencing future regret about withdrawal was high (when the outcome was visible) than when it was low (when the outcome was invisible). Also, it was found that escalation of commitment increased as the net anticipated regret about withdrawal

increased. In other words, anticipated regret has been found to be one of the negative emotions that people attempt to avoid under escalating situations.

As mentioned earlier, many types of research which aimed at turning feelings of future regret salient in the decision-making process, brought decision makers to behave in a risk averse manner. In order to illustrate this point, lets imagine a classic choice between a gamble and a sure option. In opting for the sure option, one wouldn't know whether the gamble was a better choice, and in opting for the gamble one would always learn the outcomes of the gamble and the outcome of the sure option. Thus, the sure option protects one from regret and the gamble option carries some risk for regret. If one anticipates regret, he will be most likely to choose the sure option and demonstrate risk aversion.

However, Zeelenberg (1999) along with other scholars (Larrick and Boles, 1995; Ritov and Baron, 1995) have shown that this isn't always the case and that anticipated regret doesn't necessarily lead only to risk-averse behavior. A key method in the study of anticipated regret is to consider the extent to which particular choices determine the scope of feedback information. In this regard, Zeelenberg (1999) has demonstrated how anticipated regret may promote both risk avoiding and risk seeking behaviors, in accordance with the question of which of the two will shield the decision maker from feedback on forgone outcomes (Zeelenberg and Beattie, 1997; Zeelenberg and Pieters, 2004b).

Jannis and Mann already in 1977 have pointed to several conditions that might determine when regret is anticipated and how substantial this anticipation is. These conditions weren't investigated empirically; however, do promote understanding of anticipated regret. These conditions include the following: (1) the most preferred alternative is not necessarily superior to another alternative; (2) the negative consequences that might ensue from the decision could start to materialize almost immediately after the decision is made; (3) significant persons in the decision makers social network view the decision as important and will expect him to adhere to it; (4) new information concerning potential gains and losses can be obtained; (5) significant persons in the decision makers social network who are interested in the specific decision, are not impatient about his

current state of indecision and expect the decision maker to delay action until he has evaluated the alternatives more carefully.

Several scholars have also pointed to the costs associated with the consequences of anticipating regret (Sherman and McConnell, 1995). Since potential actions, exceptional behavior and innovations are likely to increase the salience of anticipated regret (Kahneman and Tversky, 1982; Simonson, 1992), a risk averse behavioral strategy may often facilitate inaction over action, ordinary behavior at the expense of exceptional behavior and imitation over innovation (Hetts et al, 2000).

In summary, regret can be experienced about decision processes as well as about decision outcomes and can stem from decisions to act and from decisions not to act. Regret can be experienced retrospectively over decisions made and in foresight, when considering and taking into account feelings of future regret in current decision-making procedures. As mentioned above, this latter form of regret has been termed in the literature anticipated regret (Zeelenberg and Pieters, 2007).

Next, I will return to the current study and elaborate on the methodology used in order to examine whether anticipated regret may serve as a possible alternative to explain the risk averse behavior observed in the foresighted-outcome effect.

Research Design

The aim of the current study was to examine whether the risk averse behavior found in individuals under the 'OK-based principal-agent relationship', may stem from their motivation to minimize their principals' ability to compare the outcome of their chosen choice with the outcome of the foregone alternative. Such a motivation might bring them to anticipate possible regret, and thus to act strategically in order to limit the possibility of such a comparison by opting for the safe option.[11]

[11] Choosing the risky option under the 'OK-based principal agent relationship' condition in study 1 provided principals with information on the outcomes of both the risky option and the safe option, while choosing the safe option provided information on the outcome of the safe option only. This may have led

In order to disentangle the two explanations, this study examined whether an OK-based principal agent relationship increases agents' risk aversion, *even when outcome knowledge includes foregone payoffs* – thus eliminating any motivation to opt for the safe option for the purpose of limiting forgone outcome information. Thus, the hypothesis underlying this study was that participants would still demonstrate increased risk aversion, even when forgone outcome information is available.

Study 3 was based on the same experimental paradigm as in study 1 (the investment game). However, it included four experimental conditions in a 2X2 design manipulating outcome knowledge ('no-OK-based principal agent relationship' and 'OK-based principal agent relationship' conditions as in study 1), and the availability of information regarding the forgone outcome (available in all cases vs. available only if the risky option is chosen). This 2 by 2 design allowed us to test whether the foresighted outcome effect holds also when anticipated regret is unlikely to affect the agents' choices.

Participants

111 undergraduate students participated in this study, of them 55 males and 56 females, with an average age of 24.75 years. These students had voluntarily signed up for the experiment, advertised on billboard notices. Participants were randomly assigned to one of four conditions of the 2X2 design manipulating outcome knowledge and the availability of information regarding the forgone option: (1) No-OK + sanction option (N=25); (2) OK + sanction option (N=26); (3) No-OK + sanction option + forgone outcome (N=30); (4) OK + sanction option + forgone outcome (N=30). All subjects were told that they were to participate in an investment game with two players – an investor and a partner. Subjects drew a slip of paper indicating their role in the game, thus laboring under the impression that the roles were assigned randomly. In actuality, all the notes were inscribed "investor," and the subjects were told that their respective partners were in an adjoining room. Each participant received NIS 50 (about US $14.5), and was told that this endowment was now

agents to choose the safe option in order to restrict the ability of the principal to compare across potential outcomes.

jointly owned by herself and her "partner." Next, participants were informed of the conditions of the game, which varied depending on the experimental treatment to which they were assigned. As an "investor," each participant was then asked to choose between two alternatives: either to invest the NIS 50 with a 50% chance of receiving NIS 80 (US $23.2) and a 50% chance of receiving NIS 20 (US $5.8), or not to invest the money at all. Subjects were told that, irrespective of the outcome, the payoff would ultimately be divided equally between the investor and her partner, thus making the investor's decisions relevant for both. These explanations were identical for all four experimental conditions.

There were two independent variables – availability of outcome knowledge and availability of the forgone outcome – these were manipulated using the four experimental conditions. The first two conditions were identical to the ones in study 1 and aimed at replicating the original findings: In the *PA relations without outcome knowledge condition (no-OK)* the putative partner had the option to sanction the investor after learning about her decision, but crucially, *before* learning the outcome of her decision. This condition enabled us to distinguish between a principal-agent relationship which is based on the decision alone and a principal-agent relationship which is based on the decision and its outcome. The *PA relationship with outcome knowledge condition (OK)* is identical to the *no-OK* condition except for the fact that the putative partner had the option to sanction the investor *after* learning the outcome of her choice. In the second pair of conditions, the availability of information regarding the foregone option was manipulated by telling the participants that the raffle would be played regardless of which option was chosen, therefore, enabling the agents and principals (the latter only in the OK condition) to compare the outcomes of the chosen option to that of the forgone option. In the PA relations without outcome information but with forgone outcome information, the investor knew that after making her choice (but before knowing its outcome), that her putative partner would decide whether to sanction a fine. Regardless of the investors' decision whether to invest or keep the sum of money, the raffle was played anyhow and its results were revealed to both sides. In the PA relations with outcome knowledge condition (OK) and with forgone outcome information, the investor knew that regardless of her choice, that the raffle would be played anyway and that the decision of the putative partner whether to impose a fine would be based on all outcome information.

The structure of each experimental condition was explained orally and graphically to each participant before starting the investment game. The experimental conditions are described in detail in Appendix C. Our main interest was whether participants would still demonstrate increased risk-aversion when forgone outcome information is available – i.e. in conditions where anticipated regret is not expected to affect the agents' choices.

Results

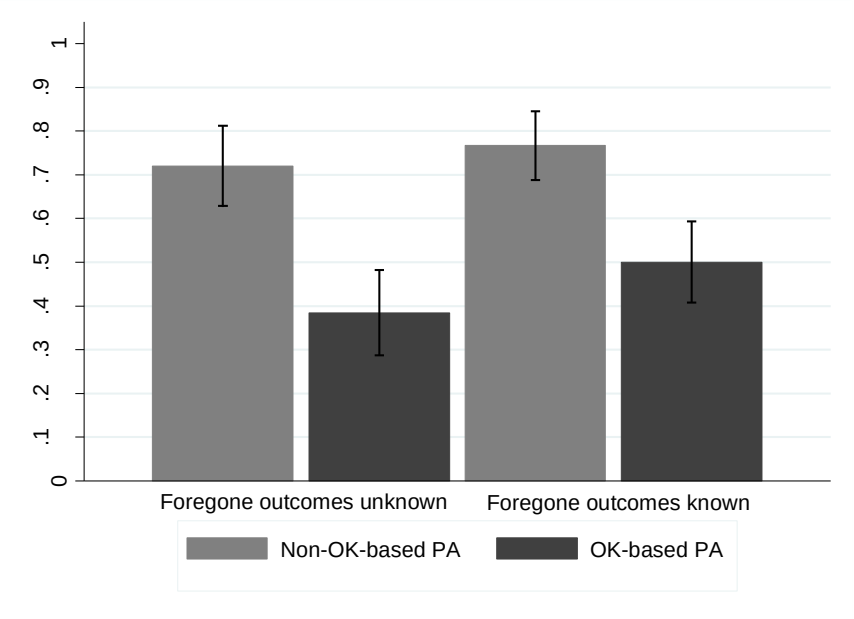
The average proportion of risk taking for all subjects was 59.5% (n=111, SE=.047) – a very similar result to the one found in Study 1. In order to estimate the effect of outcome knowledge on risk taking across the two conditions of forgone outcome information we conducted two logistic regression analyses – reported in table 3. Model 1 presents the main effects of outcome knowledge and forgone outcome information. In line with study 1, outcome knowledge had a negative effect on the propensity to choose the risky option. Respondents in the no-OK conditions were more likely to choose the risky option (M=.745 [.630, .860]) compared to respondents in the OK conditions (M=.447 [.317, .577]). The main effect of forgone outcome information (thus removing the possibility to avert regret-inducing information by choosing the safe option) is positive but statistically insignificant. By adding an interaction term between the two treatments in Model 2, we can estimate the difference in the effect of outcome knowledge across the two conditions of foregone outcome information. The interaction effect is statistically insignificant, allowing us to reject the hypothesis that the foresighted outcome effect is different between the two conditions of forgone outcome information. Indeed, the conditional effect of outcome knowledge is negative and statistically significant both when foregone outcomes are not known (replicating Study 1), as well as when foregone payoffs are known: odds-ratio=.243 [.075, .789] and odds-ratio=.304 [.100, .922], respectively. Figure 3 graphically presents the results of model 2.

Table 3: Logistic regression with risk-taking as the dependent variable

	Model 1: main effects	Model 2: Conditional effects
OK	.274 (.113)**	.243 (.146)*
All payoffs known	1.45 (.593)	1.28 (.793)
OK X All payoffs known		1.25 (1.03)
LR-X^2	11.33**	11.40**
Pseudo R^2	.076	.076
N	111	111

Note: * $p<0.05$, ** $p<0.01$. Odds-ratio coefficients. Standard errors are in parentheses.

Figure 3: The effect of anticipated outcome knowledge on agents' risk-taking across forgone outcome information conditions



Note: Bars represent risk-taking proportions in each experimental condition. Error bars are ±1 SE.

Also, Following the advice of Cumming (2014) we utilized the ESCI software to compute the average effect size of outcome-knowledge on the likelihood of risk taking of accountable agents based on studies 1 and 3, and report our results so as to facilitate their inclusion in future meta-analyses. The effect sizes (in risk-taking probability) of studies 1 and 2 are -.226 [-.475, .024] and -.299 [-.477, -.122], respectively. The average effect size

based on a random-effect meta-analysis is -.274 [-.417, -.132]. This analysis is graphically presented in figure 4. This average effect size, is substantively sizable, and statistically significant.

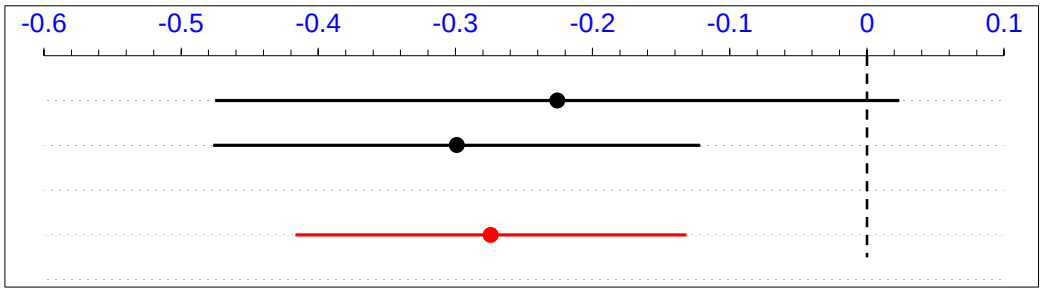


Figure 4: Average effect size of outcome knowledge based on studies 1 and 3. Note: The two upper estimates (in black) represent the effect of outcome knowledge in studies 1 (top) and 2 (middle), based on the proportions of risk taking in the two experiments, with 95% CIs. The bottom estimate (in red) represents the average effect of outcome knowledge, based on a random-effect meta-analysis using the *ESCI* software.

Discussion

The results of this study provide additional support for the hypothesis that outcome-knowledge based principal-agent relations increase risk aversion, and allow us to reject the possibility that regret avoidance accounts for the results, by obtaining a similar effect when foregone outcome information is available.

However, the fact that the experiments conducted until now employed a sanction as the only mean of holding agents accountable, allows for another alternative interpretation to the main finding that OK-based principal-agent relations simply increase risk aversion. It is possible that anticipated outcome knowledge increases the weight of outcomes in foresight judgment of agents, yet the particular outcome whose weight is enhanced is determined by the type of measure expected to be employed by the principal. This hypothesis was examined in the following study.

Study 4: Do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives?

The studies conducted so far have revealed consistent findings that outcome-knowledge based principal-agent relations increase risk aversion. These findings were obtained through experiments which equipped the principal with a sanction measure as a means to holding his agent accountable. At this point in time, we wish to adopt a symmetrical view and to examine what happens when the principal is equipped with a reward measure – would the foresighted effect still hold? Thus, the research question we ask in this study is: do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives?

This chapter is structured as follows: first, a theoretical background about the influence of positive and negative incentives on decision making and behavior is given, then the research design of the experiment used in order to answer the above research question is detailed, and closing this chapter are the results and the discussion of these results. The literature overview regarding the influence of incentives on behavior, to which I turn to next, opens with a general discussion about sanctions and rewards as mechanisms for regulating behavior, moves on to discussing different findings on incentives while conducting a differentiation between positive incentives and negative ones, and closes with the hypotheses we articulated for this study, based on the literature discussed.

Positive and negative incentives and their influence on behavior

Sanctions and rewards are basic mechanisms of regulating behavior from child rearing to organizations all over human history. At the national level, different authorities such as governments use fines to punish speeding on the motorway and private organizations give annual bonuses in order to induce employees to work well. However, the literature in the domains of brain science, psychology, organizational behavior and economics on selective incentives has shown that punishments and rewards do not have a symmetrical effect on individuals and their behaviors. Work carried out on brain structure

for example links rewards and punishments to different types of brain activity or neuronal systems (Gray, 1981; 1987). It has been found that the behavioral inhibition system influences responses when signals of punishments are present and the behavioral activation system regulates responses when signals of rewards are present (Larsen and Katelaar, 1991). In other words, rewards and punishments have different effects on behaviors, at least partially due to the fact that they are responded to by different physiological mechanisms.

In the field of psychology, perhaps one of the most prominent and early scholars who studied the causes of actions and consequences from the behaviorist view was B.F Skinner. Skinner (1937) established the 'operant conditioning' paradigm - the study of reversible behavior maintained by reinforcement schedules (Saddon and Cerutti, 2003). The basic assumption underlying this paradigm is that an individual learns mainly by producing changes in his environment (Skinner, 1953). If the environmental consequence is applied to a given operant behavior and increases the rate of response, it is termed a positive reinforcer; if an environmental consequence, by its disappearance, increases the response rate, it is a negative reinforcer; and if it produces no change in probability, the environmental event is considered to be a neutral stimulus (Jablonsky and De Vries,1972). Through this view, rewards are perceived as increasing the probability of a behavior and punishments are perceived as decreasing the probability of a behavior (George, 1995). However, having said that and in continuation to the findings obtained from brain science research (as mentioned above), other studies have shown that the effects of punishments and rewards do not have parallel influences on behavior. To a name a few examples, early works in the field of psychology which were conducted on this subject have shown that in the long run, punishments (unlike rewards) work to the disadvantage of both the punished and the punisher (Skinner, 1953). In the domain of leadership, Podsakoff et al (1984) have shown that leader contingent reward behavior was positively associated with subordinate performance while contingent punishment behavior was found to be unrelated to performance.

Moving on to the field of economics, the basic assumptions of the classic agency theory referred to at the beginning of this dissertation, perceives extrinsic motivation (such

as money or other concrete benefits) as always motivating the agent to invest more effort, according to the manner in which these incentives increase (Lazear, 2000; Prendergast, 1999). However, much evidence from the fields of psychology and behavioral economics have led to the understanding that extrinsic incentives may have a negative effect on performance. This is due to the claim that extrinsic motivation might change the perception of the activity and interfere with the intrinsic motivation to perform it when no apparent reward aside from the activity itself is expected. The result may turn out to be a reduction in the overall motivation, and therefore a reduction of the activity itself. Therefore, it seems that performance varies in a non-monotonic way with incentives. In this regard, Gneezy and Rustinchini (2000) have shown both that a decrease in motivation is apparent only when a reward is contingent on the performance and that individuals who are paid a fixed amount, with no relation to their level of performance, do no display a reduction in their intrinsic motivation.

A focus on positive incentives

Further experimental testing carried out by Gneezy and Rustinchini (2000) have attempted to provide a sensitive examination of both the differential effect of small and large rewards, and the effects of the introduction of a reward. Without going into methodological details, the results of these experiments revealed that when comparing the condition in which no monetary reward was offered with that in which it was introduced, monetary compensation produces a reduction in performance. However, when comparing between conditions which all included varying levels of compensation, a higher monetary incentive produces higher performance. The authors note that these results point to a discontinuity at the zero payment of the effect of monetary incentives. Thus, a possible attempt to bridge the literature in psychology on incentives and the literature in economics on incentives, may rely, at least in part, on the relation between the size of incentives and productivity (Gneezy, 2003).

A focus on negative incentives

After discussing the positive incentives of rewards, I will relate to the psychological literature on negative incentives and their influence on behavior. General findings that arise from this literature include the following points (Gneezy, 2000b): when negative consequences are imposed, they will generally reduce the particular behavior; when those negative consequences are removed, the discontinued behavior may likely reappear; the changes caused by the punishment may or may not be long-lasting. Such a question will be answered by several influential variables such as the severity of the punishment or the existence of a stimulus as opposed to actual behavior. A punishment is most effective when it is imposed immediately following the behavior. Adaptation tends to occur with relation to the punishment itself, thus its effectiveness may decrease over time. As mentioned earlier, these are general findings, and as such they aren't free of caveats and should therefore be considered in specific contexts.

An interesting study conducted by Gneezy and Rustinchini (2000b), has examined the influence of punishments on parents who arrive late to pick up their children from day-care centers. More specifically, the authors studied the effects of fines on the frequency with which parents arrive late to collect their children. This examination was based on the observation of ten day-care centers in Israel, over a period of 20 weeks. While the first four weeks of the study were dedicated to an observation of late-coming parents, from the fifth week, a fine was sanctioned in six of the ten day care centers, for parents who arrived more than ten minutes late for pick-up (the other four day-care centers served as a control group and no fine was sanctioned). The fine was removed at the beginning of the seventeenth week. The results of this field study demonstrated that after the introduction of the fine, there was a steady increase in the number of late-coming parents. In the weeks following the removal of the fine, the number of late coming parents remained stable – at a higher rate than in the no-fine initial period. Following these findings, the authors note that the introduction of the fine changes the perception of people regarding the environment in which they operate. In this field study, the contract between the parents and the heads of the day-care centers didn't specify the consequences for late-coming parents and in this

sense may be seen as incomplete. However, this was the case probably due to the strong social norm that exists in which children should be picked up on time. The fine which was introduced for such late comers reshaped the parents' perception of this environment (Gneezy and Rustichini, 2000b).

Summing up this part, Gneezy (2003) has illustrated the connection between the effect of positive incentives and similar effects observed in negative incentives, such as fines and punishments.[12] This connection was demonstrated through what Gneezy termed, the "W effect" of incentives, meaning that the effect of sanctions and rewards on performance may be either positive or negative, depending on the size of the incentives. Using high payoffs that are contingent upon performance results in higher productivity; however, when low incentives are used, a decrease in productivity is observed. The definition of "small" and "large" incentives is of course case dependent and can't be regarded to as a whole.

As mentioned at the beginning of this chapter, in the current study we wish to examine what happens to the risk-taking behavior of agents when their principals are equipped with a positive measure (reward), as opposed to a negative sanction– as was used in the experiments conducted until this point. For this purpose, I would like to mention, before ending this review, a prominent study carried out by Hold and Laury (2002) which measured via simple lottery choices, the degree of risk aversion over a wide range of payoffs, ranging from several dollars to several hundred dollars. Results of this experiment revealed that even at the low payoff level, most subjects exhibit risk aversion and that this risk aversion increases sharpy as payoffs are scaled up by different factors.

A common argument in the principal-agent literature claims that incentives contain information relayed from the principal to the agent, information which can change the framing of the decision situation (Gneezy et al, 2011). Taking this argument together with the complex picture that arises from the different studies detailed above regarding the non-monotonic influence of incentives upon performance, we hypothesize that the results of the

[12] It should be noted that in the existing literature on extrinsic incentives, the discussion of negative incentives is much smaller than the discussion of positive ones and few studies have tried to connect between the two.

experiment we use in order to answer our main research question, could go in one of two ways. Either that they will replicate the findings of the original experiment and demonstrate that OK based PA relations induce risk aversion – also in the case of a positive measure, or that an inverse effect will take place, meaning that OK based PA relations will induce a risk seeking behavior when the measure employed by the principal is positive. In other words, it is possible that anticipated outcome knowledge increases the weight of outcomes in foresight judgement of agents, yet the particular outcome whose weight is enhanced is determined by the type of measure expected to be employed by the principal.

The experiment used in this study was based on the original one, only alternating the principals' measure from a negative one to a positive one. Following, I will elaborate in more detail, the research design of this experiment.

Participants and design

83 students from the Hebrew University in Jerusalem participated in this experiment. The students, aged 25.8 years on average, consisted of 44 females and 39 males, and came from diverse academic disciplines such as social sciences, humanities and law. These students had voluntarily signed up for the experiment, advertised on billboard notices.

This experiment replicated the structure of the original experiment described in Study 1, with the only difference that in the two treatment groups the principal was able to *reward* (rather than sanction) the agent. Given that gains carry about 0.5-0.25 the weight of losses (Heath et al. 1999, Kahneman & Tversky 1979, Kahneman et al. 1990, Soroka 2006, Tversky & Kahneman 1991, 1992), the size of the reward in this experiment was calculated to be twice the size of the fine in the original experiment.

