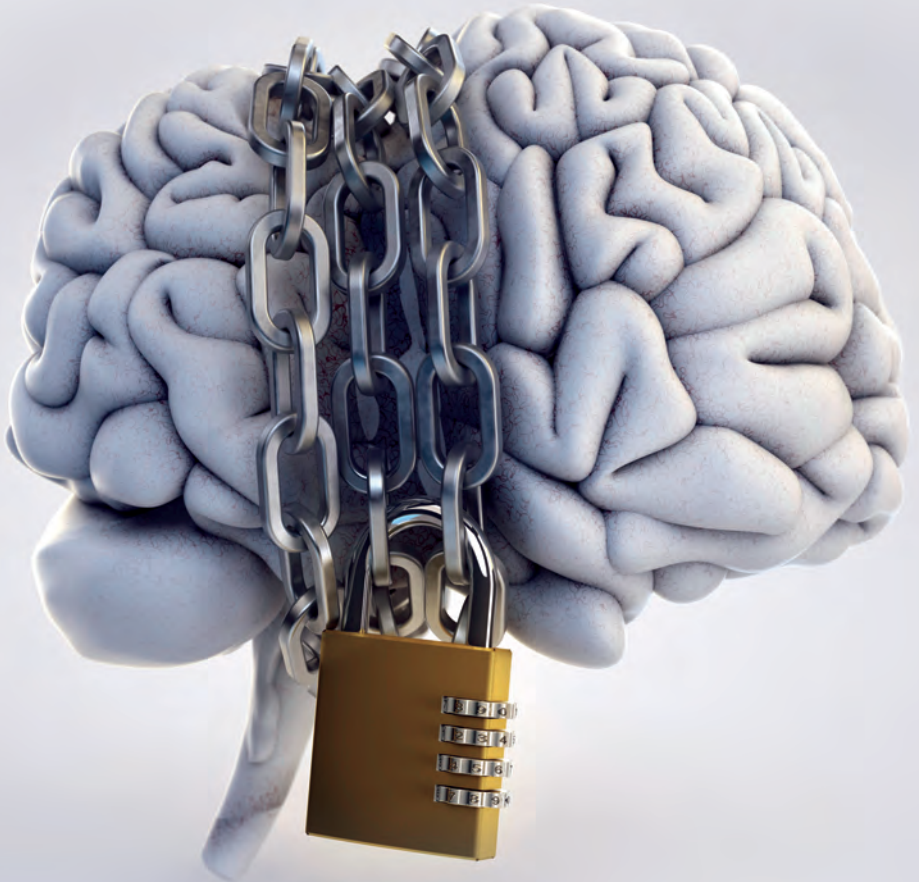NICK BENSCHOP

Biases in Project Escalation

Names, frames & construal levels

BIASES IN PROJECT ESCALATION

NAMES, FRAMES & CONSTRUAL LEVELS

Biases in Project Escalation
Names, frames & construal levels

Biases in projectescalatie
namen, framing & construal levels

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Nick Benschop,

Breda, October 2015

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Chapter 1: Introduction

According to Gartner (2015), the worldwide spending on Information Technology (IT) in 2015 is estimated to be $3.7 trillion. Not only is a lot of money being spent on IT each year, but many organizations rely on Information Systems (IS) for interaction with their customers or with other businesses. For example, Statistics Netherlands (In Dutch: Centraal Bureau voor de Statistiek (CBS)) found that, in 2009, 82% of businesses in the Netherlands with 10 or more employees had a website (Statistics Netherlands, 2011) and that, in 2012, about 40% of businesses in the Netherlands with 10 or more employees had a social media presence (Statistics Netherlands, 2012). In fact, certain forms of business, such as e-Commerce (e.g. Amazon) or internet banking, are largely dependent on IS to operate.

Yet, despite the high spending on and dependence on IS, many IS projects still struggle. A substantial portion of IS projects still suffer from significant overruns in time and budget or even fail completely. A recent report by the Standish group (2013) indicates that 18% of IS projects fail completely and that another 43% are challenged. Keil et al. (2000a) found that 30-40% of IS projects escalate and that these projects perform "*significantly worse in terms of perceived implementation performance and perceived budget/schedule performance.*" - Keil et al. (2000a), p. 632. Project escalation occurs when "*resources continue to be devoted to a project despite negative information indicating that the project is in trouble*" - Korzaan & Morris (2009), p. 1320.

Importance of not forgetting about the decision maker

The large amounts being invested into IS each year and the high degree of dependence on these systems, combined with this high degree of IS projects failing to meet targets and project escalation, underlines the importance of proper project management, governance and control. Various methodologies and guidelines have been developed for both project management and project auditing. However, the focus of these methods and guidelines seems to be mostly on so-called hard controls, i.e. tangible, objective, measurable aspects of the project. Typically information about these aspects can be obtained from project documentation and/or interviews with project managers and members and checklists can be used to determine whether certain criteria are being met. While they have been receiving more attention recently, there is still relatively little focus on soft controls. Kaptein & Wallage (2010), as quoted by de Koning (2013), define soft controls as: "*The intangible behavior-influencing factors within an organization which are important to the realization of the organizational goals*" - de Koning (2013), p.17-18 (translated from Dutch). A quote by Jim Roth in an interview by Mulders & Zevenhuizen (2007) indicates a possible reason why soft controls are not looked into as often: "*We can't evaluate soft*

controls with the same techniques or the same level of assurance as we can hard controls, but if we don't try, we are missing the boat completely." - de Koning (2013), p.18.

However, just because soft controls require a different way of measuring and could be more difficult to assess that does not mean we should ignore them, as the above quote also emphasizes. Indeed, it seems odd to assess characteristics of the project itself and aspects of the project documentation, but to not spend much attention on the person making the actual decisions since he/she has a large impact on the success of a project. As a comparison, it doesn't matter if your confidential data is well encrypted and on a private network if your users choose simple passwords or respond to phishing e-mails. Looking only at the characteristics of the software and not at the users can deceive you into thinking that everything is in order when in reality it isn't. In short, people do matter. In fact, the field of social engineering revolves around taking advantage of the weakest link (i.e. people) to bypass more difficult to break technological defenses. To give another example, having a clear idea of what to cook (i.e. the end goal) and having the right ingredients (i.e. the business case) or even the right recipe (i.e. the project management method), does not necessarily mean that your dish (i.e. the project) will turn out as successfully as expected. To not consider the qualities of the cook (i.e. the project manager) seems odd to say the least. Similarly, the real life example of stock car racing shows that even with almost identical cars that different drivers make different decisions and can systematically achieve different results. In all of these examples, the people involved have a strong impact on the success of the endeavor. In project management this is no different. It seems likely that even under identical circumstances, some project managers make different decisions than others and these decisions can impact the outcome of the project. Why then, do we spend so little attention on project managers and their decision making process?

The earlier quote by Jim Roth is certainly not the only or the first instance where the importance of looking at both hard controls and soft controls is emphasized. Simons (2013), for example, identifies the so-called four levers of control that are important for successfully implementing an organizational strategy. These are beliefs systems, boundary systems, interactive control systems and diagnostic control systems. Two of these four levers can be argued to relate to (at least in part) soft controls (de Koning, 2013), namely beliefs systems ("*used to inspire and direct the search for new opportunities*" – Simons (2013), p. 7) and interactive control systems ("*used to stimulate organizational learning and the emergence of new ideas and strategies*" – Simons (2013), p. 7).

Why then have soft controls and psychological factors thus far received much little attention in practice? One reason could be the fact that psychological factors might be more difficult to measure. However, while the psychological states and processes of people may be difficult to assess, some causal factors of psychological biases are more straightforward to identify. For example, it is relatively easy to assess the level of sunk costs in the project or the specific words chosen to describe a project (i.e. framing). If

someone is aware of how the sunk cost effect works then he/she could infer that, in a project with a high amount of sunk costs, decision makers may be more willing to continue the project. A second reason might be that people are simply not aware of the existence of these biases and their effects on decision making. In relation to this, one main contribution that we aim to make in this dissertation is to identify and describe the effects of several biases which could cause, or are linked to, project escalation. The factors studied in this dissertation have either received little to no attention as potential causes of project escalation or they have previously not been studied in this manner.

A third reason may be that people do not believe that these factors are important and/or play a role in the decision making process. From when we were young, most of us were taught lessons such as "don't judge a book by its cover" and many of us remember Shakespeare's famous quote that "a rose by any other name would smell as sweet". Thus, we are taught that we should not base our judgment on factors which are poor indicators of, or which may even be completely unrelated to, the subject in question. In other words, we learn that a book cover is not a reliable indicator of how much we will enjoy reading it and that the name that we assign to a flower does not change what it smells like. These are lessons which intuitively make sense and which most people probably would agree with. For this reason, many people might say that they don't let the cover of a book influence whether they buy it or not, for example. However, just because we know that we should not base our judgments on these types of factors, that does not mean that we don't do so. A study by Herz & von Clef (2001), for example, found that people in fact experienced certain smells to be less enjoyable when the Petri-dish containing the odor was labeled as 'vomit' as opposed to as 'cheese'. Thus it seems that a rose by any other name may in fact not smell as sweet. In other words, just because we know that something is the same regardless of the name we assign to it, that does not mean that we are immune to being influenced by it.

In this dissertation we explore biases which occur as a result of people being affected by factors which arguably should not their preferences or the decision making process. However, just as with the study of Herz & von Clef (2001) we will demonstrate that these types of factors can in fact play a role. This is perhaps all the more treacherous because such findings seem counterintuitive and because many of us are taught that such factors are poor indicators and thus that they do not matter and/or should be ignored. In fact, when debriefing practitioner subjects after one of our experiments, several of them argued that the notion that this type of factor could in any way influence the evaluations of the project and decision making intentions was unrealistic at best and that they themselves certainly didn't base their decisions on a project name or let themselves be influenced by it. Yet, our experimental results tell a very different story. These factors can in fact matter and, as such, they should not be ignored. For that reason, in this dissertation, we aim to draw attention to these types of seemingly innocent factors, which thus far have received

little attention as causal factors of project escalation, but which may nevertheless be capable of influencing project decision making.

Project escalation

Escalation of commitment is described as "*the tendency of decision makers to persist with failing courses of action*" - Brockner (1982), p. 39). Escalation of commitment to a project (i.e. project escalation) can cause decision makers to continue a previously chosen course of action, despite the availability of information which indicates that the project is in trouble (Korzaan & Morris, 2009). Research on project escalation also indicates that both tangible characteristics of a project as well as intangible psychological and social factors can serve as causes for decision makers to continue projects despite negative information being available. In fact, psychological causes of escalation of commitment seem to have received a lot of attention in prior research (Staw & Ross, 1989; Sleesman et al., 2012). As stated, project escalation involves continued commitment and investment of resources to a project despite negative information being present which indicates that the project is in trouble (Korzaan & Morris, 2009). While the decision to continue under such circumstances may seem counterintuitive, Staw & Ross (1989) identified that there are actually multiple factors which can cause managers to become overly committed to a project. They grouped these factors into four categories which are shown in Figure 1-1. An overview of these factors follows:

1. Project factors: "*The objective features of the project itself and how it is perceived by management (Ross & Staw, 1993). These factors include the costs and benefits associated with the project as well as the expected difficulty and duration of the project.*" – Keil (1995), p. 422.

2. Psychological factors: "*Those that cause managers to convince themselves that things do not look so bad and that continuation will eventually lead to success (Brockner, 1992). These factors include the manager's previous experience with similar projects, the degree to which the manager feels personally responsible for the outcome of the project, as well as psychological and cognitive biases that can affect the way in which information concerning the project is perceived or processed.*" – Keil (1995), p. 423.

3. Social factors: Factors which result from social interaction with others. "*These factors include competitive rivalry with other social groups, the need for external justification, and norms for consistency.*" – Keil (1995), p. 423.

4. Organizational factors: "*involve the structural and political environment surrounding a project. These factors include political support for the project and the degree to which the project becomes institutionalized with the goals and values of the organization.*" – Keil (1995), p. 423.

Studies on project escalation have identified various factors in each of the four categories capable of causing project escalation. We refer to Sleesman et al. (2012) for a recent overview of such factors. The high number of factors that have been suggested as causes for project escalation (Keil et al., 2000a) could explain why escalation is so widespread. While project escalation is not synonymous with failing to meet targets with regard to time, budget or functionality or even failure of the project (i.e. these things can occur even in the absence of negative information, which by definition is an element of project escalation), but the two are related. Specifically, Keil et al. (2000a) describe that escalating projects are more likely to exceed their schedule and budget. As such, given the amount of time and money that is being invested into IS each year and the dependence of organizations on IS, project escalation constitutes a serious problem.

What then causes decision makers to continue a project, despite negative information which indicates that there are significant problems with the project? In other words, what causes managers to decide to continue a project under such circumstances, rather than redirecting or terminating it? Research on psychological factors related to project escalation might provide an answer. Since IS projects are so important to organizations and because many resources are invested into them, we would like to think that the decision making process for these projects is always very deliberate, rational and based on all relevant financial and strategic considerations of the project. However, is that really the case?
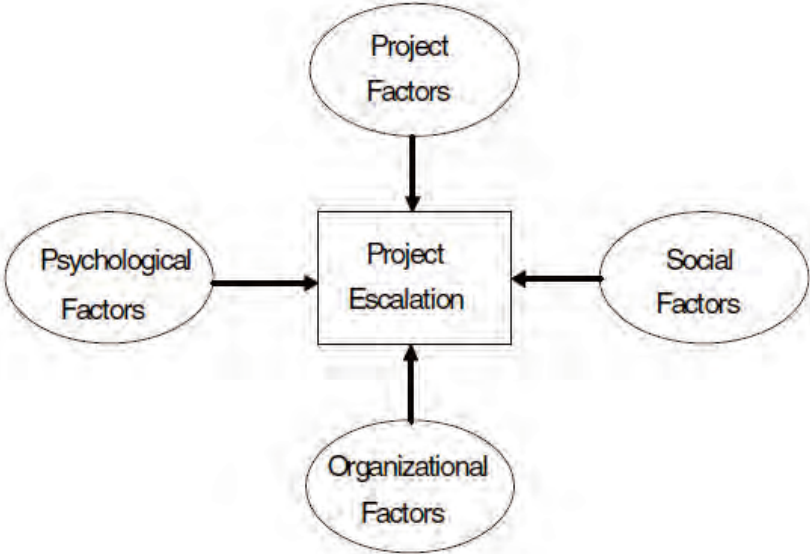

Figure 1-1: Four categories of causes of project escalation, as described by Keil & Mann (1997), based on Staw & Ross (1989).

Not all decision making is rational and deliberate: Bounded rationality

While we would perhaps like to believe that our decision making is always perfectly rational, especially for important decisions, the reality is that we are neither a computer nor the 'homo economicus' who always carefully and objectively weights all the pros and cons of all possible options and then arrives at the best solution. We are homo sapiens, and as humans we do not have the information processing capabilities that computers do, nor do we always have the time to gather and carefully weight all aspects of all possible options. As humans we have limitations, and as a result we sometimes make mistakes. Rather than describing how we 'should' behave, the field of behavioral economics tries to understand and explain how we actually do behave.

Prior research indicates that decision makers may not always be perfectly rational and that they may rely on heuristics (mental shortcuts) in their decision making, which may lead to biases (see for example Kahneman (2011) & Sleesman et al. (2012)). Such biases entail suboptimal decision making, which can have a negative impact on projects. IS projects can be both costly as well as have a big impact on the organization. As such, we would like decisions regarding such projects to be deliberate and rational, rather than based on a whim or gut feeling alone. It may not be the case that managers purposely choose not to carefully and deliberately assess all the options and to determine the optimal action, given a specific situation, but rather that this may not always be possible. Herbert Simon (1972) introduced the concept of bounded rationality, which explains that decision makers are not always perfectly rational and that, under certain conditions, they (have to) rely on heuristics and intuition when making decisions. The theory on bounded rationality states that people have limited information processing capabilities, and as such, we are not always able to find the optimal solution using deliberate, rational thought. Arthur (1994) gives the example that while we are capable of rationally figuring out the optimal strategy to a game of tic-tac-toe, that we lack the ability to find an optimal solution to a game of chess. The amount of information, possible actions of both ourselves and our opponent as well as the need to think ahead numerous moves, is often too much for us to fully consider (Simon, 1972). To stick with the example of chess, bounded rationality does not only relate to a limit in our ability to handle large volumes of information. Finding the optimal solution is also difficult under time pressure. Similarly, chess involves predicting the moves of your opponent which sometimes can be quite challenging. Under such circumstances, our bounded rationality can prevent us from being able to rationally elicit the optimal solution. In more general terms, Simon (1972) indicates that it is more difficult to find the optimal solution when there is (1) uncertainty and ambiguity, (2) incomplete information and/or (3) a high degree of complexity. These attributes are not unique to a game of chess, but can also be present in projects.

When bounded rationality makes it (too) difficult for people to find the optimal solution, they are often forced to take a different approach. "*Chess players do not consider all possible strategies and pick the best, but generate and examine a rather small number, making a choice as soon as they discover one that they regard as satisfactory*" – Simon (1972), p. 166. The process of considering a problem until a satisfactory and sufficient solution is found, and then opting to go with that solution, is called 'satisficing'. It is a mechanism that people employ when bounded rationality prevents them from finding the optimal solution (Simon, 1972). Satisficing involves investigating only a limited number of options (which seem the most promising), rather than all possible options, and choosing an option which is satisfactory. As a result however, satisficing may not always lead to the best solution. Choosing a suboptimal option, however, is sometimes interpreted as irrational behavior since there is an objectively better solution available which nevertheless isn't chosen.

Heuristics & Biases

In his book, Kahneman (2011) describes that there are two modes of thinking, which he names System 1 and System 2. Whereas system 2 is more deliberate, analytical and rational, system 1 is more automatic, intuitive and quick. In other words, system 2 is more related to deliberate and rational decision making while system 1 is more involved with quickly and easily finding solutions which are acceptable (Kahneman, 2002; 2011). The process of system 1 appears similar in nature to the process of satisficing. Figure 1-2 provides an overview of system 1 and system 2, as depicted in Kahneman (2002). Typically we would like to use system 1 for less important and common decisions where we want a quick solution which is adequate. For example, deciding how to get out of bed in the morning, deciding what drink we want. When the decision is very important however, and where finding the best solution is more important, we typically want to think over things carefully and use system 2. Arguably, project decision making falls in the latter of these categories. However, there are situations where we may want to rely (solely) on system 2, but where this is simply not possible due to our bounded rationality. As with the earlier chess example, in a project setting system 2 may not be able to find the optimal solution under time pressure, when there is too much information, too much complexity, or when there is incomplete information or ambiguity. Ironically, for difficult decisions where we believe it to be the most important to make rational decisions, system 2 might not be able to provide us with the desired optimal solution.

When system 2 is unable to provide us with the optimal solution, we have to rely (at least in part) on system 1, i.e. our gut feelings and intuition. In order to provide its quick responses, system 1 relies on mental shortcuts called heuristics to arrive at a (seemingly) acceptable solution. While efficient, such mental shortcuts are not perfect and under certain conditions can lead to systematic biases in decision making. Examples of such

biases are the previously described sunk cost effect (Arkes & Blumer, 1985) as well as framing effects (Tversky & Kahneman, 1981), where a difference in the words used to describe a situation leads to a change in preferences, despite the information being factually the same in both cases.
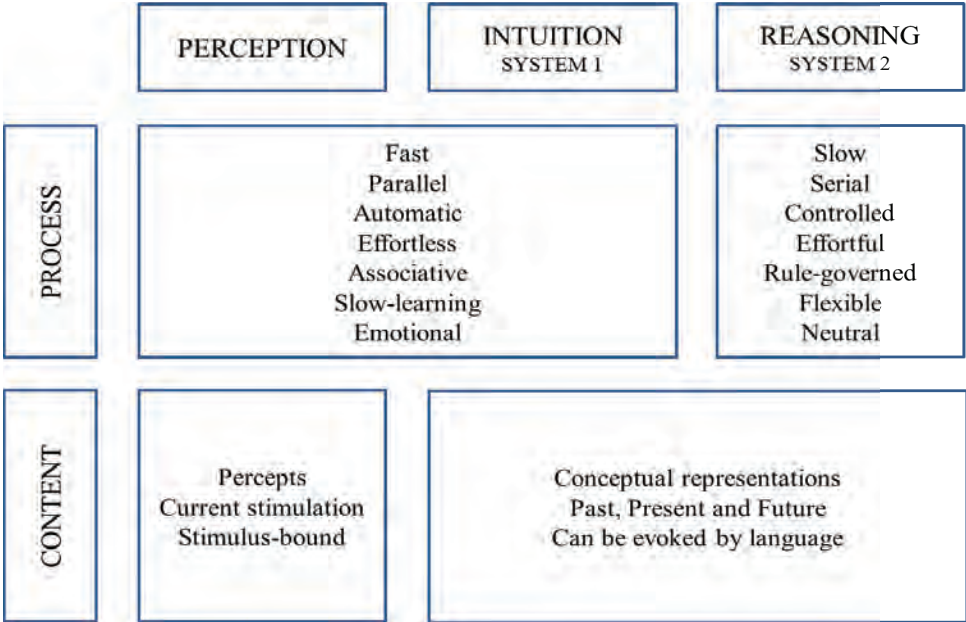
Figure 1-2: System 1 and System 2 thinking, as taken from Kahneman (2002).

IS projects & Escalation

Biases such as the sunk cost effect (for an overview see Sleesman et al., 2012) and framing effects (Nortchraft & Neale, 1986; Rutledge & Harell, 1993; Nuijten, 2012) have been linked to project escalation. Indeed, many studies have investigated the effect of psychological factors and biases on IS project escalation (for an overview see Sleesman et al., 2012). IS projects in particular, are believed to be prone to such project escalation. Prior studies argued that this may be due to factors such as their intangible nature and their complexity (Korzaan & Morris, 2009; Sabherwal et al., 2003; Keil et al., 2000a). As stated earlier, some of the components of chess which make it difficult to rationally find the optimal solution (Simon, 1972) can also be present in projects. If IS projects are, on average, more complex than other types of projects, then it is possible that managers may need to rely on system 1 more often when dealing with IS project, which can lead to

biases. That is not to say, of course, that only IS projects escalate or that only managers of IS projects are prone to biases. However, because (1) a lot of money is being invested in IS each year, because (2) organizations are becoming increasingly dependent on IS, because (3) a lot of IS projects still struggle or fail completely and because (4) IS projects are relatively prone to project escalation, the focus of this dissertation is specifically on biases which can lead to irrational decision making and project escalation in IS projects.

Psychological biases: Inconsistent preferences

Defining what is rational is difficult, especially under conditions with ambiguity, uncertainty and complexity, which aren't uncommon for IS projects. Furthermore, the optimal decision may be subjective and differ from person to person. As such, what is and what isn't considered to be rational behavior in such circumstances is something which is still debated and which depends on the exact definition and conditions of rationality that you employ (over which there is still a debate. See for example, Li (2014). In line with this, it is difficult to come up with a theory or model which always leads people to the optimal decision in every possible IS project context, and this is neither within the scope nor is it the goal of this dissertation.

This does not mean however, that irrational behavior cannot be identified. While it can be difficult to convincingly demonstrate that it is irrational for a manager to prefer course of action A over B, the argument can be made that if the same actions are described only using slightly different words (i.e. describing a glass as half empty or as half full or describing a project as 50% complete or as 50% incomplete) it can be considered irrational if this causes a manager's preferred course of action to suddenly change. In other words, when all information relevant to the decision is factually the same, then we expect a decision maker's preferences to remain the same. In the context of this dissertation, we will consider violations of such consistency to be irrational. Similarly indicating the importance of consistent preferences, Arkes & Blumer argue that "*an axiom of traditional economic theory is that decisions should be based on the costs and benefits that are expected to arise from the choice of each option*" – Arkes & Blumer (1985), p. 127. In line with this, the invariance axiom "*posits that a preference should remain unchanged regardless of order or method of presentation*" – McDermott (2001), p. 17.

Various forms of psychological biases

In this dissertation we investigate various degrees of psychological biases and demonstrate how these are related to project escalation. We focus on (these types of) factors which are seemingly innocent or irrelevant to the decision, but which actually can in fact bias decision makers and can be linked to project escalation. Because the factors causing these biases are seemingly innocent, it may be the case that people are subconsciously being biased even though they themselves might be confident that they aren't actually being

influenced. The more factors such as a project name seem innocent and irrelevant to the decision, the less likely people may be to believe that they can be influenced by these factors. Because of this seemingly innocent nature, and the counterintuitive nature of the findings, we believe that these factors are both interesting, and relevant for research as well as practice. Furthermore, the factors studied in this dissertation have either (a) received very little or no attention as potential causal factors for project escalation, or (b) have not been previously studied in this manner. If these factors are indeed capable of influencing the likelihood of project escalation, then taking them into consideration in the project management and/or auditing process could be helpful to better predict, understand and possibly prevent project escalation. In this dissertation we investigate various degrees of psychological biases, as described below.

Psychological bias as a result of a change in a seemingly unimportant factor

These are biases which can occur when all relevant financial information about the project and options are the same and where there is only a difference in aspects of the project which should not change the preference between options. We will use the sunk cost effect (Arkes & Blumer, 1985) as an example to illustrate what we mean by this. As Arkes & Blumer (1985) explained when they introduced this effect: sunk costs should not influence subsequent decision making. They explain this using the example of someone deciding whether or not they want to travel through hazardous weather to go see a football game. The amount of money that the person has already spent (e.g. on buying the ticket), i.e. the sunk costs, should not influence the decision since these costs are already incurred and cannot be recovered regardless of what the person decides and these costs are identical regardless of the subsequent decision that a person makes (Arkes & Blumer, 1985; Sleesman et al., 2012). Nevertheless, multiple experiments have found that sunk costs can influence decisions and that people are typically more likely to continue a course of action if the sunk costs are higher (See Sleesman et al., 2012 for an overview).

In Chapters 2 and 3, we look at a factor which, like the sunk cost effect, provides information which logically should not influence preferences, but does. Specifically, we look at how a seemingly innocent or irrelevant factor, the name of a project, can cause changes in preferences which constitute irrational behavior. Furthermore, the project name may be capable of biasing the decision-making process without decision makers even being aware of it. As mentioned previously, while debriefing participants in our experiments, we ourselves experienced several instances where practitioners flat out rejected the idea that they could be influenced by a factor such as the name of a project. In these chapters we hypothesize how different types of names can influence perceptions of the project and how this ultimately can influence the willingness to continue with a project and project escalation. We also identify and test mediators which can help to better

understand how a name can influence decision makers. Implications for theory and practice are discussed.

Psychological bias related to the usage of different, but factually the same wordings to describe the project

As mentioned previously, several prior studies have linked framing effects to project escalation. Our goal however is not to replicate these existing findings. Instead we take a different approach to how framing can be used in a project context, which thus far has received very little attention. In Chapter 4 we take a step back by looking at how managers themselves naturally use framing when discussing projects, instead of assessing the impact of this framing on subsequent decisions. If managers do use framing when talking about projects, then this could cause biases in the receivers of such information, e.g. executives, auditors and/or controllers. In an exploratory study where we performed a text analysis based on the transcripts of interviews with several experienced project managers, we looked at whether managers indeed used framing in their natural discussion of projects. We find not only that managers applied all four types of framing investigated in our study, but also that there appears to be a clear pattern to their framing usage. Specifically, our findings imply that managers systematically use different framing depending on whether they have a positive or a negative project view. This implies that a manager's framing is not just a potential source of bias to be avoided, but that paying attention to such psychological factors as framing could also be used as a valuable source of additional information.

The above reasoning is in line with the concept of information leakage (Sher & McKenzie, 2006), which suggests that people can systematically use different framing under different circumstances. For example, their experimental findings indicated that people were systematically more likely to describe a glass that was previously empty and then half filled with water as 'half full' rather than as 'half empty'. Similarly, they found that subjects were more likely to describe a bad project team in terms of their failure rate and a good project team in terms of their success rate (even when the success rates of both teams were actually identical). As such, the fact that someone chooses to describe a project team in terms of its failure rate, rather than in terms of its success rate, could provide an indication of the underlying opinion that the person might have of a project team. We argue that such 'information leakage' also can occur when managers discuss a project and that this could provide valuable additional information beyond what is being explicitly said to an informed listener. Implications for theory and practice are discussed.

Psychological bias when all information about the project is identical

Finally, we demonstrate that even when all information about the project and the choices is identical (including the wordings used) that biases can still occur. In Chapter 5 we

hypothesize that even when all project information is identical, that a task completely unrelated to the project can affect the willingness to continue with said project. Even though the task is clearly unrelated to the project itself, and the available information about the project was identical for all subjects, we still observed that they still evaluated the project differently and had different preferences as a result of this task. This constitutes perhaps the strongest example of irrational behavior in this dissertation which constitutes a clear example of how preferences can be unstable and influenced even when logically this does not make sense.

Based on Construal Level Theory (CLT) we hypothesize that a difference in construal level in subjects (which is manipulated in the experiment in an unrelated exercise) can influence factors such as the perceived importance of feasibility relative to desirability of the project, the perceived levels of feasibility and desirability, and the number of pros and cons for continuing the project that people will be able to think of. We further hypothesize that these factors, in turn, could mediate the effect of construal level on willingness to continue with the project. If this is the case then the likelihood of project escalation could be influenced by something completely unrelated to the project itself. Not only could this be considered irrational, but it is also concerning since it would be quite difficult to predict or account for factors completely outside of the project when managing or auditing an IS project. Implications for theory and practice are discussed.

Structure of this dissertation

Figure 1-3 provides an overview of the structure of this dissertation. As mentioned, we will be looking at various types and degrees of psychological biases. Chapters 2 & 3 discuss how a change in a seemingly innocent and irrelevant attribute of a project, its name, can bias decision makers and make them more likely to escalate commitment to the project. Chapter 4 takes a different approach to the concept of framing and investigates whether usage of different ways to frame the same information could actually leak valuable information about managers' view on a project. Chapter 5 takes things one step further and investigates whether biases can occur even when all information provided about the project to decision makers is exactly the same. The study investigates whether a difference in construal level can lead to differences in decision making even when the project information is identical. In Chapter 6 we discuss the conclusions of this dissertation. The chapter includes an overview of our most important findings, the main theoretical and practical implications of the dissertation, the limitations and suggestions for future research as well as a brief reflection on the thesis.

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│        Chapter 1:           │
│        Introduction         │
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┌───────────────────────────────────────────────────┐
│        Bias: difference in a project attribute      │
│  ┌──────────────────────┐  ┌──────────────────────┐ │
│  │     Chapter 2:       │  │     Chapter 3:       │ │
│  │    Project names     │  │    Project names     │ │
│  │ (Positive vs Negative)│ │ (Generic vs Specific)│ │
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│   Bias: different words to describe same information │
│        ┌──────────────────────┐                     │
│        │     Chapter 4:       │                     │
│        │    Framing usage by   │                    │
│        │      managers        │                     │
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│        Bias: factor unrelated to project            │
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│        │     Chapter 5:       │                     │
│        │  Construal Level Theory│                    │
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│        Chapter 6:           │
│        Conclusion           │
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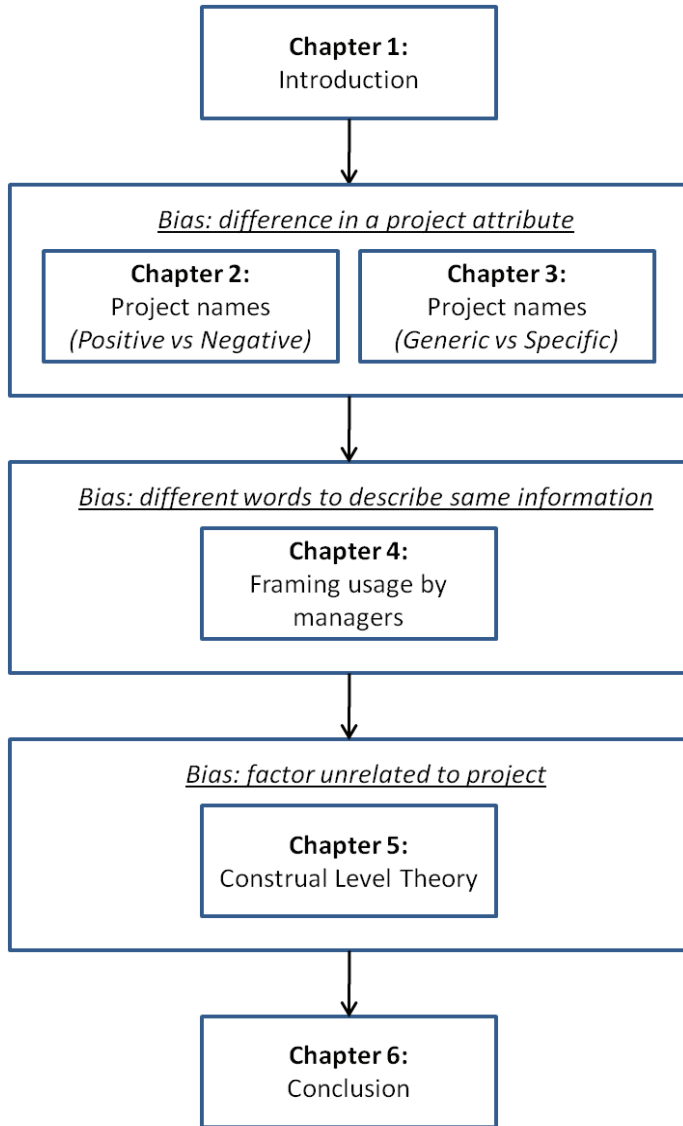
Figure 1-3: Structure of this dissertation.