Participants were randomly assigned to one of three experimental conditions: (1) Control group (N=22); (2) No-OK + reward option (N=30); (3) OK + reward option (N=31). All subjects were told that they were to participate in an investment game with two players – an investor and a partner. Subjects drew a slip of paper indicating their role in the game, thus laboring under the impression that the roles were assigned randomly. In

actuality, all the notes were inscribed “investor,” and the subjects were told that their respective partners were in an adjoining room. Each participant received NIS 50 (about US $14.5) and was told that this endowment was now jointly owned by herself and her "partner." Next, participants were informed of the conditions of the game, which varied depending on the experimental treatment to which they were assigned. As an "investor," each participant was then asked to choose between two alternatives: either to invest the NIS 50 with a 50% chance of receiving NIS 80 (US $23.2) and a 50% chance of receiving NIS 20 (US $5.8), or not to invest the money at all. Subjects were told that, irrespective of the outcome, the payoff would ultimately be divided equally between the investor and her partner, thus making the investor's decisions relevant for both. These explanations were identical for all three experimental conditions.

The independent variable – availability of outcome knowledge – was manipulated using three experimental conditions. In the *control condition* the investor acted on behalf of herself and her putative partner, and the partner had no power to reward the investor in any way. In the *PA relations without outcome knowledge condition (no-OK)* the putative partner had the option to reward the investor with 20 NIS (equivalent to about $5) after learning about her decision, but crucially, *before* learning the outcome of her decision. This condition enabled us to distinguish between a principal-agent relationship which is based on the decision alone and a principal-agent relationship which is based on the decision and its outcome. The *PA relationship with outcome knowledge condition (OK)* is identical to the *no-OK* condition, but the putative partner had the option to reward the investor *after* learning the outcome of her choice. The structure of each experimental condition was explained orally and graphically to each participant before starting the investment game. The experimental conditions are described in detail in Appendix D. Our main interest was the difference between the proportions of risk taking under the *OK* condition compared with *no-OK* condition.

Results

The average proportion of risk taking for all subjects was 63.9% (N=83) and the proportion of risk taking among all three conditions was similar and demonstrated no significant difference: (χ^2= 1.36, p = .85) 59% in the *control* condition, 66.6% in the no-OK condition and 64.5% in the OK condition. Therefore, in relation to the two hypotheses stated above, we didn't find support for either of them through the results gained in this experiment.

Discussion

The foresighted outcome effect we demonstrate in this dissertation is theoretically explained by an agent's expectation that his principal will be overly affected by the outcomes of his choices when judging his decision in retrospect. However, while in the original experiment the outcome of concern was negative due to the sanction measure held by the principal, in the current study the outcome of concern is positive due to the reward measure held by the principal.

The findings of the present study, which reflect the influence of a positive reward held by the principal on the foresighted judgment of an agent, are consistent with Kahneman and Tversky's prospect theory. This theoretical framework suggests that decision making is more driven by potential losses, than it is by gains, or the ratio of the two (e.g, Kahneman & Tversky, 1981). For this reason, as mentioned above, we increased the size of the reward in this experiment to be double that of the fine used in the original experiment in order to meet the assertion that gains carry about 0.5-0.25 the weight of losses.

In accordance with the prospect theory, the sanction option that was introduced in the first study had a 'disciplining' effect on agents. Those participants, who knew they would be judged not only upon the merit of their choices but also on the results of their choices, were afraid of loss due to the sanction option held by their principal, and therefore demonstrated risk averse behavior. On the contrary, in the current study, where the principle held a reward as the PA measure, the fear of loss was less apparent and therefore

opened the way for more risk-taking behavior that didn't take into account the outcome knowledge available to the principal.

Another explanation for these results which complements the prospect theory's view, lies in understanding the negative influences of financial incentives, as discussed in the literature overview at the beginning of this chapter. In continuation, recent literature in the business discipline suggests a few directions for interpreting the results of the current study. First, financial incentives are perceived as motivating more effort. This is the effect usually sought of when companies recommend instituting pay for performance schemes - people will work harder to achieve a greater financial reward. Yet these interventions have been found to be effective only if people have enough information to perform their work effectively (Pfeffer and Sutton, 2006). In analogy to our study, perhaps participants constructed their behavior while assuming they would deserve a reward for their efforts - translating into the current study can mean refraining from the safe option and taking the risk. Second, financial incentives have been found to have a potent impact on performance, but not necessarily in the positive manner that executives anticipate. One example is evidence demonstrating that making mistakes in pay can cause people to withhold discretionary effort, ideas and information and can therefore fuel unwanted turnover (Pfeffer and Sutton, 2006). Third, and in continuation to the previous aspect, financial incentives have been found to signal what is important and focus people's attention on those dimensions. While there is a positive side to this finding - the notion that incentives can powerfully shape behavior, there's a negative side as well which occur when parties of authority don't fully understand the implications and subtleties of the behavior shaped. For example, if people enroll in a certain job for the purpose of earning money alone, they will do what it takes to achieve this goal while disregarding other important factors. In this regard, simple signals can damage when there are multiple, interrelated dimensions of individual performance. In our study, it is possible that participants constructed their behavior while concentrating on the reward alone, without taking into account other dimensions of the PA relations, especially their principal's reliance on outcome knowledge.

Previous studies have shown that OK-based principal agent relations engender risk aversion of accountable agents. Study 3 has also ruled out an alternative explanation that

this risk-averse behavior stems from the agents' motivation to minimize their principals' ability to compare the outcome of their chosen choice with the outcome of the foregone alternative; and study 4 has demonstrated that OK based PA relationships act differently under negative and positive contexts. More specifically, that only a sanction measure held by the principal, brings to a risk averse behavior in the foresight judgment of the agent. After establishing these findings, we next attempt to better understand the underlying mechanism of the foresighted outcome effect. It is plausible that the agent's decision, when no outcome knowledge is available to the principal is based on her personal preference, and her naïve belief about the principal's risk-preference. Research on naïve beliefs regarding others' risk preferences suggests that people are prone to perceive others as more risk seeking than themselves (e.g. Hsee and Weber, 1997; Kogut and Beyth-Marom, 2008). Indeed, subjects in the *control* and *no-OK* conditions were characterized by a relatively high rate of risk taking. Conversely, we propose that in the *OK* condition agents expect that their evaluation will be based on the *outcome* of their choice, rather than on its adherence to the risk preferences of the principal. Under such an outcome-based evaluation regime, we assume that agents in the *OK* condition follow the maximin principle (e.g. Kameda et al. 2016), in the sense that they are primarily motivated by their hope to avoid a loss than by their eagerness for a gain. This hypothesis was tested in Study 5.

Study 5: What is the psychological mechanism underlying the foresighted outcome effect?

The foresighted outcome effect we point to in this dissertation refers to a situation in which agents become risk averse in their decision-making strategy, when they expect their choices to be judged by their principals retrospectively, based on outcome knowledge. The aim of this present study is to understand the reason for this behavior and thus simply asks: what is the psychological mechanism underlying the foresighted outcome effect?

We hypothesize that when considering risky choices under uncertainty within OK-based principal-agent relations, decision makers are more affected by their assessment of the probability of a negative outcome than of a positive outcome. Thus, the role of subjective perceptions of losing in the choice between a safe and a risky option is greater under OK-based principal-agent relations, than when no OK is expected.

Contrary to the laboratory experiments we employed until now in previous studies, this current study is different as it is based on hypothetical scenarios which asked participants to provide their evaluated decision making to the descriptions of the scenarios played out in these preceding studies.

Participants and Design

Ninety-four education undergraduate students from the Ben-Gurion university in Beer Sheva participated in the study (83% females, mean age 24.44, SD=3.27). Participants received a short questionnaire and were asked to complete it one page at a time (see appendix E). On the first page they w ere asked to imagine that they were participating in the investment game described in the original experiment of study 1. They were randomly assigned to one of two principal-agent conditions: (a) *no-OK*, in which the partner could sanction the investor by imposing a fine after learning about her choice but before getting to know its outcome (N=45), and (b) *OK*, in which the partner decided whether to sanction after learning the outcome (N=49). After reading the description of the investment game, participants in both conditions were asked to rate, on a visual analog seven-inch scale

ranging from "no chance at all" to "full certainty," the likelihood of winning and of losing if they were to choose the risky option – according to their subjective assessment. These two questions appeared on two separate pages, and their order was counterbalanced between subjects. Finally, on the last page of the questionnaire, participants were asked to choose between the safe option (keeping the 50 NIS) and the risky option (50% chance to win 80 NIS and 50% chance to win only 20 NIS).

Results

In line with hypothesis 1 and the results of Studies 1 and 3, results of a chi-square analysis reveal a significant difference between the percentage of participants who chose the risky option under the *no-OK* and the *OK* conditions (χ^2= 5.49, p = .023): 69% and 45%, respectively.

Results of an independent t-test reveal no significant difference between the *OK* and *no-OK* conditions in the assessments of the probability of either winning (M=4.28, SD= 1.38 in the OK condition and M=4.00, SD=1.39 in the No-OK condition; t(92)=1.00, NS) or losing (M=3.35, SD= 1.37 in the OK condition and M=3.61, SD=1.37 in the No-OK condition; t(92)=.92, NS).[13] We next examined the role of the perceived probability of winning and losing in participants' choice between the safe and the risky option under the *OK* and *no-OK* conditions. A logistic regression analysis was conducted on participants' choices, with the *OK* condition, winning and losing probability evaluations, as well as all interactions between these variables as predictors. The results proved significant (χ^2= 27.13, p = .001, R square=.25). Besides the reported effect of manipulating OK, both the interactions between OK and the winning probability and between OK and the losing probability significantly contributed to the model (b=2.85, p=.049 and b=4.32, p=.037 for the interaction with winning and with losing probabilities, respectively). According to the recommendation of Aiken and West (1991) and of Dawson and Richter (2006), these interactions are plotted in Figures 5 and 6 one SD below and one SD above the mean of winning and of losing evaluations for the *OK* and the *no-OK* condition. As can be seen in

[13] The order of the questions did not significantly affect the evaluations of winning and losing likelihoods, hence the analyses did not take question order into account.

Figure 5, the association between the subjective probability of losing and risk-taking is stronger in the *OK* condition, compared to the *no-OK* condition. Participants who evaluated the likelihood of losing as low were more likely to choose the risky option in both the *OK* and *no-OK* conditions. However, participants who evaluated the likelihood of losing as high avoided the risky choice mostly in the *OK* condition. Similarly, participants who evaluated the likelihood of winning as high were more likely to choose the risky option in both the *OK* and *no-OK* conditions. However, participants with lower expectations of winning tended to avoid the risky option, especially under the *OK* condition.

Logistic regression analyses on participants' choices conducted on each of the experimental conditions separately, with winning and losing evaluations as predictors, reveal no significant results in the *no-OK* condition (χ^2=1.89, NS). However, under the *OK* condition the model was significant (χ^2=15.75, p=.001), albeit only for the strength of losing evaluations (B=-1.49, p=.03); the contribution of winning evaluations to the model was not statistically significant.

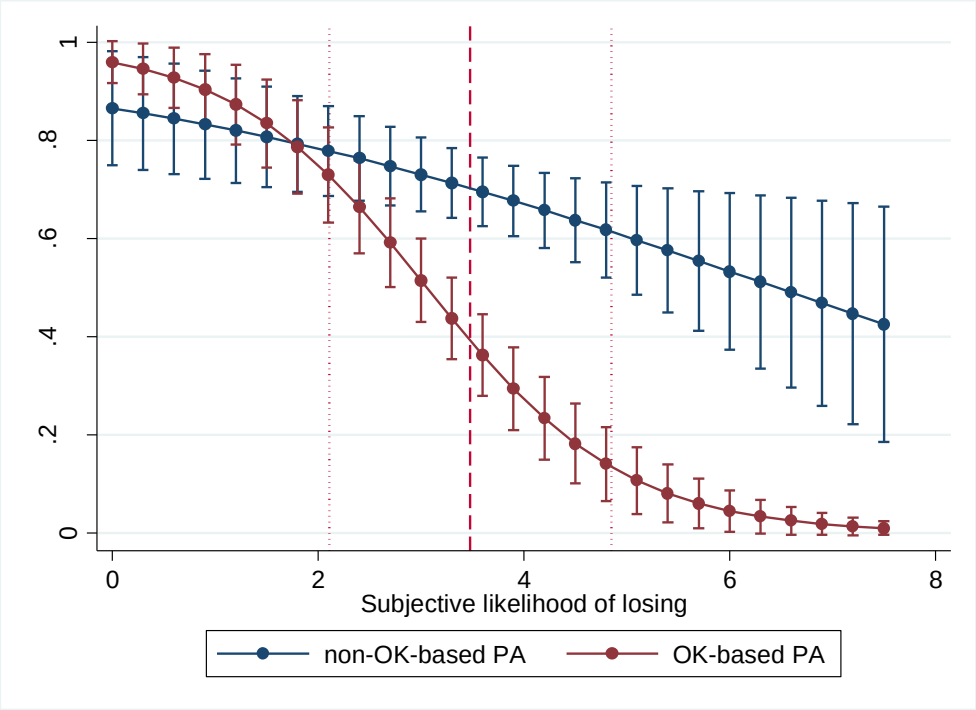


Figure 5: Probability of choosing the risky option under the *OK* and *no-OK* conditions as a function of subjective evaluations of the losing probability; according to the recommendation of Aiken and West (1991) and of Dawson and Richter (2006), the interaction was plotted one SD below (2.11) and one SD above (4.85) the losing- evaluation mean in each condition (M=3.48; SD =1.37).

Note: Dashed vertical line represents mean losing/winning-likelihood and dotted lines represent one SD below and above the mean (see: Dawson & Richter, 2006). Error bars are ±1 SE.

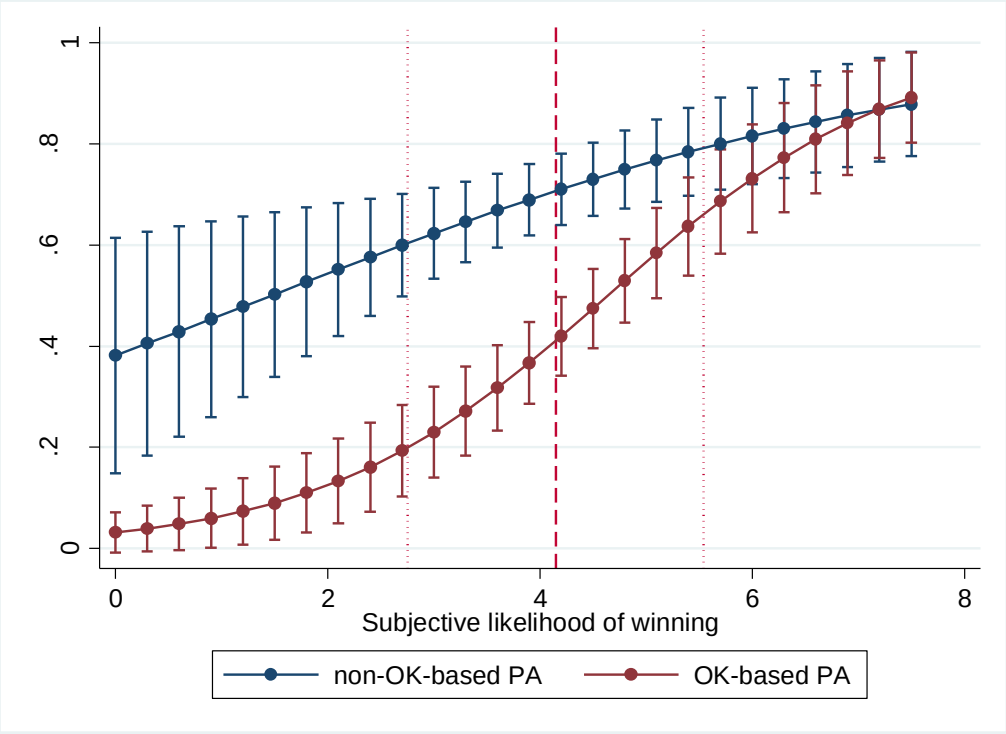


Figure 6: Probability of choosing the risky option under the *OK* and *no-OK* conditions as a function of subjective evaluations of the winning probability; according to the recommendation of Aiken and West (1991) and of Dawson and Richter (2006), the interaction was plotted one SD below (2.76) and one SD above (5.54) the winning-evaluation mean in each condition (M= 4.15; SD= 1.40).

Note: Dashed vertical line represents mean losing/winning-likelihood and dotted lines represent one SD below and above the mean (see: Dawson & Richter, 2006). Error bars are ±1 SE.

Discussion

The results of Study 5 replicate the pattern that was found in Studies 1 and 3 in the context of a hypothetical scenario, whereby *OK* decreases risk-taking. This phenomenon, which we have termed, the foresighted outcome effect, refers to an agent's assumption that her decision, although made under uncertainty would be judged by its outcome, therefore swaying the agent's ex-ante choice.

The results of this study also suggest that subjective evaluations of the probability of losing play a greater role in decisions under *the OK* than under the *no-OK* condition.

Knowing that one's decision will be evaluated based on its outcome appears to increase the weight of the perceived likelihood of losing in the decision, which in turn decreases risk-taking. It should be emphasized that these findings were obtained from the described scenarios of the original experiment which equipped the principal with a sanction measure as a mean to hold his agents accountable. Thus, when reflecting on study 4 which aimed at examining an agent's behavior when knowing that his principal is equipped with a reward measure, it seems reasonable to assume that no greater weight was assigned to the anticipated loss under such OK based PA relations. Therefore, the findings of the current study may explain why in study 4 the fear of loss was less apparent and thus opened the way for a more risk-taking behavior that didn't take into account the outcome knowledge available to the principal. In other words, the aggregated findings emphasize the importance of distinguishing between the two types of OK based PA relations. The foresighted outcome effect relates to the first type in which the principal is equipped with a negative sanction measure and is explained by the increased weight of the perceived likelihood of losing in the decision.

We note that subjective probabilities of losing in the lab may differ from subjective priors of bureaucrats in realistic settings, as the latter often possess vast stores of information on probable outcomes that likely shape their likelihood estimations. However, in order to mitigate this external validity concern, our setting explicitly provides full information regarding the objective probability of losing/winning. Despite this information, subjective probabilities were found to vary, and were predictive of agents' choices.

We also note that self-report ratings of perceived probability of losing could reflect general anxiousness and pessimism. Thus, future research should use different scales to measure this concept or to manipulate it to examine causality.

General Discussion

In December 2019, in the city of Wuhan, China, a novel coronavirus infectious disease (COVID-19) had begun to spread and quickly caused a nationwide outbreak.[14] Soon after the outbreak in China, global air transport carried the virus to all continents and according to the World Health Organization, by October 2020, it had been established in 235 countries all over the world.[15] 38,394,169 cases of COVID-19 have been confirmed, including 1,089,047 deaths. COVID-19 is a pandemic affecting many countries globally.

At this time, intensive scientific endeavors take place worldwide, aiming to develop a specific vaccine or treatment for COVID-19. Meanwhile, in their absence, policy makers all over the world engage in critical decision making which aims at slowing down transmission and reducing mortality associated with COVID-19. These decision-making procedures need to be carried out very rapidly on the one hand, but on the other, while coping with challenging circumstances of uncertainty, inadequate scientific knowledge of the virus (for example, limited understanding of the epidemiology of this disease) and other medical information.[16] These decision making processes are complex due to the constant requirement to consider and weigh different factors which many times contradict each other, including first and foremost public health, but also the preservation of the economy, and civil rights concerns.

Across the world, these decision-making procedures led to the implementation of different control measures, such as testing, isolation and care for all patients, tracing and quarantine of all contacts, public health and social measures at individual and community levels.[17] However, aside from these, more extreme measures have also been implemented,

[14] COVID-19 spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. It appears that the virus affects different people in different ways. While most infected people will develop mild to moderate respiratory illness and recover without hospitalization or special treatment, older people and those with underlying medical problems are more likely to develop serious illness.

[15] https://www.tandfonline.com/doi/full/10.1080/09669582.2020.1758708

[16] Such medical information includes, for example, questions regarding the characteristics of the virus: its' origin, ways of transmission and spread, its' survival on different types of surfaces, the climate's influence, the differentiation of populations under the question of who is more at risk for infection, the possibility of being re-infected, and so forth.

[17] World Health Organization, considerations in adjusting public health and social measures in the context of COVID-19, Interim Guidance, 16 April, 2020.

including for example: lockdowns, strict curfews (with the exception of enabling the purchase of food and medicine), and the use of surveillance and monitoring technology in order to extract information about the movements of those who have been diagnosed with the virus as well as the people who surrounded them.

Throughout this global emergency, the public discourse plays a vital role in which people can voice their concerns and form opinions about the decisions made as they influence almost every aspect of civilian life. In Israel, amongst the first countries to have implemented drastic measures which attempted to slow down transmission, one of the criticisms raised towards Prime Minister Netanyahu and the Ministry of Health, was that their risk-averse decision-making strategy was guided by the thought of a future scrutiny. Following are a few examples of quotes from the media, manifesting such speculations:

"The minister of health was right in one thing: publicizing the forecast of thousands of deaths, and then later - tens of thousands of deaths, was an extreme step. It wasn't coincidental, of course. It was Netanyahu's way (via Bar Siman-Tov), to defend himself from a future commission of inquiry, to clarify that he was the first to identify the risk and to caution the public from it…"

- (*Haaretz, May 19th, 2020)*

"From Litzman and other heads of the health systems' point of view, it is better to be more severe. Why? Because a commission of inquiry wouldn't be appointed following an aggressive and unnecessary conduct, wasting economic resources because of the Coronavirus. However, a commission of inquiry might be appointed if lesser measures would be implemented. "

- *(Globes, 11/3/20)*

"Every day, many decisions are being made, deeply influencing Israeli Society. Therefore, we assume, that on the day following the crisis, different governmental systems, the legal one amongst them, will be asked to scrutinize the state's conduct, in order to draw conclusions. In addition, it might be that different authorities will open legal proceedings concerning procedural decisions that were made for the benefit of managing the crisis.

Therefore, we ask to start preparing for the best legal defense of the state and the different ministerial offices..."

- *(An internal message that was sent by the ministry of justice to its legal advisers and was published in Haaretz, 30/3/20)*

It is too early to know, however, is it possible that the conservative and severe approach adopted during this crisis by Prime Minister Netanyahu, along with the heads of the ministry of health, were guided, amongst other considerations, by the fear of future scrutiny? At the moment this thought is only speculative, however throughout this dissertation I have shown that this phenomenon indeed exists: decision makers tend to become risk-averse when they expect their decisions to be judged in retrospect, based on the outcomes of their decisions. This phenomenon, which we termed the "foresighted outcome effect" may be witnessed not only in times of crisis but also in more routine decision-making processes as they take place in day to day life.