Clarification of contribution

This dissertation is the result of a collaboration between myself (Nick Benschop), my promotors (Prof. dr. K.I.M. Rohde, Prof. dr. H.R. Commandeur, Prof. dr. Mark Keil), my copromotor (Dr. A.L.P. Nuijten) and Prof. dr. G.J. Van der Pijl. For each chapter, the contributions were as followed:

- Chapters 1 & 6: Written by myself, improved over several rounds based on feedback and advice by promotors & copromotor.
- Chapters 2,3 & 5: The initial research ideas resulted from brainstorming sessions between myself and my promoter(s) and co-promotor. My role was to perform literature research, create research designs, perform data collection and analysis, and to write the chapters. My promotors and co-promotor offered advice and guidance throughout the entire process and made suggestions for additions and improvements. Their detailed feedback and suggestions were incorporated in the research designs, data analyses, and final versions of the chapters. Chapter 2 is based on the article *"The effect of project name and project classification on escalation: An affect heuristic perspective"* by Benschop, Nuijten, Keil, Rohde & Commandeur, which is currently under review at a journal.
- Chapter 4: Data collection (interviews) was performed by Dr. Arno Nuijten and myself. I was responsible for transcribing of the interviews, data analysis and writing of the chapter. Promotor(s) and copromotor provided feedback which was incorporated in later versions of the chapter and in the paper on which it is based. This chapter is based on a study by Benschop, Nuijten & Van der Pijl which was presented at the 2011 Bled e-Conference in Slovenia and the 2013 IACG conference in Oslo, Norway and which has been published in 'Management & Organisatie'.

Chapter 2: The effect of project name and project classification on escalation: An affect heuristic perspective

Chapter overview[1]

The main goal of this chapter is to investigate the effect of a project's name on continuation decisions and project escalation. We performed an experiment in which we investigated whether, ceteris paribus, a difference in project name would lead to different evaluations of the project and different decision making intentions. We hypothesize that a positive (negative) project name can evoke positive (negative) affective reactions towards the project. Drawing on research on the affect heuristic, we hypothesize that affect, in turn, influences willingness to continue with the project, as mediated by perceptions of project benefits and risk. Additionally, we examine whether classifying a project as an information system (IS) project can influence perceived project benefits, due to technological optimism. In this study, we performed a 2 x 2 factorial design experiment in which we manipulated project name and type. The results support our hypothesized relationships. Implications for research and practice are discussed.

Keywords: IS project management, escalation, naming, affect heuristic, decision making

2.1 Introduction

"*What's in a name? That which we call a rose by any other name would smell as sweet.*" This famous quote from Shakespeare's play Romeo & Juliet implies that we should not judge things by their name but rather by what they are. However, in practice, names may influence people without them even realizing it. In IS project settings, the choice of a project name should not be taken lightly as it could cause unintended consequences.

Anecdotal evidence suggests that project names do indeed carry meaning and that they are capable of influencing perceptions of a project. For example, one of the most commonly mentioned examples of a poor project name in the Netherlands is the so-called 'Betuwe line' or 'Betuwe route'. It was a project for a new freight train connection

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between the Dutch port city of Rotterdam and Germany. It was given its name because the track went through a part of the Netherlands which is known as the Betuwe. However, since the Betuwe is known for being one of the most nature-rich areas of the Netherlands, the name 'Betuwe line' evoked strong images of a train track ruining a beautiful piece of nature. This poorly chosen name created strong negative associations with the projects (Biesheuvel, 1993; Goslinga, 2003). It has been argued that if the project had been given a different name such as 'the A15 line' (Biesheuvel, 1993), referring to the highway which runs parallel to the track for a significant part of the route, the resistance to the project would likely have been lower (Biesheuvel, 1993; Goslinga, 2003).

In this chapter, we investigate the impact of project names on the problem of IS project escalation. Prior research has established that individuals can become overly committed to failing courses of action and this phenomenon has been labeled "escalation of commitment." Keil et al. (2000a) found that 30-40% of IS projects escalate and that these projects perform "*significantly worse in terms of perceived implementation performance and perceived budget/schedule performance*" – Keil et al. (2000a), p. 632. While prior research has identified other factors (e.g., personal responsibility and sunk cost) that can promote project escalation (see Sleesman et al., 2012 for a recent review), the impact of a project name on escalation has not been previously studied. In this research, we conduct an experiment in which we isolate the effect of project name and control for all of the other potential factors that might influence project continuation decisions. We propose that a positive project name will evoke positive affective reactions towards the project and that a negative project name will similarly evoke negative affect. Drawing on the affect heuristic, we introduce and test a model that explains how project names can indirectly influence escalation decisions. Specifically, our findings demonstrate that a project name creates affective reactions toward the project, which in turn drive perceptions of risk and benefit, thus influencing the tendency to continue a failing project.

While IS projects have been shown to be highly prone to escalation, whether individuals are any more prone to escalate commitment to an IS project than a non-IS project remains unexplored. In this study, we also explore whether people behave differently toward IS vs. non-IS projects with respect to escalation decisions. We propose that technological optimism, positive attitudes towards technology, and the view of technology as a means to solve problems (Bella, 1979; Krier & Gillette, 1985), could cause people to perceive the benefits of a project to be higher when it is classified as an IS project.

This study contributes to the existing IS project escalation literature in two ways. First, we investigate a previously unexplored causal factor (project name) and associated mechanism (affect) related to individuals' willingness to continue a failing course of action. Second, we probe whether individuals are more likely to escalate commitment to an IS project as opposed to a non-IS project. Our findings reveal that positive names may not

be as beneficial as expected and that they can in fact bias decision-making and nudge decision makers towards escalation. We further find that people are more likely to escalate commitment to an IS project than to a non-IS project and that this effect is mediated by perceived benefits.

2.2   Theoretical background

Prior research, particularly in the field of marketing, has shown that names matter. Skorinko et al. (2006), for example, found that names influence perceptions and evaluations of products such as towels as well as the subsequent willingness to pay for them. A study by Herz and Von Clef (2001) found that people described the same scent as more pleasurable when it was labeled 'Cheese' than when it was labeled 'Vomit'. These and other studies (e.g. Irmak et al., 2011) indicate that names can suggest that a product possesses certain characteristics. Names that provide people with such information are called semantic names (Wänke et al., 2007). Studies on semantic names indicate that people may ascribe positive characteristics implied by the name to the product itself. As a result, people's evaluations of the product can become more positive. Baker (2003) found that batteries named 'Marathon' were perceived to last a long time and this benefit was remembered more prominently than when the same batteries were given a different name. Similarly, Wänke et al. (2007) found that hotels with a semantic name related to winter sports (Alpine) were rated higher on sports-related attributes than hotels with the same sport-related attributes but a non-sportive name (Edelweiss). Wänke et al. (2007) found that this difference persisted even when hotel Alpine scored objectively worse on sport-related attributes than did hotel Edelweiss.

Naming effects, such as those described in the previous paragraph, have been hypothesized and found in several studies. According to Wänke et al. (2007): "*names do carry meaning, and they do elicit associations and images*" – Wänke et al. (2007), p. 2. Specifically, Damasio (1994) stated that these images become marked with positive or negative feelings. Skorinko et al. (2006) suggest that these associations could influence evaluations. Thus, names could be used as a heuristic cue that influences product assessments. Based on these findings, one can also expect project names to generate positive or negative feelings. Yet, the mechanism by which names influence evaluations remains relatively unexplored.

We suggest that the effect of a name of an artifact (e.g. product or project) on people's evaluation of the artifact is mediated by affect. Slovic et al. (2002a) describe "*affect*" as a feeling of "goodness" or "badness" that can be conscious or subconscious, and that "*reliance on such feelings can be characterized as the affect heuristic*" – Slovic et al. (2002a), p. 397. In accordance with the affect heuristic, we posit that names can serve as a stimulus that evokes certain feelings toward an artifact (e.g. product or project) and

that reliance on these feelings can influence both evaluations and decisions (Slovic et al., 2002a; King & Slovic, 2014; Su et al., 2010; Rubaltelli et al., 2010; Slovic, 2012).

According to theory on the affect heuristic, people consider the combined group of thoughts or images that the stimulus in question evokes, the so-called affect pool, when evaluating a subject or making a decision. When the sum or the average of the feelings associated with the images in the pool is positive, people tend to be more positive about the subject (Slovic et al., 2002a). As mentioned above, exposing someone even to a single word, such as a name, can be enough to evoke affective reactions. For example, Slovic et al. (1991) found that the name of a city evoked affective feelings towards that city, which in turn predicted actual travel behavior. Following the same logic, and drawing on the affect heuristic, we propose that a project's name can influence affective reactions to the project (Slovic et al., 2002a; King & Slovic, 2014; Rubaltelli et al., 2010). Specifically, we state the following hypothesis concerning the relationship between project name and affect:

> **Hypothesis 1:** *A positive project name evokes positive associations with the project which cause decision makers' affective reactions to the project to be more positive.*

Our second hypothesis concerns the relationship between affect, perceived project benefits, and perceived project risks. In their study, Alhakami and Slovic (1994) found that people's perceptions of risks and benefits were often negatively correlated. Thus, when an individual's overall attitude is positive, then benefits are perceived to be relatively high and risks to be low, and vice versa. Based on a laboratory experiment, Finucane et al. (2000) found evidence suggesting that this inverse relationship between perceived risk and benefits could be caused by the affect heuristic. They tested the effect of providing positive or negative information about either the risks or the benefits of the subject in question (i.e. technologies such as nuclear power) on people's assessments. They found that positive (negative) information about the benefits of a technology naturally increased (decreased) people's perceptions of the benefits of said technology. However, they found that information strictly about benefits also changed perceptions of risks in the opposite direction, and vice versa. They describe that the information about benefits or risks can influence the affective reactions to the subject in question and that people adjust their perceptions of risks and benefits to be in line with this affective reaction (Finucane et al., 2000).

The findings from the experiment by Finucane et al. (2000) suggest that there is a causal relationship between affect and perceptions of risks and benefits. However, their study is not specific about the exact way in which affect influences perceived risk and benefits (Finucane et al., 2000). One possibility is that affect has direct and separate effects

on both perceived risk and perceived benefits. Another possibility is that affect influences one of these, which then subsequently influences the other, such that they are negatively correlated. The notion of such an indirect effect where one attribute (e.g., perceived benefits) influences another (e.g., perceived risk) is consistent with the so-called "halo effect" whereby positive perceptions of one particular attribute can spill over and lead to positive perceptions of other attributes (Thorndike, 1920). Given the possibility of direct (hypotheses 2a & 2b) and/or indirect effects (hypotheses 2c & 2d) of affect on perceptions of risks and benefits, we state the following hypotheses:

Hypothesis 2a: Positive affect leads to lower perceived risk.

Hypothesis 2b: Positive affect leads to higher perceived benefits.

Hypothesis 2c: Positive affect leads to higher perceived benefits and this effect is mediated by lower perceived risk.

Hypothesis 2d: Positive affect leads to lower perceived risk and this effect is mediated by higher perceived benefits.

In the context of project continuation decisions, where decision makers have to decide whether or not to re-invest in the project, perceptions of risks and benefits of the investment likely play a role in the decision making process. Indeed, ceteris paribus, it seems plausible that people will be more (less) likely to invest when they perceive the benefits to be higher (lower) and the risks to be lower (higher). Following this line of reasoning, it seems plausible that affect can influence decisions (via its effect on perceptions of risks and benefits). Prior research on the affect heuristic indeed suggests that affective reactions can influence perceptions and decision making. According to Zajonc (1980), affect can influence investment decisions; for example, we are more likely to buy a car that we 'like'. Similarly, Damasio (1994) emphasizes the crucial role that positive and negative feelings can play in decision-making. In addition, prior research on project escalation has shown empirical support for a causal relationship between perceived risk and willingness to continue a project (Keil et al., 2000c).

In line with this, we propose that the affective reactions to a project can influence how willing people are to continue said project. Specifically, we expect that positive affect towards a project will engender a greater tendency to engage in escalation behavior, whereas negative affect toward a project will tend to reduce escalation. We hypothesize

that the mediating mechanism that governs the relationship between affect and escalation involves perceptions of benefits and risk. Specifically, we theorize that positive affect leads to higher perceived benefits and lower perceived risk and that this is what makes individuals more willing to continue a course of action in spite of negative feedback.

Hypothesis 3: Positive affect leads to higher willingness to continue with a project and this effect is mediated by perceived benefits and perceived risk.[2]

In line with the above, we have hypothesized a relationship between project name and affect (hypothesis 1) and a relationship between affect and willingness to continue, as mediated by perceived benefits and risks (hypothesis 3). Our fourth hypothesis ties these two together to link project name and the willingness to continue a project. Specifically, we propose that a positive project name can increase the willingness to continue with a project and that this effect is mediated by affective reactions to the project and by subsequent perceptions of the project benefits and risk.

Hypothesis 4: A positive project name leads to higher willingness to continue with a project and this effect is mediated by affect, perceived benefits and perceived risk.

Our fifth hypothesis relates to the effect of classifying a project as an information system (IS) project. We propose that people respond differently to IS projects because they are associated with images of technology and therefore trigger technological optimism. Krier and Gillette (Krier & Gillette, 1985) argue that technological optimism is pervasive in our society. Technological optimism is consistent with the widespread belief that technology is positive and provides a means of solving our problems (Bella, 1979). Thus, we theorize that even superficially describing a project as 'an IS project' will lead to a higher perception of project benefits.

Hypothesis 5: When a project is classified as an IS project, rather than as a generic project, decision-makers will perceive the project benefits to be higher.

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[2] The exact relationship between affect and perceptions of risk and benefits could be either direct or indirect, as mentioned in the discussion of hypotheses 2a-2d. Thus, we empirically tested for both direct effects of affect on perceptions of risk and benefits as well as indirect effects where the effect of affect on perceived risk is mediated by perceived benefits (and vice versa).

Combined, the hypotheses described in this section make up our research model, which is depicted in Figure 2-1. This model includes all relationships hypothesized in this section.
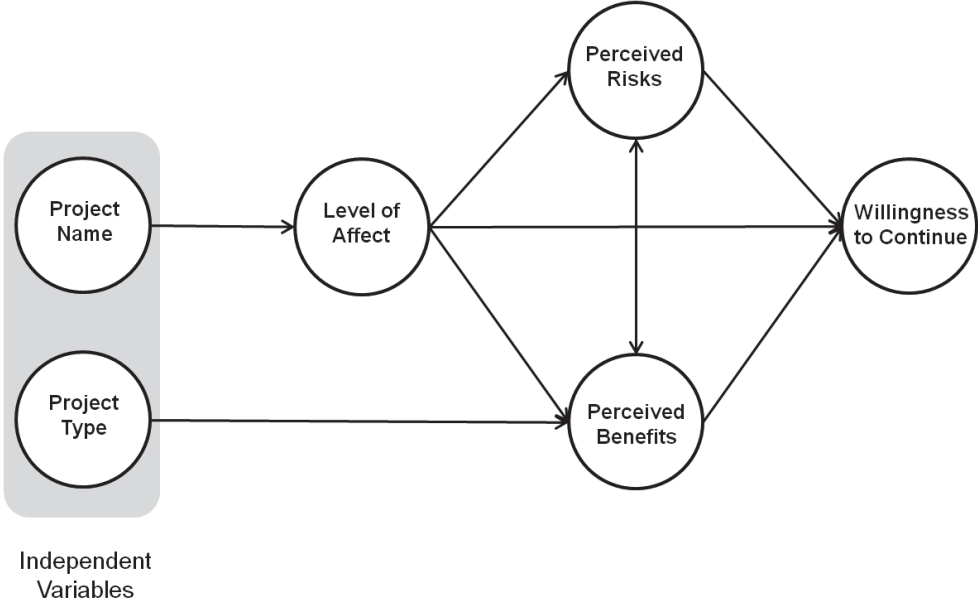
Figure 2-1: Research Model.

2.3   Methodology

Procedure and Scenario

In order to test our hypotheses, we performed a 2 x 2 factorial design experiment involving 153 undergraduate economics students in the Netherlands. Project name and project type were manipulated independently and subjects were randomly assigned to one of the four treatment conditions. They were paid €7, - for their participation. After reading the general instructions at their desks students started the experiment, which was administered on a computer workstation.

Subjects were asked to read a scenario adapted from Rutledge (1994) describing a product development project. Negative feedback was introduced into the scenario in the form of a superior product being marketed by a competitor. Subjects were asked to play the role of Financial Vice President of the company. They are presented with two options, either to abandon the project or to make an additional investment with an uncertain

outcome. Both options had an expected value of €0. Abandoning the project would involve no further costs or gains. Continuing the project required an additional investment of €2 million with a 1/3 chance of completing the project successfully (yielding sales revenues of €6 million) and a 2/3 chance of failing to complete the project successfully (yielding a final value of €0). Investments in the project prior to this decision were €3 million in all cases.

Subject pool

External validity can be a concern with laboratory experiments, and the appropriateness of using student subjects depends upon the situation (Compeau et al., 2012). Generalization of experimental research on escalation is an important factor to consider, especially when using student subjects. It is important to distinguish under which conditions generalization is acceptable and when it becomes problematic. As Compeau et al. (2012) point out: if there are theoretical reasons to assume that unique characteristics of students could drive the results, then generalization becomes problematic. Students might for example differ from managers in what factors they consider in their conscious project evaluation process. However, the focus of our study is on how project names can subconsciously bias project evaluations and subsequent decision-making by nudging people in a certain direction. For external validity to be threatened, there would have to be theoretical reasons that demonstrate that one group of subjects is susceptible to such effects while another group is immune (Compeau et al., 2012). Ashton & Kramer (1980) investigated how students and other decision makers react to psychological factors and found that students and practitioners show "*extremely similar information processing characteristics and biases*" – Ashton & Kramer (1980), p. 3. Since there is no theoretical reason to suggest that managers would be any more immune to subconscious biases (like that generated by a positive project name) than students, the use of student subjects does not pose a significant threat to external validity in the context of our study.

Treatments

For the name treatment, we wanted two names that would create strong negative and positive affective reactions. To find the most suitable names for our study, we drafted a list of potential project names and pilot tested them, asking subjects (different from the ones partaking in the actual experiment) to write down the images that the names evoked. Based on the pilot test, we selected the names 'Sunrise' and 'JHAD'. Sunrise tended to evoke mostly positive associations, either benefits related to the organization (e.g., a new dawn, an improvement or way forward for the company) or unrelated to the organization (e.g., vacation, beach, etc.). JHAD was typically interpreted as a boring name, or it was associated with the term 'Jihad', to which it is phonetically similar. Thus, this name on average evoked more negative associations than the name Sunrise did.

Project type was manipulated by either positioning the project as an information system (IS) projector or by not specifying the type of project. The scenarios for the Sunrise IS project treatment condition and the JHAD generic project treatment condition are included in Appendix 1.

Measures

Our dependent variable, willingness to continue, was assessed using two measurement items. Like our scenario, the first item to measure willingness to continue was adapted from Rutledge (1994). We added a second item which was adapted from Korzaan and Morris (2009). Subjects' affect towards the project was measured using an approach employed by Slovic et al. (1991). Specifically, subjects are asked to think about a topic, in our case the project, and then write down the first thoughts or images that come to their mind. Subsequently, they are asked to assign scores between -2 (very negative thought or image) and +2 (very positive thought or image), with 0 as the neutral point. Summing the scores of these thoughts or images leads to a total affective score towards the project.

Measures of perceived risk and benefits were based on the items used by Finucane et al. (2000). We modified the questions to fit the context of our study. The order of presentation for the risk and benefit measures was varied (within every treatment) such that half the subjects were asked about their risk perceptions first and then their benefit perceptions, while the other half of the subjects were first asked about their benefit perceptions and then their risk perceptions. A full list of the items used, as well as their respective sources is shown in Appendix 2.

2.4 Results

Before starting our analysis, we excluded responses from subjects if we saw evidence of particular problems. First, subjects were removed from the sample if their responses indicated that they misunderstood one or more questions. This included, for example, subjects who indicated that they didn't understand a specific question or subjects who indicated that both ends of a scale had the same text when this was not actually the case. Second, subjects were excluded if they guessed that the project name or type had something to do with our study. Third, subjects were excluded if their response patterns or the time that they spent suggested that they had not taken the exercise seriously. Specifically, we identified subjects who consistently clicked the same answer for every question on the page, subjects who self-reported that they did not take the experiment seriously, and subjects who completed the entire exercise in an abnormally short period of time (e.g., less than 3 minutes), and used this information as the basis for determining if a subject should be dropped. Based upon the above-described criteria, 33 of the 153 responses were dropped from further analysis. Of the remaining 120 respondents, 76 were

male (63.3%) and 44 were female (36.7%). 61 of these participants were exposed to the project name 'Sunrise' and the remaining 59 to the name JHAD. Out of the same 120 remaining participants, 62 were informed that the project was an 'IS project' while the remaining 58 were simply told that it was a project.

Model

Our research model consists of two independent variables (project name and project type), one dependent variable (willingness to continue) and several mediators (affect, perceived benefits & perceived risk). To control for possible differences due to age and gender, we included these factors in our analysis. Since escalation involves risk-taking, and gender differences have been observed with respect to risk taking, it is reasonable to assume that gender could have an influence on escalation behavior.

We first evaluated the direct effect of our manipulations of project type and name on their intended target variables (project name on affect and project type on perceived benefits). We performed an ANOVA and found that levels of affect indeed differed between subjects in the Sunrise (n = 61, M = 1.82, SD = 3.96) and the JHAD (n = 59, M = -0.39, SD = 4.11) naming conditions (p = 0.003). Similarly, levels of perceived project benefits differed based on whether subjects were in the generic project type (n = 58, M = 4.36, SD = 1.72) or IS project type (n = 62, M = 5.15, SD = 1.96) conditions (p = 0.02).

In order to test our model in its entirety, rather than testing individual parts separately, we used Partial Least Squares (PLS) analysis for testing our hypotheses. We made use of the statistical tool SmartPLS 2.0 (Ringle et al., 2005) to run the analysis, first evaluating our measurement model and then the structural model. One main advantage of PLS is that it analyzes the entire model as a whole, thus allowing multiple mediation paths to be simultaneously estimated. This makes SmartPLS particularly suitable for testing models such as ours.

Convergent validity

Following recommended practices (Chin, 1998; Fornell & Larcker, 1981), we examined both the convergent and discriminant validity of the constructs in our model. To test convergent validity we started by testing the reliability of individual items. Specifically, for all of our multi-item scales, we tested the loadings of each item on their corresponding construct. Loadings above 0.7 are considered acceptable as above this threshold the shared variance between an item and its associated construct is higher than the error variance. As can be seen in Table 2-1, all of our items meet this requirement.

Construct	Item	Item to Construct Loadings
Perceived Benefits	Benefit1	0.872
	Benefit2	0.912
	Benefit3	0.891
Perceived Risk	Risk1	0.706
	Risk2	0.848
	Risk3	0.887
Willingness to continue	Cont1	0.933
	Cont2	0.922

Table 2-1: Item loadings to corresponding construct.

Two recommended measures for assessing the consistency amongst the individual items of a construct are Cronbach's α and composite reliability. Values above 0.7 are considered sufficient evidence of construct reliability (Bearden et al., 1993). Average Variance Extracted (AVE) is another measure for construct reliability and represents the percentage of the total variance in the individual measurement items that is explained by the construct as compared to measurement error (Fornell & Larcker, 1981). The recommended AVE threshold value is 0.5 (i.e. at least 50% of the variance is accounted for by the construct (Chin, 1998)). Table 2-2 shows the Cronbach's α, composite reliability, and AVE scores for each of the constructs in our model that were assessed with multiple measurement items. For all the constructs in our model the scores are above their respective threshold levels.

Construct	Cronbach's α	Composite Reliability	AVE
Perceived Benefits	0.871	0.921	0.795
Perceived Risk	0.754	0.857	0.668
Willingness to continue	0.838	0.925	0.86

Table 2-2: Cronbach's α, composite reliability, and AVE scores.

Discriminant validity

For discriminant validity, it is important to test the extent to which individual measurement items load on their intended construct versus other constructs. Each item should load higher on its associated construct than on any other construct. Also, no items from other constructs should have a higher loading on that construct than the items associated with it. It is an indication of good discriminant validity if these requirements are met (Chin, 1998). Table 2-3 demonstrates that this is indeed the case for our model. The loadings of items on

their own construct are bolded. Chin (1998) also suggests that further evidence of discriminant validity is obtained when the root of the AVE for a construct is higher than the correlation of the construct with any of the other constructs. Table 2-4 provides an overview of both the AVE values as well as the squared correlations between each of the constructs. As can be seen, none of the squared correlations exceed the corresponding AVE scores.

Construct	Item	Name	Type	Affect	Benefits	Risk	Cont.	Age	Gender
Name	Name	**1**	-0.017	0.266	-0.103	0.117	-0.046	0.031	0.013
Type	Type	-0.017	**1**	-0.030	0.212	-0.067	0.092	-0.135	-0.009
Affect	Affect	0.266	-0.030	**1**	0.424	-0.102	0.397	-0.097	0.047
Benefits	Benefit1	-0.022	0.117	0.396	**0.872**	-0.149	0.667	0.015	-0.148
	Benefit2	-0.106	0.257	0.296	**0.912**	-0.263	0.700	-0.071	-0.151
	Benefit3	-0.139	0.188	0.436	**0.891**	-0.365	0.715	-0.094	-0.189
Risk	Risk1	0.070	-0.061	-0.069	-0.172	**0.706**	-0.205	-0.021	0.143
	Risk2	0.129	-0.007	-0.019	-0.234	**0.848**	-0.294	0.036	0.098
	Risk3	0.086	-0.091	-0.147	-0.299	**0.887**	-0.369	0.025	0.171
Continue	Cont1	-0.079	0.098	0.368	0.744	-0.382	**0.933**	-0.015	-0.181
	Cont2	-0.004	0.071	0.368	0.700	-0.295	**0.922**	0.006	-0.137
Age	Age	0.031	-0.135	-0.097	-0.059	0.022	-0.005	**1**	-0.155
Gender	Gender	0.013	-0.009	0.047	-0.184	0.168	-0.172	-0.155	**1**

Table 2-3: Item loadings to each construct.

	Name	Type	Affect	Benefits	Risk	Continue	Age	Gender
Name	1							
Type	-0.017	1						
Affect	0.266	-0.030	1					
Benefits	-0.103	0.212	0.424	**0.892**				
Risk	0.117	-0.067	-0.102	-0.297	**0.817**			
Continue	-0.046	0.092	0.397	0.780	-0.367	**0.928**		
Age	0.031	-0.135	-0.097	-0.059	0.022	-0.005	1	
Gender	0.013	-0.009	0.047	-0.184	0.168	-0.172	-0.155	1

Table 2-4: Square Root of Average Variance Extracted (AVE) compared to correlations.

Structural model results

Based on the above examination of our measurement model, both convergent and discriminant validity are sufficient, allowing us to examine our structural model. Figure 2-2 provides an overview of the outcome of the PLS analysis. PLS estimates linear relations between variables. Consider, for instance, the direct path coefficient of level of affect on perceived benefits. This coefficient takes on the value 0.43. This means that an increase in the level of affect by one standard deviation increases the level of perceived benefits by 0.43 standard deviations.

We hypothesized several direct and indirect relationships between the variables in our theoretical model in Figure 2-1. In addition to the paths and variables included in Figure 2-1, Figure 2-2 also includes the control variables gender and age as well as additional direct paths which were not hypothesized but which can be used to test to what degree the total effect is mediated by the hypothesized mediator variables. For each construct in the model Figure 2-2 also provides the R^2, indicating the amount of variance in the construct that is explained by the model. The R^2 of the dependent variable 'willingness to continue' (0.637) provides an indication of the overall explanatory power of our model. While Figure 2-2 provides information on the path coefficients, standard error and significance levels of the direct paths, it does not show how these numbers were obtained. PLS can be used to estimate path coefficients.

While the information that the PLS analysis provides can technically be used for testing significance using a Sobel test, the common practice is to using bootstrapping instead since this is considered to be a more appropriate method. Using bootstrapping has an advantage over the more traditional Sobel test in that it does not make any assumptions regarding the distribution of the indirect effect. In addition, this method of bootstrapping with PLS enables us to test for mediation effects in the context of the entire model, rather than examining it in a piecemeal fashion (Rai & Hornyak, 2013).

SmartPLS allows for several types of bootstrap analyses. Hayes & Scharkow (2013) recommend using percentile bootstrapping in order to alleviate potential concerns regarding inflation of Type 1 error, and thus we selected this type of bootstrapping for our analysis. Following typical conventions for bootstrapping, we ran a bootstrap analysis with 5000 samples in order to assess the standard errors and t-values for the path coefficients presented in Figure 2-2. With these standard errors, path coefficients and t-values, the corresponding significance levels for each path were estimated. Figure 2-2 provides an overview of all path coefficients and their standard errors and significance levels.
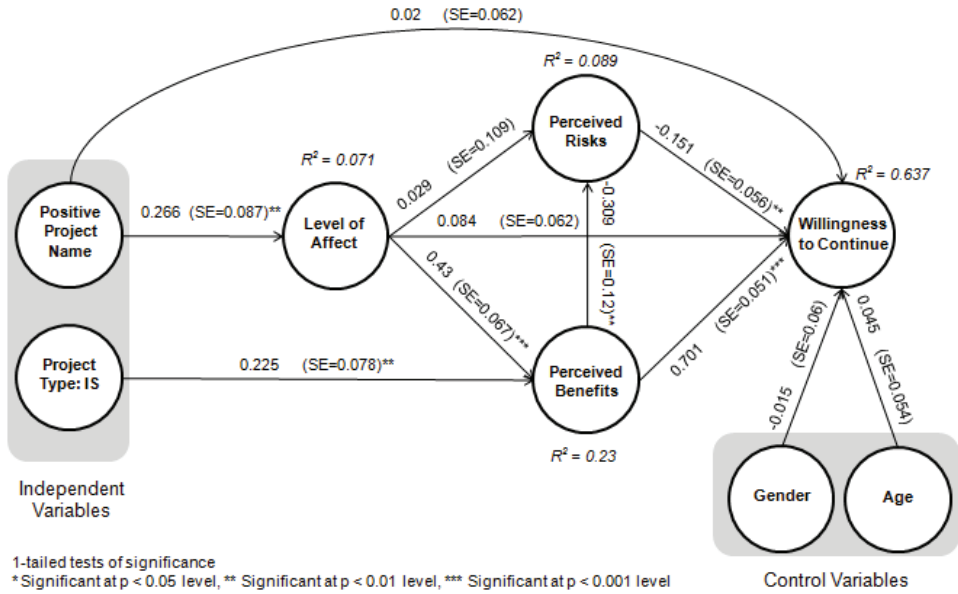
Figure 2-2: Structural Model Results.

Estimating mediation effects

We hypothesized both direct and indirect effects for the relationships between the variables in our theoretical model. The information in Figure 2-2 allows us to analyze direct paths between variables. However, in order to calculate the indirect paths between variables for our mediation hypotheses, additional calculations are necessary. Specifically, to estimate the indirect effect, one has to multiply the effect (path coefficient) of the causal variable on the mediating variable with the effect of the mediating variable on the target variable. This mediated effect also has a standard error which can be estimated. The resulting path coefficient and standard error in turn are used to calculate the t-value and the corresponding level of significance, just as is done with the coefficients and standard errors of individual paths.

Hypothesis testing

Table 2-5 provides an overview of the analysis of each of the hypothesized relationships. Based on the outcomes of the PLS analysis and the bootstrapping procedure, it lists the signs and sizes of the effects, the standard errors of the effects and the corresponding p values (which, in line with the directional nature of all our hypotheses, are one-tailed). For mediation hypotheses the remaining direct effects and the total effects are listed in addition

to the indirect effects in question. This is information can be used to assess the strength of the indirect effect relative to the remaining direct effect and total effect. In the case of a hypothesis which predicts a direct relation, only the direct path is included since there is no indirect effect for that relationship in our model. Finally, the table provides a quick overview of the implications of these findings for each of the hypotheses.

Hypothesis 1 predicts a direct effect between project name and affect such that a positive project name evokes more positive affective reactions to the project. As can be seen in Table 2-5, the sign of the effect matches our predictions and the effect is significant ($p < 0.01$). This supports the notion that, ceteris paribus, a different project name is capable of changing the affective reactions to a project.

Hypotheses 2a-2d all relate to the effect of the level of affect towards the project on perceptions of project benefits and risk. We argued that it could be the case that there are two independent and separate effects of affect on benefits and of affect on risk respectively. However, it could also be the case that affect first influences one of these, which in turn influences the other. In line with this, we included hypotheses for both direct and indirect effects of affect on perceptions of benefits and risk. Our empirical findings support the latter of these possibilities but not the former. While affect was found to have a strong and significant direct effect on perceived benefits ($p < 0.001$), the direct path between affect and perceived risk was not significant ($p = 0.396$). Thus, support was found for hypotheses 2b but not for hypothesis 2a. For perceived risk to mediate the relationship between affect and perceived benefits, the path between affect and perceived risk needs to be significant. As we just described, this condition was not met and as such we found no support for hypothesis 2c. While we found no support for a direct relationship between affect and perceived risk, there was a significant indirect effect, which was mediated by perceived benefits ($p = 0.01$) thus supporting hypothesis 2d. These findings suggest that affective feelings first influence one of the two factors (in our case perceived benefits) and that the remaining factor is subsequently adjusted to be negatively correlated to the other (as is predicted by Affect heuristic). As stated in the literature section, such an explanation is in line with theory on the halo effect (Thorndike, 1920). Similarly, theory on Construal Level Theory can help explain why we found empirical support for an effect on perceived benefits which subsequently influenced perceptions of risk, rather than the other way around. Trope & Liberman (2010) describe that when deciding whether or not to do something, people first evaluate whether the action is interesting to them (in our context: benefits) and only then start looking at the potential problems of performing this action (in our context: risks) (Trope & Liberman, 2010; Eyal et al., 2004). It is important to note, however, that these are just findings from one study and that at this point we are trying to explain our obtained empirical findings rather than attempting to theorize that affect always influences perceptions of risks and benefits in this way. We lack the theoretical support to make such a claim and more research would be needed before these specific findings could be considered for generalization to all research on the affect heuristic.

Hypothesis 3 proposes that affective reactions towards the project can influence how willing decision makers are to continue with a project. Specifically, it is proposed that this effect is mediated by perceptions of project benefits and risk. As can be seen in Table 2-5, we found empirical support for this indirect path ($p < 0.001$) which is a combination of the 1 step mediation via perceived benefits as well as the two step mediation via perceived benefits and subsequently perceived risk. Thus, hypothesis 3 is supported. The mediators perceived benefits and perceived risk mediate about 79% of the total effect (0.317 / 0.401). Claims of full mediation can be made if both the indirect effect is significant and the remaining direct effect is not significant ($p = 0.087$). However, Kenny & Judd (2013), amongst others, recommend caution in making claims of full or partial mediation, partially due to a difference in power in tests of indirect and direct effects. Baron & Kenny (1986) recommend using a rule of thumb that the indirect effect should explain 80% or more of the total effect before claiming full mediation. As such, our indirect effect is but a hair shy of the threshold for full mediation.

Hypothesis 4 connects the front and back end of the model by predicting an indirect effect of (positive or negative) project names on the willingness to continue, which is mediated by affective reactions towards the project and subsequently perceptions of project benefits and risk. This is arguably the most important hypothesis of this study and indeed our experimental results provide empirical support for this mediated effect ($p < 0.01$). Since this indirect effect makes up about 84% of the total effect (0.107 / 0.127) we can claim full mediation, though we acknowledge the reasoning by Kenny & Judd (2013) that one has to be careful in making such claims. While the remaining direct effect between name and willingness to continue is in the same direction as the indirect effect, this effect is also small and has a high standard error. As such the total effect (indirect + direct effect) is still significant ($p < 0.05$), but less so than the indirect effect alone.

Surprisingly, while both the indirect and total effect mentioned here were found to be significant, an ANOVA test of name on the willingness to continue implied an effect in the predicted direction but this effect was not found to be significant ($p > 0.1$). A PLS analysis with bootstrapping on a structural model which only included name and willingness to continue yielded similar results. These findings seem counterintuitive, since the total effect of IV on DV must be equal to the direct effect plus the indirect effect. If SmartPLS computes the total effect using our structural model, we get a different total effect than when we estimate a model which consists of only a direct path between name and willingness to continue. Yet, this direct path also estimates the total effect. Kenny & Judd (2013) provide an explanation for this type of findings. In their paper they explain, and provide examples to support, that tests of indirect effects may have more power than tests of total effects. They demonstrate that in order to obtain a particular statistical power for a total effect, 3 to even 75 times as many participants are needed, as compared to obtaining the same level of power for an indirect effect of the same size (Kenny & Judd, 2013). This can explain why we had enough power to obtain a significant p value for

hypothesis 4 in the structural model used in our study, but not when we performed the ANOVA analysis. Kenny & Judd explain that "*an implication of what we found is that one might not uncover a statistically significant total effect but might still have sufficient statistical power to detect a significant indirect effect." ... "What seems like a contradiction is not really one, a point echoed by several other researchers*" – Kenny & Judd (2013), page 3.

Finally, hypothesis 5 revolves around the effect of simply describing a project as an 'IS project'. Based on theory on technological optimism we predict that categorizing a project in this manner can influence how beneficial decision makers consider the project to be. As can be seen in Table 2-5, there indeed is empirical support for an effect of our project type manipulation on perceived project benefits ($p < 0.01$).

Relationship	Effect	Effect size	SE	P value	Hypotheses
(Positive) Name to Affect	Direct effect	0.266	0.087	0.001	Hypothesis 1 supported
Affect to Benefits	Direct effect	0.430	0.067	0.000	Hypothesis 2b supported
Affect to Risk	Direct effect	0.029	0.109	0.396	Hypotheses 2a & 2c not supported
	Indirect effect	-0.133	0.058	0.010	Hypothesis 2d supported
	Total effect	-0.104	0.093	0.131	
Affect to Continue	Direct effect	0.084	0.062	0.087	
	Indirect effect	0.317	0.054	0.000	Hypothesis 3 supported
	Total effect	0.401	0.074	0.000	
(Positive) Name to Continue	Direct effect	0.020	0.062	0.374	
	Indirect effect	0.107	0.039	0.003	Hypothesis 4 supported
	Total effect	0.127	0.069	0.033	
Type (IS) to Benefits	Direct effect	0.225	0.078	0.002	Hypothesis 5 supported

Table 2-5: Effect sizes and significance levels (one-tailed).

2.5   Discussion

The research described here addresses a real-world phenomenon (i.e., escalation of commitment) and yields findings that are applicable to both research and practice.

Specifically, this study contributes to our understanding of project escalation by empirically testing the effect of project names on individuals' willingness to continue a failing course of action. Ours is the first study to examine the role that project names can play and the mechanism through which they affect escalation decisions. By drawing on the affect heuristic, we demonstrate how project names influence escalation decisions through changes in affective reactions to the project that influence perceptions of project benefits and risks. Before discussing the implications of our study, it is appropriate to consider potential limitations.

Limitations

All studies have limitations and ours is no exception. While experiments offer several advantages such as high internal validity and the ability to isolate cause and effect, they often do so by compromising on external validity to some extent. There are two issues that are commonly raised in this regard. First, no experiment can reproduce all of the nuances that exist outside the confines of a controlled experimental environment. Therefore, the effects observed in an experiment may be either heightened or muted depending upon the setting. Second, the use of student subjects as surrogates for managers may not always be appropriate.

Generalization of experimental research is an important factor to consider, especially when using student subjects. In these cases, it is important to distinguish under which conditions generalization is acceptable and when it becomes problematic. As Compeau et al. (2012) point out: if there are theoretical reasons to assume that unique characteristics of students could drive the results, then generalization becomes problematic. Students might for example differ from managers in what factors they consider in their conscious project evaluation process. However, the focus of our study is on how project names can subconsciously bias project evaluations and subsequent decision-making by nudging people in a certain direction. For external validity to be threatened, there would have to be theoretical reasons that demonstrate that one group of subjects is susceptible to such effects while another group is immune (Compeau et al., 2012). Since there is no theoretical reason to suggest that managers would be any more immune to subconscious biases (like that generated by a positive project name) than students, the use of student subjects does not pose a significant threat to external validity in the context of our study. Nevertheless, we recommend that further research be conducted to confirm that our findings hold in other settings.

Another limitation of our study is that we examined only two project names in our experiment. Because we wanted to avoid a confound in which names could provide people with additional relevant information about the project that would create unintended differences across treatment conditions, we chose names that were designed not to provide any meaningful semantic information about the project. The fact that we find support for

our hypotheses even with these names is promising. Further research on names specifically related to project attributes might reveal even stronger effects of names on project evaluations and decision-making.

With regard to our manipulation of project type, our intent was to compare IS vs. non-IS projects without revealing any project specific details that might influence individuals' decision-making. However, it is possible that the phrase "IS project" provided subjects with more specific information than the phrase "project" and that this might partially account for the differences that we observed. While we acknowledge this as a potential limitation of our study, we also believe that it would be quite difficult to test the differential effect of IS vs. non-IS projects without influencing slightly the information available to subjects. In spite of the aforementioned limitations, we believe that our study holds important implications for both research and practice.

Implications for research

This study contributes to three streams of literature: (1) the IS project escalation literature, (2) the marketing literature pertaining to the effect of names, and (3) the affect heuristic literature. Each of these contributions is discussed below.

We contribute to the existing IS project escalation literature in two ways. First, we demonstrate that project names can influence escalation of commitment through affective reactions, which in turn shape perceptions of benefits and risks. To our knowledge, this is the first study that investigates the effect of names on project assessment and decision-making. Through a controlled experiment, we were able to isolate the effect of project name from other factors that might influence project continuation decisions. We do not mean to suggest that these other factors are unimportant or that project name is the only factor driving continuation decisions.

Second, while IS projects have been shown to be highly prone to escalation, it has not been previously shown whether individuals are any more prone to escalate commitment to an IS project than a non-IS project. Drawing on the notion of technological optimism (i.e., positive attitudes towards technology), we show that people are more likely to escalate commitment to a IS project because they perceive the benefits of such a project to be higher than those of a non-IS project.

This study also contributes to marketing research, which has found an effect of names on how people evaluate products and make purchasing decisions (Skorinko et al., 2006; Wänke et al., 2007). Prior marketing research suggested that people might use names as a heuristic cue, but the exact mechanism through which names influenced decision-making was not exactly clear. We contribute to the research on the effect of names by proposing that affect mediates the effect of names on perceptions of benefits. We

additionally found empirical support for the influence of affect on escalation, as mediated by perceived benefits.

Finally, in line with calls for further research on the link between affect and decision-making (Slovic et al., 2002b), our study contributes to the affect heuristic literature by examining the impact that affect has on project escalation decisions. Previous research on the affect heuristic found that presenting people with a trigger, such as mentioning a specific topic (Alhakami & Slovic, 1994) or a city (Slovic et al., 1991) can influence their affective feelings towards a subject. This level of affect, in turn, can influence perceived risk or benefits (Finucane et al., 2000). Our study contributes to research on the affect heuristic by providing strong empirical support that even a project name that provides no concrete information is enough to trigger the affect heuristic. Prior literature on the affect heuristic is somewhat ambiguous with regard to how higher levels of affect lead to lower risk assessment and higher benefit assessments. While this study in no way attempts to definitively resolve this ambiguity, we do find empirical support for the influence of affect on benefit perceptions, which in turn influence risk perceptions.[3] This study makes another contribution to the literature on the affect heuristic by testing this heuristic in the context of project decision-making and by linking it to willingness to continue.

To summarize, our study contributes to research by (1) providing support for the notion that something as small as a name can trigger the affect heuristic, (2) proposing affect as a mediator for the effect of names on assessments of perceived benefits, (3) testing this effect in the context of project escalation and (4) showing that merely classifying an endeavor as an information systems project can increase people's perceived benefits, thereby increasing escalation potential.

Implications for practice

Our study also holds important implications for practice. While project names are common, very little is known about the (subconscious) effects that a project name could have on decision makers and how it could potentially bias their decisions and nudge them toward escalation of commitment to a failing course of action. Our findings demonstrate that positive names may not be as beneficial as one might expect and that they can in fact bias decision-making and nudge decision makers towards escalation. Managers, therefore, need to know that by choosing one name and not another they may inadvertently increase the potential for escalation of commitment.

While project name is but one of many factors that can influence escalation decisions, it is an important factor because virtually all projects are assigned names and

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[3] We also tested an alternative model in which we examined the indirect effect of affect to perceived benefits, mediated by perceived risk. However, we found no empirical support for such a mediation path.

managers have control over the name they choose for a project. Thus project names stand apart from many of the other factors that have previously been linked to escalation of commitment which may be more difficult to control in practice. Further, setting or changing a project name requires minimal resources. Thus, if project names have the potential to reduce the chance of project escalation, we believe that managers would do well to consider carefully the implications associated with the project names they choose.

Chapter summary

The main goal of this chapter was to investigate the effect of a project's name on continuation decisions and project escalation. Specifically, we investigated whether, ceteris paribus, a difference in project name would lead to different evaluations of the project and decision making intentions. In addition, we examined whether classifying a project as an IS project could influence perceived project benefits.

We performed a 2 x 2 factorial design experiment in which we manipulated project name and type. The results support our hypothesized relationships. We found empirical support for an effect of classifying a project as an IS project on the perceived project benefits. With regard to the effect of positive/negative project names our findings indicate that:

- Ceteris paribus, project names can cause changes in the affective reactions towards the project, such that a positive (negative) project name leads to more positive (negative) affective reactions.

- The level of affect influences perceived project benefits and risk. Specifically, we found that affect directly influences perceptions of project benefits and indirectly influences perceptions of project risk, as mediated by perceptions of project benefits.

- As expected, subjects were more willing to continue with the project when they perceived the benefits to be higher and the risks to be lower. These perceptions of benefits and risk mediated the relationship between affect and willingness to continue.

- Combining the above, ceteris paribus, decision makers were more likely to continue with a project when the project was given a positive name and that this effect was mediated by affective reactions towards the project and perceptions of project benefits and risk.

This study aims to contribute to the literature on project escalation by (1) identifying a previously unexplored factor which can cause escalation of commitment and (2) by identifying several mediators which help to increase the understanding of how names can

bias decision making. The study also aims to contribute to the existing literature on the affect heuristic by (1) demonstrating that something as seemingly innocent as a name can trigger different affective reactions and (2) by linking the affect heuristic to escalation of commitment. Furthermore, this study contributes to the literature on the effect of names by (1) identifying mediators which help better understand how a name can influence perceptions and decision making and (2) by demonstrating that names can influence project continuation decisions.

Concerning the practical implications of this study, most projects in practice are given names, yet little is known about the effect of names. This study demonstrates that project names can subconsciously bias perceptions of the projects and project decision making. These findings are particularly interesting given that recently organizations seem to be paying more attention to coming up with positive names for a project. While such names may be chosen with good intentions, our findings demonstrate that exactly these types of names can make people more likely to escalate commitment to a failing project.

Appendix 1:

Experimental Scenario (Project Name: Sunrise & Project Type: IS)

Imagine that you are the current Financial Vice President of Ace Research & Development. Your responsibilities include making decisions about the Company's investment in research projects. You must make a decision about whether to invest additional funds in project **Sunrise**. **Sunrise** is an information system (IS) project that is currently underway. It has required the investment of €3 million of company funds over the past 12 months.

A competitor has just exhibited a system that is similar to that of project **Sunrise**, but is superior in many respects. This has caused the €3 million investment in **Sunrise** up to this point to have no value.

This situation may, however, be changed by investing an additional €2 million (which is available). If you choose to invest the €2 million into project **Sunrise**, either a product with a value of €6 million will be developed, or a product with no value will be developed.

Therefore, your two available options regarding project **Sunrise** are:

Option A: **Continue project Sunrise**

- Investment made in the past year: €3 million
- Additional investment: €2 million
- First possible sales value of the project: €6 million (1/3 chance of occurring)
- Second possible sales value of the project: €0,-   (2/3 chance of occurring)

Option B: **Discontinue project Sunrise**

- Investment made in the past year: €3 million
- Additional investment: €0,-
- Sales value of the project: €0,-

Experimental Scenario (Project Name: JHAD & Project Type: Generic)

Imagine that you are the current Financial Vice President of Ace Research & Development. Your responsibilities include making decisions about the Company's investment in research projects. You must make a decision about whether to invest additional funds in project **JHAD**. **JHAD** is a project that is currently underway. It has required the investment of €3 million of company funds over the past 12 months.

A competitor has just exhibited a product that is similar to that of project **JHAD**, but is superior in many respects. This has caused the €3 million investment in **JHAD** up to this point to have no value.

This situation may, however, be changed by investing an additional €2 million (which is available). If you choose to invest the €2 million into project **JHAD**, either a product with a value of €6 million will be developed, or a product with no value will be developed.

Therefore, your two available options regarding project **JHAD** are:

Option A: **Continue project JHAD**

- Investment made in the past year: €3 million
- Additional investment: €2 million
- First possible sales value of the project: €6 million (1/3 chance of occurring)
- Second possible sales value of the project: €0,- (2/3 chance of occurring)

Option B: **Discontinue project JHAD**

- Investment made in the past year: €3 million
- Additional investment: €0,-
- Sales value of the project: €0,-

Appendix 2:

Experimental measures

Item:		Scale*:	Source (adapted from):
Cont1	"Please indicate your preference between options A & B:" (reverse coded)	8-point	Rutledge (1994)
Cont2	"How likely is it that, if faced with this situation, you personally would choose to CONTINUE project Sunrise/JHAD?"**	11-point (0-100%)	Korzaan & Morris (2009)
Benefit1	"In general, how beneficial do you consider project Sunrise/JHAD to be?"	7-point	Finucane et al. (2000)
Benefit2	"How would you characterize the value of making the additional investment in project Sunrise/JHAD?"	7-point	
Benefit3	"According to you, how profitable or unprofitable is it to continue with project Sunrise/JHAD?"	7-point	
Risk1	"In general, how risky do you consider project Sunrise/JHAD to be?"	7-point	Finucane et al. (2000)
Risk2	"How would you characterize the risk of making the additional investment in project Sunrise/JHAD?"	7-point	
Risk3	"According to you, how dangerous is it to continue with project Sunrise/JHAD?"	7-point	
Affect	Part 1: "Please write down the first thoughts or images that come to mind when thinking of project Sunrise/JHAD" Part 2: "Please give each thought or image a score between -2 (very negative) and +2 (very positive): "	Each item: -2 to +2 Total: -10 to +10	Slovic et al. (1991)

* The SmartPLS software, which was used for the data analysis, automatically performs z-standardization of items in order to deal with possible differences in scale, such as the difference between the 8-point scale of Cont1 and the 11-point scale of Cont2

** The project name is dependent on the experimental treatment condition.

Chapter 3: How emphasizing time in an IS project name can affect escalation decisions

Chapter overview

The experimental findings in the previous chapter of this dissertation indicate that there is a link between project names and project escalation. Specifically, we found empirical support that positive (negative) project names can increase (decrease) willingness to continue with a project and that this effect is mediated by affective reactions towards the project and, subsequently, perceptions of project benefits and risk in line with theory on the Affect Heuristic . However, there are also different types of project names which may affect project perceptions and decision making in very different ways.

This chapter adds to the findings of the previous chapter by identifying that project names can not only be used to influence affective reactions towards the project, but that a different type of project name can also be used to influence which aspects of a project decision makers pay attention to and how important they find them in their decision making process. This constitutes a separate and different manner in which project names can influence perceptions of a project and subsequent decision making.

In this chapter, we hypothesize that a name which emphasizes the timing aspect of an information system (IS) project can cause selective perception by drawing attention towards the schedule of the project and away from other aspects of the project such as its quality. Such selective perception is suggested to increase the likelihood of escalation of commitment to the schedule of the project when facing quality issues that require deviating from this schedule. We hypothesize that this effect of selective perception on escalation is both indirect, through its effect on problem recognition, and direct. We further hypothesize that selective perception and problem recognition mediate the relationship between project name and escalation of commitment. Results from our experiment support these hypothesized relationships. Implications for practice and research are discussed.

Keywords: IS project management, escalation, naming, selective perception, decision making

3.1   Introduction

Each year several trillion dollars are spent on information technology (IT) (Gartner, 2014). Not only is a lot of money being spent on IT each year, but many organizations rely on Information Systems (IS) for interaction with their customers or with other businesses. Yet, despite the high amount of spending and the increased dependence on IS, many IS projects still struggle. A sizeable fraction of these projects experience serious problems that prevent them from meeting schedule, budget, and functionality targets, yet managers are often reluctant to terminate or redirect these projects, creating a situation known as project escalation (Keil, 1995)[4]. IS projects have been found to be particularly prone to project escalation due to their intangible nature and complexity, and a variety of factors have been found to influence escalation decisions (see Sleesman et al. (2012) for a recent overview and meta analysis).

The previous chapter of this dissertation showed that project names can influence escalation of commitment. As such, the previous chapter addressed a relevant theoretical gap, since it is the first empirical study to connect project names to escalation. By identifying the affect heuristic as a potential mediator, it also provided some insight into how names can influence project perceptions and related decision making intentions. Yet, it is important to realize that there are many different kinds of project names. The study in the previous chapter illustrates one way in which names can influence perceptions and decision making, but is it the only way? That is the question which lies at the basis of this study. Whereas the focus of the study in the previous chapter was on names which can evoke either positive or negative associations with the project, this study looks at whether names are capable of steering our perceptions of what we find important in a project. Previous studies in the field of marketing imply that names can be specifically designed to draw buyers' attention towards a certain (favorable) product attribute (e.g. Baker, 2003 & Keller et al., 1998). Will the same hold true in a project context? And if so, can guiding decision makers' focus towards a specific project attribute cause them to give that attribute more weight in their decision making process? In addition, can this guided focus towards one specific attribute cause them to be more likely to miss, ignore, or underestimate problems related to other aspects of the project?

Examples of names which can draw people's attention towards specific aspects or attributes can be found in both theory and practice. In fact, the name of the Dutch government project 'C2000' is very similar in nature to the type of name that is being investigated in this study. In 2003 the Dutch Minister of Internal Affairs, Johan Remkes, said that mistakes were made in naming the project for a new communications system between various emergency services 'C2000.' The minister said that this name created

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[4] Project escalation refers to continued commitment to a previously chosen course of action despite negative information concerning a project's prospects for success (Keil 1995).

widespread expectations that the system would be completed by the year 2000, even though he claimed that this was never the planned due date (Noorman-den Uyl & Franke, 2003). Other sources within the government added that by the time the system was launched in 2004 it was perceived as being very late and already outdated (Schrooten, 2011). This and other similar anecdotes suggest that a project name can influence people's perception of a project and its performance, but there has been no research to date that has empirically examined the impact of these types of project names.

In this study we investigate whether a project name, which conveys information about the project's timing, has an effect on project escalation. Specifically, we propose that such a name could increase the attention given to the schedule of the project while decreasing the attention given to other aspects of the project, such as its quality. We further propose that this, in turn, can lead to decreased problem recognition regarding quality. Our study makes two major contributions. First, we contribute to escalation theory by showing that project names emphasizing the project's timing can influence escalation of commitment. Second, we contribute to the marketing literature by elucidating the mechanism through which such names influence evaluations of products and services.

3.2   Theoretical background

Escalation of commitment has been studied in many contexts, including IS project continuation decisions where it is also referred to as project escalation (Keil, 1995). Prior studies have shown that IS projects are particularly prone to escalation due to their intangible nature and complexity (Mähring & Keil, 2008; Zhang et al., 2003). While a variety of factors have been found to influence escalation decisions, the effect that project names can have on escalation decisions is not well understood. In this study, we theorize that something as simple as a project name can convey information that causes decision makers to focus on a specific aspect of a project (e.g., the schedule), thereby influencing escalation decisions.

Previous studies, particularly those in the field of marketing, have investigated the effect of names on people's perceptions, assessments, and decision making. For example, Wänke et al. (2007) found that people rated the same hotel more positively on sports related aspects when it was given a sporty name (e.g. "Alpine"). The ratings on sports-related attributes for the Alpine hotel were even higher than those for another hotel with objectively better sports related facilities, but which had a less sporty name. Skorinko et al. (2006) demonstrate that attractive names assigned to specific features or aspects of products can have a similar effect. For example, they found that when the color of a towel was presented with an attractive name (e.g. "Mocha") as compared to a neutral or unattractive name (e.g. "Brown"), people judged the color of the towel to be more attractive, despite the actual shade of color being identical in both cases. Participants who

were exposed to the attractive name evaluated the product more positively, displayed a higher purchasing intention, and were willing to pay more for the same product.

Baker (2003, p. 1142) notes that "*brand names can strengthen the association between the brand and benefits implied by the name.*" Further, research shows that people are more likely to remember advertised product benefits when the product name emphasizes the associated attributes (Baker, 2003, Keller et al., 1998). Based on a laboratory experiment, Baker (2003) found, for example, that when 'Marathon' was used as a name for batteries, subjects were more likely to remember the product benefit of long battery life. Names can therefore make specific product attributes more salient, thereby influencing availability in memory and helping to shape how people evaluate a product.

Drawing on what is known about product names and their influence, we aim to investigate the effects of names in a project setting. Specifically, we examine the effect of a project name that emphasizes time and suggests a specific schedule (or deadline), as compared to a project name that does not. In doing so, we focus on a specific naming practice that is commonly used, namely the inclusion of a year as part of the name (e.g., "C2000"). Often, such a name can imply a potential launch date of a product or a completion date of a project. Even if the name is not meant to refer to such a date, it is sometimes interpreted as such (Noorman-den Uyl & Franke, 2003). Our main goal with this study is to test what the effects of such a name can be. Similar to the name "Marathon" for the batteries, which draws attention to the battery-life attribute, we believe that a project name can draw attention to the time aspect of the project. Previous marketing studies have focused on names that both draw attention to a specific attribute and portray the product as performing well on this particular aspect. For instance, the name "Marathon" not only draws attention to battery life as a product attribute, but also suggests that the battery life will be long. In our study, we decouple the idea of emphasizing a specific attribute from the notion of presenting the attribute in a positive light. By doing so, we are able to investigate the effect of drawing attention to a specific attribute, without the risk of confounding this effect by portraying the attribute in a positive or negative light. This approach allows us to focus purely on the effect that a name can have in terms of drawing attention to a specific attribute.

Based on research on memory retention of names (Baker, 2003; Keller et al., 1998), we predict that a project name containing a number which can easily be interpreted as a year creates a focus of attention on the time aspect of the project. Prior research in marketing has shown that product names that emphasize a particular attribute can cause individuals to pay less attention to other important product attributes (Baker, 2003). We therefore propose that a name that emphasizes the time aspect of a project will result in a form of selective perception whereby attention is shifted toward time relative to other attributes such as quality.

Hypothesis 1: A name that emphasizes the time aspect of an IS project, as opposed to one that does not, will cause individuals to pay more attention to time relative to quality.

Prior literature on selective perception (Hastorf & Cantril, 1954) has shown that different people looking at the same situation can notice, or fail to notice, different things. Hastorf & Cantril (1954) examined how supporters of two different college football teams experienced a game that was played between the two rival teams. While virtually all supporters of one team judged the game as being "rough and dirty," a much lower percentage of supporters of the other team reached the same conclusion. This suggests that how an individual experiences and perceives something is shaped to a great degree by his/her perspective. Prior research in psychology suggests that attention "*both facilitates perception and action towards those issues and activities being attended to, and inhibits perception and action towards those that are not*" (Ocasio, 1997, p. 190). Thus, we posit that when attention is shifted to the time aspect of a project, individuals will be less likely to recognize quality-related issues with that same project.

Hypothesis 2: When individuals place greater attention on time relative to quality in an IS project, they will be less likely to recognize problems related to software quality.

If a problem is not recognized, or not seen as important, it is unlikely that significant effort will be made to solve it (Smith, 1989). In an IS project context, failure to properly recognize the importance of a problem can keep a manager from making necessary adjustments to a previously chosen course of action. Keil et al. (2007) suggest that failure to recognize a problem or misperceiving its importance can thus result in escalation of commitment. Based on a laboratory experiment with student subjects, Keil et al. (2007) indeed found a significantly positive relationship between failure to recognize problems and escalation of commitment. This implies that when a problem is recognized, escalation is less likely. In line with these findings, we also predict to find this same relationship in our study and include the following hypothesis.

Hypothesis 3: Individuals' tendency to escalate commitment will be inversely related to problem recognition.

If individuals pay more attention to one aspect of a project (time) than another (quality), it is likely that they will also pay more attention to this aspect in evaluating the project and that this will influence their decision of whether to move forward with the project as planned or not. As a consequence, individuals who pay more attention to time will be more likely to favor a course of action that performs well on the time dimension. In an IS project context this suggests that individuals who pay more attention to time relative to quality are more likely to try and stick to an originally planned launch schedule. Consequently, they will be less likely to want to redirect a project that experiences quality issues if this will result in project delays. In line with this, Keil et al. (2007) found a significant relationship between selective perception (related to the perceived relative importance of time, as compared to quality) and escalation of commitment. We expect this same relationship to hold in our study and include the following hypothesis.

> **Hypothesis 4***: When individuals place greater attention on time relative to quality in an IS project they will be more likely to escalate commitment to a pre-existing launch schedule despite the presence of software bugs*.

Taken together, the previous hypotheses suggest a governing mechanism for the effect of a project name on escalation of commitment. In particular, we predict that a project name, which emphasizes the time aspect of a project, will lead to selective perception of time relative to quality (Hypothesis 1), and that this in turn will lead to project escalation, both directly (Hypothesis 4) as well as indirectly via problem recognition (Hypotheses 2 & 3). By combining the directional effects predicted in Hypotheses 1-4 we predict a positive relationship between a project name, which puts attention on the time aspect of a project, and willingness to escalate commitment to a previously set launch schedule. Thus, we offer the following hypothesis.

> **Hypothesis 5***: There will be a significant positive relationship between a project name that emphasizes the time aspect of an IS project, and escalation of commitment to a previously set launch schedule, and this effect will be mediated by selective perception (in the form of perceived importance of time relative to quality) and problem recognition*.

Figure 3-1 provides an overview of the hypothesized relationships in our theoretical model. As indicated, this work builds on the work by Keil et al. (2007). As mentioned in the discussion of the hypotheses, we expect to find and replicate some of the same effects that were also found in the study by Keil et al. (2007). Specifically, this relates to

hypotheses 2-4. Our main contributions to the model by Keil et al. (2007) beyond this replication involve the effect of project name on selective perception (hypothesis 1) as well as the effect of project name on willingness to continue, as mediated by selective perception and problem recognition (hypothesis 5).
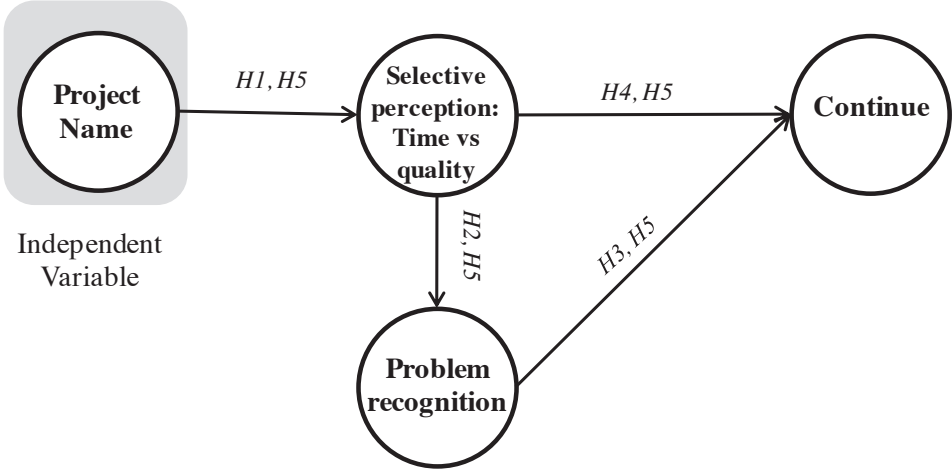
Figure 3-1. Research model & hypotheses.

3.3   Methodology

We selected an experiment as the method of choice in order to create a highly controlled setting that would allow us to examine how project names may influence IS project escalation decisions. Since our objective was to analyze causal relationships between names and escalation decisions, this argued for an approach that would provide high internal validity and the experimental method is universally acknowledged to be strong in this area. Furthermore, the experimental method is the most frequently used research approach in the escalation literature (e.g., Staw (1976); Keil et al. (2000b); Moon (2001) and Wong & Kwong (2007)).

Participants

Laboratory experiments often rely on student subjects without significant work experience. However, depending upon the nature of the study, it might be the case that students lack the necessary domain knowledge to understand the task or decision context depicted in the experiment or that they behave differently from members of the target population. For this

reason, we recruited professionals with relevant work experience for our experiment, rather than student subjects.

Participants were 62 practitioners enrolled in a postmaster program at a Dutch university, with a mean work experience of 11 years and a mean age of 34. Eighty-nine percent were born in the Netherlands and 76% were male. Participants were randomly assigned to one of two conditions (a project name that emphasized time vs. a project name which did not). All participants received identical information with the exception of the project name. They were told that they would be participating in an experiment about project decision making. Participation was voluntary and there was no compensation offered.

Experimental scenario and manipulation

Our experimental scenario was based on the one developed by Keil et al. (2007). We used this scenario as a starting point because it was developed in collaboration with practitioners and was therefore fairly realistic, and because it fit the context of our study. The scenario describes a software development project. Participants receive negative feedback in the form of newly discovered bugs in the software. Participants are then presented with two options: either (1) stay committed to their original course of action by sticking to the original launch plan or (2) delaying the project to investigate the bugs. As Keil et al (2007, p. 401) describe: "*The original launch schedule*" … "*constitutes the previously chosen course of action, and the recently discovered bugs constitute negative feedback associated with that course of action*." Thus, a recommendation to launch the project as previously scheduled represents escalation of commitment (Keil et al., 2007).