Main findings

The five studies described in this dissertation examined how the awareness that an agent's decision will be evaluated by his principal according to its outcome, affects risk-taking. These studies examined behaviors motivated by the possibility of actual monetary gain and loss (studies 1,3&4), and participants' evaluations based on descriptions of the scenarios played out in the preceding studies (study 5). Study 2 examined expert decision makers' evaluations based on descriptions of scenarios from their professional lives. Both studies 2 and 5 did not include monetary incentives.

The results of our studies reveal a consistent pattern, according to which outcome knowledge-based principal-agent relations decrease risk-taking. This effect was found among laypersons (in the laboratory) and experts (in the field), in settings of real investment games and in hypothetical scenarios. This effect also holds when forgone information is available, thus allowing us to reject regret avoidance as an alternative

explanation. However, no such finding was observed when principal-agent relations are founded on strictly positive rewards.

The differences in risk taking under the *no-OK* and *OK* conditions in four out of the five experiments which employed a sanction measure indicate the presence of what we term the *foresighted outcome effect*. It is the assumption that her decision, although made under uncertainty, would be judged by its outcome, that in all likelihood swayed the agent's ex-ante choice. The mechanism underlying this effect, as found in Study 5, is the greater weight assigned to the anticipated loss under outcome-knowledge based judgement. While it is psychologically plausible that the fear of losing out may keep people from taking risks in a wide range of situations, our results specifically show that the perceived probability of sustaining a loss becomes more strongly associated with the behavioral choice under OK-based principal-agent relations, when the agents' decision will be evaluated after its outcome has been revealed to the principal.

As discussed in the introductory section, principal agent relations aren't symmetrical and congruent in their goals, interests and informational possession. While this asymmetry usually leans towards the side of the agent, who enjoys an informational advantage, the judgment of her performance usually leans towards the side of the principal, as she enjoys the benefit of outcome knowledge. The possession of such outcome knowledge renders the agent, therefore, to be susceptible to outcome bias. When the agent knows that the principal's decision regarding a sanction will not be based on outcome knowledge, her choice is guided by her own preference and her evaluation of the principal's preferences. Yet when the agent knows that the principal will decide whether or not to sanction her after the outcome knowledge becomes available, she expects the principal's tendency to impose penalties to be guided more strongly by the occurrence of the adverse outcome, rather than by the merit of the choice taken – and as a result displays stronger risk aversion.

It is interesting to mention that the foresighted outcome effect was observed only when the principal was equipped with a negative sanction measure. Study 4, which was conducted in order to symmetrically test for the influence of a positive measure held by the principal on the risk-taking behavior of agents, didn't exemplify the effect. In other words,

outcome knowledge principal-agent relations increase risk aversion of agents only in the context of a negative measure. The fact that we didn't find an effect in a positive context allows for two distinct interpretations; either that principal-agent relations act differently under negative and positive contexts or that principal-agent relations act differently in the context of outcome knowledge. To the best of our knowledge, no literature differentiates between positive and negative principal-agent relations. However, from the literature on positive and negative incentives, we learn that punishments and rewards do not have parallel influences on behavior. That may explain why in contrast to the risk averse behavior we observed when the principal was equipped with a sanction measure, we didn't find a risk seeking behavior when the principal was equipped with a reward option. In this regard, an interesting question to ask in future research is how will an agent's risk behavior be shaped when knowing that his principal's preferences encourage risk taking.

The fact that we didn't find a risk averse behavior, as suggested by our alternative hypothesis, lies, as we mentioned earlier, in the underlying psychological mechanism of the foresighted outcome effect – as found in Study 5. Knowing that one's decision will be evaluated based on its outcome appears to increase the weight of the perceived likelihood of losing in the decision, which in turn decreases risk-taking. However, while a reward was used as a principal's measure of holding his agents accountable, it seems reasonable to assume that no greater weight was assigned by agents to the option of losing in the decision choice.

Implications

The findings gained from all of the studies presented here, carry important implications for many social and political settings and are of particular relevance to individuals who face the need to take decisions under uncertainty in their professional life, including politicians, medical doctors, managers, engineers, etc. Our results point to a decrease in risk taking, however, a question remains regarding this findings' influence upon the quality of the decisions made. Given that the safe and risky options in our studies had equal expected value in the decision process, we currently cannot determine whether the foresighted outcome effect entails positive or negative consequences for the quality of decisions.

However, it seems as if the answer to this question isn't so simple. As in many occasions of behavioral variance, the answer to such a question might be dependent upon the situational and dispositional correlates which may influence the quality of the decisions made under outcome-based judgments in principal-agent relations.

On the one hand, our results indicate that decision-making processes in such situations may be fraught with a fundamental problem. Not only is a retrospective evaluation of others' behavior open to outcome bias, but individuals who know that their decisions could be subject to such an evaluation are likely to behave defensively, following a pattern which mirrors the biased evaluation. Therefore, when it comes to corporate and institutional settings, it is possible that decision-makers, in their eagerness to avoid criticism, blame or sanctions, may all too readily sacrifice objectivity and professionalism. While this socio-political phenomenon is well documented (Hood, 2011), the current work reveals that its main catalyst in principal-agent relations may be foresighted outcome knowledge.

On the other hand, is it possible that the foresighted outcome effect may bring decision makers to engage in more optimal decision-making procedures? Perhaps the thought of being judged by a principal in retrospect, may bring agents to behave in a risk-averse manner due to more self-criticalness, thoroughness, and carefulness in their decision- making procedures (Lerner and Tetlock, 1999). Moreover, such an expectation may bring decision makers to invest more resources in the decision-making process and to put more efforts into justifying the decisions made.

A dominant field which may assist in exemplifying the implications of the foresighted outcome effect is that of defensive medicine. Defensive medicine is defined as a deviation from sound medical practice that is induced primarily by a threat of liability (Hershey, 1972; Klingman et al, 1996). Some scholars even state that the aim of defensive medicine is protecting the physicians themselves from liability rather than actually advancing care of patients (Pellino and Pellino, 2015). Before illustrating the implications of the foresighted outcome effect on the basis of this example, I will first provide a short introduction of this phenomenon, outlining its main characteristics and manifestations.

Studdert et al (2005) wished to study the prevalence and characteristics of defensive medicine among physicians practicing in high liability specialties in the United States. Six specialty areas of met this criterion: emergency medicine, general surgery, orthopedic surgery, neurosurgery, obstetrics/gynecology and radiology.

824 physicians from these specialties answered a survey in which they were asked to rate on a four-point scale how frequently concerns about malpractice liability brought them to engage in two distinct types of defensive practices: assurance behavior and avoidance behavior. Assurance behavior included the following four forms: (1) ordering more tests than medically indicated; (2) prescribing more medication than medically indicated; (3) referring to specialists in unnecessary circumstances; and (4) suggesting invasive procedures against professional judgment. Forms of avoidance behavior included: (1) avoiding conducting certain procedures or interventions; and (2) avoiding caring for high risk patients.

The results of this survey revealed strong evidence for the existence of defensive behavior. 93% of the respondents reported that they sometimes or frequently engage in one of the six forms of defensive medicine outlined in the survey. “Assurance behavior” such as ordering more tests, performing diagnostic procedures and referring patients for consultation was very common. In addition, avoidance behavior was also found to be prevalent. Many respondents (42%) reported that they had restricted the scope of their clinical practice because of liability concern. These restrictions included, for example, eliminating procedures prone to complications and avoiding patients who had complex medical problems or were perceived as litigious.

In this regard, defensive medicine may be seen as a symptom of the overall phenomenon we point to in the foresighted outcome effect. Put in our terminology, when physicians expect their clinical decision making to be judged in retrospect (litigation phase), they become more risk averse and use a conservative approach in their ex-ante decision-making process (the diagnostic and treatment decision phase). On the one hand, this risk-averse approach, might sway a physician’s judgment from leaning on objective measures and sound medical indications aimed towards the benefit of the patient, to acting defensively mainly for the benefit of the physician, due to concerns and perceptions about

medical liability. In this regard, the foresighted outcome effect we found in our studies may serve as a mediator to understand better the phenomenon of defensive medicine: A physicians' fear of litigation, gives rise to the option of an adverse outcome in risky decisions, and thus brings the physician to engage in conservative, risk-averse, decision making strategies.

This type of defensive behavior may lead, therefore, to sub-optimal decision making, a situation which entails costs of different kinds. For example, "assurance behavior" (supplying additional medical services of marginal or no medical value with the aim of reducing adverse outcomes) adds to health care costs and increases unnecessary invasive procedures which create significant risks of patient harm. Furthermore, false-positive results associated with low-yield diagnostic testing may also have effects on the quality of treatment, particularly when ambiguous findings produce emotional distress and necessitate additional invasive or hazardous procedures; Defensive medicine also influences interpersonal quality of care and the patient-physician relationship as some physicians may react with suspicion, confrontation and abandonment (Studdert et al, 2005). Defensive medicine also holds implications for health access. The survey conducted by Studdert et al (2005) revealed that many physicians engage in "avoidance behavior" (reductions in scope of practice). This behavior may have a substantial effect on access, especially in places where alternative sources of care are limited, such as rural areas.

On the other hand, defensive medicine, under certain circumstances, may also lead to more optimal decision-making. The same assurance behaviors (otherwise termed – "positive defensive medicine") detailed above in the negative context, which include for example additional diagnostical testing and referral of difficult cases to more specialized physicians or better equipped hospitals, were at certain times not harmful to patients, and even beneficial. In this sense, these acts may be quality enhancing (Tancredi and Barondess, 1978; Studdert, 2005). Also, as for physician-patient relationship, defensive medicine may lead to a situation in which physicians spend additional time with patients and provide more complete information about treatment risk.

Therefore, as mentioned above, while it seems as if the foresighted outcome effect leads to mainly negative consequences, a question remains whether under certain

circumstances this effect may increase the quality of the decisions made. We suggest further research to address this important question.

Possible ways of mitigating the foresighted outcome effect within practical frameworks

Despite the question left open regarding the influence of the foresighted outcome effect on the quality of the decisions made, understanding this effect and decreased risk taking associated with it, may in itself be valuable enough in order to be translated into a practical framework within organizations and institutions. In this regard, can organizations and institutions who wish to encourage more risk taking within their workers, use the foresighted outcome effect in order to elicit intervention measures aimed at pursuing their goals? In the next section I will attempt to illustrate how the understanding and acknowledgment of the existence of the foresighted effect may assist in this regard.

As I have shown throughout this dissertation, the foresighted outcome effect causes agents to become risk averse in their decision-making behavior when expecting to be judged by their principals retrospectively, based on the outcomes of these decisions. As study 5 has shown, the underlying mechanism of this effect, is the greater weight that agents place on the possible occurrence of an adverse outcome. However, since judging in retrospect is probably inevitable in many working environments, these approaches will attempt to mitigate the effect from a different angle – from differently structuring principal-agent relations and the organizational culture within which they take place. It is important to emphasize that these approaches haven't been examined empirically but rather serve as initial thoughts for possible future research.

Changing the perception of mistakes

One possible way of mitigating the foresighted outcome effect within principal-agent relations as they take place within organizations, may begin in changing the perception of adverse outcomes (or mistakes) in the working environment. Instead of fearing the possibility of a mistake, to perceiving such a mistake as inevitable and as part of a learning process. Research in social psychology has demonstrated how specific interventions could help individuals cope with such setbacks. These interventions lean on an important categorization of mindsets as these react differently to errors and failures.

Mindset theory proposes that individuals hold different beliefs about the malleability of human attributes, such as intelligence, talent and abilities (Dweck, 1999; Dweck and Leggett, 1988). Individuals who believe their talents aren't static and can be developed through hard work, good strategies and input from others are perceived to have a *growth mindset*; while individuals who believe that their intellectual abilities are immutable are perceived to have a *fixed mindset*. These beliefs have been found to be allied with different goals. Individuals with fixed mindsets usually pursue performance goals which aim at gaining favorable judgments of their competence, whereas individuals with a growth mindset usually pursue learning goals which aim at increasing their competence.

Research has shown how such assumptions of personal abilities impact how individuals view adverse outcomes or mistakes (Dweck, Chiu and Hong, 1995). Those with a fixed mindset perceive a failure as indicating a lack of ability and thus when faced with criticism or setback, experience self-doubt and negative emotions since their view of themselves as capable and talented is threatened. On the contrary, those with a growth mindset see a failure as an opportunity to develop and improve, in order to gain more skills in places they have endured difficulty (Dweck, Chiu and Hong, 1995; Klein et al, 2016).

Equipped with the understanding of how different mindsets influence the perception and response type to adverse outcomes, an interesting approach to mitigating the foresighted outcome effect within organizations might be through interventions which aim at encouraging a growth mindset – in the workers (agents), in their respective managers (principals), and in the organizational culture within the workplace.

Research has shown that teaching a growth mindset can be achieved through different interventions, some of them very simple, such as orientations or workshops. These interventions may lean on scenarios of others learning from setbacks (Klein et al, 2016) or on how feedback can be provided after errors are made. In this sense, learning is likely to be greater if learning exercises take place in environments which perceive errors as common and inevitable. From the point of view of the agent these interventions aim at assisting agents to cope with failures and setback in order that these occasions become less threatening and more of a learning and growing opportunity; from the point of view of the principal these interventions aim at educating him to look into the *process* under which such decisions were made and not to place all the focus on the *outcome* in the judgment phase. Such a retrospective feedback should look into the efforts and behaviors that led to positive outcomes on the one hand and praise learning procedures from mistakes on the other; and last – from the point of view of the organizational culture as a whole – this should foster a growth mindset through incentivizing risk taking and personal development, while at the same time adopting a lenient approach towards errors and setbacks. Such a combination between growth mindset workers, growth mindset principals and a growth mindset culture within an organization may shift the weight assigned to adverse outcomes and to instill a more resilient response to error.

In sum, adopting a growth mindset within an organization may increase workers' motivation to approach more challenges, to take more risk, to act less defensively and to cope better with constructive criticism. Part of the reason being the shift made in the perception of errors and failures: from something to avoid to the understanding that errors are inevitable and part of any learning process.

Debriefing as a learning tool

The previous approach, which made use of the growth mindset concept, has offered to change the perception of adverse outcomes from something to fear to being part of a learning process. Simple interventions have been exemplified in order to achieve such an aim, including the provision of feedback opportunities following times when errors are made. This current approach wishes to broaden the latter point and to offer a reflexive organizational learning model based on a debriefing technology which will take place not

only following adverse outcomes, but also following positive outcomes. In this manner, we speculate, the focus placed on outcomes may be reduced in favor of a more effective learning process in the organizational context. In more detail, a post-action reflective analysis ('debriefing') stage which is automatically assimilated as part of a learning process, regardless of the outcome, may serve two goals: compensate for the binary reflection of failure or success in favor of a more complex investigation of the decision-making process which underlay a certain event - one which looks at the event as a whole and identifies the positive and negative aspects within it, and reduces or even eliminates the fear of future scrutiny as such a retrospective investigation takes place anyhow for the purpose of learning.

An example of an organization which implements the debriefing protocol on a routine day to day basis is the Israeli Air Force (IAF). We will look here into the debriefing stage, which takes place immediately after combat or training missions have been completed. These debriefing sessions are led by the mission commander along with the participation of all team members who have been involved. During this session, the team examines the extent to which the objectives of the mission were achieved (as they were discussed before takeoff), events during the flight that promoted or complicated the achievement of these objectives, the reasons behind their emergence and question how these might be avoided next time (Vashdi et al, 2007). In short, each debriefing follows a predetermined sequence in which three fixed questions are asked: (1) what happened? (2) why did it happen? And (3) what can we learn from this so as to do it better next time?

The central aim of the debriefing routine is to maintain constant improvement and learning and is based upon a theory of organizational learning formulated by Argyris and Schon (1978). These scholars defined learning as detection and correction of errors and made a distinction between two main types of learning: single loop learning which refers to the process of detecting error without questioning underlying policies; and double loop learning which involves questioning and changing governing conditions in order to achieve desired results (Argyris and Schon, 1978). It has been found that in individuals who work in organizations which implement a double loop learning culture, the degree of

defensiveness tends to decrease and free choice tends to increase (Argyris, 1976), in his words:

"The end result should be increased effectiveness in decision making or policy making, in the monitoring of the decisions and policies and in the probabilities that errors and failures would be communicated openly and that actors would learn from the feedback."

Aside of the Israeli Air Force, a study by Vashdi et al (2007) has attempted to examine the applicability of the briefing-debriefing technology used in the Israeli Air Force, in the surgical departments of a major, civilian tertiary center in Israel for the purpose of preventing adverse outcomes in these departments. Using qualitative methodologies such as observations of briefings, debriefings and surgeries; pre- and post-surgery as well as interviews with surgical team members, the researchers attempted to answer the question how such a structured reflexivity technology might enhance surgical teams' quality related outcomes. The results obtained from this research demonstrated evidence for the existence of two learning processes in the surgical teams which adopted the briefing-debriefing protocol: single loop learning and double loop learning. The briefing-debriefing protocol demonstrated that the identification of key issues (in short, the setting of objectives, following task performance and reviewing the gap between the two) had a direct impact on quality related team outcome (Vashdi et al, 2007).

Throughout our research we have demonstrated how agents "mirror" their respective principals' anticipated outcome bias and adjust their ex-ante behavior accordingly, by acting in a risk-averse manner. However, could it be that the debriefing methodology described above, implemented as part of the double-loop learning culture, will cause agents in such organizations to be less fearful and concerned with the judgment of possible adverse outcomes but rather more engaged in the decision-making process. To the best of our knowledge, no literature has investigated the influence of a post action reflection analysis (which takes place regardless of the outcome) on the risk-taking behavior of agents. However, given the evidence that supports the debriefing technology as a learning tool, we speculate on a possible connection between routine debriefings and increased risk-taking in the decision process. The logic behind this speculation lies in the

perception of the briefing-debriefing technology not as a blame pointing tool but as a learning tool that for this purpose, judges an event and its underlying decision-making processes, in a complex manner - much beyond the simple categorization of success and failure. We suggest further research to test these hypotheses empirically.

Reason-based choice

A third possible approach to differently structuring principal-agent relations which may mitigate the foresighted outcome effect, centers around a simple task - the need to provide explanations for the decision made as part of the decision-making process. We speculate that if decision makers will be required to justify their decisions with relevant explanations, their willingness to take risks will increase. We base this hypothesis both from the side of the principal and from the side of the agent. From the side of the principal who judges in retrospect, an examination of the decision made alongside the explanations which supported it, may "revive" within the principal, the circumstances under which such a decision was made, and thus decrease the biased effect of outcome-based judgment. From the side of the agent, the need to provide explanations may lead to a more objective decision-making practice, that perhaps doesn't fear risk taking if supported by appropriate explanations. Furthermore, these explanations may serve in order to form preferences justifiable both to the self and to others. We base this hypothesis on recent studies which investigated the effect of providing explanations on different aspects of decision-making.

The literature on this topic bears a few names, such as reason-based choice or implicit reasoning and relates to the way in which reasons that enter into people's thinking about a choice influence their decisions (Kivetz, 1999). In the field of consumption decision-making for example, reason-based choice conception seeks to explain consumer preferences based on reasons that that are constructed to justify decisions (Shafir, Simonson and Tversky, 1993). In fact, it has been found that reasons may be used as both input for choice and as anticipated justifications - for the decision makers themselves and for others. In addition, reasons may occasionally operate as insurance for the decision makers from unknown preferences and help in living with the consequences following the choice (Kivetz, 1999).

It has been shown that when people think about reasons for their decisions, the choices they eventually make can be different from when they make choices without thinking about reasons (e.g Shafir, Simonson and Tversky, 1993). Continuing the example of the consumption domain, an interesting paper authored by Simonson and Nowlis (2000) investigated the interaction between explaining decisions and individual differences – need for uniqueness, on buyer decision-making. The results of this research indicate that asking consumers to provide reasons for their decisions, shifts their focus from the choice of options to the choice of reasons (Simonson and Nowlis, 2000). It was also demonstrated that the requirement to provide reasons had a systematic effect on the choices consumers made, such as a decreased likelihood of buying products on sale, selecting compromise options and demonstrating loss aversion. Interestingly and most relevant to the approach discussed in this section, it was also found that consumers who needed to explain their decisions were more likely to choose a gamble (over a sure gain) that involves the possibility of a loss (Simonson and Nowlis, 2000).

Concluding this approach and based upon the reasons detailed above, we find it worthwhile to examine empirically the effect of providing explanations for the decision made on the willingness to take more risks in principal-agent relations. This is due both to the potential of "reviving" the underlying circumstances of the decision made in the eyes of the principal, thus perhaps mitigating outcome-based judgment, and to an agent's option of using such reasoning as input for the choice made and as possible justification in cases of future evaluation. We suggest future research to explore this hypothesis.

Additional Directions for Future Research

After going into depth regarding possible approaches that may mitigate the foresighted outcome effect within principal agent relations as they take place within organizations, we would like to offer additional directions for future research, on the basis of this research. These won't be elaborated in detail but rather mentioned more briefly.

The five studies articulated throughout this dissertation examined how the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior. We

concentrated on risk taking behavior and defined the dependent variable in all studies as such. However, we contemplate that the situation in which an agent is needed to make decisions while expecting to be judged by his principal in retrospect, may influence other dependent variables, aside of risk taking. These may include creativity, complexity of thought and the willingness to approach challenges.

Other directions for future research stem from the notion that the foresighted outcome effect can't be thought about uniformly. Continuing this line of thought, it may be interesting to ask which factors may influence the extent of the foresighted outcome effect. Initial thoughts about this matter point to the following possible factors:

(1) The timing when an outcome of a decision will become apparent – in the immediate or distant future? Could it be that the faster outcomes are revealed, the more considerable is the concern regarding outcome knowledge-based evaluations? A very relevant and up to date example may be taken from the local ministerial management of the covid-19 pandemic. While the ministry of health is trying to promote more severe public measures, the ministry of finance is willing to take more risks for the sake of enabling economic recovery. Could the difference in approach be explained by the fact that the data regarding confirmed cases and deaths becomes apparent rather rapidly while it takes more time for the economic impact to become clear?

(2) The identities of the principal and the agent: Most real-world decisions are made in dynamic environments under various PA regimes and we therefore have reason to believe that the foresighted outcome effect will manifest itself differently. For example, in the context of shareholders and management or in the context of voters and politicians. In addition, when several agents are involved and it is difficult to attribute a specific decision to a specific agent, how does this abstractness influence the effect.

(3) The size of the risk at stake and the question of how clear or vague the outcome is as well as how directly can it be related to a specific decision and identity.

More directions for future research may focus on examining the conditions under which the foresighted outcome effect is more likely to occur. What are the characteristics

of these contexts and how does the effect size differ between different settings and decision types? Identifying these situations is important in order to construct ways to mitigate the effect and to tailor fit effective intervention measures.

Research Limitations

Before concluding the discussion section of this dissertation, I will point to a number of limitations this research has been subject to. Most of these limitations point to methodological issues.