Several changes were made to tailor the scenario to our research model. Most importantly, the experimental manipulation used by Keil et al. (2007) was removed and replaced by our own manipulation of project name. Appendix 1 shows the experimental scenario that was used in our study. The information in the scenario was the same for all participants with the exception of the project name, which was manipulated as our independent variable. Specifically, we tested a project name that emphasized the time aspect of the project ('SoftBiz2014')[5] against a name that did not ('SoftBiz'). Subjects were randomly assigned to either the 'SoftBiz' or the 'SoftBiz2014' condition. The name SoftBiz was used in the scenario used by Keil et al. (2007), on which our scenario is based. The name SoftBiz2014 was used to emphasize the time aspect of the project. As our scenario describes, the project was originally expected to launch "this year" (i.e. 2014 at the time of administering the experiment). We drew attention to this fact by including the year 2014 in the project name. As with the C2000 example (Noorman-den Uyl & Franke, 2003), we expected that people would similarly interpret this year as a target

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[5] The year 2014 was chosen because this year realistically could be interpreted as a goal for project completion in this scenario. As such, the name had the desired effect of emphasizing the time aspect of the project.

deadline/launch date. Additionally, 2014 was a completion date which could still be achieved if the decision maker chose to stay committed to the original planning, but not if he/she decided to delay the project. Had the name been SoftBiz2020 then, regardless of whether the project was delayed or not, the project would be launched well before this year. As such, subjects might interpret the launch date in both cases to be well beyond expectations and the intended trade-off between time and quality might not have been experienced as such by subjects.

Measures

Project name serves as the independent variable in our model and was coded as a 0 (name without year information) or 1 (name with year information). Willingness to continue (our dependent variable) was assessed using a two-item measure. One item was based on Keil et al. (2007) and a second item was adapted based on Nuijten et al. (2014). Multi-item measures of problem recognition and selective perception (time vs. quality) were based on the scales used by Keil et al. (2007). We also included the following control variables: age, gender, work experience, experience with IS projects, and illusion of control. Illusion of control was included as a control variable because Keil et al. (2007) found a significant effect of this construct on both problem recognition and escalation of commitment. Appendix 2 contains the measurement items that were used for each construct.[6]

3.4　　Results

Manipulation check

As a manipulation check, participants were asked whether they remembered the name of the project. Four participants failed the manipulation check because they could not correctly remember the name of the project. These four participants were dropped from the sample. An additional two participants were dropped since they indicated that they knew the experimenter and/or that they were involved in other experiments on project escalation by the experimenter. This left a total of 56 participants who provided usable responses (26 in the 'SoftBiz' condition and 30 in the "SoftBiz2014" condition).

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[6] Some measurement items that were adapted from Keil et al. (2007) had to be dropped due to problems with convergent or discriminant validity. Appendix B and the results section of the paper include only the measurement items that were retained for our analysis. Note that for the sake of completeness we ran the entire model with the full set of adapted items as well. Every effect that is reported as significant in the results section was also significant when we ran the model with the full set of adapted items.

Validity

We used Partial Least Squares (PLS) as implemented in SmartPLS 3.0 (Ringle et al., 2005) for the analysis of our data. PLS uses component-based estimation, maximizes the variance explained in the dependent variable, has modest distributional and sample size requirements, and allows both the measurement and structural models to be assessed simultaneously. PLS is useful for analyzing experimental data when the research model includes structural paths with more than two constructs (Jiang & Benbasat 2007). PLS was especially useful given the specification of our model because it allows for the testing of multiple mediation paths within the context of the entire structural model (see Rai and Hornyak (2013)), whereas the traditional regression based approach involves isolating one portion of the model at a time and running a series of mediation tests.

The first step in our analysis involved an assessment of our measurement model for convergent and discriminant validity. We tested the convergent validity of all multi-item constructs by assessing whether the loadings of items to their own construct, depicted (in bold) in Table 3-1, were above the recommended threshold of 0.7 which would indicate that the shared variance between each item and its associated construct is greater than the error variance (Chin, 1998). The results of our analysis indicated that the loadings of all items exceeded this threshold.

	Perception	ProbRec	Continue	Illusion
Perception1	**0.988**	-0.469	0.876	0.513
Perception2	**0.987**	-0.410	0.865	0.494
ProbRec1	-0.284	**0.789**	-0.494	-0.318
ProbRec2	-0.399	**0.859**	-0.449	-0.351
ProbRec3	-0.395	**0.916**	-0.448	-0.394
ProbRec4	-0.392	**0.733**	-0.400	-0.417
Continue1	0.842	-0.495	**0.964**	0.366
Continue2	0.859	-0.551	**0.965**	0.492
Illusion1	0.448	-0.475	0.445	**1**

Table 3-1. Item loadings on own constructs (in bold) and cross-loadings.

We also examined Cronbach's α, the Composite reliability and Average Variance Extracted (AVE), which are shown in Table 3-2. Composite reliability values exceeding .80 provide exemplary evidence of reliability (Bearden et al. 1993; Yi & Davis 2003) and the measures for all of our constructs exceeded this threshold. Similarly, Cronbach's α values of above 0.7 are considered sufficient and this was the case for all our variables. AVE indicates the amount of variance captured by a construct from its indicators relative

to the amount of variance from measurement error (Fornell and Larcker 1981). Chin (1988) suggests that AVE values of .50 or higher are acceptable and the results of our analysis indicated that all of our constructs exceed this threshold. Overall these analyses provide support for the convergent validity of our measurement model.

	AVE	Comp. Reliability	Cronbach´s α
Perception	0.975	0.987	0.975
ProbRec	0.684	0.896	0.843
Continue	0.931	0.964	0.926

Table 3-2. Composite reliability, Average variance extracted (AVE) and Cronbach's α.

We tested the discriminant validity of our items by examining the cross loadings between items and constructs (Table 3-1). Items should exhibit higher loadings on their own respective constructs than they do on other constructs. In addition, items should have a higher loading on their respective constructs than do items of other constructs (Chin, 1998; Fornell & Larcker, 1981). A second test of discriminant validity combines the various items of each construct and looks at whether the square root of the AVE of each construct is higher than the correlation of the construct with any other construct (Chin, 1998; Fornell & Larcker, 1981). When this is so, it indicates that each construct shares more variance with its respective indicators than with a different block of indicators associated with another construct. Table 3-3 provides the results of this analysis. Cells along the diagonal represent the square root of the AVE value of said construct and are bolded.

	Perception	ProbRec	Continue	Illusion
Perception	**0.987**			
ProbRec	-0.446	**0.827**		
Continue	0.882	-0.542	**0.965**	
Illusion	0.510	-0.449	0.445	1

Table 3-3. Fornell-Larcker test (square root of Average Variance Extracted (AVE) versus correlations).

Test of hypotheses

Our PLS model consists of the variables in our research model and the hypothesized relationships between them. In addition it also includes the direct path from the project

name to willingness to continue. Although this path was not hypothesized to be significant, it was included in order to test the degree to which the total effect of project name on willingness to continue is carried by the two mediators in the model. Figure 3-2 shows the full PLS model including the control variables used in our study. For each path in the model, information is provided on the path coefficient, the t-value and the significance. Given the directional nature of our hypotheses, 1-tailed tests of significance were appropriate for hypothesis testing. As can be seen in the Figure, all paths proposed in hypotheses 1-4 were found to be significant and in the predicted direction.

Table 3-4 provides an overview of the tests for hypotheses 1-4. All hypothesized path coefficients had the expected signs and were found to be significant, thus supporting hypotheses 1-4. H5 predicts an effect of project name on willingness to continue as mediated by selective perception (Perception) and problem recognition (ProbRec). As Table 3-5 shows, we indeed find statistical support for hypothesis 5 as this mediation is found to be significant. In addition, since the remaining direct effect after controlling for this mediation is not significant ($p = 0.38$), this indicates that the effect of project name on escalation is fully mediated through selective perception and problem recognition.

Effect	Path coefficient	t-value	p-value*	Hypotheses
Name to Perception	0.246	1.997	0.023	Hypothesis 1 supported
Perception to ProbRec	-0.294	2.611	0.005	Hypothesis 2 supported
ProbRec to Continue	-0.213	2.510	0.006	Hypothesis 3 supported
Perception to Continue	0.810	9.796	< 0.001	Hypothesis 4 supported
* P-values were calculated using one-tailed tests for significance in line with the directional nature of the hypotheses				

Table 3-4. Tests of hypotheses 1-4.

Effect	Path coefficient	% of total effect	t-value	p-value*	Hypotheses
Indirect effect of Name to Continue	0.214	112	1.942	0.026	
Direct effect of Name to Continue	-0.023	-12	0.313	0.377	Hypothesis 5 supported
Total effect of Name to Continue	0.191	100	1.417	0.078	
* P-values calculated using one-tailed tests for significance, in line with the hypothesis´ directional nature					

Table 3-5. Test of hypothesis 5.
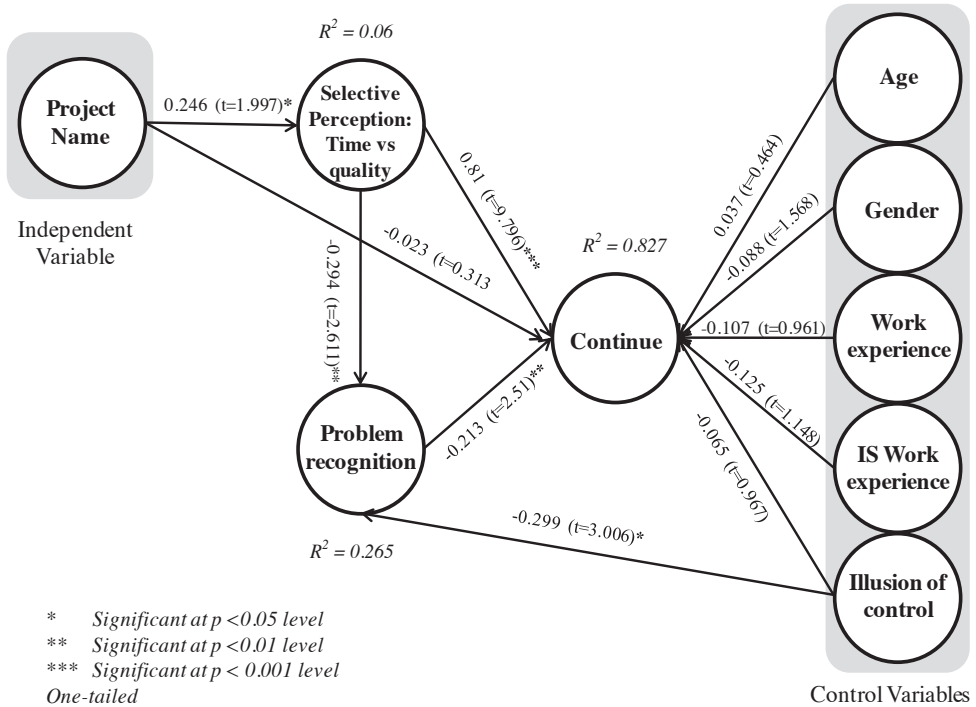
Figure 3-2. Structural model results.

3.5   Discussion

In this study, we have compared the effects of a project name that emphasizes the time aspect of a project (Softbiz2014) with one that does not (SoftBiz). The results from our experiment indicate that a project name that emphasizes time leads to selective perception on the part of decision makers causing them to pay more attention to time relative to quality (Hypothesis 1), and that this selective perception inhibits problem recognition (Hypothesis 2). In other words, decision makers become less able to recognize quality issues that pertain to the project at hand. This finding is consistent with results reported earlier by Keil et al. (2007). Consistent with the findings reported by Keil et al. (2007), our results also show that problem recognition is negatively related to escalation (Hypothesis 3) and that selective perception regarding the importance of time relative to quality is positively related to escalation (Hypothesis 4). Finally, our results provide insight into the mechanism through which project names influence escalation decisions. Specifically, we find that a project name that emphasizes the time aspect of a project influences escalation indirectly by altering the perceived importance of time relative to quality and reducing the

extent to which quality-related problems are recognized and judged to be important. Before discussing the implications of our study it is appropriate to examine some limitations.

Limitations and future research

In order to understand the role that project names can play in IS project escalation decisions, we conducted a laboratory experiment, as this approach has been frequently used in escalation research (e.g., Staw (1976), Keil et al. (2000b), Moon (2001), and Wong and Kwong (2007)). While laboratory experiments are typically very strong in terms of internal validity, concerns are sometimes raised about their external validity.

One concern has to do with the lack of realism associated with the experimental decision making context. In short, a laboratory experiment cannot possibly capture all of the complexities of actual work settings in organizations. We do not see this as a major shortcoming, however, since our primary objective was to investigate the effect of project names on escalation decisions, and it was necessary to create a controlled environment in order to do this. Moreover, we employed a scenario that had been developed with input from practicing managers who deemed it to be realistic. Further, escalation research based on laboratory experiments has tended to produce findings that are broadly consistent with the results of escalation studies that have been based on field data (see for example, Keil, 1995; Staw et al., 1995; Staw & Hoang, 1995). Nonetheless, further work is warranted to confirm that the findings observed in our experiment can be generalized to actual projects in organizational settings.

Another concern that is associated with the external validity of laboratory experiments is that they often involve student subjects who may not possess the domain knowledge necessary to approach the task in the same way that someone with relevant work experience might approach the task. To overcome this problem, we enrolled actual practitioners as participants in our experiment.

Implications for research

Our study has several implications for research and contributes to the literature on IS project escalation as well as to the marketing literature on the effects of names. First, we contribute to research on IS project escalation by demonstrating that project names can influence escalation decisions. Second, we provide evidence for the mechanism that governs this effect. Specifically we show that the effect of a project name that emphasizes the time aspect of a project on escalation of commitment is fully mediated through selective perception (time vs. quality) and problem recognition. Third, this study makes a further contribution to the literature on IS project escalation by corroborating the results of Keil et al. (2007) with regard to the effects of selective perception and problem recognition

on escalation. While this replication aspect of our study is not where the novelty of our study lies, the fact that we obtained support for the same relationships that were found to be significant in earlier work (Keil et al., 2007) adds to the robustness of these findings.

Our findings also contribute to the marketing literature on the effects of names by further clarifying how names can influence perceptions and assessments. In particular, our findings demonstrate that a name that emphasizes a specific attribute leads to a higher perceived importance of that attribute in comparison to other attributes. This implies that a product name can be used by marketers to draw attention to an attribute on which the product in question scores particularly well with consumers. Our results also suggest that if a product performs poorly on particular attributes, the product name can be used as a means of drawing attention away from these attributes. This would be consistent with prior research in marketing (e.g., Baker, 2003) that has suggested that brand names can make people less likely to remember benefits related to attributes that are unrelated to the name. For example, when "Marathon" was used as a name for batteries, subjects were more likely to remember the product benefit of the long battery life. However, they were also less likely to remember other product benefits than when the batteries were named "Chaplin" (Baker, 2003).

In prior studies, names that emphasized a specific attribute typically did not only draw attention to said attribute but also painted it in a positive light (i.e. 'Marathon' batteries). Our study provides a second contribution to research on the effect of names by separating the aspect of emphasizing an attribute from putting said attribute in a positive light. In other words, our name shifted the focus towards the time aspect of the project but it did not suggest that the project was performing successfully, or poorly, on this particular attribute. Whereas with prior studies it was difficult to be certain whether effects were due to the emphasis placed on the attribute or due to the fact that the product (attribute) was portrayed positively, the effects found in this study can specifically be attributed to the former. Our findings demonstrate that even if a name does not imply that a product performs well on a particular attribute, drawing attention to such a specific attribute can still influence perceptions and assessments of said subject.

In our study, we tested the effect of only two different names. While our findings provide some information about the effect that project names can have, there are clearly other interesting avenues to be explored. In choosing our name manipulation, we focused on the attribute of time. Ideally, it would be desirable to test the impact of choosing various names that capture other project attributes as well. This would both increase our understanding of the effects of names as well as the robustness of these effects.

Implications for practice

Our study has important implications for practice. First, our results strongly suggest that project names can in fact influence decision making on IS projects. Interestingly, in our

debriefing sessions with participants many were convinced that the project name did not influence their decision and were therefore skeptical that we would find an effect. This suggests that practitioners are unaware that project names can affect the decisions that they make regarding the continuation of IS projects. Thus, our study has the potential to inform practice by demonstrating not only the importance of project names, but also the need to choose them wisely.

Project names should be chosen very carefully because they can (wittingly or unwittingly) convey information about project goals. There are several sites and articles on the internet on choosing "good" project names. Often these suggest choosing an attractive and/or interesting project name in order to draw attention to, generate interest in, and raise motivation for the project. We suspect that managers sometimes choose a project name that will help to instill a goal, because goals can increase focus and motivation (through a feeling of purpose). While adding a target year to the name of a project may be commonly used in this way to increase motivation, our study suggests that this can come at a cost. Indeed, our results indicate that such an approach can cause people to focus more strongly on time (i.e., schedule goals), while causing them to focus less attention on other goals such as quality. If the first and foremost priority in the project is completion by a certain date then this may not be too harmful, but we think practitioners should be aware that such naming practices can cause reduced problem recognition in regard to quality issues that may arise during the course of a project. Therefore, to the extent that factors other than schedule (e.g., quality) are deemed to be equally or more important than time, emphasizing time in the product name might lead to trade-offs in decision making that run counter to project priorities. In summary, we believe that our findings will be useful to practitioners who may be otherwise unaware of the negative consequences that may result from commonly used naming practices.

Chapter summary

The main goal of this study was to investigate whether, in addition to influencing affective reactions to the project (as demonstrated in the previous chapter), a different type of project names could make decision makers more prone to escalation of commitment, by influencing which aspects of the project they pay attention to and how important they consider these aspects to be in their decision making. Specifically, an experiment was performed where a project name was used to draw attention to the time element and deadline of a project. Even though all other aspects of the project were identical, we found that a different project name could influence how important time aspects of the project were perceived to be by decision makers. Specifically, we our findings indicate that:

- Ceteris paribus, a project name which emphasizes the time element (i.e. SoftBiz2014) increases the perceived importance of finishing a project on time relative to other aspects such as quality, as compared to a name which does not (i.e. SoftBiz).

- Ceteris paribus, a project name which causes decision makers to focus on the time aspect of the project makes decision makers less likely to fully recognize problems related to other aspects of the project such as quality. Thus, the effect of a project name which emphasizes the time element on problem recognition of issues related to other aspects of the project (i.e. quality), is mediated by the perceived importance of time relative to quality.

- In line with prior research on this subject, we found empirical support that both perceived importance of time, relative to quality, and a lack of problem recognition made escalation of commitment to the previously chosen course of action more likely in the context of our study.

- In the context of this study, decision makers were more likely to escalate commitment to the originally planned launch date when the project was given a name which emphasized its time aspect, and this effect was mediated by the perceived relative importance of finishing on time and, subsequently, a lack of problem recognition for another aspect of the project (quality).

This study contributes to the literature on project escalation by finding further empirical evidence supporting the notion that project names can influence escalation of commitment to a project. This adds robustness to the findings from the previous chapter. In addition, this study identifies a different type of name, which is capable of influencing project perceptions in a different manner than described in the previous chapter.

Furthermore, the study identifies several mediating variables which increase the understanding of how such a project name affects escalation of commitment. This study similarly also contributes to literature on the effect of names by further increasing the understanding of how names can influence perceptions and decision making. Combined these two chapters suggest that the 'semantic names' which are typically used in prior research to paint a specific attribute in a positive light, might actually comprise different and separate effects. In these two chapters we aimed to disentangle this effect by separately testing the effects of (1) names which draw attention to specific attributes but do not portray said attributes positively or negatively and (2) names which are positive or negative but which do not relate to any specific attribute.

The findings from these two chapters combined indicate that both of these aspects of semantic names can have biasing effects. In the context of project escalation, our findings indicate that both types of names can make people more likely to escalate commitment to a project. With regard to practical implications, this study further increases

the understanding of the effects that project names might have. Like positive project names, project names which contain a target deadline might be picked with good intentions and the goal to motivate people. However, the outcomes of this study suggest that these types of names could also have undesirable effects and could even make escalation of commitment to a failing course of action for the project more likely. As such, one should take care when selecting such a name for a project.

Appendix 1:

Experimental scenario:

The project name that subjects were exposed to was either 'SoftBiz' or 'SoftBiz2014'

ComSoft is an industry-leading information systems (IS) vendor. Image that you are ComSoft's manager for **SoftBiz/SoftBiz2014**, a product that is being developed on the basis of a proposal that you had made to ComSoft's Executive Committee. Everyone knows that project **SoftBiz/SoftBiz2014** is your baby. Because **SoftBiz/SoftBiz2014** is so revolutionary, the project has always faced both technical and market uncertainty. Nevertheless, potential customers have expressed delight with the product concept. However, ComSoft is racing against time as other competitors are planning to launch similar products.

Most of the development work on **SoftBiz/SoftBiz2014** has been completed. However, a recent development has occurred that has focused everyone's attention on the timing of the product's release. Specifically, the **SoftBiz/SoftBiz2014** testing team has just identified some bugs with the system. Within the hour, you must meet with ComSoft's Executive Committee to recommend whether or not to proceed with launching **SoftBiz/SoftBiz2014** as scheduled. According to your review of the project's status, you have identified two possible courses of action.

The first course of action is to *launch **SoftBiz/SoftBiz2014** as previously scheduled* without correcting the recently discovered bugs. These bugs could be corrected at a later date with a service pack issued to customers. Choosing this course of action allows you to launch this year. However, it creates the risk of alienating customers and it might also have repercussions in terms of market acceptance. The second course of action is to *delay the launch of **SoftBiz/SoftBiz2014***, initiate a 4-month investigation into the extent and nature of the bugs and what it may take to correct them and then reevaluate the feasibility of launching the product at that time. Recommending this course of action will delay the completion of the project to 2015, which means that ComSoft risks being beaten to market by one or more competitors.

You must decide which one of these courses of action to recommend to ComSoft's Executive Committee.

Appendix 2

Measures

Continue

<u>Continue1</u>: *Please indicate what you will recommend and how strong that recommendation will be*. (8-point scale with answers ranging between "*definitely recommend delay*" to "*definitely recommend continue as planned*").

<u>Continue 2</u>: *Please indicate how much you agree with the following statement: "I will certainly continue with the launch of the project as planned (i.e. without delaying it.)"* (8-point scale with answers ranging from "*strongly disagree*" to "*strongly agree*").

Perception. Selective perception. All items were on a 7 point scale ranging from "*strongly disagree*" to "*strongly agree*". Subjects were asked to "*Please indicate how much you agree, or disagree, with each of the following statements*".

<u>Perception1</u>: *For this product, I believe that being first to market is a more important measure than delivering bug-free software*.

<u>Perception2</u>: *For this product, I believe that delivering bug-free software is more important than being first to market*.

ProbRec. Problem recognition. All items were on a 7 point scale ranging from "*strongly disagree*" to "*strongly agree*". Subjects were asked to "*Please indicate how much you agree, or disagree, with each of the following statements*". Note that all items were reverse coded.

<u>ProbRec1</u>: *I believe that the bugs will not require much effort to fix*.

<u>ProbRec2</u>: *From a technical perspective, I do not believe that the product has any serious bugs*.

<u>ProbRec3</u>: *I believe that the bugs discovered in the product are minor in nature*.

<u>ProbRec4</u>: *I do not see any major problems with this project*.

Illusion. Item was measured on a 7 point scale ranging from "*strongly disagree*" to "*strongly agree*". Subjects were asked to "*Please indicate how much you agree, or disagree, with each of the following statements*".

<u>Illussion1</u>: *If 50% of consumers react unfavorably to buggy software, I could convince more than half of them to overlook the bugs and regard the product favorably*.

Chapter 4: The story behind the words: Framing and information leakage by project managers

Chapter overview[7]

In the previous chapters we have investigated how seemingly innocent or irrelevant factors can bias decision making and can lead to an increased willingness to continue with a troubled project (i.e. project escalation). However, prior research on framing shows that biases can occur even when all information available about the project is factually the same (Tversky & Kahneman, 1981). Several studies in this field have found that using slightly different words to describe the same factual information can have a big impact on people's preferences.

While there has been a lot of research on how decision makers react to framed information which is presented to them by researchers, relatively little attention has been given to investigating whether, and how, people themselves use framing naturally in conversation and what we could learn from this. Research on information leakage (Sher & McKenzie, 2006) suggests that people systematically use different framing under different circumstances and that analyzing the framing usage of an individual could thus provide potentially valuable information beyond what is said.

In this study we investigate whether project managers use framing naturally when discussing projects. Not only do we investigate whether they use framing, but also which types of framing they use and whether they systematically use different framing depending on their view on a project (e.g. positive or negative). We performed interviews with multiple project managers and asked them to freely discuss projects from their personal experience of which they had either a positive or a negative view. These interviews were recorded and later transcribed. The transcriptions formed the basis for a text analysis process where the usage of words that are associated with specific types of framing was investigated. The findings of this exploratory study suggest that managers indeed use

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[7] The concept for the study discussed in this chapter is based on my master thesis research. The study has since then been improved and modified several times. This chapter is based on the conference papers "Benschop, N., Nuijten, A.L.P. & Pijl, G.J. van der (2011). Escalating IT-projects: A text-analysis of risk-framing effects of managers. In *Proceedings Bled e-Conference.* Bled, Slovenia" and "Benschop, N., Nuijten, A.L.P. & Pijl, G.J. van der (2013). Framing & Information Leakage in Project Management: Knowledge internal auditors can gain from the words and phrases managers use when discussing their projects. In *Proceedings 11th European Conference on Internal Audit and Corporate Governance*. Oslo, Norway." and on the article "Benschop, N., Nuijten, A.L.P. & Pijl, G.J. van der (2015). Het beeld achter de woorden: Framing en informatielekkage in projectrapportages. *Management & Organisatie, 69*(4), 59-76."

framing naturally when talking about projects and that they use systematically different framing depending on their view of the project (for three out of four framing categories investigated in this study). People trained to recognize this information leakage could obtain valuable additional information about the manager's view on the project.

Keywords: Project management, framing, information leakage, content analysis

4.1   Introduction

Determining which course of action is best for a project can depend on various factors such as risk, costs and benefits. However, not all available information may be equally important or even relevant to the decision at all. For example, few people would argue that a manager should let his or her decisions for a project be determined by factors such as what he/she had for breakfast that morning or the name of the project. Yet, the outcomes of the studies in Chapters 2 and suggest that a different project name can in fact lead to differences in decision making and specifically in the willingness to continue a project. However, biases can not only occur as a result of a change in a seemingly innocent and/or irrelevant characteristic of the project, but they can even occur when all available information is factually the same.

The focus on this chapter is on framing effects. Research on framing has identified that even when all information is factually the same, that slight differences in the exact words used to describe that information (i.e. framing) can have a strong impact on which options decision makers prefer (Tversky & Kahneman, 1987; Kühberger, 1998). For example, the same glass can be described as either 'half empty' or as being 'half full' and, while slightly different, both of these descriptions are correct and convey the same factual information about the glass (Sher & McKenzie, 2006). Whereas few would argue that a change in a factor such as the project name should influence which option decision makers prefer, probably even fewer would argue that preferences of decision makers should change when all information about the options is factually the same but only slightly different words are used to describe these options. Yet, framing effects have been found in many different studies (Kühberger, 1998; Levin et al., 1998; 2002) including in the field of project escalation (Northcraft & Neale, 1986; Rutledge & Harell, 1993; Nuijten, 2012).

Most prior research on framing has investigated how individuals react to framed information which is provided by the researchers to the decision makers. This study sets itself apart from previous framing studies by looking at how people naturally use framing themselves when discussing a topic (e.g. a project) and what we could learn from this. Surprisingly, there has been very little prior research on this application of framing. Those studies that do exist though are quite promising. Of particular interest is the study by Sher

& McKenzie (2006), which suggests that people use different forms of framing under different circumstances. As such, identifying that a person uses framing in a certain way could provide a keen observer with potentially useful additional information beyond what is said. This concept has been described as information leakage (Sher & McKenzie, 2006). The study by Sher & McKenzie (2006) and those of others investigating the framing usage of individuals (e.g. van Buiten & Keren, 2009a) however do have some important limitations. One main limitation is that in these studies individuals were presented with two different forms of framing, which had been created by the researchers, and were forced to pick one of these two forms of framing. As a result, people had no choice but to use a predefined form of framing and they were not free to choose if and how they would frame (other than being able to choose between 2 options).

In this study we aim to extend the existing research on framing usage by decision makers, not only by testing this concept in a new context (e.g. project management), but also by dealing with some of the main limitations of the previous studies discussed above. Specifically, we performed interviews where individuals were completely free to describe the projects using their own natural language, using whichever words they wanted and focusing on any aspect of the project for as long as they liked. Rather than purposely using framing to influence people, we look at how analyzing the framing usage of another can provide valuable additional information beyond the content that is being discussed.

While politicians and marketers may spend a long time deciding which words or phrases might have the best effect (de Bruijn, 2010), most people probably don't consciously think about the various ways in which they can describe the same information when having a conversation or about how these different forms might affect perceptions of others and which framing usage of best in the given situation. As such, if people do use framing in these situations, it is probably more likely that this is a subconscious, rather than a conscious process. As a result, this framing may be more indicative of people's actual perceptions rather than a deliberate effort to choose whichever framing is believed to achieve the desired effect in others. As such, analysis of a person's framing usage could potentially be a useful indicator for their views of a project. This is not to say that this form of framing is potentially less harmful. Intentional or not, if framing is used when reporting on a project then the executives, auditors or controllers receiving this information run the risk of being influenced by the other's framing and following along in their (biased) view on the project.

In this chapter, we report the outcomes of interviews with experienced project managers who freely discussed several projects from their own experience. Since we were interested in the exact wording usage by these managers, interviews were recorded in their entirety and later transcribed. Text analysis was performed on the transcriptions of these interviews to determine if, how and under what circumstances managers used framing. Specifically we looked at whether there were (systematic) differences in framing usage

when people were talking about projects of which they had a positive, rather than a negative, view. If there is a link between framing usage and a positive or negative view on a project, then the framing usage of managers could provide valuable additional information about their perspective on a project. This information could potentially help to better predict managers' decision making and the risk that they are willing to take and it could even serve as an early warning sign of project escalation.

4.2   Theoretical background

Two theoretical concepts play a central role in this study, namely framing and information leakage. Framing is closely related to Prospect Theory (Tversky & Kahneman, 1981). This theory describes that risk preferences of individuals can change depending on whether they are dealing with decisions involving gains (domain of gains) or decisions involving losses (domain of losses). According to the theory, people generally are more risk seeking when dealing with losses than when dealing with gains (Kahneman & Tversky, 1979). For example, when given the choice between certainly winning $100,- or having a 10% chance of winning $1.000,- most people choose the risk free option of the certain $100,-. However, when the situation instead involves a certain loss of $100,- or 10% chance of losing $1.000,- most people prefer to take the small risk of losing $1.000,- over the certain loss (Tversky & Kahneman, 1981).

While both choices in the above example are similar in terms of the trade-off between a certain outcome and an uncertain outcome (i.e. both have a 10% chance of an uncertain outcome which is ten times as high as the certain outcome), one could argue that both choices are different. There are however studies which show that even when both options are factually identical (i.e. the outcomes and risks are exactly the same) that people's preference between the certain and the uncertain option can change, so-called preference reversals (Tversky & Kahneman, 1981). Among other reasons, such preference reversals can result from framing (Tversky & Kahneman, 1981).

Whether something is seen as a gain or a loss is dependent on the point of reference (Kahneman & Tversky, 1979). If you sell stocks for $1.000,- then this could be considered a gain. However, if those stocks were bought for $2.000,- then this could also be perceived as a loss of $1.000,-. This can be problematic when people act in accordance with Prospect theory as we see that the same outcome or situation could be perceived as both a gain and a loss, depending on the reference point, and that people act differently when dealing with gains than with losses. Thus, a difference in reference point can cause people's preferences between two choices (such as the examples described above) to reverse. Such inconsistent preferences are a sign of irrational decision making.

Framing relates to the manipulation of the reference point by using specific words to describe the same information (Tversky & Kahneman). Using framing, the same

choice/outcome can be perceived as either involving gains or losses, depending on the point of reference. Note that regardless of the specific words used to describe the choices (i.e. framing), that the characteristics of the choices themselves (e.g. their risks and outcomes) are factually the same. A good example of this is that a glass can be described as half empty or as half full and, while both descriptions are framed using different words, they both correctly describe the state of the glass (Sher & McKenzie, 2006).