This research aimed at coping with a lacuna existing in the literature regarding the foresighted outcome effect and its influence upon decision making. This lacuna exists, to our understanding, due to the empirical problem that stems from the fact that it is nearly impossible to find concrete principal-agent relations *without* expected outcome knowledge, which would allow for direct comparison. For this reason, we followed in the studies we have conducted the advice of Falk and Heckman (2009) and employed five laboratory experiments to test our hypotheses.

On the one hand, the fact that these experiments were designed simply, ensured us that the participants fully understood the instructions given and followed them thoroughly. Also, the fact that in three out of the five experiments participants made their decisions regarding money they could earn to their private pocket assisted to achieve their genuine conduct. On the other hand, there is room to conduct these experiments on a larger scale, possibly with larger sums of money in order to enhance our understanding and provide a more sensitive perspective on the foresighted outcome effect. Although the sums earned in the experiments were considerable, especially with regard to the customary payments in such laboratory settings, perhaps such an experiment played with larger sums of money might bring the decision makers to consider more earnestly the situation at stake since the risk level would have also gone up accordingly.

The ‘lab in the field’ experiment which was conducted in study 2 provided an initial assurance for the existence of the foresighted outcome effect outside of the lab. Although this experiment was carried out on real decision makers in their field (basketball coaches) and on real scenarios taken from the professional lives on the court, the basis of this

experiment was still hypothetical. Since this experiment demonstrated consecutive results to the ones gained from the lab, we have confidence in their validity. However, there is room to conduct this experiment on a larger sample of basketball coaches or other types of professional decision makers and perhaps to make an additional methodological leap forward and to conduct actual field experiments. Examining the foresighted outcome effect in a field experiment will assure that decision makers aren't aware that their decisions are being studied, therefore turning the results to be even more applicable to our context.

Study 5 which aimed at identifying the underlying mechanism of the foresighted outcome effect, provided participants full information regarding the objective probability of losing or winning. This was carried out for the purpose of mitigating external validity concern. However, the subjective probabilities of losing in the lab may differ from subjective priors of bureaucrats in realistic settings, as the latter often possess vast stores of information on probable outcomes that likely shapes their likelihood estimations. For this purpose and in similarity to the previous methodological point, we encourage to examine this mechanism on samples of real decision makers, without providing probable outcomes at the outset. Indeed, this wasn't done through this dissertation; however, as we see it, it is possible now, since the foundation of the underlying mechanism has already been laid.

Technically, the experiments were carried out in isolated rooms, with a laptop and the experimenter alone. While these conditions assured us that minimal background noise influences the decision making of the participants, a question remains regarding a potential influence for the presence of the experimenter. This situation has been named in the literature as the "experimenter demand effect" (Zizzo, 2010). It could be that in the absence of the experimenter, that participants would have decided differently. In addition, four out of the five experiments were conducted on university campuses, a setting in which laboratory experiments are very common and spoken of. We asked participants not to disclose the contents of the experiment to others, however we have no way of knowing that all participants came in a clean state, with no prior knowledge.

Conclusion

Despite the centrality of agency theory to the study of many academic disciplines, including economics, psychology and public administration, no consideration has been given so far to the fact that such relationships typically involve ex-post evaluations that rely on outcome knowledge which are therefore susceptible to outcome bias. Research on outcome bias has hitherto solely focused on the biased evaluation *per se*. In a novel approach which has integrated these two fields of research, the current dissertation has directed attention to the ex-ante effect of anticipated outcome knowledge on the behavior of agents.

This dissertation provided the first experimental analyses of the effects of outcome knowledge in principal-agent relations on the decision maker's ex ante behavior. This empirical work has been carried in five studies on a total of 413 participants for the purpose of answering the following research questions: (1) does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so, in what way? ;(2) do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known? (3) does the risk-avoidance that results from expected availability of outcome knowledge in principal-agent relations stems from an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative?; (4) do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives?; and (5) what is the psychological mechanism underlying the behavior of agents who expect to be judged based on the availability of outcome knowledge?

In the first chapter, I addressed the following question: does the expected availability of outcome knowledge in principal-agent relations affect ex-ante behavior, and if so – in what way? To answer this question, we employed a laboratory experiment which was based on an investment game in which subjects were required to make financial decisions involving a choice between a sure and a risky option, while manipulating two types of principal-agent relations: with and without outcome knowledge. The findings of

this experiment revealed that availability of outcome knowledge in principal-agent relations increases ex-ante risk aversion of accountable agents. We explained this risk-averse behavior by the participants' belief that outcome knowledge might give rise to a judgment different to one likely to be passed in the absence of such information, as under the *no-OK* condition.

In the second chapter, I turned my attention to the study of the first research question on a different population – that of experts, and asked the following: do experts who take part in principal-agent relations adjust their ex-ante behavior when they expect to be judged after the consequences of their decisions are known? To answer this question, we employed a 'lab in the field' experiment which was conducted on basketball coaches from the "Hapoel Jerusalem Youth Basketball Club", using scenarios from their every-day professional lives. The results of this experiment revealed that experts, as laypersons, demonstrate a risk averse behavior in their professional decisions when expecting to be judged by the outcomes of their choices.

The third chapter of this dissertation wished to take a pause from the 'outcome knowledge-based principal-agent relation' framing, and to test an alternative explanation to the risk averse behavior we observed in accountable agents until this point. This alternative explanation was derived from the literature on regret and anticipated regret and asked the following: does the risk-avoidance behavior that results from expected availability of outcome knowledge in principal-agent relations stems from an agent's motivation to avoid his principal's ability to compare the result of the decision taken with its forgone alternative? To answer this question, we replicated the original experiment, only aside from manipulating outcome knowledge alone, we also manipulated the availability of information regarding the forgone outcome. The results of this experiment added further support to our findings established so far and enabled us to reject the possibility that regret avoidance accounts for them. The results revealed that outcome knowledge-based principal-agent relations increase risk aversion, even when forgone outcome information is available.

The three experiments we conducted until this point in time, equipped the principal with a sanction measure as a mean to hold his agent accountable. In the fourth chapter, we

wished to examine a symmetrical view and examined the behavior of agents when their principals were equipped with a positive reward measure. We asked, do principal-agent relations which are based on outcome knowledge behave differently under positive and negative incentives? The experiment we employed in order to answer this question was based on the original one, only altering the negative sanction measure held by the principal to a positive one. However, the results of this experiment didn't conform to any hypothesized behavior, participants didn't demonstrate risk averse or risk seeking behavior.

In chapter 5, the closing chapter of this dissertation, we aimed at identifying the psychological mechanism underlying the risk-averse behavior we observed in accountable agents and simply asked: what is the psychological mechanism underlying the behavior of agents who expect to be judged based on the availability of outcome knowledge? Contrary to the experimental methodology we employed in previous studies, to answer this question we used questionnaires which included the hypothetical scenario of the original investment game, followed by questions. The results of this study demonstrated that knowing that one's decision will be evaluated based on its outcome appears to increase the weight of the perceived likelihood of losing in the decision, which in turn decreases risk-taking.

The fact that these questions haven't been discussed in the literature is surprising, given their bearing on several social-psychological phenomena, including the effects of principal-agent relationships on behavior (Eisehnhardt,1998) and the effects of outcome knowledge on judgment (Baron and Hershey, 1988; Clarkson, Emby and Watt, 2002). In probing this issue within principal-agent relations, the current research addressed strategic prospective behavior that resulted from anticipating outcome knowledge. We termed this hypothetical social aspect of principal-agent relations "foresighted outcome effect" and examined its role in decision makers' willingness to take risks. In this sense, I believe that these five chapters detailed above contributed both theoretically and empirically to the study of agency theory and outcome bias.

When considering the sort of audiences who could make use and advance the findings of this dissertation, we point to the following. First, scholars from diverse academic disciplines such as economics, business, organizational behavior, political

science, public policy and sociology, as in each of these disciplines there is an extensive research devoted to agency theory. Moreover, the theoretical integration carried out in this dissertation between agency theory and outcome bias as well as the empirical contribution derived from the foresighted outcome effect may assist in structuring differently principal-agent relations which are based on cooperative behavior but hold different goals and attitudes towards risk. This understanding may establish new avenues for research in the different disciplines and domains detailed above.

A second audience which may be contributed from the findings of this dissertation are social psychologists who study different aspects of outcome bias. One of the conclusions that Baron and Hershey (1988) pointed to in order to encourage retrospect evaluators to ignore the outcome when judging decisions is to reanalyze the decision from the decision makers' point of view. The foresighted outcome effect which takes place when agents anticipate being judged in retrospect, after the outcomes of their decisions are known, may assist in highlighting a different aspect of the effect of outcome bias. It may assist in illustrating the effect of the bias – not only from the evaluator's point of view as he judges a decision in retrospect, but also from the decision makers' point of view as he tends to mirror his respective evaluator anticipated biases and shape his behavior accordingly. Social psychologists may wish to continue this new perspective on outcome bias in order to deepen the understanding of the factors/conditions under which such behaviors or actions occur.

A last audience which I would like to mention as potential benefiters from the findings of this dissertation are practitioners in different domains who need to take decisions under uncertainty throughout their professional lives: including for example elected officials and politicians, medical doctors, managers and engineers. Raising awareness of the foresighted outcome effect we have investigated in this dissertation, may bring such practitioners to invest more effort in the decision process, as opposed to the decision outcome. As study 5 has demonstrated - knowing that one's decision will be evaluated based on its outcome appears to increase the weight of the perceived likelihood of losing in the decision, which in turn decreases risk-taking. In order to mitigate the excessive weight placed on the outcome, practitioners may wish to concentrate on the

decision-making procedure as opposed to the decision-making outcome, and to compare it with a normative standard. This may include defining the problem well, gathering and making good use of all the information possessed, considering alternatives thoroughly as well as assigning proper weights to each consideration and so forth. Each and every one of these components has a significant influence on the quality level of the decision-making procedure.

Bibliography

Adelberg, S., and Batson, C.D. (1978). Accountability and Helping: When Needs Exceed Resources, *Journal of Personality and Social Psychology*, Vol. 36, pp. 343-350.

Alm, J., Bloomquist, K., and McKee, M. (2015). On the external validity of laboratory tax compliance experiments, *Economic Inquiry*, Vol. 53 (2), pp. 1170-1186.

Andersen J, C., Lowe, D.J., and Reckers, P.M.J. (1993). Evaluation of Auditor Decisions: Hindsight Bias Effects and the Expectation Gap. *Journal of Economic Psychology*, Vol. 14 (4), pp. 711-737.

Agrawal, N. and Maheswaran, D. (2005) Motivated Reasoning in Outcome-Bias Effects, *Journal of Consumer Research*, Vol. 31 (4), pp. 798–805.

Aiken, L.S., and West, S.G. (1991). Multiple regression: Testing and interpreting interactions. London, Sage Publications.

Anderson, C.M., Freeman, K.A., and Scotti, J.R. (1999). Evaluation of the generalizability (reliability and validity) of analog functional assessment methodology, *Behavior Therapy*, Vol. 30 (1), pp. 31-50.

Anderson, J.C., Jennings, M, M., Lowe, D.J., and Reckers, P.M.J. (1997). The Mitigation of Hindsight Bias in Judges' Evaluation of Auditor Decisions, *Auditing: Journal of Practice and Theory*, Vol. 16, pp. 20-39.

Anderson, P. A. (1981). Justifications and precedents as constraints in foreign policy decision-making. *American Journal of Political Science*, Vol. 25, pp. 738-761.

Anderson, C.A and Bushman, B.J (1997). External Validity of "Trivial" Experiments: The Case of Laboratory Aggression, *Review of General Psychology*, Vol. 1(1), pp. 19-41.

Anderson, C. A., Lindsay, J. J., and Bushman, B. J. (1999). Research in the psychological laboratory: Truth or triviality? *Current Directions in Psychological Science*, Vol. 8(1), pp. 3–9.

Argyris, C. (1976). Theories of action that inhibit individual learning. *American Psychologist*, Vol. 31 (9), pp. 638-654.

Argyris, C., and Schon, D.A. (1978). Organizational learning: a theory of action perspective. Addison-Wesley, Reading, MA.

Arkes, H. R., Wortmann, R. L., Saville, P. D., & Harkness, A. R. (1981). Hindsight bias among physicians weighing the likelihood of diagnoses. *Journal of Applied Psychology*, 66(2), 252–254

Arkes, H., R., Faust, D., Guilmette, T.J., and Hart, K. (1988). Eliminating the Hindsight Bias. *Journal of Applied Psychology*, Vol.73 (2), pp. 305–307.

Arnold, R.D. (1990). The logic of congressional action, New Haven: Yale University Press

Arrow, K. J. (1985). The economics of agency. In J. Pratt, & R. Zeckhauser (Eds.), *Principals and agents: the structure of business (*pp.37-51). Cambridge, MA: Harvard University Press.

Baron, J., and Hershey, J.C. (1988). Outcome Bias in Decision Evaluation. *Journal of Personality and Social Psychology*, Vol.54 (4), pp. 569–79.

Bardsley, N. (2005). Experimental economics and the artificiality of alteration. *Journal of Economic Methodology*, Vol. 12 (2), pp. 239-251,

Bazerman, M., and Gino, F. (2012). Behavioral Ethics: Towards a Deeper Understanding of Moral Judgment and Dishonesty. *Annual Review of Law and Social Science,* Vol.8, pp. 85-104.

Beisswanger, A. H., Stone, E. R., Hupp, J. M., and Allgaier, L. (2003). Risk taking in relationships: Differences in deciding for oneself versus for a friend. *Basic and Applied Social Psychology*, Vol. 25(2), pp. 121–135.

Bendel, N. "Legal advisors were instructed: protocol the decision-making procedures towards a wave of lawsuits", *Haaretz,* 30 March,2020. [In Hebrew]

Benz, M., and Meier, S. (2008). Do people behave in experiments as in the field? – Evidence from donations. *Experimental Economics*, Vol. 11, pp. 268-281.

Bernstein, D.M, Atance, C., Loftus, G.R and Meltzoff, A. (2004). We saw it all along: Visual Hindsight bias in children and adults. *Psychological Science*, Vol. 15, pp. 264-267.

Beith-Maron, R., and Zakai, D. "Commissions of inquiry from the psychological perspective – the potential of learning from experience", Vol. 36, booklet 3. [In Hebrew]

Besley, T., and Case, A. (1995). Does electoral accountability affect economic policy choices? Evidence from gubernatorial term limits. *Quarterly Journal of Economics*, Bernstein, Vol. 110, pp. 769–798.

Biais, B., and Weber, M. (2009). Hindsight bias, risk perception, and investment performance. *Management Science,* Vol. *55*(6), pp. 1018–1029.

Birch, S.A.J., and Bernstein, D.M. (2007). What kids can tell us about hindsight Bias: A fundamental constraint on perspective – taking? *Social Cognition*, Vol. 25, pp. 98-113.

Blank, H., Jochen, M., and Rüdiger F. P. (2007). Hindsight Bias: On Being Wise after the Event. *Social Cognition*, Vol. 25(1), pp. 1-9.

Boston, J., Martin, J., Pallot, J., and Walsh, P. (1996). *Public management: the New Zealand model*. Auckland: Oxford University Press.

Brewer, M.B., and Crano, W.D. (2000). *Research Design and Issues of Validity*. In Reis, H.T., and Judd, C.M (Eds), Handbook of research methods in social and personality psychology, Cambridge University Press.

Brockner, J. (1992). The escalation of commitment to a failing course of action: toward theoretical progress. *Academy of Management Review*, Vol. 17 (1), pp. 39-61.

Broude, T., and Levy, I. (2020). Outcome bias and expertise in investigations under international humanitarian law. *The European Journal of International Law*, Vol. 30 (4), pp. 133-1318.

Brown C, E., and Solomon, I. (1987). Effects of outcome information on evaluations of managerial decisions, *The Accounting Review*, Vol. 62 (3), pp. 564-567.

Brownback, A., and Kuhn, M. (2019). Understanding outcome bias. *Games and Economic Behavior*, Vol. 117, pp. 342-360.

Bukszar, E., and Conolly, T. (1988). Hindsight bias and strategic choice: Some problems in learning from experience. *Academy of Management Journal*, Vol. 31(3), pp. 628–641.

Caplan, R.A., Posner, K.L., and Cheney, F,W. (1991). Effect of outcome on physician judgments of appropriateness of care. *JAMA*, Vol. 265(15), pp.1957-1960.

Carli L, L. (1999). Cognitive reconstruction, hindsight, and reactions to victims and perpetrators. *Personality and Social Psychology Bulletin*, Vol. 25 (8), pp. 966-979.

Carpenter, J., Liati, A., and Vickrey, B. (2005). They come to play: supply effects in an economic experiment, (Mimeo). Department of Economics, Middlebury College.

Charness, G., Garcia, T., Offerman, T., and Villeval, M.C. (2020). Do measures of risk attitude in the laboratory predict behavior under risk in and outside of the laboratory? *Journal of Risk and Uncertainty*, Vol. 60 (2), pp. 99-123.

Christensen-Szalanski, J. J., and, Fobian-Willham, C. (1991). The Hindsight Bias: A Meta-Analysis. *Organizational Behavior and Human Decision Processes*, Vol. 48 (1), pp. 147–168.

Clarkson, P. M., Emby, C., and Watt, V.W.S. (2002). Debiasing the outcome effect: The role of instructions in an audit litigation setting. *Auditing: A Journal of Practice & Theory*, Vol. 21 (2), pp. 7–20.

Connolly, T., and Butler, D. (2006). Regret in economic and psychological theories of choice. *Journal of Behavioral Decision Making*, Vol. 19 (2), pp. 139-154.

Connolly, T., and Zeelenberg, M. (2002). Regret in decision making, *Current Directions in Psychological Science*, Vol. 11 (6), pp. 212-216.

Crandall, B., and Getchell-Reiter, K. (1993). Critical decision method: A technique for eliciting concrete assessment indicators from the "intuition" of NICU nurses. *Advances in Nursing Science*, Vol. 16, pp. 42–51.

Cumming, G. (2014). The New Statistics Why and How. *Psychological Science*, Vol. 25(1), pp. 7–29.

Dawson, J.F., and Richter, A.W. (2006), "Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test", *Journal of Applied Psychology*, Vol. 91(4), pp. 917-926.

Dweck, C.S. (1999). Mindset: The new psychology of success. Random House USA: New York.

Dweck, C.S, and Legget, E.L. (1988). A social cognitive approach to motivation and personality, *Psychological Review.* Vol. 95 (2), pp.256-273.

Dweck, C.S., Chiu, C.Y., and Hong, Y.Y. (1995). Implicit theories and their role in judgments and reactions: a world from two perspectives. *Psychological Inquiry*, Vol. 6 (4), pp. 267-285.

Eisenhardt, K.M. (1989). Agency- and institutional-theory explanations: the case of retail sales compensation. *Academy of Management Journal*, Vol. 31(3), pp. 488–511.

Falk, A., and Heckman, J. (2009). Lab Experiments are a Major Source of Knowledge in the Social Sciences. *Science,* Vol. 326, pp. 535-538.

Fischhoff B. (1975). Hindsight ≠ foresight: the effect of outcome knowledge on judgment under uncertainty. *Journal of Experimental Psychology: Human Perception and Performance*, Vol.1, pp. 288–299.

Fischhoff, B., and Beyth, R. (1975). I Knew It Would Happen: Remembered Probabilities of Once-Future Things. *Organizational Behavior and Human Performance,* Vol. 13, pp. 1–16.

Frederick, S. (2005). Cognitive Reflection and Decision Making, *Journal of Economic Perspectives,* Vol. 19 (4), pp. 25-42.

Galizzi and Navarro-Martinez. (2019). On the external validity of social preference games: a systematic lab-field study. *Management Science*, Vol. 65 (3).

George, J.M. (1995). Asymmetrical effects of rewards and punishments: the case of social loafing. *Journal of Occupational and Organizational Psychology*, Vol. 68, pp. 327-338.

Gilbert, D. T., and Ebert, J. E. J. (2002). Decisions and revisions: The affective forecasting of changeable outcomes. *Journal of Personality and Social Psychology*, Vol. 82(4), pp. 503–514.

Gilbert D.T., Morewedge, C.K., Risen, J.L., and Wilson, T.D. (2004). Looking forward to looking backward: the misprediction of regret. *Psychological Science*, Vol. 15(5), pp.346-350.

Gilovich, T., and Medvec, V. (1995). The experience of regret: what, when, and why?. *Psychological Review*, Vol. 102 (2), pp. 379-395.

Gino, F., Moore, D., and Bazerman, M. (2008). No Harm, No Foul: The Outcome Bias in Ethical Judgments, Working Paper Summaries, Harvard Business School.

Gorali, M. "Netanyahu as well has a curve to flatten", *Calcalist*, 18 March, 2020. [In Hebrew].

Gleicher, F., Kost, K.A., Baker, S.M., Strathman, A.J., Richman, S.A., and Sherman, S.J. (1990). The role of counterfactual thinking in judgments of affect, *Society for Personality and Social Psychology*, Vol. 16 (2), pp. 284-295.

Gneezy, U., and Rustichini, A. (2000a). Pay enough or don't pay at all. *Quarterly Journal of Economics*, Vol. 115 (3), pp. 791-810.

Gneezy, U., and Rustichini, A. (2000b). A fine is a price. *Journal of Legal Studies*, Vol. 29 (1), pp. 1-17.

Gneezy U. (2003). The W effect of incentives. University of Chicago Graduate School of Business.

Gneezy, U., Meier, S., and Rey-Biel, P. (2011). When and why incentives (don't) work to modify behavior. *Journal of Economic Perspectives*, Vol. 25 (4), pp. 191-210.

Gneezy, U., and Imas, A. (2017). Lab in the field: measuring preferences in the wild, in A.V. Banerjee and E. Duflo (Eds). Handbook of Economic Field Experiments (pp.439-464), Netherlands, imprint of Elsevier.

Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness, *American Journal of Sociology,* Vol. 91(3), pp.481-510.

Gray, J.A. (1981). A critique of Eysenck's theory of personality. In H.J. Eysenck (Ed.), *A Model for Personality*. Berlin: Springer.

Gray, J.A. (1987a). The neuropsychology of emotion and personality. In S.D. Iversen, S.M. Stahl and E.C. Goodman (Eds). *Cognitive Neurochemistry,* Oxford: Oxford University Press.

Gregory, M. (2012). Revisiting Truth or Triviality: The External Validity of Research in the Psychological Laboratory, *Perspectives on Psychological Science,* Vol. 7, pp. 109-118.

Griffin, R., and Kacmar, K. M. (1991). Laboratory research in management: Misconceptions and missed opportunities. *Journal of Organizational Behavior*, 12(4), pp. 301–311.

Grossman, Guy. (2011). Lab-in-the-field experiments. *Newsletter of the APSA Experimental Section,* Vol. 2 (2), pp. 13-19.

Harel, A. "As in Tzuk Eitan, also in the corona crisis does Netanyahu think of the next commission of inquiry that will be established". *Haaretz*, 19 March, 2020. [In Hebrew]

Harris. M., and Raviv, A. (1979). Optimal Incentive with Imperfect Information. *Journal of Economic Theory,* Vol. 20, pp. 231-259.