Perhaps the most well known example of framing is Tversky & Kahneman's (1981) 'Asian disease problem'. The name refers to a fictive scenario in their experiment where subjects are presented with information about the outbreak of a disease which has infected 600 people. The scenario describes that two alternative treatment methods are available with different outcomes and different levels of risk. Similar to the example from Prospect Theory which we described earlier, one treatment method is guaranteed to save some but not all lives whereas the other has a chance of saving everyone but also has a risk of saving no one. Thus, here too we have a risky and a risk free option for subjects to choose from. Specifically, subjects in one treatment condition were asked to choose between the following two options for the 600 infected people:

1. "*If program A is adopted, 200 people will be saved*"

2. "*If program B is adopted, there is a 1/3 probability that 600 people will be saved, and 2/3 probability that no people will be saved*" (Tversky & Kahneman, 1981, p. 453)

While they differ in their risk levels and outcomes, both of these options revolve around the number of lives that can be saved. Since a saved life can be considered a gain, Tversky & Kahneman (1981) predicted that people would interpret this choice as one involving gains and that they would act risk averse, in line with Prospect Theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981) as described earlier. Indeed, their findings show that most people preferred the certain option of saving 200 lives over the risky option. However, the most interesting outcome of their experiment comes from the fact that a second group received slightly different information. While the exact number of lives saved and lost and the associated risk levels were identical, the words (framing) that were used to describe outcomes was different. In this second treatment condition subjects were asked to choose between the following two options for the 600 infected people:

1. "*If Program C is adopted, 400 people will die*"

2. "*If program D is adopted, there is a 1/3 probability that nobody will die, and 2/3 probability that 600 people will die*" (Tversky & Kahneman, 1981, p. 453)

As can be seen, the outcomes and risks are identical in both treatment conditions. For example, in both treatment conditions exactly 200 out of 600 lives are certainly saved and 400 are lost in the riskless option. Yet, surprisingly, the preferences of people in the two treatment groups were significantly different. In the second version most people preferred

the risky option instead of the riskless option, contrary to subjects in the other treatment condition (Tversky & Kahneman, 1981). This finding seems counterintuitive given the fact that all the characteristics of the choices are identical in both treatment conditions. Logically, regardless of whether people prefer the risky or the riskless option, one would expect that under identical factual information that this preference would not suddenly flip. The findings by Tversky & Kahneman (1981), amongst others, demonstrates that a small and seemingly innocent change in the words used to describe the same information can have a substantial impact on people's preferences and decision making.

While surprising at first, this observed preference reversal makes sense when looking at it from the perspective of Prospect Theory (Kahneman & Tversky, 1981). The second set of options both revolve around the loss of life. Since a life lost can be considered a loss, Tversky & Kahneman (1981) predicted that people would interpret this choice as one involving losses and that they would act risk seeking, in accordance with Prospect Theory. Indeed, this is what the outcomes show. The reason for this preference reversal is then that, even under identical factual information, that framing can change the reference point which causes people to interpret the choice as one involving either gains or losses. This is referred to as either positive or negative framing (Tversky & Kahneman, 1981) which emphasize either positive or negative (aspects of the) outcomes. In the case of the Asian disease problem positive framing was used to emphasize the amount of lives saved in each option, where every life saved was considered a gain relative to the reference point (i.e. reference point: 0 lives saved), and as such people were generally risk averse and preferred the certain outcome as Prospect Theory predicts. Similarly, negative framing was used to emphasize the amount of lives that would be lost in each option and each life lost was considered a loss (i.e. reference point: 0 lives lost) which caused people to prefer the risky option instead. In this manner, a difference in framing of the exact same choices was able to cause a preference reversal (Tversky & Kahneman, 1981).

Since the original experiment by Tversky & Kahneman (1981), many researchers have performed experiments involving framing in various forms and setting. As a result, different types of framing have emerged. Levin et al. (1998; 2002) performed a literature review of prior framing experiments and categorized the framing used in these experiments into three distinct types of framing. These are:

1. *Risky Choice framing*: where emphasis is put on either the (potential) gains or losses of the options.

2. *Attribute framing*: where the focus is either on attributes which are typically considered to be desirable or those that are undesirable.

3. *Goal framing*: where attention is placed on either the advantages of performing an action or the disadvantages of not performing it.

These three framing types, as well as their main characteristics, are listed in Table 4-1, which was taken from the study by Levin et al. (1998).

Frame type	What is framed	What is affected	How effect is measured
Risky choice	Set of options with different risk levels	Risk preference	Comparison of choices for risky options
Attribute	Object/event attributes or characteristics	Item evaluation	Comparison of attractiveness ratings for the single item
Goal	Consequence or implied goal of a behavior	Impact of persuasion	Comparison of rate of adoption of the behavior

Table 4-1: Characteristics of the framing categories, as described by Levin et al. (1998).

Since the introduction of these categories further refinements have been made. Of particular importance to our study was the introduction of so-called progress framing by Karevold & Teigen (2010), which can be seen an extension of the existing categories of framing. They suggested that framing is not just about using words that describe either positive or negative (aspects of) outcomes. Rather, even when emphasizing a positive effect, additional framing can be used to induce a positive or a negative framing effect by further altering the reference point. Studies on attribute framing have found that emphasizing positive rather than negative attributes can influence evaluations. For example, when beef was described as '20% fat' subjects rated the product less favorably, and were willing to pay less money for it, as compared to when it was described as being '80% lean' (Levin et al., 2002). This is again related to a manipulation of the reference point. Fat is seen as an undesirable attribute and thus every percentage of fat is seen as a bad thing. Alternatively, being lean is seen as a desirable attribute and as such the more lean the meat product is, the more positive its evaluation. Implicit in this is not only the focus of the reference point (percentage fat or percentage lean) but also the level of this reference point (0% in both cases). It is the combination of the nature of the attribute (positive or negative) and its position relative to the reference point (above or below) together which influence evaluations. While the three categories of framing as identified by Levin et al. (1998; 2002) all relate to the former of these two elements, progress framing mainly relates to the latter.

Thus, even when a positive aspect is emphasized using traditional framing, progress framing can be used to still achieve a negative framing effect by simply manipulating the reference point to be above the levels of the outcomes or product in question. Vice versa, even when a negative aspect is emphasized, a positive framing effect could possibly be achieved by adjusting the reference point to be higher using progress framing.

Karevold & Teigen (2010) illustrate the effect of progress framing in a project management context, which is relevant for our study. In their study, they measured how people interpret framed messages by a project manager. Specifically, they looked at whether people associated certain types of framing with the intention to continue or discontinue a (troubled) project. They state that using traditional forms of framing a project could be described either positively (e.g. 75% complete) or negatively (e.g. 25% incomplete). This is similar to our earlier example of describing the meat product as having 20% fat or being 80% lean. Indeed, they associated the positive framing of the project with the intention to continue it, which may have resulted from a more positive opinion of the project. Similarly, the negatively framed version was associated with a willingness to discontinue the project. However, even a project which is described as 75% complete, progress framing can be used to adjust the level of the reference point by, for example, describing the status as 'more than 70%' complete or as 'less than 80% complete'. Karevold & Teigen (2010) argue that using words such as 'more than' suggests that something is above a reference point, even though the exact reference point is unknown. Similarly, the words 'less than' indicate that something is below the reference point. Indeed they found that even when the project was described in positive terms (completion percentage) that progress framing could be used to nudge the evaluation of the project to be more positive or more negative. More importantly, they found that the effect of progress framing was even stronger than the effect of describing the project in terms of percentage complete or percentage incomplete.

The discussion above shows that there are many forms of framing and settings in which it has been tested. What is surprising however is that this prior research has focused almost exclusively on the reactions of individuals to framed information. This study sets itself apart from previous framing studies by looking at how people naturally use framing themselves when discussing a topic (e.g. a project) and what we could learn from this. While there has been very little work on this topic so far, the research that does exist is promising.

The work of Sher & McKenzie (2006) on information leakage is of particular interest. The concept behind information leakage is that individuals are more likely to choose to use one form of framing rather than another when some underlying condition is true, even though both frames provide the same information (i.e. 'the glass is half full' or 'the glass is half empty'). If this is the case, then the fact that someone chooses frame A, rather than frame B, to describe something could indicate that underlying condition C has been met. As such, awareness of the framing that someone uses can leak additional information beyond what they are explicitly saying. Sher & McKenzie (2006) have shown that such an underlying condition could be related to, and thus leak information about, factors such as:

- The condition at a prior point in time. I.e. an empty glass that has been filled is more likely to be described as half full while a full glass that has half of the liquid removed is more likely to be described as half empty.

- Exceeding a specific reference point. I.e. the outcome of rolls with a (loaded) dice with 5 black squares and only 1 white square was more often described in the number of times white was rolled when this occurred noticeably more frequently than the expected 1 in 6 rolls.

- Strongly positive or negative view of performance. I.e. a project team that was described to subjects as very poorly performing was more often described by those subjects in terms of their failure rate while subjects who had been told that the project team was performing very well typically described the team in terms of its success rate.

That last point is of particular interest in the context of project management. It demonstrates that people communicate differently when they have either a positive or a negative view of a project team. This suggests that analyzing the words that individuals use to describe the project team could be used as an indicator to gain insight into their view of the project team. In this study, we propose that managers may similarly use framing in a systemic manner depending on whether they have a positive or a negative opinion of a project. As such, analysis of their framing usage could leak information about their perspective on a project, which could prove quite valuable to people like auditors, controllers or executives. Such leaked information could be useful since it potentially allows for the testing of the managers view against the reality of the project. As such, if the manager has an unrealistic and/or overly optimistic view of the project or its risks then this could perhaps be detected before poor decisions are made. Prior research supports the notion that such leaked information could be valuable. Forlani (2002) and Kühberger (1998), for example, describe that the course of action which is perceived to be the most favorable is dependent on the personal goals or perspective of the manager. Another article mentions that the view or frame that individuals have with regards to a project can be an antecedent condition for project escalation (i.e. resources continuing to be committed to a failing project) (Mähring & Keil, 2008).

Research by Karevold & Teigen (2010) as well as by van Buiten & Keren (2009a, 2009b) also seems to support the concept of information leakage. The research by Karevold & Teigen (2010) suggests that in people's minds certain forms of framing are associated with decision making intentions. Specifically, their findings indicate that people associate positive (negative) framing usage by a manager with the intention of continuing (discontinuing) a project.

Van Buiten & Keren (2009a) investigated whether the framing usage of people differed based on their goals. They found that when presented with two ways of framing

the same choices that subjects tended to preferred to use the positively framed version when trying to convince someone to choose a specific option. It seems that people to some degree are aware, either consciously or subconsciously, that positive framing makes a certain option seem more positive to others. However, it appears that in their study people did not sufficiently consider, or were not consciously aware, that using positive framing also would make the alternative option appear more attractive. As such, people generally preferred to use positive framing even when negative framing would make their option seem relatively less unattractive. This suggests that people may not be aware of the link between framing, prospect theory and risk preferences. Nevertheless, the study finding does show that there may be a link between people's opinions and goals and their framing usage.

4.3   Research Goals

Most of the previous research on the framing types described in this section provide framed information to subjects and measure how a difference in framing can influence their perceptions and decision making. Surprisingly little research however has focused on how people themselves use framing rather than how they react to it. Based on research by Sher & McKenzie (2006) on information leakage, we propose that the framing used by project managers when discussing a project could provide valuable additional information beyond what is discussed.

While promising, the studies by Sher & McKenzie (2006), Karevold & Teigen (2010) and by Van Buiten & Keren (2009a, 2009b) do have important limitations which this study aims to address. First of all, all four of these studies used student subjects rather than actual project managers. It may however be the case that experienced project managers use different words and different framing when discussing projects than students do. In order to accurately assess the framing used by project managers, we based our analysis on interviews with actual project managers that talked about real life projects, rather than students as surrogates. Secondly, the study by Karevold & Teigen (2010) for example only looked at how people interpreted the framing of others and how they related it to their intentions. The study however did not investigate how subjects themselves used framing, if at all. This point is also related to the main limitation of the studies by Sher & McKenzie (2006) and by van Buiten & Keren (2009a). While these studies did give subjects a choice in their framing, this choice was very limited and artificial. Specifically, subjects were given two alternative ways in which the information could be framed and then were forced to choose one of those two options. In other words, subjects were forced to frame either positively or negatively. They were also not free to choose the words that they wanted to describe the situation. As such, the framing here may have been artificially imposed and as such the question remains whether subjects would have framed if they were free to discuss the topic in question using their own natural language. In our study we

aim to fill this theoretical gap by allowing managers complete freedom in the words they use and the topics which they discuss when talking about projects. As such, we can determine if, and how, managers use framing naturally when freely discussing a project. In line with the above, the goals of this research are:

1. To analyze if, and how, managers use framing when they talk freely about a project as they normally would.

2. To determine whether managers systematically use (certain types of) framing under certain conditions. I.e. what information does the usage of this framing leak?

Finding such a link between framing in communications and factors such as a manager's view of a project and its performance is potentially valuable because it could provide insight into the type of actions the manager might take with the project. This information could be used to better assess project risk, anticipate problems early and to prevent project escalation. Additionally, because this information could potentially be obtained at the start and throughout the project, unrealistic views of the project may be identified at an early stage which may help eliminate the problem of project escalation.

4.4   Methodology

Framing and information leakage can be very subtle, describing a project as '80% complete' rather than '20% still remaining' for example, or even as 'more than 70% complete' rather than 'less than 80% complete' (Karevold & Teigen, 2010). As such, collecting and analyzing the exact and complete wordings used by interviewed managers, rather than a researcher's notes or summary, is imperative to this research. For this reason, content analysis was selected as the methodology of choice for systematically documenting and analyzing the communication of managers (Shapiro & Markoff, 1997). In the context of this research, the analysis was performed on transcripts of interviews with managers based on audio recordings of the event.

Utilizing the text analysis software ATLAS.ti, an iterative coding process was employed based on the Weber protocol (Weber, 1990). In line with the protocol, the purpose of the analysis and the coding approach were set before going into the interviews. The purpose of the analysis was to identify the framing usage by managers when talking about projects, if any, as well as to determine whether there is any pattern to this framing usage. In order to do this in a structured and thought out manner, a coding scheme was created which includes different codes which can be used to identify, mark and classify specific words or phrases in the text. Specifically, these words and phrases were based on words and phrases used in existing framing experiments for positive or negative framing. As said, text analysis is an iterative process. In the first round the initial coding scheme

was used to mark relevant words or phrases. However, as is common in an explorative study, sometimes things are encountered which were not thought of or expected in advance. This then requires the creation of additional codes. This was the case, for example, for attribute framing. The list of attributes that are seen as desirable or undesirable of course depends strongly on the object in question. As such, we did not have a specific exhaustive list based on theory regarding which attributes could be used for positive or negative attribute framing. Rather, these were added during the iterative coding process. Alternatively, some codes might be either too vague or too specific and as a result these codes, and which words or phrases qualified to receive this code, also changed somewhat during the coding process.

The Weber protocol (Weber, 1990) also recommends the assessment of the accuracy and reliability of the codes/coding. In positivist research and/or in quantitative studies, so-called interrater reliability (sometimes also referred to as intercoder- or interjudge reliability/agreement) is considered to be an important measure of reliability. As Kolbe & Burnett (1991) describe: "*Interjudge reliability is often perceived as the standard measure of research quality and "high levels of disagreement among judges suggest weaknesses in research methods, including the possibility of poor operational definitions, categories, and judge training*" (p. 248). Even though interrater reliability is generally less common and less important in interpretive research and/or in an exploratory study such as this one, we have taken several steps to ensure the accuracy and reliability of our codes and coding process. In particular, it is relevant to note that interrater agreement is not a guarantee of reliability (Krippendorff, 2004a), nor the only measure for it. While Krippendorff (2004a) recommends measuring interrater reliability, he also points out the following: "*To be clear, agreement is what we measure; reliability is what we wish to infer from it. In content analysis, reproducibility is arguably the most important interpretation of reliability (Krippendorff, 2004b, p.215).*" – p. 414.

Weber (1984) explains that with computer-aided content analysis the rules for assigning or not assigning the code have to be made explicit. The advantage of codes that are explicit, clear and precise (enough for computer-aided analysis) is that such explicit codes (1) should generate similar results in a variety of different context and (2) that software following these formalized coding rules ensures a high coder reliability. While we did not automate our coding process, the implication is that (a) clear, explicit and precise codes can establish a high level of reproducibility Weber (1984). Like the codes for computer-aided analysis, the codes for a content analysis on framing usage have to generally be very precise and clear. After all, even more important than analyzing what is said, is analyzing exactly which words and phrases were used to say it. As mentioned before, the same information can be framed in different ways and as such, the exact and specific words used by managers are the focal point of our study. As a result, our codes and coding rules had to be very precise and specific with regard to which exact words or phrases qualified to be assigned a specific code. For example, for risky choice framing and

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progress framing, specific lists of words were created which were associated with these types of framing. Only if managers used these specific words would the text be coded using one of the codes for risky choice or progress framing. Thus, this left little room for misinterpretation or ambiguity and, as such, the risk of incorrectly assigning a code is considered to be low. All the coding categories for each of the four categories of framing along with a list of words, phrases and/or sentence structures which are required to qualify for receiving that code are provided in Tables 4-5 – 4-8 in the Appendix.

As stated, this coding scheme was developed based on prior framing research. It is important to clarify here what we considered to be framing within the context of this study as the term is applied more strictly or more freely depending on the (field of) study. Most broadly speaking, framing refers to the way something is communicated. For example, framing could refer to how politicians discuss a certain topic (de Bruijn, 2010). In this sense, anything a person says about a certain topic (or in our case: what a manager says about a project) could be considered framing. In this case, determining whether managers use framing, or keeping track of how often they use it is not very useful since anything they say about a project could be considered framing. For this reason, a more narrow definition of framing was considered to be more suitable, given the purpose and goals of this study. Specifically, we limited our focus specifically to the four categories of framing which have been discussed in the previous section: risky choice-, progress-, attribute- and goal framing. For these categories of framing, we investigated which words and/or sentence structures were used for either positive or negative framing in prior research. This process was easiest for risky choice framing and progress framing since prior studies could provide us with specific words which were used to achieve either positive or a negative framing. Furthermore, these words generally can be applied in a wide variety of contexts, including a project context.

The specific desirable or undesirable attributes used for attribute framing are, as mentioned earlier, unfortunately strongly dependent on the context and the object in question. As such, prior attribute framing studies could not provide us with a list of specific desirable or undesirable attributes which have been used for attribute framing in a project context. As a result, the attributes used for attribute framing were mainly identified based on the interviews. Similarly, goal framing is related to discussing consequences of (not) performing a certain action. While it is possible and relatively straightforward to identify whether benefits are mentioned of performing a certain action or possible problems of not performing a certain action, the specific content of the consequences are of course also strongly context dependent. Table 4-2 provides an overview of the words used in prior studies for positive or negative risky choice framing and progress framing. These served as a starting point for our analysis, though as said the code scheme was iteratively refined in line with the Weber protocol (Weber, 1990).

The source material for the analysis was based on interviews with three experienced project managers who discussed several projects over the course of an interview. Each interview lasted between 45 minutes and 1 hour 45 minutes. Questions were very broad and open to allow managers to choose their own natural wordings and to freely discuss the aspects that they found to be the most important. For the sake of validity and realism, managers were asked to discuss actual projects that they had experience with. During the interview, managers were also explicitly asked to discuss both projects of which they had a strongly positive view as well as those of which they had a strongly negative one so that it was known to us in advance what a manager's view of a project was rather than us having to guess. This enabled us to compare the framing used when talking about positively-viewed projects with the framing that was used when discussing negatively-viewed projects. This allowed us to analyze not only if managers used framing but also whether the framing was noticeably different when managers discussed projects of which they had either a very positive or a very negative view.

Positive frame related	Negative frame related	Source(s)
X *done*	Y *left*	Karevold and Teigen, 2010
More than X *Less than* Y	*More than* Y *Less than* X	
Almost X done	*Almost* Y left	
Larger than X	*Smaller than* X	Buiten and Keren, 2009b
X% users *satisfied*	Y% users *dissatisfied*	Sabherwal et al., 2003
Save/Saved	*Lose/Lost*	Tversky & Kahneman, 1981 Buiten and Keren, 2009a Kuhberger, 1998
Has (succeeded to)	*Has failed to*	Davis and Bobko, 1986

Table 4-2: Words used in risky choice framing and progress framing experiments.

4.5   Results

As described in the previous section, the transcripts of the interviews were scanned for words that can be associated with positive or negative framing. Based on the refined coding scheme, specific words and phrases were assigned to the appropriate codes and categorized. Once this was complete, an analysis was performed to see what types of framing were used by project managers when talking about projects, if any. The next step was to see whether there was any pattern to this framing usage. Specifically, we investigated whether the usage of (certain types of) framing was systematically different dependent on whether managers had a positive or negative view of a project. In this

section, we describe the outcomes of the analysis of the four types of framing included in our study.

Risky choice & progress framing

In previous risky choice framing studies, specific words were used to emphasize either (potential) positive or negative elements associated with a certain course of action or a choice. Drawing attention to either the positive or the negative aspects can cause subjects to interpret the outcomes as either gains (positive framing) or losses (negative framing), relative to a reference point. Progress framing has a similar effect but achieves it in a different way. Rather than changing whether a (potential) positive or negative aspect is emphasized, progress framing instead uses specific words to change the reference point. As such, positive framing involves either moving the reference point of a positive outcome to be below the actual value or moving the reference point of a negative outcome to be higher than the actual value. Negative framing can be achieved by instead moving the reference point in the opposite direction (Karevold & Teigen, 2010).

As stated, a list of words used for positive or negative framing in risky choice and progress framing in prior studies which could also apply to a project context, are listed in Table 4-2. Analysis of the interviews shows that each of these words were used by managers when discussing projects, with the exception of the framing of user (dis)satisfaction. This indicates that managers, when discussing projects, indeed use the same words which have been used in experiments to achieve (risky choice or progress) framing effects. However, the most important outcome here is that managers also applied these type words very systematically. In fact, in 100% of the cases words typically used in progress framing and risky choice framing experiments to achieve a positive frame were used by managers when discussing a project of which they had a positive view. The same was true for the usage of words associated with negative framing when discussing projects which they viewed negatively. This is an important finding because it is a strong indication that identifying the framing usage of managers could reliably provide insight into their view of a project.

In the second round of analysis we also came across other phrases that were used by the project managers which are not mentioned in Table 4-2, but which are closely related. For progress framing we came across additional words which, similar to the progress framing words listed in Table 4-2, could influence the distance to the reference point. For example, one interviewee mentioned that the project "*has **already** gone through **at least** 10 project managers*" (quote translated from Dutch). These words were categorized into to the following codes: "At least / At most", "Already", "Increase / Decrease" and "Only / Just". In addition, we also discovered additional words which could be used for risky choice framing in a project context. The code "Under target / Over target" includes statements related to projects going over or under budget and meeting or failing to meet targets. These

extend the "Done / Left" form of risky choice framing listed in Table 4-2. For a complete overview of all the codes used in our study related to risky choice and progress framing, we refer to the Appendix.

Attribute framing

We did not have a specific pre-existing list of desirable or undesirable attributes which have been used in previous attribute framing studies going into the interviews. As stated, the reason for this is that which attributes are considered desirable or undesirable is strongly dependent on the object in question and thus differs from context to context. Since we are aware of no prior studies which used attribute framing in a project context, the attributes used for attribute framing were mainly identified based on the interviews. During the iterative coding and analysis process we identified various factors which were used by managers when discussing projects of which they had a positive or a negative view. This list might be useful since it might be used in future studies on attribute framing in a project context. In addition it provides an overview of specific project attributes which could both influence a manager's view of a project as well as be indicative of said view if mentioned by the manager when discussing the project. An overview of the attributes which we identified is listed in Table 4-3.

Attributes	Positive or negative
Benefits and/or importance of the project are clear	Positive
Clear and definite project deadline	Positive
Clear and consistent project process (objectives, goals, scope, planning, guidelines)	Positive
Shared goals, commitment and support for the project by those involved	Positive
Focus on cost savings and/or efficiency	Negative
Difficulty/Failure to meet targets	Negative
Fear of redirecting or stopping	Negative

Table 4-3: Attributes used for attribute framing during the interviews.

As with risky choice framing and progress framing, we also observed a pattern in the usage of attribute framing where positive (negative) framing was systematically used more often when discussing a project of which managers had a positive (negative) view. Table 4-3 classifies whether these attributes can be considered positive or negative in nature. In other words, whether they are desirable or undesirable attributes. Note that this does not necessarily mean that a positive attribute can only be used for positive attribute framing. For example, emphasizing that a project is missing or lacking a specific positive attribute

is a form of negative framing similar as to saying that a car doesn't have features such as air conditioning. Thus, the attributes mentioned in Table 4-3 can be used both for positive framing or negative framing and indeed there were examples where managers mentioned the absence of a positive (negative) attribute as a reason for a more negative (positive) view of the project. For example, with regard to the positive attribute of having clear and consistent project process, and having clear (business) goals in particular, one manager said (quotes translated from Dutch): "*There was complete transparency about the business goal*" (positive framing) whereas in another instance it was said during the interviews that: "*Only with regard to money the goal was well defined*" (negative framing) (Quotes translated from Dutch).

Positive (negative) framing was systematically used more often when discussing a project of which managers had a positive (negative) view. However, while attribute framing in line with the project view (i.e. both positive or both negative) was more common, there were also instances where the two did not match. One possible reason why in some cases positive framing did not line up with a positive project view was because managers discussed multiple projects during the interview and started to make comparisons between them. As a result, their attention was sometimes drawn to positive attributes of projects which they viewed negatively and vice versa. This shows that it is important to realize that a single instance of attribute framing by managers might not be a truly reliable indicator of their view of a project. However, positive framing was used significantly (multiple times) more often in relation to a positive project view than in relation to a negative project view, and vice versa. Thus, analyzing the overall attribute framing of a manager could still reliably give insight into their view of a project.

It is also interesting to mention that some of the attributes mentioned in Table 4-3 seemed to have a more prominent impact on the decision makers' project views. Having 'shared, goals commitment and support for the project by those involved' and a 'clear and consistent project process', for example, were mentioned over twice as many times during the interviews as any other attribute. This indicates that these were either perceived to be the more relevant aspects of a project or that they have a strong impact on the view of projects that the managers developed. Also, having a 'clear and definite deadline' was only mentioned for projects in which this was not the case. This could indicate that not having a clear or definite deadline can lead to a (more) negative project view but that having such a deadline does not necessarily lead to a more positive project view.

Goal framing

When goal framing was used by the interviewees, it was mostly in relation to specific project attributes and in explaining the benefits of having these factors or the problems when these are not present within the project.

Goal framing is different from the other two types of framing in that it involves making a certain action, alternative or project more desirable, both in the positively and negatively framed forms, by either emphasizing its advantages or the disadvantages of passing it up. An example of positive goal framing is that one of the interviewed managers mentioned that when changes are absolutely necessary it is important to properly communicate this as well as the reasons behind it. He said: "*In that situation very clearly explain why that is the case and announce that not the day before but at an early stage. Now, you will still encounter resistance (...) but at least you will mitigate a part the resistance in part*" (Quote translated from Dutch). Alternatively, negative goal framing can be used to point out the (potential) problems of not performing the recommend action. A quote from an interviewed project manager: "*I think that it helps tremendously if you undertake an IT project which has a very clear business goal, which is made clear to both the business side and the IT-side. And if you have a project where that is much less clear and where it looks like everyone is working on an IT-hobby, then it becomes a lot more difficult for everyone to enjoy working on the project, but I also think that it will become more difficult to get results*" (Quote translated from Dutch).

Since both positive framing (i.e. describing the benefits of doing something) and negative framing (i.e. describing the downside of not doing something) involve promotion of a performing a certain action, analyzing whether a manager uses positive or negative goal framing turned out to not be suitable for distinguishing between positive or a negative view of a project. However, since goal framing was used in relation to specific desirable features or attributes, it still played a role in identifying project attributes which were considered to be important. Therefore, goal framing still had its uses for linking statements made by decision makers to their view of a project.

Degree of framing usage

Table 4-4 shows how often framing was used by the managers during the interviews. The table shows that in the three interviews which together lasted over four hours, a total of 86 instances of framing were identified. This means that, on average, managers used words or phrases linked to framing about once every three minutes. Taking away the 29 instances of goal framing, this leaves 57 forms of framing which were linked to a manager's view of a project. This suggests that instances of framing may come up with some regularity during a conversation about a project. As such, knowledge of the different forms of framing used by managers and how it can be linked to their views of a project can certainly be valuable.

Category of framing	Occurrences
Goal Framing	29
Risky Choice Framing & Progress Framing	18
Attribute Framing	39

Table 4-4: Summary of occurrences of framing categories.

The 18 combined instances of risky choice framing and progress framing identified in the interviews were all congruent with the project view of the manager (i.e. positive framing for a positive project view and vice versa). This means that on average each interview contained 6 (seemingly) highly reliable indicators of a manager's project view. Similarly, the words associated with this type of framing are relatively stable and can apply to various contexts as well as various different projects. As such, being aware of and looking out for these two categories of framing is likely to provide auditors, controller or executives with the most valuable information.

Attribute framing was the most commonly used form of framing. On average, attribute framing occurred 13 times per interview. Note however that we found that attribute framing is a bit less of a reliable indicator than the other two framing types since there were instances where the attribute framing was not congruent with the project view (positive attribute framing with a negative project view and vice versa). As such, a single instance of attribute framing may not, and should not, be seen as a reliable indicator of a manager's project view. However, we did notice that attribute framing congruent with the project view was several times more common than incongruent attribute framing. As such, looking at the overall attribute framing usage should still provide a valuable indicator. Luckily, given that attribute framing was used the most out of any type of framing, situations where there is only one or a few instances of attribute framing seem less likely.

Finally, project managers used goal framing on average 9 to 10 times per interview. As said though, due to the different nature of goal framing where with both negative and positive framing an action is promoted, goal framing was found to be less useful as an indicator for identifying either a positive or a negative project view. Nevertheless, goal framing was useful in helping to understand why managers had a positive or a negative view of a project and the arguments made helped to identify relevant project attributes used in attribute framing.

To summarize, on average, managers used framing once every three minutes during the interviews. Our findings indicate that risky choice framing, progress framing and attribute framing which formed the large majority of the framing usage, can serve as useful and (relatively) reliable indicators for a managers view of a project. Information leaked in this manner can be very valuable to auditors, controllers or executives and could be used as an early warning indicator for potentially very costly project escalation.

4.6 Discussion

In this exploratory study we investigated whether managers use framing naturally when freely talking about projects from their personal experience. The outcomes of our text analysis based on interviews with several experienced project managers indicate that managers indeed use words and phrases that have been used for positive and negative framing in prior framing experiments. Specifically, during the interviews we encountered multiple instances of each of the four categories of framing that we looked at in this study. Moreover, we observed a pattern to this framing usage. For three of the four framing categories, positive framing was (generally) used when discussing projects of which managers had a positive view and vice versa for negative framing. Before we discuss the theoretical and practical implications of this study and its outcomes, it is important to first state its limitations.

Limitations and future research

While this study fills some relevant theoretical gaps, such as allowing people to speak freely rather than forcing them to choose between one of two predefined frames, there are also some limitations to this study. The main limitation of this study is related to its exploratory nature and the limited number of interviews that was performed. While we found a total of 86 instances of framing, an average of once every three minutes, the findings are based on extensive interviews with three managers. While it is interesting to discuss the usage of framing and the frequency of (the various categories of) framing, the study is exploratory in nature given this limited sample size. As such, it is important to recognize that one should be cautious in generalizing the outcomes of this study. Rather, this study is an important first step which indicates that managers indeed can use framing when freely discussing a project. The outcomes suggest that all four categories of framing can be used by managers and, more importantly, there seems to be a strong relationship between a manager's framing usage and their project view. More research, and particularly quantitative studies, are needed to in order to assess whether there is indeed empirical support for a relationship between framing usage and a manager's view of a project.

A second limitation relates to the fact that we looked at a specific set of words and phrases associated with framing and that our scope included four categories of framing. There might however be words or phrases which can be used for positive or negative framing which managers use but which we did not look at in our study and/or did not find in our text analysis of the interviews. This may apply in particular to attribute framing where we did not have a pre-existing list of attributes going into the interviews. Further research can help to both extend and increase the robustness of the various forms of framing that we observed in this study.

A third limitation is that while we (1) found indications for a link between the natural framing usage of managers and their project view and that (2) prior research suggests that this project view can influence perceptions, decisions made by individuals and even project escalation, our study did not directly investigate the link between managers framing usage, actual project decision making and project escalation. As such, we recommend for future research to empirically test the relationship between natural framing usage of managers and project decision making as well as project escalation.

Implications for research

Prior framing research has focused almost exclusively on how people are influenced by framed information. We add to the existing research by taking a different approach and by investigating if, and how, people use framing naturally when freely discussing a topic (in our case, a project). How people use framing, rather than how they react to it, has received relatively little attention. The few existing studies on this topic however (e.g. Sher & McKenzie (2006), Karevold & Teigen (2010) and Van Buiten & Keren (2009a, 2009b)) are promising and suggest that there may be a pattern in the framing usage of people and that, as such, the framing that someone uses can leak information beyond what is said.

However, the experiments in the above mentioned studies have some important limitations. One such limitation is that the previous studies all used student subjects and not project managers (the target population that we are interested in). It may be the case that experienced project managers use different words and different framing when discussing projects than students do. In order to accurately assess the framing used by project managers, we based our analysis on interviews with actual project managers that talked about real life projects, rather than students as surrogates. Another limitation is that the study by Karevold & Teigen (2010) only looks at how people interpret the framing usage of others and how that framing usage may be linked to the others' decision making intentions. While Sher & McKenzie (2006) and van Buiten & Keren (2009a) do look at the framing usage of subjects themselves they also have an important limitation. Subjects in their experiments are provided two alternative frames created by the researchers and are asked to select one of these two frames. Thus, the choice of framing was both forced and artificial. Importantly, the question of whether people actually naturally use framing when they are free to choose their own words remained thus far unanswered. In our study we aimed to fill these theoretical gaps by (1) using actual project managers as a source rather than students as surrogates (2) letting managers talk about actual projects that they encountered in real life and, perhaps most importantly, (3) allowing managers complete freedom in the words they choose to describe the project and the freedom to discuss any aspect of the project for as long as they like. This enabled us to analyze the actual framing usage of actual managers talking about real projects.

Our findings indicate that managers can use all of the categories of framing that are investigated in this study. Over the course of three interviews, lasting over four hours combined, we found 86 instances of framing usage by managers. In addition to investigating whether managers would use framing naturally, and which types of framing they could use, the second main goal of this study was to investigate whether there was a pattern to their framing usage. If there is a clear pattern to the framing usage of managers then information leakage of potentially valuable information could occur. While the empirical base for our study is limited due to the limited number of interviews and the exploratory nature of our study, our results give several clear indications that there may be a structured pattern in the framing usage of managers.

In our text analysis we found that words that have been used for positive and negative (risky choice- and progress-) framing in previous framing studies are also used by project managers when they are discussing projects. In addition, we found that framing was quite common, with a total of 86 instances of framing observed in three interviews. Furthermore, there appears to be a link between the framing usage of managers and their view on a project. Specifically, we found that positive framing was commonly used when managers had a positive project view, but not when they had a negative project view, and vice versa. As a result, the fact that a manager uses negative framing, rather than positive framing, to describe a project could leak valuable information about their project view beyond what is said in the discussion. This is in line with findings from Sher & McKenzie (2006).

We found that while all four categories of framing were used by managers, that not all were equally useful or reliable. We found a very strong link between two types of framing (risky choice framing and progress framing) and a manager's project view. In fact, in 100% of the observed instances of these categories of framing, the framing matched the project view (i.e. positive framing with a positive project view and vice versa). This indicates that these two categories of framing may be particularly reliable as an indicator for a manager's project view. Since the words associated with these categories of framing could also apply, and have been used, beyond the context of project management, these types of framing appear to be the primary instances of framing to look for when attempting to analyze information leakage. For attribute framing we did observe instances where the framing usage did not match the project view (i.e. positive framing with a negative view and vice versa). This means that attribute framing may be a less reliable indicator and that people should not depend on a single instance of attribute framing to obtain leaked information. However, overall the number of times where the attribute framing matched the project view was several times greater than the number of instances where there was a mismatch. As such, looking at the overall usage of attribute framing could still serve as a relatively reliable indicator of a project manager's view. Goal framing, due to the fact that both negative and positive framing is used to promote a certain action, was found to be less useful as an indicator for identifying either a positive or a negative project view.

Implications for practice

Our research results translate to implications and guidelines for practice in several ways. For example, it is often difficult for executives to keep their finger on the pulse with complex IS projects and they are highly dependent on the information that they receive from project managers. However, because this information is sometimes colored and not entirely objective, executives can develop a biased view of the project as a result. Prior framing research has repeatedly shown that even when the information itself is objectively the same, that small differences in the words used to describe said information can have a big impact on perceptions of the project and decision making. As such, the framing effects which have been found to occur in prior framing studies, might also occur in practice when managers use similar words and sentences to frame project information. When someone is unaware of the effects of framing, they may run the risk of being biased without even realizing it, though it is important to mention that we did not test this directly in our study..

The outcomes of the text analysis on the framing usage by managers during the interviews are an indication that framing is indeed being used in practice by project managers when discussing projects. The framing which we observed in the interviews seems to a natural and subconscious process, which is applied even when the people in question have no incentive to give an incorrect depiction of the project. Being aware that project managers can use framing when discussing project in such a manner is an important first step which may help in preventing the biasing effects of framing in the future, though again, this was not something which we investigated within the context of this study. We do hope, however, that our study helps to raise awareness about framing usage by managers. Furthermore, our findings indicate that the framing usage by managers might be linked to their underlying view of the project. As such, the fact that the manager uses positive framing rather than negative framing can leak information about their project view, in line with theory on information leakage (Sher & McKenzie, 2006). Someone who is aware of the ways in which managers can use framing could thus potentially obtain valuable additional information beyond what is discussed in the conversation or report. Such information might for example be valuable to a project auditor. In addition, this information might also be used to test a manager's view against reality. This again, however, would be a topic for future research.

Chapter summary

In this chapter we investigated if, and how, managers use framing naturally when they are discussing projects. Our study is based on theory on framing and information leakage which indicates that the specific words which people use to describe something could provide valuable information beyond what is being said. We performed interviews with several experienced managers which we freely allowed to discuss projects from their

personal experience. Questions were purposely very broad and open-ended to allow managers to discuss any aspect of the projects that they wanted, for as long as they liked and using their own words. These interviews were recorded and transcribed so that text analysis could be performed based on the exact words and sentences that the managers had used.

We found that managers applied all four types of framing that were investigated in this study on multiple occasions. Framing occurred 86 times during the interviews which came down to an average of once every three minutes. Furthermore, we found that managers generally used positive framing when they talked about projects of which they had a negative view, and vice versa, for three of the four categories of framing. This suggests that a manager's choice of framing may leak valuable information about their view of a project. This study makes several contributions to existing research on framing:

- We differentiate ourselves from most framing research, which focuses on reactions to framed information, by instead looking at how people themselves frame which has received little attention thus far.

- While promising, the few other studies on this topic (a) all used student subjects which may frame differently than managers do and (b) all forced participants to choose between two pre-selected forms of framing. We address the theoretical gaps in these studies by investigating whether managers use framing naturally when they are free to discuss a project using their own natural language.

- We find that managers do use framing naturally when discussing projects. All four categories of framing which were looked at in this study were applied on multiple occasions during the interviews.

- Our findings indicate that managers also systematically use different framing depending on their view of the project. As such, the framing usage by managers could potentially be used to obtain valuable information about their view on a project beyond what is said in the conversation (i.e. information leakage).

Of course, this study also has some limitations. Most importantly, the study is explorative in nature and is based on a relatively small number of interviews. As such, one should be cautious in generalizing the outcomes of this study. Rather, this study is an important first step which indicates that managers indeed use framing when freely discussing a project. Further research is needed to obtain empirical support for this relationship between framing usage and a manager's view of a project as well as for the relationship between framing and project escalation. In addition, there may be other ways in managers can use framing which were not explored or encountered in this study. Future research could thus be useful to extend the various forms of framing observed in this study.

Appendix

Iteratively developed coding schemes

Code	Associated words & phrases (Dutch)	Translation	Interview example (translated)
Done / Left*	(Niet): Klaar, Af, Compleet, Afgerond, Opgeleverd / afgeleverd. **Zit op**, Te doen/gedaan worden. Over	(Not): Done, Finished, Complete, Completed / Delivered. **Is at** / Have spent, To do/Has to be done, Remains/Left	*"If you, for example, **are at three quarters of your time"***
Over target / Under target (timeschedule, budget)	(Niet): Over, **Overschrijden**, Volgens (Niet): Onder, Binnen, Uitloop	(Not): Over, **Exceed**, According to/In line with (Not): Under, In/Within, Delay	*"And what I think of immediately are enormous **exceedances of budget and timeschedule"***
(Financial) **Costs / Gains**	Kosten, Verlies, **Geïnvesteerd**, Uitgegeven aan Winst, Besparing, Baten	Costs, Losses, **Invested**, Spent on Profit, Savings, Gains	*"In [year x], [y amount] was **invested** in [project z]"*
Succeed / Fail	(Niet): Geslaagd, **Onder controle**, In staat, Succesvol (Niet): Gefaald	(Not): Succeed(ed), **Under control**, Able, Successful (Not): Fail(ed)	*"[Project x], **no one will get that under control**, it can't be done"*
* *In their study, Karevold & Teigen (2010) also classify describing progress in terms of what is done or left as progress framing. Given that this method of framing is more in line with describing the situation in positive or negative terms (i.e. what's done versus what is left), rather than manipulating the position of the reference point given a certain positive or negative description, we believe this factor to be more similar in function to risky choice framing than to progress framing.*			

Table 4-5: Coding scheme for risky choice framing.

Code	Associated Words / Phrases (Dutch)	Translation	Interview example (translated)
More than / Less than	(Niet): Meer dan, Hoger dan, Sterker dan, Beter dan, Boven (Niet): Minder dan, **Lager dan**, Zwakker dan, Slechter dan, Onder	(Not): More than, Higher than, Stronger than, Better than, Above (Not): Less than, **Lower than**, Weaker than, Worse than, Below	*"But the **investments are remarkably lower than** for [project x]"*
Almost / Nearly	**Bijna**, Vrijwel, Zowat, Zo goed als	**Almost**, Nearly, As good as	*"In that system, **almost [x] units have** already **been converted** in to the new target system"*
At least / At most	Tenminste, In ieder geval, Minimaal, **Zeker**, Hoogstens, Maximaal	**At least**, A minimum of, For certain At most, A maximum of	The project *"has already gone through **at least 10 project managers**"*
Already	(Nu) **Al**	**Already**	*"[Amount x] has **already** been invested in that"*
Increase / Decrease	Stijging, Toename, Vooruitgang Daling, Afname, **Achteruitgang**	Increase **Decrease**	*"If you are talking about the quality of the project or service, that **decreased** in the eyes of me and many others"*
Only / Just	Alleen, Enkel, Slechts, **Nog maar**	**Only**, Just	*"If you, for example, are at three quarters of your time and **you have only achieved a quarter of your goals**, then you should seriously ask yourself whether you should continue"*

Table 4-6: Coding scheme for progress framing.

Attributes	Interview example (translated)
Benefits and/or importance of the project are clear	"*I think it has to do with the drive and the goal-orientation of 'Why do we do this? Does this benefit us? Yes, this benefits us. Well then we should do it'*"
Clear and definite project deadline	The project "*Also doesn't have a clear deadline as other projects do. More like, 'we will see where we end up'*"
Clear and consistent project process (objectives, goals, scope, guidelines)	"*When those projects are approved these things are looked at it is being said that 'well this is not too risky, it is not too ambitious, it is not too expensive, this is all fine in line, it falls within our framework'*"
Shared goals, commitment and support for the project by those involved	"*I think that [Project x] has good project ownership. Those people are involved, it keeps them up at night. If I come bringing bad news than they are angry at me*"
Focus on cost savings and/or efficiency	"*In reality the driver for the project was money, savings*"
Difficulty/Failure to meet targets	"*But it is extremely expensive, it all is delayed*"
Fear of redirecting or stopping	"*The politics surrounding it, like 'yeah, I really don't dare to terminate it', that's what you see when you look around*"

Table 4-7: Coding scheme for attribute framing.

Code	Assigned to arguments involving:	Interview example (translated)
Positive goal framing	Benefits of performing an action. Reasons why (having) something is important/beneficial.	*"In that situation very clearly explain why that is the case and announce that not the day before but at an early stage. Now, you will still encounter resistance (...) but at least you will mitigate a part the resistance in part"*
Negative goal framing	Consequences of not performing an action. Reasons why (not having) something is detrimental.	*"I Think that it helps tremendously if you undertake an IT project which has a very clear business goal, which is made clear to both the business side and the IT-side. And if you have a project where that is much less clear and where it looks like everyone is working on an IT-hobby, then it becomes a lot more difficult for everyone to enjoy working on the project, but I also think that it will become more difficult to get results"*

Table 4-8: Coding scheme for goal framing.

Chapter 5: How factors unrelated to the project can cause project escalation: A Construal Level Theory perspective

Chapter overview

The main goal of this chapter is to investigate Construal Level Theory (CLT) in the context of information system (IS) projects and escalation of commitment. We performed an experiment with a between-subject design in which we manipulated construal level to be either high or low. In this experiment we tested the effect of differences in construal level on the willingness to continue with a project. Drawing on Construal Level Theory, we also tested several potential mediators of this effect which could help explain exactly how construal level can affect project perceptions and decision making. In addition to including as mediators factors which have previously been shown to be influenced by construal level, we also include other factors on which the effect of construal level has not previously been tested. Specifically, we hypothesize that the following factors could serve as mediators: (1) importance of desirability aspects to the decision, relative to feasibility aspects, (2-3) the perceived levels of feasibility and desirability of the project, as well as (4-5) the number of pros and cons for continuing with the project that decision makers can think of. We find empirical support for an effect of construal level on the perceived level of feasibility of the project, which in turn affects the willingness to continue with the project. Implications for research and practice are discussed.

Keywords: project escalation, Construal Level Theory (CLT), decision making

5.1   Introduction

Each year, a lot of money is invested into information technology (IT) (Gartner, 2014). In addition, information systems (IS) are becoming increasingly important to organizations. Imagine, for example, the importance of information systems to a business such as Amazon or to internet banking and online payments. Since these information systems are so important to organizations and because many resources are invested into them, we would like to think that the decision making process for IS projects is always very deliberate, rational and based on all relevant financial and strategic considerations of the project. However, is that really the case?

Prior research indicates that decision makers may not always be perfectly rational and that they may rely on heuristics (mental shortcuts) in their decision making, which may lead to biases (see for example Kahneman, 2011 & Sleesman et al., 2012). Such biases entail suboptimal decision making, which can have a negative impact on projects. In this chapter we focus on project escalation, where decision makers continue to invest resources and remain committed to a troubled project. IS projects, in particular, are believed to be prone to escalation, due to factors such as their complexity and their intangible nature (Korzaan & Morris, 2009; Sabherwal et al., 2003; Keil et al., 2000a). As the investments in IS projects keep increasing, it is important to be aware of the biases that underlie project escalation. For a recent overview of psychological biases which have been linked to project escalation, such as the sunk cost effect and framing effects, we refer to Sleesman et al. (2012).

In this chapter we study a potential causal factor of project escalation, construal level (Trope & Liberman, 2010), which has thus far received little attention in this context. Construal Level Theory (CLT) assumes that people use different 'construal levels' to think about objects/situations that are psychologically distant (i.e. high construal level) as compared to those that are psychologically close to them (i.e. low construal level). Psychological distance can, for instance, refer to geographical, temporal, or social distance as well as to a high degree of hypotheticality. CLT suggests that a high or low construal level can influence perceptions and preferences (Trope & Liberman, 2010). In this study, we test whether different construal levels can influence the likelihood of project escalation by affecting perceptions of feasibility and desirability as well as perceptions of the pros and cons of the project. We perform an experiment to investigate how different construal levels can influence the willingness to continue with a project. Furthermore, we propose and test several factors which could serve as mediators of this effect in order to increase awareness and understanding of how construal level can influence project perceptions and decision making.

5.2   Theoretical background

Escalation of commitment is described as "*the tendency of decision makers to persist with failing courses of action*" - Brockner (1982), p. 39. Escalation of commitment to a project can cause decision makers to continue a previously chosen course of action, despite the availability of information which indicates that continuation on the current course is undesirable. Research on project management introduced the concept of project escalation, which occurs when "*resources continue to be devoted to a project despite negative information indicating that the project is in trouble*" - Korzaan & Morris (2009), p 1320. Project escalation is relatively prevalent amongst IS projects (Keil et al., 2000a). It is suggested that IS projects are particularly prone to project escalation due to their intangible nature and their relatively high level of complexity (Korzaan & Morris, 2009; Sabherwal et

al., 2003). A variety of project-, psychological-, social- and organizational factors, such as the sunk cost effect and agency theory, have been found to influence escalation decisions (see Sleesman et al. (2012) for a recent overview).

While several of the factors influencing project escalation have received a lot of attention in research, others remain (mostly) unexplored. The focus of this study is on a potential causal factor of project escalation which has thus far received little attention, i.e. the construal level of decision makers. Construal Level Theory (CLT)[8] has received a lot of interest in psychology and behavioral economics and it seems plausible that the effects of CLT, as described in other studies, can also play a role in the context of project decision making. Yet, the exact link between CLT and project escalation, if any, remains mostly unexplored. In this study, we hope to fill this gap.

According to Stephan et al. (2010) "*any event or object can be represented at different levels of construal*" – p. 270. According to CLT, objects and events that are psychologically more distant are represented at a higher construal level (Trope & Liberman, 2010; Stephan et al., 2010). Psychological distance refers to geographical distance, temporal distance, social distance, and degree of hypotheticality. Temporal distance, for instance, increases when the event lies further in the future. Social distance increases when the event concerns someone else rather than oneself. Hypotheticality increases when the situation becomes more hypothetical. These different distances all activate a common part of the brain (Trope & Liberman, 2010; Stephan et al., 2010). Based on theories on concept formation, categorization and goal identification, Trope & Liberman (2010) suggest that high level construals are generally abstract and emphasize the central or defining characteristics of an event. Low level construals are more concrete and place emphasis on distinguishing or peripheral characteristics of an event. Psychological distance influences construal level, but at the same time construal level can also influence perceived distance. Events that are construed at a higher level are, for instance, perceived to be more distant (Trope & Liberman, 2010). This evidence suggests that events that are construed at a higher level induce a higher activation of the part of the brain related to transcending the here and now.

Basing themselves on goal subordination theories, Trope & Liberman (2010) suggest that desirability considerations constitute high level construals whereas feasibility considerations constitute low level construals. They found that decisions regarding more distant activities were influenced more by desirability and less by feasibility considerations. Thus, the construal level used to represent an event can influence evaluations and decisions related to the event in this manner.

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[8] To our knowledge, no prior studies on the link between CLT and project escalation have been published. However, we are aware of an unpublished manuscript by Wakslak et al. (2006). While the study was never published, Trope et al. (2007), describe that the study involved an experiment which looked at how construal level could moderate the effect of the sunk cost bias on escalation of commitment.

In this chapter we analyze the impact of construal level on a project continuation decision. We first manipulate the construal level (high or low) that subjects use to represent events. Then we study whether subjects' construal level influences subsequent project continuation decision. Based on existing research on CLT, we expect that the level of construal on which people think influences continuation decisions through various mediators, such as its impact on the relative importance of feasibility and desirability (of continuation) discussed above.

In line with Trope & Liberman (2010) we hypothesize that activating a higher construal level will increase the relative importance of desirability relative to feasibility on a subsequent task. Prior studies in other decision making contexts indicate that there is an effect of the construal level of decision makers on the importance of feasibility aspects, relative to desirability aspects of the object in question (Liberman & Trope, 1998; Liberman et al., 2007; Trope & Liberman, 2010). For example, Liberman & Trope (1998) found that for several contexts, such as the decision for students of whether or not attend a guest lecture, that subjects rated the importance of the desirability (e.g. how interesting the guest lecture is to them) to be higher and the importance of the feasibility (e.g. how convenient it is for them to attend the guest lecture) to be lower when the temporal distance to the event was manipulated to be high (i.e. high construal level), rather than low (i.e. low construal level). In line with this, we expect that, ceteris paribus, people with a higher construal level will be more likely to focus on desirability and less likely to focus on feasibility of the project. For a project with feasibility issues, but a high level of desirability if the project can be completed successfully, which is not uncommon for escalating projects, we hypothesize that a higher construal level will lead to increased willingness to continue.

Furthermore, prior research on escalation has shown that when people mainly focus on one aspect of a project (e.g. time), they are less likely to notice, acknowledge or accurately assess problems related to aspects which they aren't focused on (e.g. quality) (Keil et al., 2007). Indeed, the study in this dissertation on the effects of project names which include a year (Chapter 3) found similar results. The findings from the study from Bar-Anan et al. (2007) also imply that people are better capable of processing construal level congruent information (Trope & Liberman, 2010). Thus, in the context of project decision making, people with a high construal level could be better capable of processing desirability-related information and could have more difficulty processing feasibility-related information.

Since scenarios for project escalation regularly involve significant feasibility problems (e.g. a low chance of being able to solve the encountered problems) but a relatively attractive outcome if the project can still be completed successfully (i.e. a high level of desirability), this suggests that a high construal level can cause people to focus on, and be better capable of processing, the relatively positive desirability-related information,

while focusing less on ,and being less capable of processing, the relatively negative feasibility-related information. In other words, this suggests that with a higher (lower) construal level people are more likely to focus on desirability (feasibility) aspects and, as such, are more likely to underestimate issues related to the feasibility (desirability) of the project. Thus, we predict that in a typical project escalation scenario a high construal level will cause the perceptions of the perceived level of feasibility to be higher than with a low construal level. Similarly, due to a lack of focus on the desirability aspect with a low construal level, the perceived level of desirability is predicted to be higher with a high construal level than with a low construal level. As mentioned above, for a project with feasibility issues but a high level of desirability if the project can be completed successfully, this leads us to hypothesize that a higher construal level will lead to increased willingness to continue with the project. Summarizing, we have the following hypotheses:

Hypothesis 1a: With a higher construal level, individuals will find desirability aspects of the project to be more important relative to feasibility aspects.

Hypothesis 1b: With a higher construal level, individuals will perceive the level of desirability of a project to be higher than with a lower construal level.

Hypothesis 1c: With a higher construal level, individuals will perceive the level of feasibility of a project to be higher than with a lower construal.

Hypothesis 2a: With a higher construal level, individuals will be more likely to continue a project with feasibility problems, and this effect is mediated by an increase in the weight put on desirability relative to feasibility of the project.

Hypothesis 2b: With a higher construal level, individuals will be more likely to continue a project with feasibility problems, and this effect is mediated by an increase in the perceived level of desirability of the project.

Hypothesis 2c: With a higher construal level, individuals will be more likely to continue a project with feasibility problems, and this effect is mediated by an increase in the perceived level of feasibility of the project.

Aside from perceptions of feasibility and desirability aspects, CLT has also been linked to several other factors. Of these factors, the link between CLT and the number of pros and cons that people can think of for an action is also relevant for this study. Specifically, CLT predicts that with a high construal level people will be able to think of more pros, and fewer cons, when deciding whether or not to perform a certain action (Eyal et al., 2004). Trope & Liberman (2010) explain this as follows: "*In deciding whether to undertake an action, cons are subordinate to pros. This is because the subjective importance of cons depends on whether or not pros are present more than the subjective importance of pros depends on whether or not cons are present*" - Trope & Liberman (2010), p. 452. In short, this suggests that if you don't see a reason to perform an action in the first place (pros), then there is little reason to think about the possible disadvantages or problems (cons). As such, pros are associated more with a high construal level and cons with a low construal level. Thus, we hypothesize:

> **Hypothesis 3a***: With a higher construal level, individuals will be more likely to continue a project and this effect is mediated by an increase in the number of pros that individuals can think of for the project.*

> **Hypothesis 3b***: With a higher construal level, individuals will be more likely to continue a project and this effect is mediated by a decrease in the number of cons that individuals can think of for the project.*

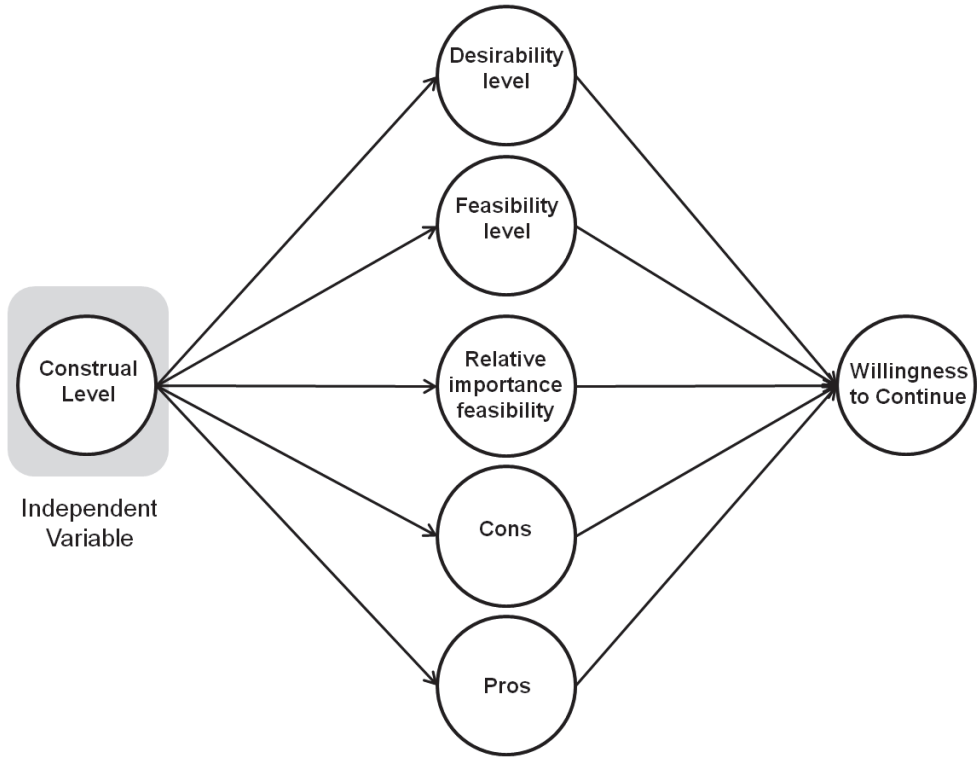Figure 5-1 summarizes our hypotheses.

Figure 5-1. Research Model

5.3 Methodology

Sample & procedure

In order to test our hypotheses, we conducted an experiment with 154 undergraduate students in the Netherlands. 153 students successfully completed the experiment. All students were enrolled in an economics program. The mean age of the subjects was 21 and 31% were female. Eligible students were invited by mail, which allowed them to sign up for one of the sessions. As the experiment was written in Dutch, only Dutch students were eligible. To assure sample homogeneity so as to maximize internal validity, only students who were enrolled in an economics program were eligible. Upon arrival at the lab, all subjects received verbal instructions at the start of the session. Subjects were then seated at their cubicles. On their desk they found a reminder of the instructions. The experiment was administered digitally; subjects filled in their answers on the computer in their cubicles. At the end of the experiment subjects were paid €7,- for their participation. A session took

around 40-45 minutes on average, including instructions at the start and payment at the end. The mean time spent by subjects completing the experiment on the computer was 23 minutes.

Design

Our experiment had a between-subject design and subjects were randomly assigned to either the low CL or the high CL experimental condition. All other aspects of the experiment were identical for both treatment groups. The computer experiment started with an instructions page and a general overview of what elements the experiment would contain. In order to prevent potential demand effects, subjects were not informed of the actual goal or hypotheses of the study. Subjects were told that the study was split into two separate parts. After the instructions, subjects proceeded to the first part of the study which contained the experimental manipulation as well as the manipulation check. The manipulation was designed to induce either a high or low CL and differed between subjects. The manipulation check and the rest of the experiment were identical across treatments.

Manipulation

For our treatment conditions we employed the categories/examples word manipulation task (Fujita et al., 2006), a commonly used and tested method of construal level manipulation. The manipulation involves a short exercise, which subjects are asked to complete. In both versions of the exercise subjects were presented with a set of words (the same for both versions). In the low CL condition, subjects were asked to think of specific examples of the presented word. For example, if the word was COMPUTER then subjects might write down LAPTOP or HP as examples. In the high CL condition, subjects were presented with the same words. However, rather than asking them for examples of said words, they were asked to think about the higher level category to which the words belonged. Again, in the example of the word COMPUTER subjects might write down DEVICE or ELECTRONICS as categories. Since the experiment was in Dutch, the instructions and the words were translated from English to Dutch.

Manipulation Check

We employed the Behavior Identification Form (BIF) manipulation to assess whether construal levels were successfully manipulated. The Behavior Identification Form (BIF) consists of a short exercise in which subjects are asked to answer 25 multiple choice questions (Vallacher & Wegner, 1989). The BIF describes to subjects that different actions and activities can be described in various ways. The task for the subjects is, for each of the 25 actions and activities that they are presented with, to pick the descriptions that they

prefer. Each action and activity is provided with two different descriptions. One of these two descriptions always describes how you can perform this action or activity while the other always describes why you would perform this action or activity. For example, the two descriptions for the activity LOCKING A DOOR are PUTTING A KEY IN THE LOCK (how) and SECURING THE HOUSE (why).

Prior studies have shown that people with high CL are more likely to prefer 'why' answers on the BIF whereas people with low CL are more likely to prefer 'how' answers (Vallacher & Wegner, 1989; Fujita et al., 2006). As such, the number of 'why' answers given on the BIF, gives an indication of the subject's construal level. This is typically done by giving a score of 1 for each 'why' answer selected and a score of 0 for each 'how' answer. Thus, subjects can end up with a total score between 0 and 25, where higher scores indicate higher construal levels. This is also how we implemented this manipulation check.

Decision Task

The manipulation check was followed by the scenario for the experiment. Subjects were asked to imagine that during their time as a student they thought of an idea for an app for mobile phones. Based on positive feedback on the app idea, it was entered into a student competition. The app idea ends up winning the competition and the organization behind the competition subsequently provides the possibility to develop the app. During the development process however problems arise in the form of technical obstacles, which results in the budget being spent without being able to deliver a working version of the app. It is also very uncertain as to whether or not the technical obstacles can be solved in the future. The subjects must then decide whether they will abandon development of the app or continue development regardless. Their willingness to continue with the project was measured using 3 items as listed in Table 5-1. These items were based on the study by Du et al. (2007) and adapted to fit the context of our scenario.

In most project escalation studies, experimental manipulations involve changes within the project scenario. For example, in sunk cost experiments, the level of sunk costs of the project in the scenario can be manipulated to be either high or low (Keil et al., 1995). Similarly, in Chapters 2 and 3, the name of the project was different depending on the treatment condition that subjects were in. In those cases, the information in the scenario itself is different (even if only slightly in the case of names) and this might partially explain why people perceive the project differently and make different decisions as a result. Our manipulation of CLT, however, involves subjects performing an independent task which is completely unrelated to the project itself. As such, subjects' construal levels are manipulated prior to reading the project scenario, which is in line with how construal level commonly is manipulated in prior CLT experiments (e.g. Fujita et al., 2006; Ledgerwood et al., 2010). As such, the actual project scenario is identical for subjects, regardless of treatment condition.

While this scenario does not take place in the typical organizational context, it does contain all the basic elements of an IS project escalation situation as described by Keil et al. (2007). First, in such scenarios there is a previously chosen course of action. In our case this was the initial decision to develop and market the app based on the positive feedback on, and the potential of, the app. Second, some time later, problems with the selected course of action are encountered. This provides new information in the form of negative feedback which indicates that it may be best to abandon or redirect the previously chosen course of action. In our case, this refers to the technical obstacles encountered with the app and the high degree of uncertainty of whether these can be overcome. Third, there is the choice either to continue with, and stay committed to, the previously chosen course of action or to abandon or redirect the project. In our case, subjects can choose to either continue development of the app despite the negative feedback, or they can choose to abandon the development of the app. As such, we have created a scenario which contains the basic characteristics of IS project escalation, but have done so in a context which is accessible and understandable to students. The experimental scenario is included in the Appendix.

As the focal point of this study is to establish the relation between construal level and project continuation decisions, we wanted to maximize internal validity of our experiment, even if it comes at a cost of a possibly reduced external validity. We recruited a relatively homogenous group of subjects, such that any difference in decision making between the high and low construal level groups could be attributed to these levels. It is sometimes argued that experiments with students have a reduced external validity as (a) students and practitioners may evaluate projects in a different manner and (b) student subjects may lack the experience or expertise to effectively make a decision in a project context (Compeau et al., 2012). Yet, as mentioned in Chapter 2, these concerns are valid specifically in those cases when there are unique characteristics of students and practitioners which cause them to act differently (Compeau et al., 2012). While one could argue that students and practitioners may differ in what factors they consciously base their decisions on, empirical evidence suggests that they are very similar in terms of information processing (Ashton & Kramer, 1980) and as such it is unlikely that one of the two is susceptible to the subconscious biases studied in this dissertation, whereas the other is immune.

Mediator variables

The decision task was followed by measurement items for the mediators in our theoretical model, the control variables age and gender, and questions to test for demand effects. Table 5-1 provides an overview of the measurement items used for each of the variables discussed next.

Construct	Item	Item wording*	Scale
Continue	Cont1	*Please rate the likelihood that you will continue or discontinue developing the app*	8-point likert
	Cont2	*Please rate the likelihood that you will complete or abandon development of the app*	
	Cont3	*Please indicate your willingness to spend your own money to continue developing the app*	
RelFeasImp	RelFeasImp	*Allocate 100 points to indicate how much weight you placed on feasibility vs. desirability in your decision making*	100-point fixed sum
Feasibility	FeasLevel1	*In your opinion, how feasible is the completion of the app?*	7-point likert
	FeasLevel2	*In your opinion, how likely is it that the app will be successfully developed?*	
	FeasLevel3	*In your opinion, what are the chances of achieving a successful outcome with the app?*	
Desirability	DesLevel1	*In your opinion, how desirable is the completed app?*	7-point likert
	DesLevel2	*How would you describe the value of the completed app?*	
	DesLevel3	*In your opinion, how lucrative will it be if you complete the app?*	
Pros	Pros	*Please write down as many pros of continuing the development of the app as you can*	Count # of pros
Cons	Cons	*Please write down as many cons of continuing the development of the app as you can*	Count # of cons
* All item wordings translated from Dutch			

Table 5-1. Measurement items used in our study.

The importance of feasibility of the project relative to its desirability, was assessed using a fixed sum (fixed allocation) question format in which subjects were asked to divide 100 points between feasibility and desirability of the project. The more points assigned to feasibility, relative to desirability, the higher the importance of feasibility relative to

desirability. As such, scores for this variable ranged could range from 0 to 100. For the sake of completeness we also included two questions to measure the absolute importance of feasibility and desirability separately. Yet, in these questions most people indicated that both feasibility and desirability are important and there was not much difference between treatments. As the main variable we are interested in is the importance of feasibility relative to desirability, we decided to only use the responses to the fixed sum question.

Three items each were created to assess the perceived level of feasibility and desirability of the project. Typically, feasibility and desirability of situations are manipulated in CLT studies, rather than measured. As such, these items we created ourselves. This is also one of the reasons why we opted for multiple item measurement for each and to assess them using several tests of convergent and discriminant validity (described in the results section).