Hawkins, S., and Hastie, R. (1990). Hindsight: biased judgments of past events after the outcomes are known. *Psychological Bulletin,* Vol. 107 (3), pp. 311–327.

Heath, C., Larrick, R., and Wu, G. (1999). Goals as Reference Points, *Cognitive Psychology,* Vol. 38, pp. 79 –109.

Henriksen K., and Kaplan, H. (2003). Hindsight bias, outcome knowledge and adaptive learning. *BMJ Quality and Safety,* Vol. 12, pp. 46-50.

Hershey, N. (1972). The defensive practice of medicine. *The Milbank Memorial Fund Quarterly,* Vol. 50 (1), pp. 69-97.

Hetts, J.J., Boninger, D.S., Armor, D.A., Gleicher, F., and Nathanson, A. (2000). The influence of anticipated counterfactual regret on behavior, *Psychology and Marketing*¸Vol. 17 (4), pp. 345-368.

Hinterleitner, M., and Sager, M. (2017). Anticipatory and reactive forms of blame avoidance: of foxes and lions. *European Political Science Review*, Vol. 9 (4), pp. 587-606.

Hoch, S. J., and Loewenstein, G.F. (1989). Outcome feedback: Hindsight and information. *Organizational Behavior and Human Decision Processes*, Vol. 75, pp. 605-619.

Hold, C.A, and Laury, S.K. (2002). Risk aversion and incentive effect. *The American Economic Review*, Vol. 92 (5), pp. 1644-1655.

Holmstrom, B. (1979). Moral hazard and observability, *The Bell Journal of Economics*, Vol. 10 (1), pp. 74-91.

Hood, C. (2002). The risk game and the blame game. *Government and Opposition*, Pol. 37 (1), pp. 15-37.

Hood, C. (2010). The blame game: spin, bureaucracy, and self-preservation in government. Princeton, NJ: Princeton University Press.

Howlett, M. (2000). Managing the "hollow state": procedural policy instruments and modern governance. *Canadian Public Administration*, Vol. 43 (4), pp. 412-431.

Howlett, M. (2017). Policy tools and their role in policy formulation: dealing with procedural and substantive policy instruments. In M. Howlett and I. Muhkerjee (Eds), *Handbook of policy formulation*, (pp. 96-111), Cheltanham: Edward Elgar.

Hugh T.B., and Dekker, S.W. (2009). Hindsight bias and outcome bias in the social construction of medical negligence: A Review. *JLM*, Vol. 16, pp. 846-857.

Hsee, C. K., and Weber, E. U. (1997). A fundamental predicting error: Self-other discrepancies in risk preference. *Journal of Experimental Psychology: General*, Vol. 126, pp. 45-53.

Jablonsky, S.F., and DeVries, D.L. (1972). Operant conditioning principles extrapolated to the theory of management, *Organizational Behavior and Human Performance*, Vol. 7 (2), pp. 340-358.

Jannis, I.L., and Mann, L. (1977). *Decision Making.* New York: Free Press.

Jennings, M.M., Lowe, D., and Reckers, P. (1998). Causality as an influence on hindsight bias: an empirical examination of judges' evaluation of professional audit judgment. *Journal of Accounting and Public Policy*, Vol. 17 (2), pp. 143-167.

Kahneman, D. (2011). Thinking, Fast and Slow. Farrar, Straus and Giroux.

Kahneman, D., Knetsch, J. L., and Thaler, R. (1990). Experimental tests of the endowment effect and the Coase Theorem. *Journal of Political Economy,* Vol. 98, pp. 1325–48.

Kahneman, D., and Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk, *Econometrica,* Vol. 47, pp. 263-91.

Kahneman, D. and Tversky, A. (1977). Intuitive Prediction: Biases and Corrective Procedures. Technical Report PTR: 1042-77-6

Kahneman, D. and Tversky, A. (1981). The Framing of Decisions and the Psychology of Choice. *Science,* Vol. 221(4481), pp. 453-458.

Kahneman, D. and Tversky, A. (1982). The Psychology of preferences Choice. *Scientific American,* Vol. 246 (1), pp. 160-173.

Kameda, T., Inukai, K., Higuchi, S., Ogawa, A., Kim, H., Matsuda T., and Sakagami, M. (2016) Rawlsian maximin rule operates as a common cognitive anchor in distributive justice and risky decisions, *Proceedings of the National Academy of Sciences of the USA*, Vol. 113(42), pp. 11817–11822.

Kivetz, R. (1999). Advances in research on mental accounting and reason based choice. *Marketing Letters.* Vol. 10, pp. 249-266.

Klein, G. A. (1989). Recognition-primed decisions. In W. Rouse (Ed.), Advances in man-machine systems research (Vol. 5, pp. 47–92). Greenwich, CT: JAI Press.

Klein, G. A. (1998). Sources of power: How people make decisions. Cambridge, MA: MIT Press.

Klein, G., Orasanu, J., Calderwood, R., and Zsambok, C. E. (1993). Decision making in action: Models and methods. Norwood, NJ: Ablex Publishing Co.

Klein, J., Delany, C., Fischer, M.D., Smallwood, D., Trumble, S. (2016). A growth mindset approach to preparing trainees for medical error. *BMJ Quality and Saftey*. Vol. 26 (9), pp. 771-774.

Klingman, D., Localio, A.R., Sugarman, J., Wagner, J.L., Polishuk, P.T., Wolfe, L. and Corrigan, J.A. Measuring defensive medicine using clinical scenario surveys. *Journal of Health politics, Policy and Law.* Vol. 21 (2), pp. 185-220.

Knobe, J. (2003). Intentional action and side effects in ordinary language. *Analysis.* Vol. 63 (279), pp. 190-194.

Kogut, T. and Beyth-Marom, R. (2008). Who helps more? Self-other discrepancies in helping-behavior contexts. *Judgment and decision making,* Vol. 3, pp. 595–606.

LaBine, S.J. and LaBine, G. (1996). Determinations of negligence and the hindsight bias. *Law and Human Behavior,* Vol. 20, pp.501-516.

Larkin, J. H., Mc Dermott, J., Simon, D. P., and Simon, H. A. (1980). Expert and novice performance in solving physics problems. *Science*, Vol. 208, pp. 1335–1342.

Larrick, R., and Boles, T.L. (1995). Avoiding regret in decisions with feedback: a negotiation example. *Organizational Behavior and Human Decision Processes.* Vol. 63 (1), pp. 87-97.

Larsen, R.J., and Ketelarr, T. (1991). Personality and susceptibility to positive and negative emotional states. *Journal of Personality and Social Psychology*, Vol. 61 (1), pp. 132-140.

Lau, R.R and Redlaswk, D.P. (2001). Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making. *American Journal of Political Science*, Vol. 45 (4), pp. 951-971.

Lazear, E. (2000). Performance Pay and Productivity. *American Economic Reivew*, Vol. 90 (5), pp. 1346-1361.

Lemon, K.N., White, T.B., and Winer, R.S. (2002). Dynamic customer relationship management: Incorporating future considerations into the service retention decision. *Journal of Marketing*, Vol. 66 (1), pp. 1-14.

Leong, C., and Howlett, M. (2017). On credit and blame: disentangling the motivations of public policy decision making behavior. *Policy Sciences,* Vol. 50 (3), pp. 599-618.

Lerner, J. S., and P. E. Tetlock, (1999). Accounting for the Effects of Accountability. *Psychological Bulletin*, Vol. 125 (2), pp. 255–275.

Levitt, S. D., & List, J. A. (2007a). What do laboratory experiments measuring social preferences reveal about the real world? Journal of Economic Perspectives, 21(2), 153–74.

Levitt, S. D., & List, J. A. (2007b). Viewpoint: on the generalizability of lab behavior to the field. Canadian Journal of Economics, 40(2), 347–370.

Liblich, Y. "Commissions of Inquiry from the psychological perspective or the inadequacy of retrospect", Hapraklit Journal, Vol. 36, booklet 3. [In Hebrew]

Lipshitz, R., Ron, N., and Popper, M. (2002). Sensemaking when accuracy matters: Post flight reviews in the Israeli Defense Force Air Force. Paper presented at "Probing the future: Developing organizational foresight in the knowledge economy," University of Stathclyde Graduate School of Business, Glasgow, U.K.

List, J. A. (2006). The behavioralist meets the market: measuring social preferences and reputation effects in actual transactions. Journal of Political Economy, 114(1), 1–37.

Loewenstein, G., Weber, E. U., Hsee, C. K., and Welch, N. (2001). Risk as feelings. *Psychological Bulletin*, Vol. 12, pp. 267–286.

Loomes, G., and Sudgens, R. (1982). Regret theory: an alternative theory of rational choice under uncertainty. *The Economic Journal*, Vol. 92 (368), pp. 805-824.

Marshall G,W. and Mowen, C. (1993) An experimental investigation of the outcome bias in salesperson performance evaluations. *Journal of Personal Selling & Sales Management*, Vol. 13 (3), pp. 31-47.

Mazzocco, P.J. Alicke, M.D. and Davis, T.L. (2004). On the robustness of outcome bias: No constraint by prior culpability. *Basic and Applied Social Psychology,* Vol. 26 (2&3), pp. 131-146.

Mccauley, C., Kogan, N., and Teger, A. I. (1971). Order effects in answering risk dilemmas for self and others. *Journal of Personality and Social Psychology*, Vol. 20(3), pp. 423–424.

McGraw, K.M. (1991). Managing blame: and experimental test of the effects of political accounts, *The American Political Science Review,* Vol. 85 (4), pp. 1133-1157.

Miller, G.J. (2005). The political evolution of principal-agent models, *The Annual Review of Political Science,* Vol. 8(1), pp. 203-225.

Miller, G.J., and Whitford, A.B. (2002) Trust and incentives in principal-agent negotiations: the insurance/incentive tradeoff. *Journal of Theoretical Politics*, Vol. 14 (2), pp. 231-267. Miller, G.J., and Whitford, A.B. (2007). The principal's moral hazard: constraints on the use of incentives in hierarchy, *Journal of Public Administration and Theory*, Vol. 17 (2), pp. 213-233.

Mitchell, G. (2012). Revisiting truth or triviality: the external validity of research in the psychological laboratory, *Perspectives on Psychological Science,* Vol. 7 (2), pp. 109-117.

Mitchell T, R. and Kalb, L.S. (1981). Effects of outcome knowledge and outcome valence on superior's evaluations. *Journal of Applied Psychology,* Vol. 66(5), pp. 604-612.

Moore, D., Tetlock, P., Tanlu, L., and Bazerman, M.H. (2006). Conflicts of interest and the case of auditor independence: moral seduction and strategic issue cycling. *Academy of Management Review*, Vol. 31 (1), pp.1-20.

Montibeller, G. and Winterfeldt, D.V. (2015). Cognitive and motivational biases in decision and risk analysis. *Risk Analysis*, Vol. 35 (7), pp. 1230-1251.

Noreen, E. (1988). The Economics of Ethics: A new perspective on agency theory. *Accounting Organization and Society,* Vol. 13 (4), pp. 359-369.

Parker, D., Stradling, S.G., and Manstead, A.S.R. (1996). Modifying beliefs and attitudes to exceeding the speed limit: An intervention study based on the theory of planned behavior. *Journal of Applied Social Psychology*, Vol. 26 (1), pp. 1-19.

Patton, J. R. (2003). Intuition in decisions. *Management Decision,* Vol. 41, pp. 989–996.

Peecher, M.E., and Piercey, M,D. (2010). Judging audit quality in light of adverse outcomes: evidence of outcome bias and reverse outcome bias. *Contemporary Accounting Research,* Vol.25 (1), pp. 243-274.

Pellino, I.M., and Pellino, G. (2015). Consequences of defensive medicine, second victims, and clinical-judicial syndrome of surgeons' medical practice and on health service. *Updates in Surgery*, Vol. 67, pp. 331-337.

Petty, R.E., Wegener, D.T., and Fabrigar, L.R. (1997). Attitudes and Attitude Change, *Annual Review of Psychology,* Vol. 48 (1), pp. 609-647.

Pezzo, M. (2011). Hindsight bias: A primer for motivational researchers. *Social and Personality Psychology Compass*, Vol. 5 (9), pp. 665–678.

Pfeffer, J., and Sutton, R.I. (2006). Evidence-based management. *Harvard Business Review*, Vol. 84 (1), pp.1-13.

Pohl, R. F., and Hell, W. (1996). No reduction in hindsight bias after complete information and repeated testing. *Organizational Behavior and Human Decision Processes,* Vol. 67, pp. 49–58.

Podaskoff, O.M., Todor, W.D., Grover, R.A., and Huber, V.L. (1984). Situation modifiers of leader reward and punishment behaviors: fact or fiction? *Organizational Behavior and Human Performance,* Vol. 34 (1), pp. 21-63.

Prendergast, C. (1999). The predictions of incentives in firms. *Journal of Economic Literature,* Vol. 37 (1), pp. 7-63.

Rachlinski, J. J., Guthrie, C., and Wistrich, A.J. (2011). Probable cause, probability, and hindsight. *Journal of Empirical Legal Studies,* Vol. 8 (1), pp. 72–98.

Reb, J. (2008). Regret aversion and decision process quality: Effects of regret salience on decision process carefulness. *Organizational Behavior and Human Decision Processes*, Vol. 105 (2), pp. 169-182.

Richard, R., Van der Pligt, J., and De Vries, N. (1996). Anticipated regret and time perspective: changing sexual risk-taking behavior. *Journal of Behavioral Decision Making*, Vol. 9 (3), pp. 185-199.

Ritov, I., and Baron, J. (1995). Outcome knowledge, regret and omission bias. *Organizational Behavior and Human Decision Processes.* Vol. 64, pp. 119-127.

Ritov, I. (1996). Probability of regret: anticipation of uncertainty resolution in choice. *Organizational Behavior and Human Decision Processes.* Vol. 66 (2), pp. 228-236.

Robbennolt, J. (2000). Outcome severity and judgments of "responsibility": A meta-analysis review. *Journal of Applied Social Psychology*, Vol. 30 (12), 2575-2609.

Roese, N.J., and Summerville, A. (2005). What we regret most… and why. *Personality and Social Psychology Bulletin*, Vol. 31 (9), pp. 1273-1285.

Roiter, A. "Risk management in the corona crisis – a proposal for a different solution", *Globes*, 11 March 2020. [In Hebrew]

Saddon, J.E.R., and Cerutti, D.T. (2003). Operant Conditioning. *Annual Review of Psychology*, Vol. 54, pp. 115-144.

Scott, W.R. (1998). Creating organizations. In *Organizations: rational, natural and open systems* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Sezer , O., Zhang, T., Gino, F., and Bazerman, M. (2016). Overcoming the outcome bias: making intentions matter. *Organizational Behavior and Human Decision Processes*, Vol. 137, pp. 13-26.

Shadish, W.R., Cook, T.D., and Campbell, D.T (2002). Experimental and quasi-experimental designs for generalized causal inference. New York: Houtghton Mifflin Company.

Shafir, E., Simonson, I., and Tversky, A. (1993). Reason-based choice. *Cognition*. Vol. 49 (1-2), pp. 11-36.

Shapiro, S. (2005). Agency Theory. *Annual Review of Sociology*, Vol. 31, pp. 263-284.

Sherman, S.J., and McConnell, A.R. (1995). Dysfunctional Implications of Counterfactual Thinking: When Alternatives to Reality Fail Us. In N.J. Roese and J.M. Olson (Eds), *What Might Have Been: The Social Psychology of Counterfactual Thinking*, pp. 199-231. Lawrence Erlbaum Associates, Inc.

Shlenker, B.R., and Bonoma, T.V. (1978) Fun and Games: The Validity of Games for the Study of Conflict, *Journal of Conflict Resolution*, Vol. 22 (1), pp. 7-38.

Simon H, A. (1991). Bounded Rationality and Organizational Learning. *Organization Science*. Vol. 2, (1), pp. 125-134.

Simonson, I. (1992). The influence of anticipating regret and responsibility on purchase decisions. *Journal of Consumer Research*, Vol. 19 (1), pp. 105-118.

Simonson, I., and Nowlis, S.M. (2000). The role of explanations and need for uniqueness in consumer decision making: unconventional choices based on reasons. *Journal of Consumer Research.* Vol. 27 (1), pp. 49-68.

Skinner, B.F. (1937). Two types of conditioned reflex: a reply to Knoroski and Miller. J. *Journal of General Psychology*, Vol. 16, pp. 272-279.

Skinner, B.F. (1953). *Science and Human Behavior*, New York: McMillan.

Slovic, P., and Fischhoff, B. (1977). On the Psychology of Experimental Surprises, *Journal of Experimental Psychology: Human Perception and Performance*, Vol. 3 (4), pp. 544–551.

Sniderman, P. M., Brody, R. A., and Tetlock, P. E. (1991). Reasoning and choice: Explorations in political psychology. Cambridge University Press

Soroka, S. N. (2006). Good News and Bad News: Asymmetric Responses to Economic Information, *Journal of Politics*, Vol. 68(2), pp. 372-85.

Staw, B.M., and Ross, J. (1978). Understanding escalation situations: antecedents, prototypes and solutions. In B.M. Staw and L.L.Cummings (Eds). *Research in Organizational Behavior*. Vol. 9, pp. 39-78. Greenwhich, CT: JAI Press.

Stone, E. R., Yates, A. J., and Caruthers, A. S. (2002). Risk taking in decision making for others versus the self. *Journal of Applied Social Psychology*, Vol. 32(9), pp. 1797–1824.

Studdert D,M., Mello, M.M., Sage, W.M.,DesRoches, C.M.,Peugh, J., Zapert, K., and Bernnan, T.A. (2005). Defensive medicine among high risk specialist physicians in a volatile malpractice environment. JAMA, Vol. 293 (21), pp. 2609-2617.

Sulitzeanu-Kenan, R. (2006). If they get it right: an experimental test of the effects of the appointment and reports of UK public inquiries. *Public Administration*, Vol. 84(3), pp. 623-653.

Sulitzeanu-Kenan, R. (2020). Blame Avoidance and Crisis Inquiries. *Oxford Research Encyclopedias*, Oxford University Press.

Sulitzeanu-Kenan, R., and Hood, C. (2005) Blame avoidance with adjectives? Paper for ECPR Joint Sessions, Blame Avoidance and Blame Management Workshop, Granada.

Tancredi L, R., and Barondess, J. (1978). The problem of defensive medicine, *Science*, Vol. 200, pp. 879-882.

Teger, A. I., and Kogan, N. (1975). Decision-making for others under reciprocal and non-reciprocal conditions. *British Journal of Social & Clinical Psychology*, Vol. 14(3), pp. 215–222.

Tetlock, P. E. 1992. The impact of accountability on judgment and choice: Toward a social contingency model, *Advances in Experimental Social Psychology*, Vol. 25, pp. 331-376.

Tetlock, P.E. 2006. Expert Political Judgment. New Jersey, Princeton University Press.

Thomson, J.J. (1976). Killing, letting die and the trolley problem, *The Moinst* Vol. 59 (2), pp. 204-2017.

Tversky, A., and Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model, *Quarterly Journal of Economics*, Vol. 41, pp. 1039–1061.

Tversky, A., and Kahneman, D. (1992). Advances in prospect theory: Cumulative representations of uncertainty. *Journal of Risk and Uncertainty*, Vol. 5, pp. 297–323.

Vanhuysse, P., and Sulitzeanu-Kenan, R. (2009). Teacher's PAT? Multiple-Role Principal-Agent Theory, Education Politics, and Bureaucrat Power. *Critical Studies in Education*, Vol. 50 (2), pp.129-144.

Vashdi, D.R., Bamberger, P.A., Erez, M., and Weiss-Meilik, A. (2007). Briefing-debriefing: using a reflexive organizational learning model from the military to enhance the performance of surgical teams. *Human Resource Management.* Vol. 46 (1), pp. 115-142.

Wasserman, D., Lempert, R.O. and Hastie, R. (1991). Hindsight and Causality, *Personality and Social Psychology Bulletin*. Vol. 17(1), pp. 30-35.

Weaver, R.K. (1986). The politics of blame avoidance. *Journal of Public Policy*, Vol. 6 (4), pp. 371-398.

Webster, M., and Sell, J. (Eds). (2014). *Laboratory Experiments in the Social Sciences*. Elsevier imprint. Academic Press.

Wilson, T. D., Aronson, E., and Carlsmith, K. (2010). The art of laboratory experimentation. In S. T. Fiske, D. T. Gilbert, and G. Lindzey (Eds.), Handbook of social psychology (p. 51–81). John Wiley & Sons, Inc.

Wilson, T. D., and Brekke, N. (1994). Mental contamination and mental correction: Unwanted influences on judgments and evaluations, *Psychological Bulletin*, Vol. 116(1), pp. 117-142.

Wolfe, J., and Roberts, R. (1993). A Further Study of the External Validity of Business Games: Five-Year Peer Group Indicators, *Simulation and Gaming*, Vol. 24 (1), pp. 21-33.

Wong, K.F.E., and Kwong, J.Y.Y. (2007). The role of anticipated regret in escalation of commitment, *Journal of Applied Psychology*, Vol. 92 (2), pp. 545-554.

Wray, L.D., and Stone, E.R. (2005). The role of self-esteem and anxiety in decision making for self-versus others in relationships, *Journal of Behavioral Decision Making*, Vol. 18, pp. 125-144.

Zeelenberg, B., and Beattie, J. (1997). Consequences of regret aversion 2: Additional evidence for effects of feedback on decision making. *Organizational Behavior and Human Decision Processes.* Vol. 72 (1), pp. 63-78.

Zeelenberg, M. (1999). Anticipated Regret, Expected Feedback and Behavioral Decision Making, Journal of Behavioral Decision Making, Vol. 12, Issue 2, pp. 93-106

Zeelenberg, M., and Pieters, R. (2004b). Beyond valence in customer dissatisfaction: A review and new findings on behavioral responses to regret and disappointment in failed services. *Journal of Business Research*, Vol. 57, pp. 445-455.

Zeelenberg, M. and Pieters, R. (2007). A Theory of Regret Regulation 1.0. Journal of Consumer Psychology, Vol.17, Issue 1, pp.3-18

Zeelenberg, M., van Dijk, W. W., van der Pligt, J., Manstead, A. S. R., van Empelen, P., and Reinderman, D. (1998). Emotional reactions to the outcomes of decisions: The role of counterfactual thought in the experience of regret and disappointment. *Organizational Behavior and Human Decision Processes*, Vol. 75(2), pp. 117–141.

Zizzo, D.J. (2010). Experimenter demand effects in economic experiments. *Experimental Economics*. Vol. 13, pp. 75-98.

Appendix A (Hebrew)

בקרה

הסבר ראשוני

❖ בניסוי להלן משתפים 2 שחקנים:
"משקיע" ו"שותף"

❖ באמצעות הפתק שבחרת, את/ה נבחרת באופן אקראי לשחק כמשקיע, השותף שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך.

❖ עם תחילת הניסוי, אתה מקבל 50 ₪ שהם מתחלקים שווה בשווה בינך לבין השותף שלך, קרי – 25 ₪ לכל אחד.