Items to measure pros and cons were based on prior CLT studies. While Eyal et al. (2004) do not provide an exact wording for their measurement items, they do describe that "*Participants were instructed to think about their final exam and to write arguments in favor of and against four possible changes in the exam*" – Eyal et al. (2004), p. 785. In line with this general description of the questions, we asked subjects to "write down as many pros for continuing the development of the app as you can" and "as many cons as you can".

Order effects & Demand effects

In an experiment it is important to anticipate and handle potential order effects. If all subjects receive questions in the exact same order, then the order of these questions can also influence the results. For example, always asking people about pros first and then about cons means that the answer given to the pros question could influence the answer to the cons question. To deal with this potential issue, we used counterbalancing where half the subjects were first asked to write down pros and then write down cons and vice versa for the other half of subjects. Similarly, for questions related to the levels of feasibility and desirability, half the subjects first received the desirability related question(s) and then the feasibility related question(s) and vice versa for the other half.

Finally, demand effects can also play a role. If subjects correctly guess the purpose of the experiment or the experimental manipulation then they might give the answers that they believe that the experimenter wants to hear, rather than answering honestly. To control for such potential demand effects we included open ended questions in the experiment which asked subjects what they believed to be the goal of the experiment. In addition, subjects were allowed to make any additional comments about the experiment, which could be used to identify any potential demand effects.

5.4   Results

Invalid responses

We had 154 subjects participating in the experiment. Out of these subjects, one ended the experiment prematurely (by accidentally closing the internet session) and was unable to complete it. Two other subjects were dropped from the sample because they had given invalid responses to questions. One subject for example, when asked to allocate 100 points between feasibility and desirability based on their relative importance, allocated more than 100 points. Analysis of the open ended questions asking subjects to (1) describe what they thought was the goal of the experiment and to (2) give feedback on the experiment, showed no signs that any of the subjects had guessed that the study was about construal level theory or that the manipulation exercise was related to the project case. As such, we found no evidence of demand effects. After these preliminary checks, 151 out of 154 responses were considered valid, 76 of which were in the low CL treatment and 75 were in the high CL treatment.

Manipulation check

We used the BIF manipulation check to assess whether the experimental manipulation was successful. In line with the prescribed usage of this manipulation check, for each of the 25 answers, a score of +1 was assigned if the answer was a 'why'-answer and a score of 0 was assigned if the answer was a 'how'-answer. Thus, each participant ended up with a summed manipulation check score which could range between 0 (all 'how'-answers) and 25 (all 'why'-answers). An ANOVA was then performed to determine whether there were statistically significant differences in the mean manipulation check scores of the two treatment groups. Despite the fact that (1) two prior studies found a significant effect of this manipulation on this manipulation check (van Schie et al., 2015) as well as on a similar one with fewer and different activities (Fujita et al., 2006)[9], and (2) both this manipulation and manipulation check are commonly used in CLT studies, we found no such effect in our study. While the effects were in the predicted direction, these differences were not significant (F = 0.97, p = 0.326). The high CL group had a mean manipulation check score of 13.2 and a standard error of 0.622 while the low CL group had a mean score of 12.4 and a standard error of 0.49.

There can be a few reasons for this outcome. One of these reasons is that the manipulation worked as intended but that the manipulation check does not accurately capture the construal level of subjects. This explanation seems unlikely given the fact that

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[9] Both van Schie et al. (2015) & Fujita et al. (2006) tested this manipulation in isolation in a separate pre-study. I.e. neither study included an experiment which included this manipulation, this manipulation check and a factor which was hypothesized to be affected by changes in construal level (e.g. a dependent variable).

this manipulation check has been previously tested and is commonly used. Alternatively, it could be the case that the outcome of the manipulation check is accurate and that in our case the manipulation simply was not strong enough to create significant differences between groups. This explanation seems more likely given the nature of construal level as a state. In other words, rather than a trait, construal level can be influenced and manipulated by certain factors. One such factor is our manipulation, which is specifically designed to evoke a higher or lower construal level in subjects by having them perform an exercise. It is, however, unlikely that this is the only possible means capable of influencing construal level. Indeed, prior CLT studies have also identified other exercises which can be used to manipulate construal level, such as the how-why manipulation (Freitas et al., 2004; Fujita et al., 2006). Similarly, a high (low) construal level has been linked to high (low) psychological distances such as temporal, geographical and social distance (Liberman& Trope, 2010). As such, thinking about the near future/recent past rather than about the distant future/past could evoke different construal levels. If, for example, a student was very concerned with the exam that he took earlier that morning then it is quite likely that he/she may have entered the experiment with a different construal level than a student who was contemplating what job to take after his/her studies. Thus, it is possible that the manipulation was indeed successful in nudging the construal level in the intended direction, but that it was perhaps not strong enough to change a relatively low construal level into a high construal level. Indeed, looking at the manipulation check scores of participants, we found plenty of instances where people in the high construal level treatment condition had a low construal level score (more 'how'-answers than 'why'-answers) and vice versa. In other words, in these cases the manipulation had failed to evoke the desired high or low construal levels intended in the treatment condition.

Outcomes of the model with all 151 subjects

Assuming that the manipulation check correctly concludes that there are relatively small differences in construal level between treatment groups, this difference may be too small to find statistically significant effects of our manipulation on project continuation. We used Partial Least Squares (PLS) analysis to analyze these effects. Specifically, we used the statistical tool SmartPLS 3.0 (Ringle et al., 2015) to run the analysis. One main advantage of PLS is that it analyzes the entire model as a whole, thus allowing multiple mediation paths to be simultaneously estimated. This makes SmartPLS particularly suitable for testing models such as ours. In addition, SmartPLS uses bootstrapping to estimate the significance of effects, which is typically considered to be more reliable than alternative methods, such as a Sobel test, since it requires no distributional assumptions (Ray & Hornyak., 2013).
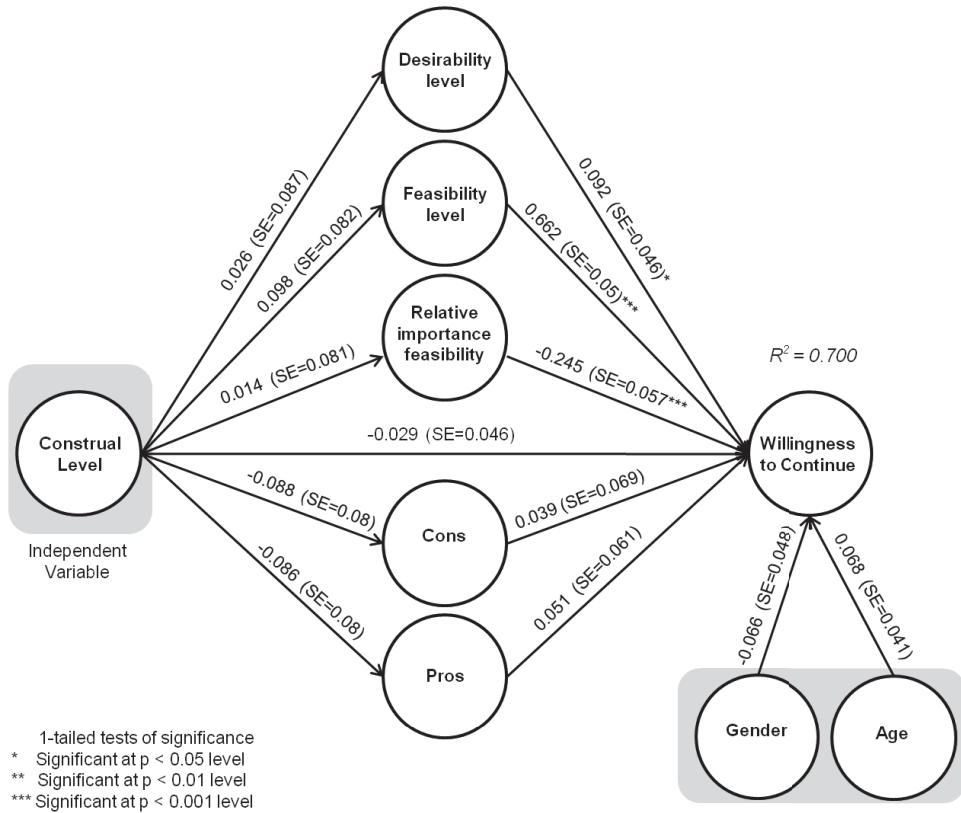
Figure 5-2. Structural Model Results (all 151 participants included).

Figure 5-2 provides an overview of the outcomes of the PLS analysis. For each path, the figure provides the path coefficient (an indication of the direction and the relative strength of the effect), its standard error, and the corresponding level of significance. In line with the directional nature of our research hypotheses, we report one-tailed p-values. The model also provides the R-squared of 0.7. As can be seen in Figure 5-2, the differences between treatment groups, illustrated by the arrows from construal level to the other variables, are all small and not statistically significant. For example, there is a negative relationship between (an increase in) construal level and the number of cons that people could think of, as predicted by Construal Level Theory, but this effect is small and not significant (path coefficient = -0.088, se = 0.08, one-tailed p = 0.136).

Dropping participants for whom the manipulation was unsuccessful

In order to better assess the impact of construal level on the project continuation decision, we also analyzed our model when subjects in the high (low) CL condition with a low (high) CL level according to the manipulation check were dropped. Specifically, we removed the subjects in the high CL condition who had selected more low CL 'how' answers than high CL 'why' answers (i.e. subjects with a score below 13), and the subjects in the low CL condition who had selected more high CL 'why' answers than low CL 'how' answers (i.e. subjects with a score above 12).This left us with 43 subjects in the low CL condition and 38 in the high CL condition. An ANOVA test confirmed that for this subsample, there is a statistically significant difference ($p < 0.001$) in manipulation check scores between the high CL treatment group (M = 17.58, se = 0.551) and the low CL treatment group (M = 9.44, se = 0.356).

The results of the SmartPLS analysis for this subsample are presented in Figure 5-3. Indeed, the results from Figure 5-3 differ from those of Figure 5-2 in several ways. Most importantly, we find a significant effect of construal on the perceived level of feasibility (path coefficient = 0.247, SE = 0.108, one-tailed p = 0.011), which was not significant with the full sample (Figure 5-2). In addition, since the path from level of feasibility to willingness to continue is also significant (path coefficient = 0.693, SE = 0.078, one-tailed $p < 0.001$) this suggest that there is a significant effect of construal level on willingness to continue and that this effect is mediated by perceived level of feasibility (unlike with the full sample where there was no significant effect of construal level on willingness to continue). In the following paragraphs we will assess the validity of our model and then move on to hypothesis testing.

Before we can test our research hypotheses, however, it is first important to establish the validity of the model depicted in Figure 5-3 and the corresponding subsample. Several tests were performed to assess the convergent and discriminant validity of questions used to measure the variables in our model.
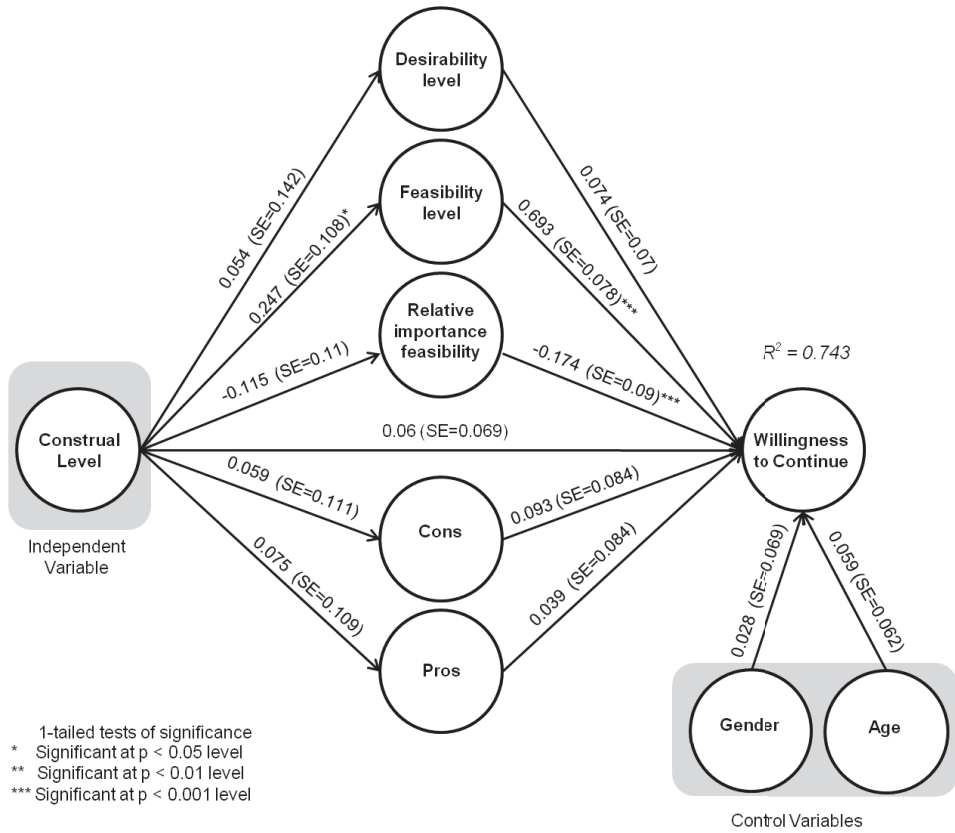
Figure 5-3. Structural Model Results (subsample of 81 where the manipulation succeeded)[10].

Convergent validity

Several tests are recommended for testing the convergent validity of variables which are measured with multiple items to assess whether these items are measuring the same underlying construct (Chin, 1998; Fornell & Larcker, 1981; Bearden et al., 1993). The variables which were measured using multiple items are perceived level of feasibility, perceived level of desirability and willingness to continue. The first test of convergent validity is to determine whether each item has a high enough loading on its corresponding construct. Loadings of 0.7 or higher are typically considered acceptable, as above this

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[10] In the model that we opted to go with the items measuring the relative importance of feasibility and desirability rather than their independent absolute importance. As mentioned in the discussion section, when asked whether feasibility (desirability) was important most people answered that it was important regardless of their treatment condition. As such, values of absolute importance for both groups were very similar for all participants.

threshold the shared variance between an item and its associated construct is higher than the error variance (Chin, 1998; Fornell & Larcker, 1981). As can be seen in Table 5-2, all items in our study have a loading above 0.7. Additional measures for convergent validity include tests of Cronbach's α, composite reliability, and the Average Variance Extracted (AVE). The threshold for the first two is 0.7 (Chin, 1998; Fornell & Larcker, 1981) and for the AVE it is 0.5 (Bearden et al., 1993). As can be seen in Table 5-3, all items in our studies exceed these thresholds.

Construct	Item	Loading
Feasibility	FeasLevel1	0.922
	FeasLevel2	0.964
	FeasLevel3	0.886
Desirability	DesLevel1	0.948
	DesLevel2	0.876
	DesLevel3	0.724
Continue	Cont1	0.959
	Cont2	0.956
	Cont3	0.877

Table 5-2. Convergent validity: Loadings of items on their respective constructs.

Construct	AVE	Comp. Reliability	Cronbach's α
Feasibility	0.855	0.946	0.915
Desirability	0.730	0.889	0.822
Continue	0.868	0.952	0.923

Table 5-3. Convergent validity: Average Variance Extracted, Composite Reliability & Cronbach's α.

Discriminant validity

For discriminant validity, it is important to test the extent to which individual measurement items load on their intended construct versus other constructs. Each item should load higher on its associated construct than on any other construct. Also, no items from other constructs should have a higher loading on that construct than the items associated with it. It is an indication of good discriminant validity if these requirements are met (Chin, 1998). Table 5-4 demonstrates that this is indeed the case for our model. The loadings of items on

their own construct are bolded. Note that since the questions related to a variable which is measured using only a single question, could also load highly on another variable, these variables and their questions are also included in the discriminant analysis.

Another test of discriminant validity is the Fornell-Larcker criterion. This test compares the square root of the AVE with the correlation between variables. If the square root of the AVE of a variable is higher than the correlation between that variable and any other variable, then this is an indication of discriminant validity (Chin, 1998). As can be seen in Table 5-5, there is no evidence of a violation of discriminant validity.

	CL	RelFeasImp	Feasib.	Desirab.	Pros	Cons	Continue	Age	Gender
CL	**1**	-0.115	0.247	0.054	0.075	0.059	0.261	0.078	-0.231
RelFeasImp	-0.115	**1**	-0.558	-0.01	-0.118	-0.161	-0.599	-0.169	-0.055
FeasLevel1	0.257	-0.593	**0.922**	0.057	0.108	-0.013	0.806	0.095	0.027
FeasLevel2	0.291	-0.491	**0.964**	0.18	0.059	0.07	0.793	0.108	0.071
FeasLevel3	0.121	-0.456	**0.886**	0.318	-0.022	0.048	0.698	0.054	0.042
DesLevel1	0.03	0.001	0.242	**0.948**	0.081	0.015	0.252	-0.101	-0.05
DesLevel2	0.122	-0.007	0.134	**0.876**	-0.054	-0.038	0.098	-0.127	0.013
DesLevel3	-0.001	-0.034	0.036	**0.724**	0.065	0.055	0.112	-0.131	0.067
ProNumber	0.075	-0.118	0.057	0.048	**1**	0.474	0.147	-0.131	0.13
ConNumber	0.059	-0.161	0.037	0.012	0.474	**1**	0.172	0.066	-0.061
Cont1	0.189	-0.573	0.811	0.19	0.188	0.167	**0.959**	0.128	0.159
Cont2	0.27	-0.567	0.816	0.205	0.082	0.078	**0.956**	0.137	0.041
Cont3	0.277	-0.535	0.69	0.181	0.142	0.245	**0.877**	0.152	-0.064
Age	0.078	-0.169	0.095	-0.13	-0.131	0.066	0.148	**1**	-0.072
Gender	-0.231	-0.055	0.051	-0.009	0.13	-0.061	0.053	-0.072	**1**

Table 5-4. Discriminant validity: Cross-loadings.

	CL	RelFeasImp	Feasib.	Desirab.	Pros	Cons	Continue	Age	Gender
CL	**1**								
RelFeasImp	-0.115	**1**							
Feasibility	0.247	-0.558	**0.924**						
Desirability	0.054	-0.01	0.191	**0.854**					
Pros	0.075	-0.118	0.057	0.048	**1**				
Cons	0.059	-0.161	0.037	0.012	0.474	**1**			
Continue	0.261	-0.599	0.831	0.206	0.147	0.172	**0.932**		
Age	0.078	-0.169	0.095	-0.13	-0.131	0.066	0.148		
Gender	-0.231	-0.055	0.051	-0.009	0.13	-0.061	0.053	-0.072	**1**

Table 5-5. Discriminant validity: Square root of AVE versus correlations (Fornell-Larcker. criterion).

Testing of research hypotheses

Now that the convergent and discriminant validity of the model have been established and that we have a subsample where there are statistically significant differences in construal level between treatment groups, the next step is to test our research hypotheses. Hypotheses 1a-1c concern the relationship between construal level and the perceived levels of feasibility and desirability, as well as their relative importance. Hypotheses 2 and 3 concern the relation between construal level and willingness to continue and the variables which could mediate this effect. Before testing for any specific mediated effects, we first analyzed the total effect of construal level on willingness to continue.

SmartPLS uses bootstrapping to estimate the standard error and significance levels of these effects. Following typical conventions for bootstrapping, we ran a bootstrap analysis with 5000 samples. In line with the directional nature of our hypothesis, we estimated the significance of effects using one-tailed p-tests. The total effect of construal level on willingness to continue using the model depicted in Figure 5-3 is 0.263, the standard error of this effect is 0.11, resulting in a one-tailed p value below 0.01. Thus, there is a statistically significant total effect of construal level on willingness to continue.

After establishing that there is an effect of construal level on willingness to continue, the next step to test our mediation hypotheses is then to determine whether there is a significant effect of construal level on the various mediator variables which are proposed in the hypotheses. If there is no such effect, then there is no mediation (Baron & Kenny, 1986). Thus, the paths from construal level to the various mediators in our model need to be significant. As can be seen in Figure 5-3, this is not the case for all the paths which were hypothesized. Table 5-6 summarizes the path coefficients, standard errors, and

significance levels of the tests of these paths. In cases where a path is not significant, it can be concluded that the corresponding hypothesis is not supported. Hypotheses 1c and 2c are the only ones which we cannot reject. Our results show that a higher construal level is associated with a higher perceived level of feasibility. In other words, hypothesis 1c is supported.

For hypothesis 2c to also be supported, not only does the effect of construal level on perceived level of feasibility need to be significant (the X-to-M path) but also the effect of perceived level of feasibility on willingness to continue (the M-to-Y path). Figure 5-3 shows that the path from perceived level of feasibility to continue is indeed significant (path coefficient = 0.693, SE = 0.078, one-tailed p < 0.001). Since both the X-to-M path and the M-to-Y path are significant, the indirect effect of construal level to willingness to continue, via perceived feasibility level, should be significant. As we can see in Table 5-6, this is indeed the case (path coefficient = 0.171, SE = 0.075, one-tailed p = 0.013). Thus, hypothesis 2c is also supported.

To summarize, the paths from construal level to the importance of feasibility relative to desirability, to desirability level, and to the number of pros/cons that people wrote down were not statistically significant, which indicates that these factors also could not serve as mediators for the effect of construal level to willingness to continue (i.e. the requirement of a significant X-to-M path is not met). As such, hypotheses 1a-1b, 2a-2b and 3a-3b are rejected. We did however find statistical support for an effect of construal level on willingness to continue, and a mediation of this effect by the perceived level of feasibility. This supports hypotheses 1c and 2c.

It would be interesting to know how strong this mediated effect is compared to the direct effect since this might give an indication of whether there is full or partial mediation. As a rule of thumb, one can classify an indirect effect as full mediation when the indirect effect is statistically significant but the remaining direct effect isn't and if the ratio of the indirect effect to the total effect is at least 0.8. Since our mediation effect did not meet this threshold (0.171 / 0.263 = 0.65), we can infer that there is partial rather than full mediation.

However, as stated in Table 5-6, the total effect size here is calculated based on all indirect effects in the model and not just the indirect effect via perceived level of feasibility. As such, the total effect also includes indirect effects for which we find no empirical support (related to the rejected hypotheses) and, as a result, the total effect here is not equal to the sum of the direct effect and (only) the indirect effect via feasibility level. Thus, to obtain a more clear and pure indication of the relative sizes of the indirect and direct effect, we created a new model where we dropped the mediation effects which were not found to be significant in Figure 5-3. To obtain further insight into this mediation effect, we also investigated whether the effect from feasibility level to continue (M-to-Y path) is itself mediated.

Relationship	Effect	Effect size	SE	P value	Hypotheses
Construal level to relative importance feasibility	Total effect	-0.115	0.11	0.149	Hypothesis 1a & 2a rejected
Construal level to desirability level	Total effect	0.054	0.142	0.353	Hypothesis 1b & 2b rejected
Construal level to feasibility level	Total effect	0.247	0.108	**0.011**	Hypothesis 1c supported
Construal level to pros	Total effect	0.075	0.109	0.244	Hypothesis 3a rejected
Construal level to cons	Total effect	0.059	0.114	0.3	Hypothesis 3b rejected
Construal level to continue	Indirect effect via feasibility level	0.171	0.075	**0.013**	Hypothesis 2c supported
	Direct effect	0.06	0.069	0.193	
	Total effect*	0.263	0.11	**0.009**	

* In a standard mediation with a single mediator, the total effect equals the sum of the direct and the indirect effect. However, in our model we do not have one but multiple mediators. As such, the total effect is equal to the sum of the direct effect and all of the indirect effects between construal level and willingness to continue in our model (Figure 5-3). Thus, the total effect here is different than the sum of the direct effect and (only) the indirect effect via feasibility level.

Table 5-6. Significance testing of paths (one-tailed).Model: Figure 5-3.

We used this opportunity to also further explore why we didn't find effects of construal level on factors such as the importance of feasibility relative to desirability, as well as the number of pros and cons written down, i.e. effects which had been found in other CLT studies (see Liberman & Trope (2010) for an overview). Indeed for the perceived importance of feasibility relative to desirability, that while the direct path from construal level to these factors was not found to be significant (Table 5-6), we did find support for an indirect effect, mediated by the level of feasibility. This can be seen in the model shown in Figure 5-4. The outcomes of the model in Figure 5-4 are quite similar to the outcomes of the model in Figure 5-3. As with Figure 5-3, the following paths are also significant in Figure 5-4:

- Construal level to feasibility level (path coefficient = 0.247, SE = 0.108, one-tailed p = 0.011).

- Feasibility level to willingness to continue (path coefficient = 0.704, SE = 0.081, one-tailed p < 0.001).

- Relative importance of feasibility to willingness to continue (path coefficient = -0.188, SE = 0.095, one-tailed p = 0.024).
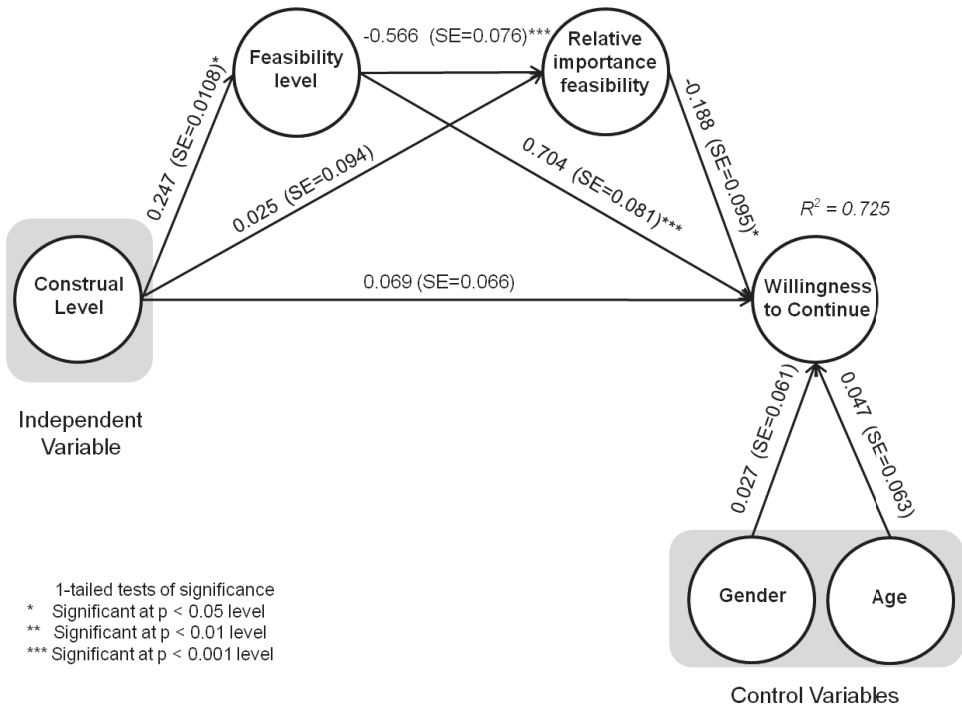
Figure 5-4. Structural Model Results, only significant mediation paths included (subsample of 81).

The main difference between the models, aside from the removal of several factors and paths related to rejected hypotheses, is the fact that there is a significant effect of feasibility level on the relative importance of feasibility (path coefficient = -0.566, SE = 0.076, one-tailed p < 0.001). While we didn't find a significant direct path between construal level and relative importance of feasibility in Figure 5-3, the outcomes depicted in Figure 5-4 indicates that there may be an indirect effect.

Table 5-7 provides an overview of the effects found based on the model in Figure 5-4. As with the model in Figure 5-3, we again find empirical support for both a total effect (path coefficient = 0.264, SE = 0.107, one-tailed p = 0.007) and an indirect effect (path coefficient = 0.196, SE = 0.088, one-tailed p < 0.014) of construal level on willingness to continue. Note that this indirect effect is the total indirect effect, and that it thus sums the direct and the indirect effect from feasibility level to willingness to continue into a total effect for the M-to-Y path rather than taking only one of the two. As such, the indirect effect listed here calculates the indirect effect of construal level on willingness to continue, as mediated by perceived feasibility level. Thus, Table 5-7 provides further evidence that Hypotheses 1c and 2c are supported.

However, the model in Figure 5-4 goes one step further by splitting the effect of feasibility level on willingness to continue (i.e. the M-to-Y path of hypothesis 2c) into a direct effect and into an indirect via relative importance of feasibility. As Table 5-7 shows, both the direct effect (path coefficient = 0.704, SE = 0.081, one-tailed p < 0.001) and the indirect effect (path coefficient = 0.106, SE = 0.056, one-tailed p = 0.029) are statistically significant. Given that (1) the indirect effect divided by the total effect is less than 0.8 (0.106 / 0.81 = 0.13) and (2) the remaining direct effect is significant, there is partial rather than full mediation. In line with the above, there is a statistically significant indirect effect of construal level on the relative importance of feasibility which is mediated by perceived feasibility level (path coefficient = -0.140, SE = 0.064, one-tailed p = 0.014). Combined, these findings show that there is a statistically significant indirect effect and total effect of construal level on willingness to continue and that this indirect effect is mediated by perceived feasibility level (and subsequently in part by relative importance of feasibility). For this relationship, the indirect effect divided by the direct effect is below 0.8 (0.196 / 0.264 = 0.74) and there is evidence of partial, rather than full, mediation.

It is surprising that we did not find a statistically significant direct or total effect of construal level on the number of pros and cons written down or the relative importance of feasibility and desirability, which have been found in prior CLT studies (see Trope & Liberman, 2010 for a recent overview). In addition, while in the model in Figure 5-3 the effect of construal level on the perceived importance of feasibility was in the predicted direction, the effect was not strong enough to be statistically significant (path coefficient = -0.115, SE = 0.11, one-tailed p = 0.149, see Table 5-6). However, in the Model in Figure 5-4 we did find empirical support for an indirect effect, via the perceived level of feasibility (path coefficient = -0.140, SE = 0.064, one-tailed p = 0.014, see Table 5-7). While this is post-hoc hypothesizing and further research certainly would be needed, these findings could indicate that the effect of construal level on the relative importance of feasibility could actually be mediated by a change in the perceived level of feasibility.

Relationship	Effect	Effect size	Standard error	P value
Construal level to willingness to continue	Direct effect	0.069	0.066	0.148
	Indirect effect	0.196	0.088	**0.014**
	Total effect	0.264	0.107	**0.007**
Level of feasibility to willingness to continue	Direct effect	0.704	0.081	**<0.001**
	Indirect effect	0.106	0.056	**0.029**
	Total effect	0.81	0.048	**<0.001**
Construal level to relative importance feasibility	Direct effect	0.025	0.094	0.396
	Indirect effect	-0.14	0.064	**0.014**
	Total effect	-0.115	0.11	0.147

Table 5-7. Significance testing for effects of construal level. Model: Figure 5-4.

Based on existing theory, we hypothesized that construal level could influence the relative importance of feasibility and desirability (hypotheses 1a) as well as the perceived level of feasibility (hypotheses 1c). While it could be possible that these are two independent direct effects, this is not necessarily the case. Alternatively, construal level could influence one of these two variables, which in turn influences the other. In other words there could be an indirect effect, where the effect of construal level on one of these variables is mediated by the other variable. It seems plausible that the perceived feasibility of a project and its importance in the decision making process are related. For example, if there are significant problems or risks related to the feasibility of the project (i.e. a low level of feasibility) then it is likely that these issues play an important role in the decision of whether or not to continue (i.e. feasibility becomes more important to the decision). In this case, an effect of construal level on the relative importance of feasibility could be mediated by the perceived level of feasibility. This latter explanation would be consistent with our research findings. However, we emphasize that this is a first indication and that further research is needed to provide further empirical support for this relationship.

5.5   Discussion

Overview of findings

In this study we investigated a potential causal factor of project escalation, which has thus far received almost no attention in this field, namely a decision maker's construal level. Specifically we looked at whether a higher construal level could lead to project escalation.

In addition, we investigated which factors could mediate this effect, based on construal level theory.

Surprisingly, despite the usage of a common and previously tested manipulation method, the manipulation check indicated that the manipulation was not successful in creating statistically significant differences in construal level between treatment conditions. We believe that the most plausible explanation for this is that while the manipulation may have been successful in raising or lowering the construal, it is possible that this is not the only factor which influenced the final construal level of participants. Some participants may have entered the experiment with a high or low construal level. While the manipulation may have nudged the construal level in the correct direction in such cases, it seems that it was not always successful (as evidenced by various subjects in the high construal level treatment condition with a low construal level score and vice versa). Since both treatment conditions contained subjects with both high and low construal levels, this could explain the small and non-significant overall differences between treatment groups that we encountered during our initial analysis (Figure 5-2).

Since the manipulation appeared to have failed for a portion of the subjects, we decided to remove those participants from the sample and to retain only the subjects in the high construal level condition who actually had a higher construal level and vice versa for subjects in the low construal level treatment condition. When using this reduced subsample, we indeed found significant differences between treatment groups. First and foremost, we found a significant effect of construal level on willingness to continue. Furthermore, we found that this effect was mediated by the perceived level of feasibility (hypotheses 1c & 2c). Upon further investigation, we found that the effect of perceived feasibility level on willingness to continue in turn (the M-to-Y path) was also partially mediated by the relative importance of feasibility and desirability. Before we discuss the implications of these findings, it is important to first discuss the limitations of this study.