שלב א'

כעת עליך לבחור בין שתי אפשרויות:

קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

*הסכום שתרוויחו יתחלק שווה בשווה בינך לבין השותף שלך

שלב ב'

בשלב זה נודיע לשותף שלך מה בחרת.

שלב ג'

אם בחרת להשקיע באפיק בעל סיכון, נבצע כעת את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך

קבלת ההחלטה

קח מספר דקות להחליט ובצע את בחירתך.

להזכירך, אפשרויותיך הן:

קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

תודה רבה על שיתוף הפעולה!

ללא שיפוט בדיעבד

הסבר ראשוני

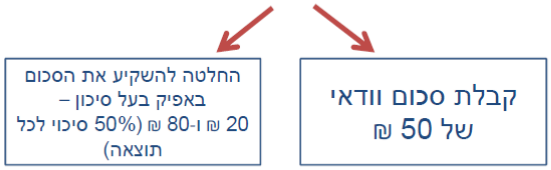
❖ בניסוי להלן משתפים 2 שחקנים: "משקיע" ו"שותף"

❖ באמצעות הפתק שבחרת, את/ה נבחרת באופן אקראי לשחק כמשקיע, השותף שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך.

❖ עם תחילת הניסוי, אתה מקבל 50 ₪ שהם מתחלקים שווה בשווה בינך לבין השותף שלך, קרי – 25 ₪ לכל אחד.

שלב א'

כעת עליך לבחור בין שתי אפשרויות:



*הסכום שתרוויחו יתחלק שווה בשווה בינך לבין השותף שלך

שלב ב'

בשלב זה נודיע לשותף שלך מה בחרת.

שלב ב'

השותף רשאי להטיל קנס של 10₪ על החלק שלך מהסכום שיתקבל, אם לא יהיה מרוצה

שלב ג'

אם בחרת להשקיע באפיק בעל סיכון, נבצע כעת את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך

קבלת ההחלטה

קח מספר דקות להחליט ובצע את בחירתך.

להזכירך, אפשרויותיך הן:

תודה רבה על שיתוף הפעולה!

עם שיפוט בדיעבד

הסבר ראשוני

- בניסוי להלן משתפים 2 שחקנים: "משקיע" ו"שותף"
- באמצעות הפתק שבחרת, את/ה נבחרת באופן אקראי לשחק כמשקיע, השותף שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך.
- עם תחילת הניסוי, אתה מקבל 50 ₪ שהם מתחלקים שווה בשווה בינך לבין השותף שלך, קרי – 25 ₪ לכל אחד.

שלב א'

כעת עליך לבחור בין שתי אפשרויות:

קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

*הסכום שתרוויחו יתחלק שווה בשווה בינך לבין השותף שלך

שלב ב'

אם בחרת להשקיע באפיק בעל סיכון, נבצע כעת את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך

שלב ג'

השותף רשאי להטיל קנס של 10 ₪ על החלק שלך מהסכום שיתקבל, אם לא יהיה מרוצה

קבלת ההחלטה

קח מספר דקות להחליט ובצע את בחירתך.

להזכירך, אפשרויותיך הן:

קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

תודה רבה על שיתוף הפעולה!

Appendix A (English)

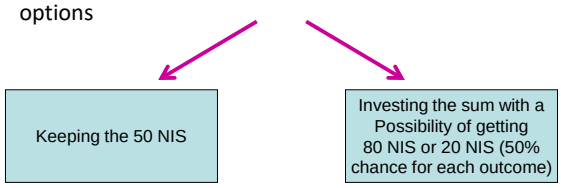
Control condition

Preliminary explanation

- In the following experiment there are two participants: “investor” and “partner”
- According to the note you chose, you were randomly selected to be an investor, and your partner is in the next room. His role will be explained later.
- At the beginning of this experiment you receive 50 NIS which are divided equally between you and your partner – 25 NIS for each player.

Stage 1

- At this stage you need to choose between two options



- The sum of money you receive will be equally divided between you and your partner.

Stage 2

- At this stage we will inform your partner about your choice.

Stage 3

- If you chose to invest, we will conduct the lottery and its outcome will be revealed to you and your partner.

Stage 4: Making a decision

- Take a few minutes and make your decision.
- To remind you, your options are:

Investing the sum with a Possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)	Keeping the 50 NIS

- Thanks for your cooperation!

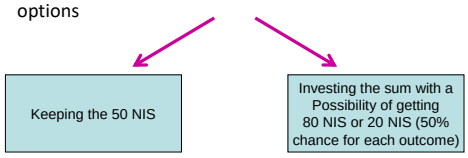
Without outcome knowledge

Preliminary explanation

- In the following experiment there are two participants: "investor" and "partner"
- According to the note you chose, you were randomly selected to be an investor, and your partner is in the next room. His role will be explained later.
- At the beginning of this experiment you receive 50 NIS which are divided equally between you and your partner – 25 NIS for each player.

Stage 1

- At this stage you need to choose between two options



- The sum of money you receive will be equally divided between you and your partner.

Stage 2

- At this stage we will inform your partner about your choice.

Stage 3

- Your partner can impose a fine of 10 NIS on your share of the sum that will be received, if he/she is not satisfied.

Stage 4

- If you chose to invest, we will conduct the lottery and its outcome will be revealed to you and your partner.

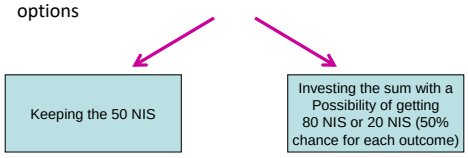
With outcome knowleadge

Preliminary explanation

- In the following experiment there are two participants: "investor" and "partner"
- According to the note you chose, you were randomly selected to be an investor, and your partner is in the next room. His role will be explained later.
- At the beginning of this experiment you receive 50 NIS which are divided equally between you and your partner – 25 NIS for each player.

Stage 1

- At this stage you need to choose between two options



- The sum of money you receive will be equally divided between you and your partner.

Stage 2

- At this stage we will inform your partner about your choice.

Stage 3

- If you chose to invest, we will conduct the lottery and its outcome will be revealed to you and your partner.

Stage 4

- Your partner can impose a fine of 10 NIS on your share of the sum that will be received, if he/she is not satisfied.

Stage 5: Making a decision

- Take a few minutes and make your decision.
- To remind you, your options are:

Investing the sum with a Possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)	Keeping the 50 NIS

- Thanks for your cooperation!

Stage 5: Making a decision

- Take a few minutes and make your decision.
- To remind you, your options are:

Investing the sum with a Possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)	Keeping the 50 NIS

- Thanks for your cooperation!

Appendix B (Hebrew)

ללא שיפוט בדיעבד

קבלת החלטות על מגרש הכדורסל

המחקר נתקיים במסגרת עבודת דוקטורט בביה"ס למדיניות ציבורית באוניברסיטה העברית: מיכל לרנר-לרר בהנחיית פרופ' סולייאמן קינן

רקע

דמיין לעצמך כי אתה מועמד למשרת מאמן של מועדון כדורסל גדול.

בסבב הראיונות האחרון, אתה נדרש לצפות בסרט וידאו של משחק חצי גמר גביע שאינך מכיר, **בדקות ההכרעה של המשחק.**

הווידאו נעצר ועליך להחליט כיצד היית נוהג אילו היית מאמן הקבוצה.

קח בחשבון כי השופטים שלך, אשר צופים יחד איתך במשחק, אינם יודעים כיצד הוא נגמר ושופטים אותך רק על בסיס ההחלטה שלך.

מצב המשחק בדקות ההכרעה

שתי דקות לסיום המשחק, התוצאה היא שוויון 81.

המשחק כעת בטיים אאוט שאחד המאמנים לקח, אחרי שהקבוצה היריבה רצה עליו ב-1:40 האחרונות ריצת 7-2 והשוותה את התוצאה.

המאמן על המגרש מתלבט האם לבצע חילוף בין שני שחקנים.

תיאור השחקנים בשקף הבא.

שחקן א' – וותיק ומנוסה, המעמיד ממוצעים של 17.3 נקודות למשחק ב-35 דקות למשחק (56.5% לשתיים, 44% לשלוש, 91% מהקו), נמצא בערב לא טוב. עד עתה קלע 4/15 מהשדה, איבד מספר כדורים ונראה שאינו מרוכז. בדקות האחרונות היה על הפרקט, קלע 1/4 ואיבד כדור.

שחקן ב' – נמצא על הספסל. שחקן צעיר אך מבטיח: סטטיסטיקה עונתית: 20 דקות למשחק, 7.8 נקודות (31% לשתיים, 47% לשלוש, 90% מהקו) שבמחצית הראשונה נתן 8 דקות טובות: קלע 3/4 מהשדה, מסר 2 אסיסטים וחטף כדור.

מצב המשחק
שתי דקות לסיום המשחק, התוצאה היא שוויון 81.

המשחק כעת בטיים אאוט שאחד המאמנים לקח, אחרי שהקבוצה היריבה רצה עליו ב-1:40 האחרונות ריצת 7-2 והשוותה את התוצאה.

המאמן שלקח טיים אאוט מתלבט האם לבצע חילוף

אילו היית מאמן הקבוצה מה היית בוחר לעשות?

א. להישאר עם שחקן א'

ב. להכניס את שחקן ב' במקום שחקן א'

כעת נעבור לתרחיש נוסף.

בדומה לתרחיש הקודם - דמיין לעצמך כי אתה מועמד למשרת מאמן של מועדון כדורסל גדול.

בסבב הראיונות האחרון, אתה נדרש לצפות בסרט וידאו של משחק חצי גמר גביע שאינך מכיר, **בדקות ההכרעה של המשחק.**

הווידאו נעצר ועליך להחליט כיצד היית נוהג אילו היית מאמן הקבוצה.

קח בחשבון כי השופטים שלך, אשר צופים יחד איתך במשחק, אינם יודעים כיצד הסתיים ושופטים אותך רק על ההחלטה שלך

תרחיש II - מצב המשחק בדקות ההכרעה

ארבע דקות לסיום המשחק, אחת הקבוצות מובילה ב-2 הפרש בלבד, אחרי שכבר הובילה ב- 11, והקבוצה היריבה רצה עליה 0-9 ב- 2:40 הדקות האחרונות.

לאורך כל המשחק, עד לנקודת זמן זו– הקבוצה המובילה שמרה הגנה אישית.

הסלים של הקבוצה היריבה, ב2:40 דק' האחרונות בהן צמצמה את ההפרש, נקלעו בהתקפה עומדת ולא במשחק ריצה, ומתוכם שני סלים היו של שלוש נקודות.

ממוצע הקבוצה היריבה העונתי לשלוש עומד על 31% וכרגע הם עם 7/18 (38%). קבוצתך מתורגלת בהגנה אישית או בסוג אחד של הגנה אזורית 3X2

בשלב זה מאמן הקבוצה המובילה לוקח טיים אאוט והוא מתלבט:
האם להישאר בהגנה אישית או לעבור להגנה אזורית.

אילו היית מאמן הקבוצה, מה היית בוחר לעשות?

א. להישאר בהגנה אישית
ב. לעבור להגנה אזורית

לפני סיום, נבקש ממך כמה פרטים דמוגרפיים בהם יעשה שימוש באופן אנונימי ולצרכים סטטיסטיים בלבד.

תודה רבה על שיתוף הפעולה!

עם שיפוט בדיעבד

קבלת החלטות על מגרש הכדורסל

המחקר מתקיים במסגרת עבודת דוקטורט בביה"ס למדיניות ציבורית באוניברסיטה העברית מיכל לבנה-לכר רהנחיית פרופ' סוליציאנו קינן

רקע

דמיין לעצמך כי אתה מועמד למשרת מאמן של מועדון כדורסל גדול.

בסבב הראיונות האחרון, אתה נדרש לצפות בסרט וידאו של משחק חצי גמר גביע שאינך מכיר, **בדקות ההכרעה של המשחק.**

הווידאו נעצר ועליך להחליט כיצד היית נוהג אילו היית מאמן הקבוצה.

קח בחשבון כי השופטים שלך, אשר צופים יחד איתך במשחק, יודעים כיצד הוא נגמר ושופטים אותך על בסיס ההחלטה שלך וגם לאור התוצאה.

מצב המשחק בדקות ההכרעה

שתי דקות לסיום המשחק, התוצאה היא שוויון 81.

המשחק כעת בטיים אאוט שאחד המאמנים לקח, אחרי שהקבוצה היריבה רצה עליו ב-1:40 האחרונות ריצת 2-7 והשוותה את התוצאה.

המאמן על המגרש מתלבט האם לבצע חילוף בין שני שחקנים.

תיאור השחקנים בשקף הבא.

שחקן א' – וותיק ומנוסה, המעמיד ממוצעים של 17.3 נקודות למשחק ב-35 דקות למשחק (56.5% לשתיים, 44% לשלוש, 91% מהקו), נמצא בערב לא טוב. עד עתה קלע 4/15 מהשדה, איבד מספר כדורים ונראה שאינו מרוכז. בדקות האחרונות היה על הפרקט, קלע 1/4 ואיבד כדור.

שחקן ב' – נמצא על הספסל. שחקן צעיר אך מבטיח; סטטיסטיקה עונתית: 20 דקות למשחק, 7.8 נקודות (31% לשתיים, 47% לשלוש, 90% מהקו) שבמחצית הראשונה נתן 8 דקות טובות: קלע 3/4 מהשדה, מסר 2 אסיסטים וחטף כדור.

אילו היית מאמן הקבוצה מה היית בוחר לעשות?

א. להישאר עם שחקן א'

ב. להכניס את שחקן ב' במקום שחקן א'

מצב המשחק

שתי דקות לסיום המשחק, התוצאה היא שוויון 81.

המשחק כעת בטיים אאוט שאחד המאמנים לקח, אחרי שהקבוצה היריבה רצה עליו ב-1:40 האחרונות ריצת 2-7 והשוותה את התוצאה.

המאמן שלקח טיים אאוט מתלבט האם לבצע חילוף

כעת נעבור לתרחיש נוסף.

בדומה לתרחיש הקודם - דמיין לעצמך כי אתה מועמד למשרת מאמן של מועדון כדורסל גדול.

בסבב הראיונות האחרון, אתה נדרש לצפות בסרט וידאו של משחק חצי גמר גביע שאינך מכיר, **בדקות ההכרעה של המשחק.**

הווידאו נעצר ועליך להחליט כיצד היית נוהג אילו היית מאמן הקבוצה.

קח בחשבון כי השופטים שלך, אשר צופים יחד איתך במשחק, יודעים כיצד הוא נגמר ושופטים אותך גם בראי ההחלטה שלך וגם בראי התוצאה.

תרחיש II - מצב המשחק בדקות ההכרעה

ארבע דקות לסיום המשחק, אחת הקבוצות מובילה ב-2 הפרש בלבד, אחרי שכבר הובילה ב- 11, והקבוצה היריבה רצה עליה 9-0 ב- 2:40 הדקות האחרונות.

לאורך כל המשחק, עד לנקודת זמן זו– הקבוצה המובילה שמרה הגנה אישית.

הסלים של הקבוצה היריבה, ב2:40 דק' האחרונות בהן צמצמה את ההפרש, נקלעו בהתקפה עומדת ולא במשחק ריצה, ומתוכם שני סלים היו של שלוש נקודות.

ממוצע הקבוצה היריבה העונתי לשלוש עומד על 31% וכרגע הם עם 7/18 (38%). קבוצתך מתורגלת בהגנה אישית או בסוג אחד של הגנה אזורית 3X2

בשלב זה מאמן הקבוצה המובילה לוקח טיים אאוט והוא מתלבט:
האם להישאר בהגנה אישית או לעבור להגנה אזורית.

אילו היית מאמן הקבוצה, מה היית בוחר לעשות?

א. להישאר בהגנה אישית
ב. לעבור להגנה אזורית

לפני סיום, נבקש ממך כמה פרטים דמוגרפיים בהם יעשה שימוש באופן אנונימי ולצרכים סטטיסטיים בלבד.

תודה רבה על שיתוף הפעולה!

Appendix B (English) –

Without Outcome Knowledge

Background

Imagine you are an applicant for a competitive position of a basketball coach in a top basketball club.

You have reached the last stage of the examination procedure, in which you were asked to watch a video of a semi-final basketball game you are not familiar with, during the last critical minutes of the game.

The video has stopped and you must decide what you would have done, if you were the teams coach.

Take into account that the judges, whom are watching together with you, do not know what the outcome of the game was and will judge you solely by the merit of your decision

Decision making on the basketball court

Game status

Two minutes to the end of the game the score is tied – 81.
The coach of the team that led the game until this point decided to take a time-out, after the opponent team ran during the last 1:40 minutes and scored 7-2, equalizing the score.
The coach on the court is deliberating whether to substitute between two of his players.

Player A: A leading and experienced player, season averages: 17.3 Points in 35 minutes per game (56.5% from two-point range, 44% from the three and 91% from the free throw line) isn't going through a good evening. Until now he shot 4/15 from the field, turned the ball over a few times and doesn't seem concentrated, in general. During his last minutes on the court, he shot ¼ and turned the ball over once.

Player B: A young but promising player, is currently sitting on the bench. Season averages: 7.8 points in 20 minutes per game: (31% from two-point range, 47% from the three and 90% from the free throw line). During the first half of the game played 8 good minutes: shot ¾ from the field, passed two assists and stole a ball.

Had you been the teams coach, what would you have chosen to do?

A. To stay with player A
B. To substitute player A with player

Status of the game in the last minutes

Two minutes to the end of the game the score is tied – 81.
The coach of the team that led the game until this point decided to take a time-out, after the opponent team ran during the last 1:40 minutes and scored 7-2, equalizing the score.
The coach on the court is deliberating whether to substitute between two of his players.
Description of the two players is in the next slide.

Second scenario – game status in last minutes

Four minutes to the end of the game, one of the teams is leading by only 2 points, after it has already led the game by 11.
The opponents made a 9-0 run during the last 2:40 minutes.
Throughout the game and up to this point in time, the leading team played a 'man to man' defense tactic.
The last 9 points scored by the opponent team during the last 2:40 minutes of the game, and which minimized the gap between the two teams, were scored in set offense and not via fast breaks.
Two of the baskets scored were of three points. The season average of the opponent team from three-point range is 31%, and in the current game they scored 7/18 (38%) from that range.
Your team is very familiar with the 'man to man' defense tactic or with the 3-2 zone defense. 3X2

Now let's move on to a second scenario

As in the previous scenario - Imagine you are an applicant for a competitive position of a basketball coach in a top basketball club.

You have reached the last stage of the examination procedure, in which you were asked to watch a video of a semi-final basketball game you are not familiar with, during the last critical minutes of the game.

The video has stopped and you must decide what you would have done, if you were the teams coach.

Take into account that the judges, whom are watching together with you, do not know what the outcome of the game was and will judge you solely by the merit of your decision

Before we end we would like to ask you for some demographic details for statistical purposes only

Thank you for your corporation

At this stage the coach of the leading team takes a time-out and he's thinking weather to stay with man to man or switch to zone.

Had you been the group's coach, what would you have chosen to do?

A. To stay with the 'man to man' defense tactic
B. To switch to zone defense

With Outcome knowledge

Background

Imagine you are an applicant for a competitive position of a basketball coach in a top basketball club.

You have reached the last stage of the examination procedure, in which you were asked to watch a video of a semi-final basketball game you are not familiar with, during the last critical minutes of the game.

The video has stopped and you must decide what you would have done, if you were the teams coach.

Take into account that the judges, whom are watching together with you, know what the outcome of the game was and will judge you according to your decision and the outcome

Decision making on the basketball court

Game status

Two minutes to the end of the game the score is tied – 81.
The coach of the team that led the game until this point decided to take a time-out, after the opponent team ran during the last 1:40 minutes and scored 7-2, equalizing the score.
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Two of the baskets scored were of three points. The season average of the opponent team from three-point range is 31%, and in the current game they scored 7/18 (38%) from that range.
Your team is very familiar with the 'man to man' defense tactic or with the 3-2 zone defense. 3X2

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As in the previous scenario - Imagine you are an applicant for a competitive position of a basketball coach in a top basketball club.

You have reached the last stage of the examination procedure, in which you were asked to watch a video of a semi-final basketball game you are not familiar with, during the last critical minutes of the game.

The video has stopped and you must decide what you would have done, if you were the teams coach.

Take into account that the judges, whom are watching together with you, know what the outcome of the game was and will judge you according to your decision and the outcome

Before we end we would like to ask you for some demographic details for statistical purposes only

Thank you for your corporation

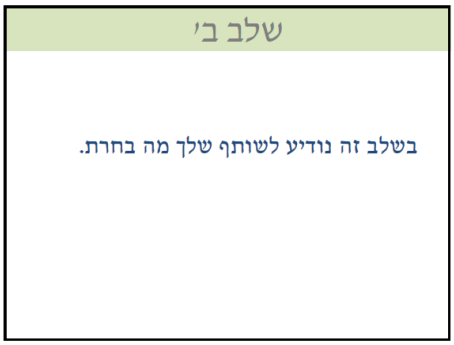
At this stage the coach of the leading team takes a time-out and he's thinking weather to stay with man to man or switch to zone.

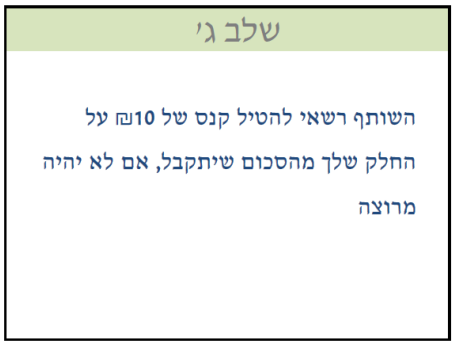
Had you been the group's coach, what would you have chosen to do?

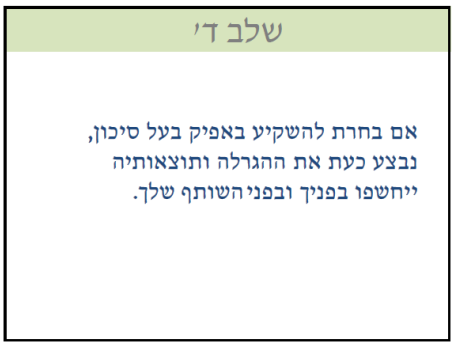
A. To stay with the 'man to man' defense tactic
B. To switch to zone defense

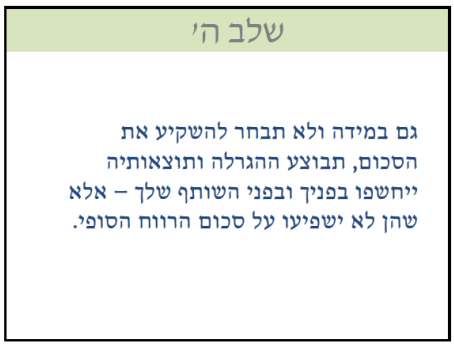
Appendix C – (Hebrew)

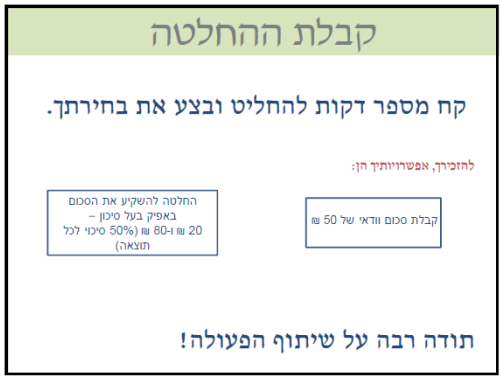
ללא שיפוט בדיעבד











עם שיפוט בדיעבד

הסבר ראשוני

❖ בניסוי להלן משתפים 2 שחקנים: "משקיע" ו"שותף"

❖ באמצעות הפתק שבחרת, את/ה נבחרת באופן אקראי לשחק כמשקיע, השותף שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך.

❖ עם תחילת הניסוי, אתה מקבל 50 ₪ שהם מתחלקים שווה בשווה בינך לבין השותף שלך, קרי – 25 ₪ לכל אחד.

שלב א'

כעת עליך לבחור בין שתי אפשרויות:

החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

שמירה על ה-50 ₪

*הסכום שתרוויחו יתחלק שווה בשווה בינך לבין השותף שלך

שלב ב'

אם בחרת להשקיע באפיק בעל סיכון, נבצע כעת את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך.

שלב ג'

גם במידה ולא תבחר להשקיע את הסכום, תבוצע ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך, אלא שהן לא ישפיעו על סכום הרווח הסופי.

שלב ד'

בשלב זה נודיע לשותף שלך מה בחרת ומה היו התוצאות של ההגרלה.
הוא יהיה רשאי להטיל קנס של 10 ₪ על החלק שלך מהסכום שיתקבל, אם לא יהיה מרוצה

קבלת ההחלטה

קח מספר דקות להחליט ובצע את בחירתך.

להזכירך, אפשרויותיך הן:

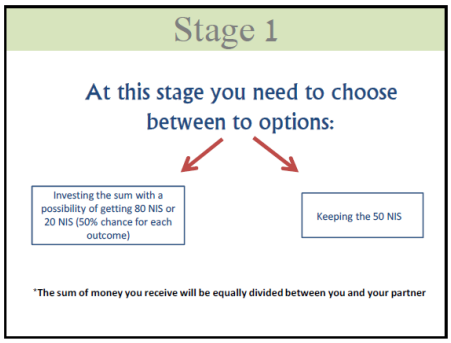
החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

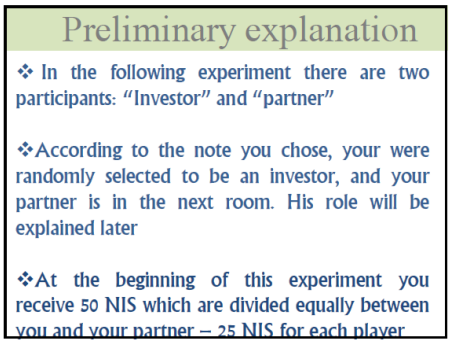
קבלת סכום וודאי של 50 ₪

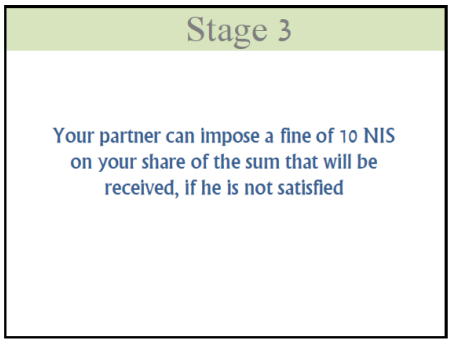
תודה רבה על שיתוף הפעולה!

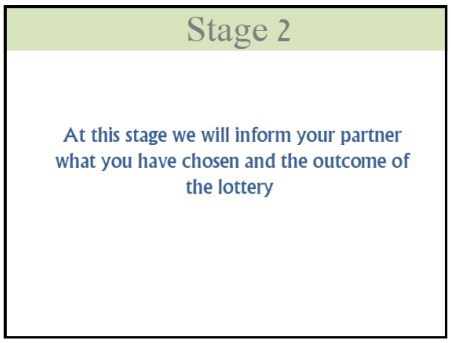
Appendix C – (English)

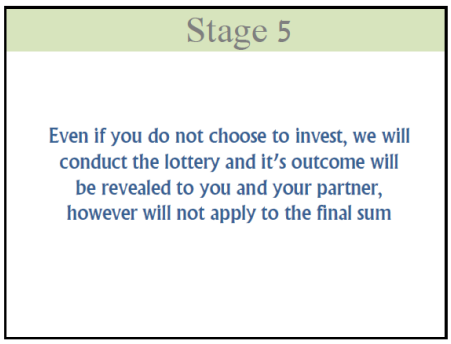
Without Outcome knowledge

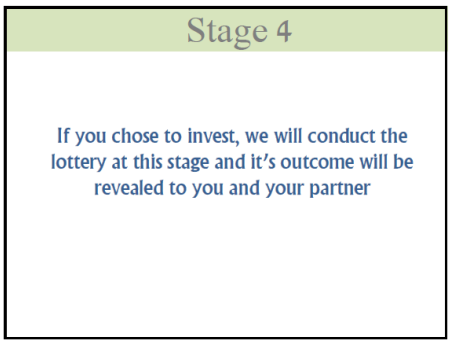


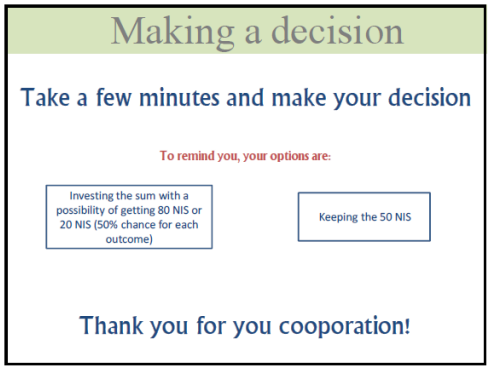











Making a decision
Take a few minutes and make your decision
To remind you, your options are:
Investing the sum with a possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)
Keeping the 50 NIS
Thank you for you cooporation!

With Outcome knowledge

Stage 1

At this stage you need to choose between to options:

Investing the sum with a possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)

Keeping the 50 NIS

*The sum of money you receive will be equally divided between you and your partner

Preliminary explanation

❖ In the following experiment there are two participants: "Investor" and "partner"

❖According to the note you chose, your were randomly selected to be an investor, and your partner is in the next room. His role will be explained later

❖At the beginning of this experiment you receive 50 NIS which are divided equally between you and your partner – 25 NIS for each player

Stage 3

Even if you do not choose to invest, we will conduct the lottery and it's outcome will be revealed to you and your partner, however will not apply to the final sum

Stage 2

If you chose to invest, we will conduct the lottery and it's outcome will be revealed to you and your partner

Making a decision

Take a few minutes and make your decision

To remind you, your options are:

Investing the sum with a possibility of getting 80 NIS or 20 NIS (50% chance for each outcome)

Keeping the 50 NIS

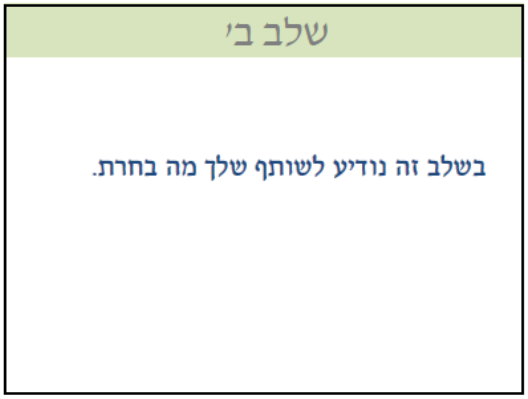
Thank you for you cooporation!

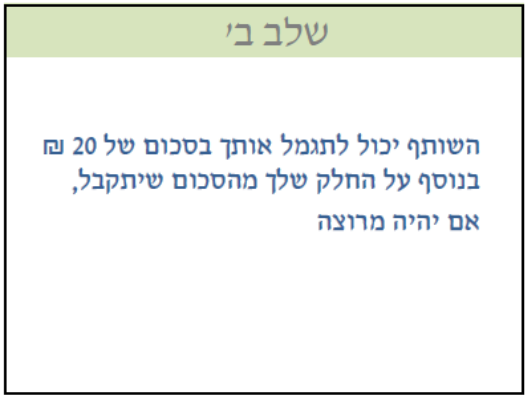
Stage 4

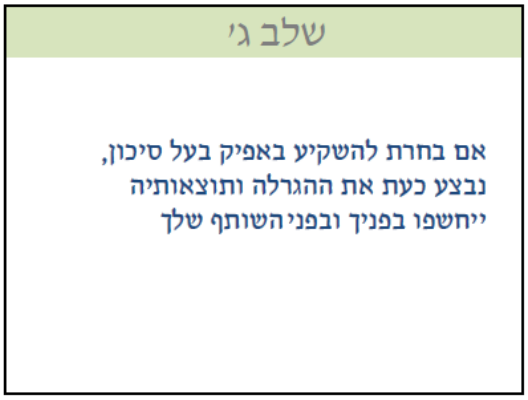
At this stage we will inform your partner what you have chosen and the outcome of the lottery.
Your partner can impose a fine of 10 NIS on your share of the sum that will be received, if he is not sattisfied

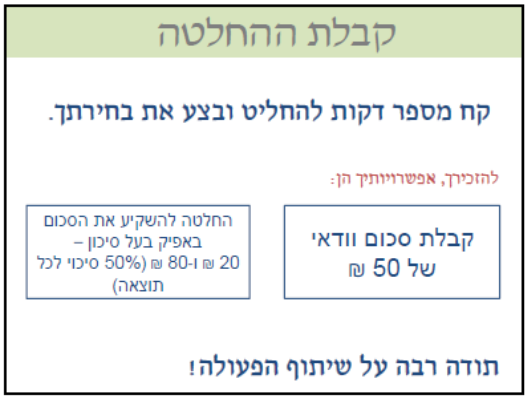
Appendix D (Hebrew)

ללא שיפוט בדיעבד









עם שיפוט בדיעבד

הסבר ראשוני

❖ בניסוי להלן משתפים 2 שחקנים: "משקיע" ו"שותף"

❖ באמצעות הפתק שבחרת, את/ה נבחרת באופן אקראי לשחק כמשקיע, השותף שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך.

❖ עם תחילת הניסוי, אתה מקבל 50 ₪ שהם מתחלקים שווה בשווה בינך לבין השותף שלך, קרי – 25 ₪ לכל אחד.

שלב א'

כעת עליך לבחור בין שתי אפשרויות:

קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

*הסכום שתרוויחו יתחלק שווה בשווה בינך לבין השותף שלך

שלב ב'

אם בחרת להשקיע באפיק בעל סיכון, נבצע כעת את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך

שלב ג'

השותף יכול לתגמל אותך בסכום של 20 ₪ בנוסף על החלק שלך מהסכום שיתקבל, אם יהיה מרוצה

קבלת ההחלטה

קח מספר דקות להחליט ובצע את בחירתך.

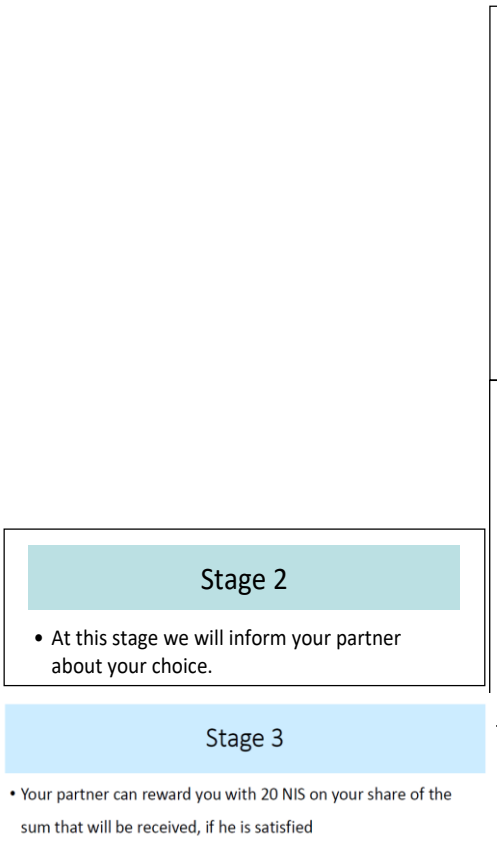
להזכירך, אפשרויותיך הן:

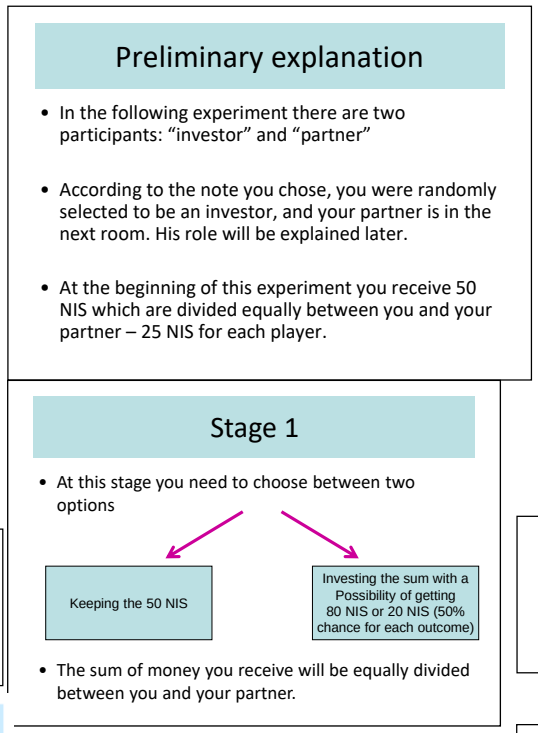
קבלת סכום וודאי של 50 ₪	החלטה להשקיע את הסכום באפיק בעל סיכון – 20 ₪ ו-80 ₪ (50% סיכוי לכל תוצאה)

תודה רבה על שיתוף הפעולה!

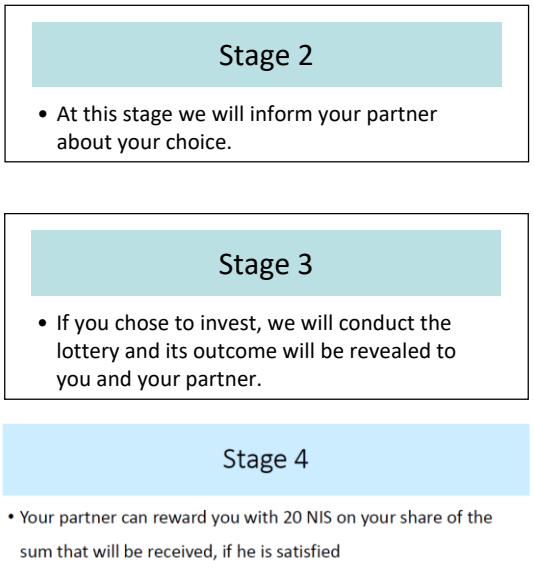
Appendix D (English)

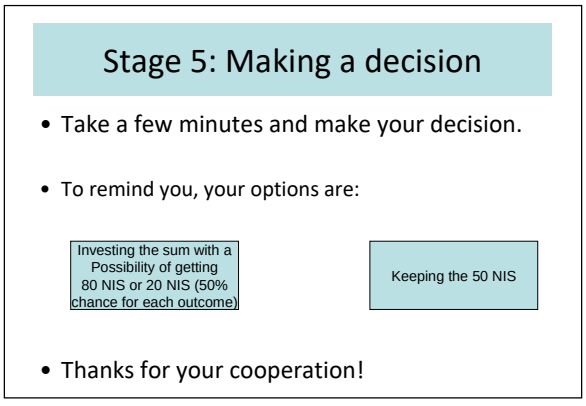
Without outcome knowledge





With outcome knowledge





Appendix E

Without outcome knowledge (Hebrew)

סטודנט יקר,

בשאלון זה מספר עמודים קצרים. בבקשה ענה לפי סדר אל תדפדף **ואל תחזור לעמוד עליו כבר ענית**.

א. **דמיין לעצמך** כי את/ה משתתף בפועל בניסוי שיתואר בפניך וקרא היטב את הוראות הניסוי בראייה זו:

1. בניסוי משתתפים שני שחקנים: "משקיע" ו-"שותף".
2. באמצעות פתק שבחרת מקופסא, נבחרת באופן אקראי לשחק כ"משקיע". "השותף" שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך. לא תראה את השותף בשום שלב בניסוי והוא לא ידע מי אתה.
3. עם תחילת הניסוי, אתה מקבל 50 ₪ שהם **משותפים** לך ולשותף שלך (קרי, 25 ₪ לכל אחד).
4. בתפקיד המשקיע בניסוי, עליך לבחור בין שתי אפשריות: א. שמירה על ה-50 ₪ <u>או</u> ב. החלטה להשקיע את הסכום באפיק בעל סיכון. אם תבחר באופציה זו, במקום 50 השקלים, תשתתף בהגרלה ובה יש 50% סיכוי לקבל 80 ₪ ו 50% לקבל 20 ₪.
בכל מקרה, הסכום שתרוויח (בין אם 50 ₪ ששמרת, או הכסף שיתקבל כתוצאה מההגרלה) יתחלק שווה בשווה בינך לבין השותף שלך.
5. השותף שלך מודע לאופציות ההשקעה שהוצגו בפניך וממתין להחלטתך.
6. לאחר שתחליט על בחירתך, ניידע את השותף שלך בהחלטה שלך והוא יהיה רשאי, **בשלב זה**, להטיל עליך קנס של <u>10 ₪</u> על החלק שלך מהסכום במידה ולא יהיה מרוצה.
7. אם בחרת להשקיע את הכסף באפיק בעל סיכון, נבצע את ההגרלה ותוצאותיה ייחשפו בפניך ובפני השותף שלך וסכום הרווח שלך יחושב בקיזוז/אי קיזוז סכום הקנס, אך חלקו של השותף לא מושפע מהטלת/אי הטלת קנס.

בטרם תקבל החלטה לגבי האופציה המועדפת עליך, אנא ענה על השאלות המופיעות בעמודים הבאים:

חשוב שוב על שתי האופציות שהוצגו לפניך בעמוד הקודם:

נניח כי בחרת בהגרלה, באיזו מידה אתה מאמין כי תרוויח?

חתוך את הסקאלה הבאה בנקודה המשקפת את **תחושתך לגבי הסיכוי שלך להרוויח** בהגרלה:

_____|_____|

בטוח שארוויח בטוח שלא ארוויח

עבור לעמוד הבא

חשוב שוב על שתי האופציות שהוצגו לפניך בעמוד הקודם:

נניח כי בחרת בהגרלה, באיזו מידה אתה מאמין כי תפסיד?

חתוך את הסקאלה הבאה בנקודה המשקפת את **תחושתך לגבי הסיכוי שלך להפסיד** בהגרלה:

_____|_____|

בטוח שלא אפסיד בטוח שאפסיד

עבור לעמוד הבא

מיד תתבקש לסמן את העדפתך מבין שתי האופציות שהוצגו לפניך.

א. שמירת 50 ₪

ב. השקעת הכסף באפיק בעל סיכון: השתתפות בהגרלה שבה 50% סיכוי להרוויח 80 ₪

ו- 50% סיכוי להרוויח רק 20 ₪.

זכור בחירתך תועבר לשותף שלך והוא יוכל לקנוס אותך בסכום של 10 שקלים אם לא יהיה מרוצה מיד **כשידע מה בחרת**.

סמן את ההעדפה שלך על פני הסקאלה הבאה

(הנעה מ-1, בטוח שאשמור את 50 ₪, עד 7, בטוח שאבחר בהגרלה).

1	2	3	4	5	6	7
שמירת 50%						הגרלה

כעת סמן את בחירתך: **הקף אופציה אחת בלבד**: א. שמירת הכסף ב. הגרלה

כעת עבור לעמוד האחרון

רוב התיאוריות בקבלת החלטות מכירות בעובדה שהחלטות אינן מתקבלות בוואקום. העדפות אישיות וידע, יחד עם הנסיבות הקיימות משפיעים יחד על תהליך ההחלטה. על מנת לאפשר את מחקרנו על קבלת החלטות, אנו מעוניינים לדעת מספר גורמים לגביך – מקבל ההחלטה. באופן ספציפי יותר, אנו מעוניינים לדעת האם אתה אכן לוקח את הזמן לקרא את ההוראות; במידה שלא, הרי שחלק מהתוצאות עליהם אנו מסתמכים תהיינה לא נכונות. לכן, כדי להראות שקראת את ההוראות, אנא התעלם מן השאלה הבאה. במקום לבחור את אחת התשובות, פשוט הקף את השאלה. לאחר מכן המשך לענות על השאלות הבאות לאחר שאלה זו. תודה רבה.

מהן הפעילויות האהובות עליך בשעות הפנאי שלך?

קריאת ספר	הצגות תאטרון	הופעות מוסיקה	קולנוע	ספורט קבוצתי	ריצה	אחר

חשוב על עצמך. עד כמה אתה אוהב לקחת סיכונים (כמו להשתתף בהימורים והגרלות)

1 2 3 4 5 6 7
לא אוהב כלל אוהב מאוד

כעת חשוב על סטודנט ממוצע בקמפוס. עד כמה הוא אוהב לקחת סיכונים **(להשתתף בהימורים והגרלות)**

1 2 3 4 5 6 7
לא אוהב כלל אוהב מאוד

לסיום מספר פרטים לצרכים סטטיסטיים:

מין: זכר / נקבה גיל _____ שפת אם:_____

ארבע ספרות אחרונות של תעודת זהות:_____

תודה רבה על עזרתך!

Without Outcome Knowledge (English)

Dear student,

This questionnaire includes a number of pages. Please answer page by page, as it is organized, and **don't' turn pages or go back to a page you have already answered**.

Imagine that you are participating in an experiment and please read the following instructions:

a. In this experiment there are two players: an "investor" and a "partner".
b. Via a note you picked from a box, you have been randomly chosen to play the "investor". Your "partner" is waiting in another room and his role will be elaborated shortly. You won't see your partner throughout the entire experiment and he/she won't know who you are.
c. In the beginning of the experiment, you receive 50 NIS which are jointly owned by you and your partner (25 NIS each).
d. As the investor in the experiment, you need to choose between two options: to keep the 50 NIS or to invest the sum via a lottery with a possibility of getting 80 NIS or 20 NIS (50% chance for each outcome). Regardless of what you choose, the sum of money that you'll earn (the sum of money you kept or the outcome of the lottery), will divide equally between you and your partner.
e. Your partner is aware of the investment options presented to you and awaits your decision.
f. After you make your choice, we will let your partner know what you have decided and he will be allowed to impose a fine of NIS 10 on your share of the sum that will be received, if he is not satisfied.
g. If you chose to invest the sum, we will conduct a lottery and its outcome will be revealed to you and to your partner. The sum you'll earn will be calculated according to the outcome of the lottery with or without the sanction fine. Note that your partner's share of the sum will not be influenced by the sanction decision.

Before you make your decision regarding your chosen option, please answer the questions in the following pages:

Think again of the two options presented to you in the previous page:

Let's assume you chose to invest the sum and to conduct the lottery, to what extent do you believe that you'll win?

Please cut the following scale at a point which reflects your feeling regarding your chances to win the lottery:

I'm sure I won't win I am sure I'll win

Please turn to the next page

Please think again of the options presented to you in the previous page.

Let's assume you chose to invest the sum and to conduct the lottery, to what extent do you believe you'll lose?

Please cut the following scale at a point which reflects your feeling regarding your chances to lose the lottery:

I am sure I won't lose I am sure I'll lose

Please turn to the next page

Soon you'll be asked to make a choice between the two options presented to you

1. To keep the NIS 50
2. To invest the sum via participating in a lottery where there is a 50% chance, you'll receive NIS 20 and a 50% chance you'll receive NIS 80

Remember: Immediately after making your choice. It will be transferred to your partner and he will be allowed to impose a NIS 10 fine if he won't be satisfied.

Please mark your preference on the following scale (beginning from 1 – I am sure I will keep the NIS 50 to 7 – I am sure I will pick the lottery.

1 2 3 4 5 6 7

Keeping the NIS 50 Lottery

Now, please make your decision, circle only one option:

(1) Keeping the sum of money

(2) Lottery

Please turn to the last page

Most theories in the field of decision making acknowledge the fact that decisions aren't usually made in a vacuum. Personal preferences and knowledge together with the existing circumstances, influence the decision-making procedure. In order to enable our research about decision making, we are interested to know a few things about you – the decision maker. More specifically, we are interested to know whether you take the time to read the instructions. If not, then some of the results we rely on for our research won't be correct. Therefore, in order to make sure that you read the instructions properly, please ignore the following question. Instead of circling one of the answers, circle the question. Then continue answering the rest of the questions following this one.

What are your favorite activities that you like to pursue during your free time?

Reading a book Theatre plays Music shows Cinema Team Sports Running Other

Think of yourself. How much do you like taking risks? (as participating in lotteries and gambles)

1 2 3 4 5 6 7

Don't like at all Like very much

Now think of an average student on campus. How much does he like to take risks (as participating in lotteries and gambles)

1 2 3 4 5 6 7

Don't like at all Like very much

Before finishing, please fill in some details about yourself. These will be used for statistical use only.

Gender: male/female Age: _____ Mother tongue: _____

Last four digits of personal id: _____

Thank you very much for your help!

With Outcome Knowledge (Hebrew)

סטודנט יקר, בשאלון זה מספר עמודים קצרים. בבקשה ענה לפי סדר אל תדפדף ואל תחזור לעמוד עליו כבר עניתי.

ב. דמיין לעצמך כי את/ה משתתף בפועל בניסוי שיתואר בפניך וקרא היטב את הוראות הניסוי בראייה זו:

8. בניסוי משתתפים שני שחקנים: "משקיע" ו-"שותף".
9. באמצעות פתק שבחרת מקופסא, נבחרת באופן אקראי לשחק כ"משקיע". "השותף" שלך נמצא בחדר אחר ותפקידו יוסבר בהמשך. לא תראה את השותף בשום שלב בניסוי והוא לא ידע מי אתה.
10. עם תחילת הניסוי, אתה מקבל 50 ₪ שהם משותפים לך ולשותף שלך (קרי, 25 ₪ לכל אחד).
11. בתפקיד המשקיע בניסוי, עליך לבחור בין שתי אפשריות: א. שמירה על ה-50 ₪ <u>או</u> ב. החלטה להשקיע את הסכום באפיק בעל סיכון. אם תבחר באופציה זו, במקום 50 השקלים, תשתתף בהגרלה ובה יש 50% סיכוי לקבל 80 ₪ ו 50% לקבל 20 ₪.
בכל מקרה, הסכום שתרוויח (בין אם 50 ₪ ששמרת, או הכסף שיתקבל כתוצאה מההגרלה) יתחלק שווה בשווה בינך לבין השותף שלך.
12. השותף שלך מודע לאופציות ההשקעה שהוצגו בפניך וממתין להחלטתך.
13. אם בחרת להשקיע את הכסף באפיק בעל סיכון, נבצע את ההגרלה ותוצאותיה ייחשפו <u>מייד</u> בפניך ובפני השותף שלך.
14. **בשלב זה,** השותף שלך יהיה רשאי להטיל קנס של 10 ₪ על החלק שלך מהסכום שיתקבל במידה ולא יהיה מרוצה. לבסוף, סכום הרווח שלך יחושב בקיזוז/אי קיזוז סכום הקנס, אך חלקו של השותף לא מושפע מהטלת/אי הטלת קנס.

ב. בטרם תקבל החלטה לגבי האופציה המועדפת עליך, אנא ענה על השאלות המופיעות בעמודים הבאים:

חשוב שוב על שתי האופציות שהוצגו לפניך בעמוד הקודם:

נניח כי בחרת בהגרלה, באיזו מידה אתה מאמין כי תרוויח?

חתוך את הסקאלה הבאה בנקודה המשקפת את תחושתך לגבי **הסיכוי שלך להרוויח** בהגרלה:

בטוח שארוויח	בטוח שלא ארוויח

עבור לעמוד הבא

חשוב שוב על שתי האופציות שהוצגו לפניך בעמוד הקודם:

נניח כי בחרת בהגרלה, באיזו מידה אתה מאמין כי תפסיד?

חתוך את הסקאלה הבאה בנקודה המשקפת את תחושתך לגבי **הסיכוי שלך להפסיד** בהגרלה:

בטוח שלא אפסיד	בטוח שאפסיד

עבור לעמוד הבא

מיד תתבקש לסמן את העדפתך מבין שתי האופציות שהוצגו לפניך.

ג. שמירת 50 ₪

ד. השקעת הכסף באפיק בעל סיכון: השתתפות בהגרלה שבה 50% סיכוי להרוויח 80 ₪

ו- 50% סיכוי להרוויח רק 20 ₪.

זכור **תוצאות** בחירתך יועברו לשותף שלך והוא יוכל לקנוס אותך בסכום של 10 שקלים אם לא יהיה מרוצה

סמן את ההעדפה שלך על פני הסקאלה הבאה

(הנעה מ-1, בטוח שאשמור את 50 ₪ ועד 7, בטוח שאבחר בהגרלה).

1 2 3 4 5 6 7

שמירת 50% הגרלה

כעת סמן את בחירתך: הקף אופציה אחת בלבד: א. שמירת הכסף ב. הגרלה

כעת עבור לעמוד האחרון

רוב התיאוריות בקבלת החלטות מכירות בעובדה שהחלטות אינן מתקבלות בואקום. העדפות אישיות וידע, יחד עם הנסיבות הקיימות משפיעים יחד על תהליך ההחלטה. על מנת לאפשר את מחקרנו על קבלת החלטות, אנו מעוניינים לדעת מספר גורמים לגביך – מקבל ההחלטה. באופן ספציפי יותר, אנו מעוניינים לדעת האם אתה אכן לוקח את הזמן לקרא את ההוראות; במידה שלא, הרי שחלק מהתוצאות עליהם אנו מסתמכים תהיינה לא נכונות. לכן, כדי להראות שקראת את ההוראות, אנא התעלם מן השאלה הבאה. במקום לבחור את אחת התשובות, פשוט הקף את השאלה. לאחר מכן המשך לענות על השאלות הבאות לאחר שאלה זו. תודה רבה.

מהן הפעילויות האהובות עליך בשעות הפנאי שלך?

קריאת ספר	הצגות תאטרון	הופעות מוסיקה	קולנוע	ספורט קבוצתי	ריצה	אחר

חשוב על עצמך. עד כמה אתה אוהב לקחת סיכונים (כמו להשתתף בהימורים והגרלות)

1 2 3 4 5 6 7

לא אוהב כלל אוהב מאוד

כעת חשוב על סטודנט ממוצע בקמפוס. עד כמה הוא אוהב לקחת סיכונים (להשתתף בהימורים והגרלות)

1 2 3 4 5 6 7

לא אוהב כלל אוהב מאוד

לסיום מספר פרטים לצרכים סטטיסטיים:

מין: זכר / נקבה גיל _____ שפת אם:_____

ארבע ספרות אחרונות של תעודת זהות:_____

תודה רבה על עזרתך!

With Outcome Knowledge (English)

Dear student,

This questionnaire includes a number of pages. Please answer page by page, as it is organized, and **don't' turn pages or go back to a page you have already answered**.

Imagine that you are participating in an experiment and please read the following instructions:

h. In this experiment there are two players: an "investor" and a "partner".
i. Via a note you picked from a box, you have been randomly chosen to play the "investor". Your "partner" is waiting in another room and his role will be elaborated shortly. You won't see your partner throughout the entire experiment and he/she won't know who you are.
j. In the beginning of the experiment, you receive 50 NIS which are jointly owned by you and your partner (25 NIS each).
k. As the investor in the experiment, you need to choose between two options: to keep the 50 NIS or to invest the sum via a lottery with a possibility of getting 80 NIS or 20 NIS (50% chance for each outcome). Regardless of what you choose, the sum of money that you'll earn (the sum of money you kept or the outcome of the lottery), will divide equally between you and your partner.
l. Your partner is aware of the investment options presented to you and awaits your decision.
m. If you chose to invest the sum, we will conduct a lottery and its outcome will be revealed to you and to your partner. Then, your partner will be allowed to impose a fine of NIS 10 on your share of the sum that will be received, if he is not satisfied.
n. The sum you'll earn will be calculated according to the outcome of the lottery with or without the sanction fine. Note that your partner's share of the sum will not be influenced by the sanction decision.

Before you make your decision regarding your chosen option, please answer the questions in the following pages:

Think again of the two options presented to you in the previous page:

Let's assume you chose to invest the sum and to conduct the lottery, to what extent do you believe that you'll win?

Please cut the following scale at a point which reflects your feeling regarding your chances to win the lottery:

I'm sure I won't win I am sure I'll win

Please turn to the next page

Please think again of the options presented to you in the previous page.

Let's assume you chose to invest the sum and to conduct the lottery, to what extent do you believe you'll lose?

Please cut the following scale at a point which reflects your feeling regarding your chances to lose the lottery:

I am sure I won't lose I am sure I'll lose

Please turn to the next page

Soon you'll be asked to make a choice between the two options presented to you

3. To keep the NIS 50
4. To invest the sum via participating in a lottery where there is a 50% chance, you'll receive NIS 20 and a 50% chance you'll receive NIS 80

Remember: The results of your choice will be transferred to your partner and he will be allowed to impose a NIS 10 fine if he won't be satisfied.

Please mark your preference on the following scale (beginning from 1 – I am sure I will keep the NIS 50 to 7 – I am sure I will pick the lottery.

1 2 3 4 5 6 7

Keeping the NIS 50 Lottery

Now, please make your decision, circle only one option:

(3) Keeping the sum of money

(4) Lottery

Please turn to the last page

Most theories in the field of decision making acknowledge the fact that decisions aren't usually made in a vacuum. Personal preferences and knowledge together with the existing circumstances, influence the decision-making procedure. In order to enable our research about decision making, we are interested to know a few things about you – the decision maker. More specifically, we are interested to know whether you take the time to read the instructions. If not, then some of the results we rely on for our research won't be correct. Therefore, in order to make sure that you read the instructions properly, please ignore the following question. Instead of circling one of the answers, circle the question. Then continue answering the rest of the questions following this one.

What are your favorite activities that you like to pursue during your free time?

Reading a book Theatre plays Music shows Cinema Team Sports Running Other

Think of yourself. How much do you like taking risks? (as participating in lotteries and gambles)

1 2 3 4 5 6 7

Don't like at all Like very much

Now think of an average student on campus. How much does he like to take risks (as participating in lotteries and gambles)

1 2 3 4 5 6 7

Don't like at all Like very much

Before finishing, please fill in some details about yourself. These will be used for statistical use only.

Gender: male/female Age: _____ Mother tongue: _____

Last four digits of personal id: _____

Thank you very much for your help!

אשר מצפים להישפט בדיעבד, על סמך התוצאה? המטרה של מחקר זה הייתה לבחון האם כאשר שוקלים חלופות עם סיכון בתנאי אי וודאות במסגרת יחסי מנהל-סוכן, מקבלי החלטות מושפעים יותר מהערכתם את ההסתברות לתוצאה שלילית מאשר לתוצאה חיובית. כדי לענות על שאלה זו, עשינו שימוש בשאלונים אשר פירטו באופן היפותטי את משחק ההשקעה של הניסוי הראשון ואשר גם כללו שאלות שנועדו למדוד את ההערכות הסובייקטיביות של המשיבים באשר לסיכוי להפסיד או לזכות בהחלטה, תחת יחסי מנהל-סוכן המבוססים על ידיעת התוצאה. תוצאות הניסוי הראו כי התפקיד של תפיסות סובייקטיביות להפסד בבחירה שבין חלופה שמרנית לחלופה עם סיכון, גדול יותר תחת יחסי מנהל-סוכן המבוססים על ידיעת התוצאה.

הממצאים אשר הצטברו מהמחקרים אשר הוצגו לעיל, טומנים בחובם השלכות חשובות לסביבות פוליטיות וחברתיות רבות, ורלוונטיים במיוחד לפרטים אשר נדרשים לקבל החלטות בתנאי אי וודאות במהלך חייהם המקצועיים. הדיון הכללי אשר נערך לקראת סוף העבודה מנתח לעומק את השלכות אלה וכן מציע דרכים למתן את אפקט ציפיית התוצאה. נוסף על כך, אני מאמינה כי עבודה זו מציעה תרומה אמפירית ותיאורטית הן למחקר של תיאוריית הסוכן והן למחקר על הטיית התוצאה.

זו, ביצענו ניסוי מעבדה אשר ערך סימולציה למשחק השקעה שבו היה על המשתתפים לקבל החלטה בנוגע לסכום כסף, כאשר הבחירה הייתה בין שמירה על אותו הסכום או השקעתו באפיק בעל סיכון. תנאי הניסוי תפעלו שני סוגים של יחסי מנהל-סוכן: עם ידע על התוצאה וללא ידע על התוצאה, כאשר המשתנה התלוי הוגדר כשיעור לקיחת הסיכון. תוצאות הניסוי סיפקו לנו תמיכה ראשונה להשערה כי הציפייה לשיפוט על סמך התוצאה במסגרת יחסי מנהל-סוכן מביאה לרתיעה מסיכון בתהליך קבלת ההחלטות. כינינו התנהגות זאת כ-'אפקט ציפיית התוצאה'.

הפרק השני של עבודה זו שואל את השאלה הבאה: **האם מומחים הלוקחים חלק ביחסי מנהל-סוכן מתאימים את קבלת ההחלטות שלהם כאשר הם מצפים להישפט בדיעבד, על סמך התוצאה?** על מנת לענות על שאלה זו ביצענו ניסוי 'מעבדה בשדה' עם מאמני כדורסל ממועדון" הפועל ירושלים – נוער" וזאת על תרחישים מחייהם המקצועיים על המגרש. תוצאותיו של ניסוי זה הדגימו ממצאים עקביים לאלו אשר התקבלו בניסוי הראשון: הציפייה לשיפוט על סמך התוצאה במסגרת יחסי מנהל-סוכן מביאה לרתיעה מסיכון בהחלטות המקצועיות גם בקרב מומחים.

הפרק השלישי שואל כך: **האם ניתן להסביר את אפקט ציפיית התוצאה באמצעות המוטיבציה של הסוכן למנוע את יכולתו של המנהל להשוות בין התוצאה של ההחלטה שהתקבלה עם האלטרנטיבה אשר לא נבחרה?** מחקר זה ביקש לבחון הסבר אלטרנטיבי לרתיעה מסיכון שהודגמה בקרב סוכנים מתוך הספרות על חרטה. המחקר בחן האם מוטיבציה מסוג זה יכולה להביא סוכנים לצפות לחרטה בקרב המנהלים ועל כן לפעול באופן אסטרטגי על מנת להגביל את יכולת ההשוואה על ידי בחירה באפשרות השמרנית. כדי לענות על שאלה זו, ביצענו את ניסוי המעבדה הראשון רק שמלבד לתפעול ידע על התוצאה, תפעלנו גם את זמינותו של המידע בנוגע לתוצאה של החלופה אשר לא נבחרה. הדבר אפשר לנו לבחון האם הרתיעה מסיכון אשר הודגמה בשני הניסויים הראשוניים מחזיקה גם כאשר המידע על התוצאה כולל מידע על התוצאה של החלופה אשר לא נבחרה. תוצאות הניסוי המשיכו את הממצאים מהניסויים הקודמים והדגימו כי הציפייה לשיפוט על סמך התוצאה במסגרת יחסי מנהל-סוכן מביאה לרתיעה מסיכון בתהליך קבלת ההחלטות, וזאת גם כאשר מידע על התוצאה של החלופה אשר לא נבחרה זמין.

בפרק הרביעי שאלנו את השאלה הבאה: **האם יחסי מנהל-סוכן המבוססים על ידע בדיעבד מתנהגים אחרת תחת תמריצים חיוביים ותמריצים שליליים?** במהלך שלושת המחקרים הראשונים, ציידנו את המנהל עם אפשרות להטיל סנקציה על הסוכן, במידה ולא מרוצה מקבלת ההחלטה שלו. במחקר זה החלפנו אמצעי זה לחיובי וציידנו את המנהל באפשרות לתת פרס לסוכן במידה ומרוצה מקבלת ההחלטה שלו. זאת כדי לבחון האם סוכנים מעניקים יותר משקל לתוצאה (שלילית או חיובית) בהתאם לסוג התמריץ אשר מחזיק בו המנהל (סנקציה או פרס). הניסוי שביצענו על מנת לענות על שאלה זו התבסס על הניסוי המקורי של המחקר הראשון רק שבמקום לצייד את המנהל ביכולת להטיל סנקציה, הוא צויד ביכולת להעניק פרס. התוצאות של ניסוי זה לא הדגימו כי המשקל הניתן לסוג התוצאה – חיובית או שלילית, משתנה בהתאם לסוג התמריץ בו מחזיק המנהל.

בפרק החמישי והאחרון של עבודה זו ביקשנו לבחון את המכניזם הפסיכולוגי המונח בבסיס הממצאים המרכזיים אשר הצטברו במחקר ושאלנו: **מהו המכניזם הפסיכולוגי המונח בבסיס התנהגות הסוכנים**

תקציר

הרבה דילמות מערבות קבלת החלטות בתנאי אי וודאות – קבלת החלטות בתנאים של מידע חלקי ותוצאות לא ידועות. עם זאת, כאשר החלטות אלה נשפטות בדיעבד, כאשר התוצאה כבר ידועה, קיימת נטייה שלא לקחת בחשבון את תנאי אי הוודאות שאפיינו את שלב קבלת ההחלטה ולהסתמך על התוצאה באופן שאינו רלוונטי להערכת איכות ההחלטה עצמה. תופעה זו מכונה בספרות הפסיכולוגית הטיית התוצאה והיא נחקרה והודגמה בתחומים מגוונים ורבים כגון בתחום המוניטרי, הרפואי, בחקירות צבאיות, בסוגיות של אחריות חוקית, בתחומים אתיים של שיפוט ועוד. עם זאת, המחקר על הטיית התוצאה התרכז עד כה בפרט השופט או המעריך בדיעבד. במחקר זה ביקשנו לאמץ נקודת מבט שונה - זו של מקבל ההחלטה אשר מצפה להישפט בדיעבד, על בסיס התוצאה, במסגרת יחסי מנהל-סוכן.

במחקר זה אנו מתמקדים במספר שאלות הנוגעות ללב הנושא המתואר לעיל. בפרק הראשון אנו שואלים את שאלת המחקר הראשית: האם הציפייה לידע בדיעבד במסגרת יחסי מנהל-סוכן משפיעה על ההתנהגות הקודמת לקבלת ההחלטה, ואם כן, באיזה אופן? למחקר של פרק זה היו שני תפקידים: תפקיד תיאורטי ותפקיד מתודולוגי. התפקיד התיאורטי היה לספק תשובה ראשונית לשאלת המחקר הראשית והתפקיד המתודולוגי היה לזהות מסגרת שבה יחסי סוכן-מנהל אינם צפויים לכלול ידע בדיעבד, באופן אשר יאפשר השוואה בין שני תנאים של קבלת החלטות: באחד עם הציפייה לשיפוט בדיעבד ובשני ללא הצפייה לשיפוט בדיעבד. לאחר הנחת הבסיס הזה, פרקים 2-5 בעבודה מתמודדים עם עוד ארבע שאלות מחקר הנגזרות מהשאלה הראשית: האם מומחים הלוקחים חלק ביחסי מנהל-סוכן מתאימים את קבלת ההחלטות שלהם כאשר הם מצפים להישפט בדיעבד, על סמך התוצאה?; האם ניתן להסביר את אפקט ציפיית התוצאה באמצעות המוטיבציה של הסוכן למנוע את יכולתו של המנהל להשוות בין התוצאה של ההחלטה שהתקבלה עם האלטרנטיבה אשר לא נבחרה?; האם יחסי מנהל-סוכן המבוססים על ידע בדיעבד מתנהגים אחרת תחת תמריצים חיוביים ותמריצים שליליים?; ומהו המכניזם הפסיכולוגי המונח בבסיס אפקט ציפיית התוצאה?.

על כן, עבודת מחקר זו כוללת חמישה פרקים (שלושה מתוכם אוגדו לכדי מאמר אשר פורסם בכתב עת מדעי) כאשר כל פרק מתמודד עם שאלת מחקר חשובה אחרת הנוגעת לסיטואציה החברתית של יחסי מנהל-סוכן המבוססים על ידיעת התוצאה. לאורך חמשת פרקים אלו, אני מיישמת סוגים שונים של מתודולוגיות מחקריות. בעיקרן, ניסויי מעבדה המבוססים על תמריצים כספיים (פרקים 1, 3 ו-4) אולם גם ניסוי 'מעבדה בשדה' (פרק 2) וניסוי סקר אשר מעביר באמצעות סימולציה היפותטית את התרחישים של ניסויי המעבדה שבוצעו (פרק 5).

הפרק הראשון שואל כך: **האם הציפייה לידע בדיעבד במסגרת יחסי מנהל-סוכן משפיעה על ההתנהגות הקודמת לקבלת ההחלטה, ואם כן, באיזה אופן?** שאלה זו נשענת על הספרות של תיאוריית הסוכן ועל הספרות של הטיית התוצאה, ומציעה להרחיב את היריעה באמצעות בחינת ההשפעה של הציפייה לשיפוט על סמך התוצאה על קבלת ההחלטות המתבצעת על ידי הסוכן. כדי לענות על שאלה

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חיבור לשם קבלת דוקטור בפילוסופיה

מאת מיכל לרר

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