Limitations and future research

While experiments typically have a high level of internal validity, this can come at the cost of a lower level of external validity. Our experiment is no exception to this. As such, we recommend that future research investigates whether the causal relationships observed in this study also occur in practice with real projects. Secondly, whereas our scenario contains all the basic elements of IS project escalation, the project in our scenario is different from typical IS projects and from the project escalation scenarios which typically occur in practice. We used a scenario which is appropriate for a student sample. Future research could further validate the results from this study by testing the proposed effects in different types of project contexts. Thirdly, some of our findings differ from what has previously been suggested and found in research on CLT. While these new findings are very interesting, it is important to not jump to conclusions. More research is needed before

one, for example, can conclude that there is generally no effect of construal level on the number of pros and cons that people can think of when making a decision. Given the fact that such effects were found in other studies, there may be an unexplored moderator which influences the strength of this relationship under certain conditions.

Implications for theory

This study makes contributions to theory on project escalation and escalation of commitment as well as to construal level theory. While construal level theory has been studied in various contexts, its effects on project escalation were still mostly unknown. This study addresses that theoretical gap by not only finding empirical evidence for an effect of construal level on willingness to continue with a project, but also by testing a variety of potential mediators of this effect. In line with hypotheses 1c & 2c, we found a significant effect of construal level on willingness to continue with a troubled project, which was mediated by the perceived level of feasibility of the project. In addition, we found empirical support for a partial mediation of the effect of feasibility level on willingness to continue by the relative importance of feasibility & desirability. These effects of construal level on project escalation were previously unexplored in literature.

The effect of construal level, as found here, is also interesting because if differs from the effect of various other potential causes of project escalation. Many of the psychological biases previously linked to project escalation (see Sleesman et al. (2012) for a recent overview) result from differences in the project scenario between treatment conditions. Thus, different treatment groups receive different information about the project and this could explain the observed differences in their perceptions and decision making. However, in our study, all subjects received the exact same project scenario, regardless of the treatment condition that they were in. Yet, even when the information about the project was the same, we found statistically significant differences in willingness to continue with the project between treatment conditions. This shows and provides further support for the notion that even factors completely unrelated to the project itself, such as an unrelated exercise used to induce high or low construal levels, can influence perceptions of a project and decision making intentions.

This study also makes several contributions to Construal Level Theory. First, this study tests the effect of construal level on several factors. Surprisingly, we find no empirical support for effects which have been found in other studies. For example, the effects of construal level on the number of pros and cons that people could think of were not statistically significant in our study. Similarly, we only find an indirect effect, but not a direct or total effect of construal level on the importance of feasibility, relative to desirability. The fact that we do not find such effects here, could be an indication that these effects are either not as robust as they appear from other publications on CLT, or that there

perhaps are unexplored moderators which can explain why we did not find significant effects in our studies whereas others did.

Secondly, we find empirical support for effects of construal level on a previously unexplored factor, namely the perceived level of feasibility. In addition, our findings indicate the perceived level of feasibility may actually mediate the effect of construal level on the relative importance of feasibility and desirability, which has been found in previous studies (see Liberman & Trope, 2010 for an overview).

To our best knowledge, the effect of construal level on the perceived level of feasibility or desirability has not been previously measured in CLT studies. Rather, it is more common for experiments in this area to experimentally manipulate feasibility and desirability (i.e. manipulating feasibility by having treatment conditions with a guest lecture scheduled at either a convenient or an inconvenient time (Trope & Liberman, 1998) but it is not measured whether treatment groups with different construal levels perceive the level of feasibility of desirability differently. Note that our findings do not necessarily contradict the findings in these studies. In fact, while we did not find a direct effect of construal level on the perceived importance of feasibility, relative to desirability, we did find empirical support for (1) an indirect effect, which was mediated by the perceived level of feasibility, as well as for (2) an effect of the perceived relative importance of desirability on the willingness to continue with the project. Thus, the perceived relative importance of desirability appears to also be a second and partial mediator of the effect of construal level on willingness to continue. Specifically, it partially mediates the M-to-Y path of perceived level of feasibility on willingness to continue, as depicted in Figure 5-4.

Perhaps more importantly, (1) the effect of construal level on perceived level of feasibility appears to be stronger than the effect of construal level on the importance of feasibility relative to desirability, and (2) the effect of the perceived level of feasibility on the decision appears to similarly be much stronger than the effect of the importance of feasibility relative to desirability. As such, while our findings are in line with the existing theory of CLT that construal level can influence the importance of feasibility relative to desirability, and subsequent decision making, the effect of construal level on the decision may actually be primarily driven by the effect of construal level on the perceived level of feasibility, rather than its (relative) importance. For that reason, the findings in our study may provide an alternative explanation, or at least an extension of the findings in prior CLT research. However, we emphasize that further research is needed to provide further empirical support for such a relationship and the link between feasibility level and its relative importance.

Implications for practice

Our study can be relevant to practice since it provides empirical support for a causal relationship between construal level and project escalation. It also identifies several factors

which mediate this relationship, namely the perceived level of feasibility and the importance of feasibility considerations relative to desirability considerations in the decision making process. Moreover, the findings of this study show that even under identical project information, perceptions of projects and subsequent decision making can change depending on the construal level of the decision maker.

Many of the other psychological factors and biases which have previously been linked to escalation (see Sleesman et al. (2012) for a recent overview) are typically caused by different information which is available about the project (e.g. a difference in the level of sunk costs). As such, if organizations are aware of the existence of such effects and how they influence perceptions and decision making, they are better able to identify situations in which the bias may occur and to predict how this bias may influence decision making. Our findings indicate that construal level can cause differences in decision making, even under identical project information. Since the construal level can be influenced by factors completely unrelated to the project itself, it is difficult to reliably predict or anticipate the construal level of decision makers based on characteristics of the project. Furthermore, since the level of construal cannot be easily predicted and estimated, it becomes very difficult to anticipate how construal level may influence the decision making process in practice. If one cannot predict if a decision maker has a high or a low construal level, it becomes difficult to anticipate whether (s)he will be more or less willing to continue the project.

For the above reasons, trying to anticipate or predict how decision making in a project may be influenced by construal level is very difficult. But is there some other way for organizations to use this information to their advantage? If construal level cannot be easily predicted, then perhaps it can be controlled to some degree. CLT states that several dimensions of psychological distance are related. In addition, construal level is considered to be a state rather than a trait. As such, the construal level of people can be influenced, as numerous CLT experiments have demonstrated. Similarly, organizations may be able to nudge the construal level of decision makers in a certain direction. Our findings indicate that people are actually less likely to escalate commitment to a failing course of action when their construal level is low, rather than high. Studies on CLT also show that there are several methods that can be used to induce a lower construal level. While not all of these may be equally practical to apply in an organizational context (such as getting people to think about examples or higher level categories), there are others which possibly could be tweaked to fit in a project decision making setting. For example, nudging people to think about 'how' they are going to complete the project/achieve the project goals. Asking managers to make a decision about, or give their advice on, a project which needs a decision in the near future (low temporal distance), about their own project or one of a close colleague (low social distance) being performed in this branch of the organization (low geographical distance) could all potentially be used to evoke a low construal level, which in turn makes project escalation less likely. Of course, thought would have to be

given to how such a set up could be practically implemented within an organization. Nevertheless, there certainly appear to be possibilities for organizations to use CLT to their advantage and to even use it as a means to reduce the risk of project escalation.

Chapter summary

In this study we investigated a potential causal factor of project escalation, which has thus far received almost no attention, namely the construal level of decision makers. Specifically, we looked at whether a higher construal level could lead to project escalation of commitment. In addition, we investigated which factors could mediate this effect, based on construal level theory.

Since the manipulation appeared to have failed for a portion of the subjects, we decided to remove those participants from the sample and to retain only the subjects in the high construal level condition who actually had a high construal level and vice versa for subjects in the low construal level treatment condition. When using this reduced subsample, we indeed found significant differences between treatment groups. First and foremost, we found a significant effect of construal level on willingness to continue. Furthermore, we found that this effect was mediated by the perceived level of feasibility (hypotheses 1c & 2c). Upon further investigation, we found that the effect of perceived feasibility level on willingness to continue in turn (the M-to-Y path) was also partially mediated by the relative importance of feasibility and desirability. The other hypotheses however were not supported.

This study contributes to existing theory on project escalation by:

- Exploring a potential causal factor of project escalation which has thus far received almost no attention, namely construal level. Our study provides empirical support for an effect of construal level on project escalation such that with a high construal level people are more willing to continue a troubled project, as compared to a low construal level.

- Identifying and testing, based on CLT, several potential mediators of this effect which increase our understanding of how construal level can influence project perceptions and decision making. Specifically, we find empirical support for mediation by changes in the perceived level of feasibility of the project as well as (subsequently) changes in the perceived importance of feasibility, relative to desirability, which partially mediates the effect of perceived level of feasibility on the willingness to continue. This last finding however was found based on post-hoc hypothesizing and should be tested further in future research.

This study contributes to theory on Construal Level Theory by:

- Testing the effect of construal level on several previously suggested factors (thus providing more insight into the robustness of these findings) as well as on several previously unexplored factors, including an effect on perceptions of the level of feasibility and willingness to continue. Contrary to other CLT studies, we find no empirical support for an effect of construal level on the number of pros and cons that people write down and we only find support for an indirect effect of construal level on the relative importance of feasibility and desirability (which is mediated by the perceived feasibility level). We do however find empirical support for an effect of construal level on perceived feasibility level (hypothesis 1c) as well as both a total and an indirect effect of construal level on willingness to continue, where the indirect effect is mediated by perceived feasibility level (hypothesis 2c). Additionally, we found that the effect of feasibility level on willingness to continue may also partially mediated by a change in the relative importance of feasibility and desirability.

- Indicating that the effect of construal level on the relative importance of feasibility and desirability, as proposed and found in other CLT studies, may actually be mediated by a change in the perceived level of feasibility. Not only that, but the effect of the perceived level of feasibility on willingness to continue was found to be much stronger than the effect of its perceived relative importance. As such, these findings provide an interesting addition or possibly even an alternative explanation to findings in prior CLT studies. This outcome was however not hypothesized and, thus, further research should be performed to provide further theoretical and empirical support for this relationship.

Appendix

Experimental scenario:

Part 2: Decision making case

> **INSTRUCTIONS:** The case that follows is part of a study that examines decision-making. Please take a few minutes to read over the case and to answer the questionnaire that follows. There are no right or wrong answers.

Please imagine yourself in the following situation.

During your time as a student, you decided to create an app for the iPhone called ChillPill. This app is based on the latest thinking in cognitive psychology and is designed to help individuals reduce their stress levels while also being fun to play. One year ago, you submitted this idea to a student competition organized by a large software company. The judges from the company were very enthusiastic about the idea and you ended up winning the competition. For winning the competition you received €10.000,- from the software company to develop and market your app.

To date, you have spent your entire award budget and you have failed to come up with a working version of the app, primarily due to technical obstacles that you have encountered along the way. Should you decide to proceed further with the development and launch of your app you would therefore have to spend your own money from now on.

Now, you must decide whether or not to continue developing the app. On the one hand, there are feasibility concerns that make it highly uncertain as to whether or not you will be able to overcome the technical obstacles and successfully complete the app. On the other hand, you know that it would be desirable to complete the app both from a learning perspective and because it could be quite lucrative when it becomes available in the app store.

Chapter 6: Conclusions

We begin this final chapter of the dissertation with a summary of our main findings. We will then proceed with the theoretical and practical implications of this dissertation as a whole. Of course, this dissertation is not without limitations. These will be discussed and will be followed by several suggestions for future research. I will close with a short reflection on the research.

6.1   Main findings

In this dissertation we have looked at various forms of psychological biases related to project escalation. In Chapters 2 & 3 we investigated how a seemingly innocent or irrelevant factor, the name of a project, is capable of biasing decisions and of increasing the likelihood of project escalation. In Chapter 4 we examined a factor which has been found to create a bias by presenting the same factual information but by using different words to describe said information, i.e. framing effects. Most prior research on framing has focused on analyzing how subjects react to framed information. We aimed to add to this existing research by taking a different approach, which has thus far been relatively unexplored, by investigating how decision makers themselves naturally use framing, instead of how they react to it. Specifically, we studied whether managers use framing when they are naturally discussing a project as well as whether different forms of framing could be linked to either positive or negative opinions of the project. In Chapter 5, we took things one step further. We hypothesized that not only differences in seemingly innocent or irrelevant aspects of the project (i.e. project names) or even different ways of presenting the same information (i.e. framing) can be important, but that even a factor completely unrelated to a project is capable of biasing the decision making process for said project. Specifically, we studied whether individuals' construal level, which was manipulated by a completely unrelated task, could lead to different decision making, even when all information about the project was completely the same.

Psychological bias as a result of a change in a seemingly unimportant factor

Chapters 2 & 3 studied the effects of project names. We hypothesized that certain project names could make decision makers more likely to escalate commitment to a troubled project, e.g. project escalation. We investigated the effects of two different types of names. Prior naming studies in other fields have studied the effects of semantic names which draw attention to specific attributes (of a product) and simultaneously suggest that the performance in relation to this attribute is favorable. In this dissertation we aimed to

separate these two effects by independently investigating (1) the effects of names which were attractive or unattractive, but which did not emphasize any specific attribute (Chapter 2) and (2) names which drew attention to a certain attribute, but did not portray said attribute in a positive or a negative light (Chapter 3). Experiments were performed where the project name was manipulated as the independent variable and its effects on the willingness to continue a troubled project were tested. The results of these experiments indicate that, while rationally speaking they should not influence the willingness to continue a troubled project, both types of names had an effect on the dependent variable willingness to continue, in line with our research hypotheses. Thus, both components of these types of semantic names seem to have an effect. Furthermore, we identified several factors which can serve as mediators for the effects of project name on the willingness to continue a troubled project, such as affect and perceptions of project benefits and risk (Chapter 2) as well as selective perception and a lack of problem recognition (Chapter 3). In short, while project names may seem innocent, our findings suggest that they do matter and that they can bias decision makers.

Psychological bias related to using different the usage of different, but factually the same wordings to describe the project

Chapter 4 extends existing research on the effect of framing. Prior framing studies have found that people react differently when the same information is described using different words (i.e. framing). Contrary to the vast majority of framing research, we took a different approach in Chapter 4 and looked at whether, and how, managers themselves used framing when discussing projects. Interviews were held with several experienced project managers who were allowed to freely discuss projects. These interviews were recorded and text analysis was performed based on the transcriptions. The findings of this exploratory study indicate that managers do not only react to, and can be biased by, framed information as found in prior research, but that they themselves also naturally use framing when talking about projects. Since they used many of the same words which have also been used to achieve framing effects in past studies, it is possible that as a result of this natural framing usage, that they themselves might bias and evoke framing effects in others, such as executives or auditors, though it is important to mention that this was not directly investigated in the context of this study. Our findings did demonstrate that managers not only used framing but that they in fact applied each of the four types of framing which were investigated in our study multiple times. Furthermore, we found that this framing occurred roughly about once every three minutes on average. Not only that, but most importantly we also observed that managers' framing usage was systematically different depending on their opinions of the projects being discussed. Specifically, managers generally used positive (negative) framing when they had a positive (negative) view of a project for three out of four types of framing. This suggests that the framing usage of a

manager can serve as an indication which could be used to obtain valuable additional information about his/her view on a project.

Psychological bias even when all information about the project is identical

Chapter 5 investigated whether the likelihood to escalate commitment to a project could be influenced even by factors which are completely unrelated to the project itself. It can be considered irrational if someone were to judge two identical options differently. In line with Construal Level Theory (CLT), we hypothesized that individuals' construal level can influence their willingness to continue a troubled project. Construal level was the independent variable in this study, which was manipulated by letting participants perform a task which was separate from, and unrelated to, the project scenario. The experimental findings indicate that individuals who had a high construal level prior to reading the project scenario were more willing to continue the troubled project than those who had a low construal level. Furthermore, the outcomes suggest that this effect is mediated by a change in the perceived level of feasibility of the project. Specifically, a low construal level caused people to perceive the project as less feasible which in turn made them less likely to continue.

In summary

Combined, these findings indicate that these factors, which have thus far received little or no attention (or which have not been used in this manner), can cause irrational behavior in the form of psychological biases and that they could lead to project escalation. In addition, we gained insight into why these factors had this effect by identifying relevant mediators in our experimental studies. Furthermore, we found not only that decision makers can be subconsciously biased by aspects of the project which seem unimportant, such as a project name, but that people could also be biased even by factors completely unrelated to the project and when all project information is identical. Thus, even when it may seem counterintuitive to decision makers for such factors to influence project decision making or when the decision makers themselves might be convinced that they would not be influenced by them, this does not mean that these factors can't in fact have a biasing effect or that they can be ignored. Indeed, our findings indicate that they do matter and they can bias decision making.

6.2   Theoretical implications

There are potential causal factors of project escalation which remain (mostly) unexplored

The literature on project escalation is extensive and many different causes of project escalation have thus far been identified (see Sleesman et al., 2012 for a recent overview). However, our findings suggest that there are also still causal factors remaining that have yet to be (fully) explored. In this dissertation, we identified causal factors of escalation which thus far have received little (i.e. construal levels) to no (i.e. names) attention in the field of project escalation. In addition, we demonstrated that even a previously known and studied cause of escalation can be applied and can play a role in a different way which thus far has received almost no attention (framing). The results of our experiments (on project names and on construal levels) indicate that these factors, ceteris paribus, can indeed influence project decision making and can make individuals more willing to continue with a troubled project (i.e. project escalation). Furthermore, we also hypothesized and investigated why these factors, such as a project name, can make people more willing to continue by testing potential mediators for these effects. Indeed, we were able to identify and find empirical support for several mediators for the effects of project names and construal levels on the willingness to continue a troubled project.

By identifying these additional causal factors, we hope to increase the combined understanding of human decision making in a project context. While a modest one, this is an important contribution because the better we understand this process, the better we may be able to understand, recognize, predict and/or prevent biases which can lead to irrational decision making and project escalation. This studies in this dissertation contribute to the theory on project escalation by new potential causal factors of project escalation which have thus far received little or no attention in this field. In addition, we contribute to the understanding of the effects of these factors by identifying several mediators which can help explain why they are capable of biasing decision making. Furthermore, this dissertation makes a contribution by indicating that even previously discovered causal factors may be applied and studied in additional ways. Figure 6-1 provides an overview of where our theoretical contributions lie.
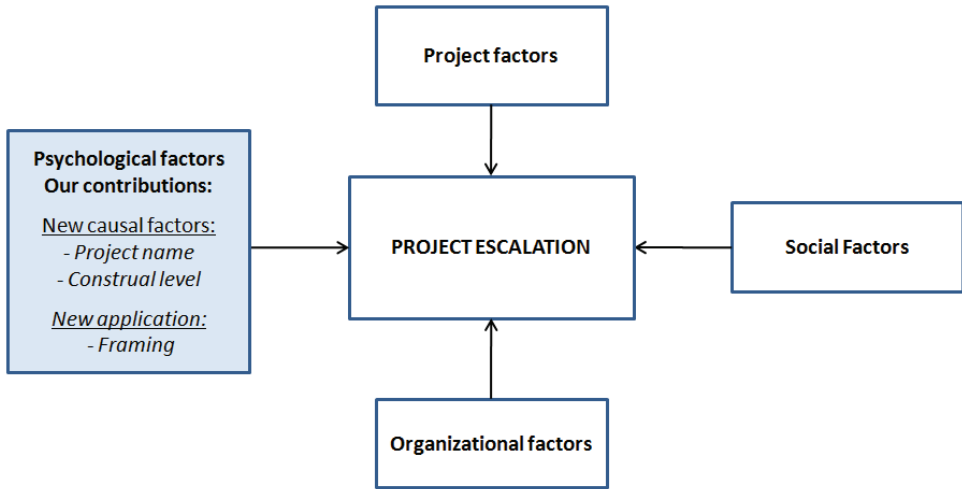
Figure 6-1: Contributions to existing model on project escalation.

Psychological biases are not restricted to a single sample or context

A concern which is sometimes raised with experimental studies on project escalation is that these often employ student subjects rather than practitioners. Specifically, the concern is that student subjects may react differently than practitioners and that the findings might not be generalizeable outside of the context of the study. While there is certainly something to be said for the argument that, due to differences in factors such as work experience, practitioners might evaluate a project differently and have a different deliberate decision making process than students do, there is no evidence to suggest that, unlike students, practitioners are unaffected by psychological biases. In this dissertation we tested for the effects of psychological biases in a variety of contexts and with both student subjects and practitioners alike. Indeed, we found empirical evidence of psychological biases in all cases which indicates that factors such as real life work experience do not automatically make one immune to psychological biases or irrational decision making. This suggests that our findings may be generelizeable to both real life project settings as well as perhaps even to different fields of study.

Theories and findings from other fields can be valuable

The outcomes of the studies in this dissertation suggest that theories and findings from other fields, particularly those related to heuristics, biases and decision making, could prove valuable to the field of project escalation. Of course, it is important to recognize that these fields are different and that because of these differences findings from one field may

not automatically apply in another field. As such, such theories and factors should be tested rather than simply assuming that they apply universally. However, just as biases might not be unique to or only apply to students, it may also very well be the case that some of these theories may not only apply within the specific context in which they were discovered. Indeed, a well chosen name might be as important to a product or a business as it might be to a project. I believe that biases which have been found in other fields could also play a role in a project escalation context and, as such, studies in these fields could serve as a potentially valuable source of information.

Indeed, the psychological biases investigated in three of the four studies in this dissertation have thus far received very little (construal levels) to no attention (names) in the field of project escalation, despite the fact that they have received significant attention in the fields of decision making and marketing respectively. Only framing has received some attention in the field of escalation, and even that bias did not originate here. Yet, our findings imply that all of these psychological factors could actually also play a role in the context of project decision making and that they may lead to project escalation.

Counterintuitive effects or unlikely findings are not necessarily incorrect. Factors that seem innocent or irrelevant may not be

I believe that an important lesson which is re-affirmed several times in this dissertation is that just because something seems unlikely or counterintuitive, that does not mean that it cannot be true. Many of us have been taught not to "judge a book by its cover", or that "a rose by any other name would smell as sweet". The notion that when all other information is identical, that factors such as the name of a project, the specific words we use to describe the same information or even factors completely unrelated to the project itself could bias our decision making clashes strongly with these lessons which many of us have been taught and as such they may encounter resistance from decision makers.

Similarly, traditional economics defended for a long time the notion of the homo economics, the rational decision maker who perfectly knows his/her own preferences and who carefully considers and weighs all the information and all possible options before selecting the option that is perceived to be optimal. Yet, as much as we may perhaps like to be (or believe that we are) this rational, deviations from rational behavior have been observed time and time again in experiments in the field of behavioral economics. When asked whether people's preferences should change if the exact same options are described using slightly different words (framing) then most people would likely say no. Yet, various framing experiments have observed exactly these kinds of preference reversals in the past. Similarly, the outcomes from our studies indicate that project names can construal levels can similarly bias decision making and may lead to project escalation. This suggests that just because people don't expect a factor to be of influence, it does not automatically become true. For this reason, I propose that it is important to be open to the notion that

certain factors may be biasing our decisions, even if it seems unlikely or counterintuitive, and to raise awareness of the fact that these factors indeed can play a role, even if they are seemingly innocent or unimportant.

Rather than exclusively focusing on the negative effects of psychological biases, it could prove valuable to spend more attention on how they might be used to our benefit

It is important to theorize on and empirically test the effect of psychological biases, such as the ones discussed in this dissertation. Many studies on decision making biases, however, tend to focus on testing if, and how, such biases can lead to irrational decision making (such as project escalation). Yet, relatively little attention seems to be spent on studying how to make the most out of such biases when they occur or on how these factors could actually be used to benefit, rather than hinder, us. The field of behavioral economics uses the term nudging to describe this process. The idea behind nudging is using people's biases to work for them rather than against them and to 'nudge' them towards better decisions. For example, it is recognized that when given a choice, people are more likely to choose an option when that option is presented as the default option, as compared to when it is not. While it can be considered irrational for people to let choices, particularly important ones, to be biased by which of the options happens to be selected as the default, this bias could perhaps actually be used in a beneficial way. For example, countries that have an opt-out system for organ donors (where being a donor is the default option), typically have a much higher percentage of donors than do countries with an opt-in system (where not being a donor is the default option) even though (1) the choice rationally should not be based on which option is the default and (2) people are still completely free to choose whether they want to be a donor or not in both systems.

These are lessons which, I propose, may also have value in the field of project escalation and which may be applicable factors and biases such as the ones investigated in this dissertation. This is relevant, in particular, to our study on framing (Chapter 4). Most prior research on framing effects has focused on how framing can lead to biases and irrational decision making. However, it is also possible to look at framing from a different perspective by investigating how this bias could work to our advantage, at least to some degree. This is not necessarily to propose that the existence of the bias itself is a good thing. After all, (1) we would generally rather like our decisions to not be biased and (2) if a manager naturally uses the same types of words that are capable of creating biases in framing experiments, then it is plausible that their conversation partners might similarly be influenced by framing effects. I also do not aim to propose that the potential beneficial uses or advantages that may be gained from a bias necessarily outweigh its disadvantages and its potentially negative effect on decision making. Rather, I propose that such biases exist, and that, when they do occur, that ignoring the potential advantages or benefits that

could be gained from them is a waste, because they might lessen or counteract the negative effects of said bias.

In Chapter 4 we found that the interviewed managers systematically used different framing depending on their view of a project. In line with the concept of information leakage (Sher & McKenzie, 2006), our findings suggests that a listener aware of framing effects may actually be able to use the framing by the manager as a means to obtain valuable information about their views of a project beyond what was said in the conversation. Applying biases in such a way and studying how we may be able to best deal with them beyond trying to prevent them, e.g. by exploring what advantages they could give us or by exploring how we could use them to nudge decision makers towards better decisions, is something which could provide valuable insights to the field of project escalation but which remains, thus far, relatively unexplored.

6.3   Implications for practice

A combination of both soft controls and hard controls and of both project/organizational factors as well as psychological/social factors gives the most complete understanding of situation

In the introduction section of this paper we argued that both soft controls and hard controls, both project factors and psychological factors, can influence the outcome of a project. For example, even if your security measures are of a high technological standard, that this does not mean that your data is secure when a user writes down their password or responds to a phishing e-mail. Similarly, as mentioned in the introduction, having a clear idea of what to cook (i.e. the end goal) and having the right ingredients (i.e. the business case) or even the right recipe (i.e. the project management method), does not necessarily mean that your dish (i.e. the project) will turn out as successfully as expected. To not consider the qualities of the cook (i.e. the project manager) in this case seems odd to say the least. For this reason, it is perhaps surprising that, in practice, there is a strong focus on hard controls but relatively little attention on soft controls. I propose that as a result, the impact of the decision maker, and specifically the potential impact of psychological biases that can cause the decision maker to escalate commitment to a failing project, may to be underestimated or at least not given enough attention.

The importance of not underestimating or ignoring psychological biases is demonstrated in the studies in this dissertation. Our findings indicate that factors such as project names and construal level are indeed capable of biasing decision makers and that they can lead to an increase in the willingness to continue a troubled project (i.e. escalation of commitment to a project). It is important to note, however, that the studies in this dissertation are not the first to find a link between psychological biases and project

escalation, nor are they the only psychological factors which can play a role. Rather, in this dissertation we aimed to contribute to the existing knowledge of potential biases in human decision making by investigating potential causal factors of project escalation which thus far had received very little to no attention (or which were not investigated in this manner). Not only did we observe a causal effect (Chapters 2, 3 & 5) but we also identified several factors which mediate these effects. As such, this dissertation aims to contribute by raising awareness of new factors which can serve as potential causes of escalation is important and by explaining how exactly they can lead to biased decision making. Similarly, this dissertation reinforces findings from prior research by finding empirical support that psychological factors can influence project decision making and escalation and by demonstrating that there may be more psychological biases than we thought thus far and that more may yet be undiscovered.

Note that we are not trying to make the case that this is the be-all and end-all of project escalation. We recognize that (1) these are certainly not the only psychological factors that play a role in project escalation and (2) that project factors and hard controls also can have a big impact on the evaluations of a project and the decision making process. As stated in the introduction of this dissertation, our aim is not to argue that psychological biases are the only thing that matter, just that they matter and that they should not be ignored. In line with Simons (2013), we emphasize the importance of looking at both soft control and hard controls, both project and psychological factors. Just because the psychological factors here aren't the only factors of influence or perhaps the single most important factors in the decision making process does not mean that they should be ignored. Similarly, even if certain biases have a very strong effect, that does not mean that relevant financial information should be ignored either. Rather than ignoring one, both should be considered. It is the balance which, I propose, is important and which allows for a better and more complete understanding and prediction of people's decision making and project outcomes.

Be open to the possibility that we might be influenced factors that we might not expect

As mentioned in the previous point, I believe that a balance of focusing on both characteristics of the project and organization itself, as well as on the (potential biases of the) decision maker can be valuable. However, the focus of organizations still appears to be primarily on the former and not on the latter. For example, while many organizations might focus on the information in the business case, relatively few might pay attention to factors such as a project name or framing and how these might bias managers. This may, however, not be entirely justified since our outcomes imply that such factors can actually influence project decision making and specifically the willingness to continue with a troubled project (i.e. escalation). Yet, despite there being a theoretical basis which supports

the notion that these factors can have an effect, they do not seem to be getting as much attention in practice. Indeed, we ourselves encountered resistance to the very notion that these factors could play a role. When debriefing subjects after an experiment, several practitioners indicated that they were very skeptical that a factor like a project name could play a role and that the idea that practitioners would be influenced by such a factor is unrealistic. Yet, this is exactly what the results of that experiment indicate.

The reason for such resistance to, and unwillingness to believe in, the effects of factors such as these may be the fact that they intuitively seem innocent and/or irrelevant. It might be the case that people make the mistake that if they believe that something should not matter, that it must mean that it does not matter. But just because it seems unlikely or counterintuitive, that does not mean that it is not true, as our experimental results indicate. Thus, one could argue that these factors are perhaps deceptive in the sense that they seem innocent when in fact they are not. Arguably this may make them more troublesome than several other psychological factors since the decision maker might (a) not be aware that they might be influenced by this factor and (b) might not believe that they themselves are prone to being influenced when they are being told about the potential biasing effect of these factors. This again emphasizes the importance of being open to the possibility that a factor might be capable of biasing decisions, even when this seems unlikely or counterintuitive. In this dissertation we aimed to contribute by (1) demonstrating that such factors can in fact have an effect and by (2) explaining how they can lead to biased decision making by identifying several mediators of these effects.

Well intended measures may actually backfire

Another reason why raising awareness of the effects of these biases is valuable is that, if people are unaware of these effects that they might unintentionally actually increase the chances of irrational decision making and project escalation. Certain well intended actions might actually do more harm than good due to their potential biasing effects. This may be particularly true with regard to project names. It seems that lately organizations are putting more time into a project name by trying to pick interesting, original and/or attractive project names. However, our findings from Chapter 2 indicate that exactly these types of positive names (e.g. "Sunrise") may also cause decision makers to be more likely to remain committed to a project even when it is troubled and when redirection or termination is more desirable. Similarly, putting a completion year in a deadline may seem like a good idea since it can provide a clear target for people to work towards. Yet, as the findings from Chapter 3 demonstrate, a name which draws attention specifically towards one aspect of an element might lead to that element being overly emphasized and may cause decision makers to miss or underestimate issues related to other elements. By increasing awareness of how these types of factors can bias decision making in this dissertation, we aim to

reduce instances where well intended measures actually backfire simply because people are not aware of their effects.

Not all psychological biases may be equally relevant or useful to an organization

In this dissertation we looked at various psychological biases. While it can be useful to be aware of the effects that these types of factors can have, not all of them may be equally relevant or valuable to an organization. Specifically, I propose that knowledge of factors capable of causing decision making biases may be more useful to an organization when (1) they are easily identified, (2) when their effects on project decision making can reliably be determined, (3) when they are within the control of the organization and (4) when they could potentially be used to either detect project escalation at an early stage or to prevent or reduce the chances of escalation occurring. Furthermore, the usefulness of such factors can increase when organizations could potentially also use them to their advantage (more on that in the next point).

In general, psychological factors can differ greatly on the above mentioned points, and so do the specific psychological factors that were investigated in this dissertation. When biases are caused by the absence or presence of specific project attributes then it may be relatively straightforward to detect whether these factors were present. For example, it is relatively easy to identify the level of sunk costs or the name of a project. When a bias can be caused not by specific attributes of the project itself but rather by how these are described (i.e. framing) then things already become a bit more difficult. It may be most difficult, however, when biases are caused by factors completely unrelated to the project. It is impractical for organizations to attempt to identify factors which take place outside of the project or even the organization. Similarly, these types of factors are generally also outside of the control of the organization. Whereas a project name is completely within the control of an organization, and can easily be set or changed to avoid biases, regulating the construal level of decision makers may, for example, be near impossible. The reasons for that are amongst others that, unlike (with) a project name (1) construal level cannot be observed but needs to be measured, which is invasive and takes time, (2) that construal level can be influenced by factors outside factors unrelated to the project and (3) that construal levels may fluctuate (more often) during the course of a project. Based on our findings, the less related to actual characteristics/attributes of the project, the more difficult these biases may be to detect, predict and prevent. As such, I propose that it may be valuable for organizations to (first) focus on those psychological factors which may be most relevant and useful to them.

Biases could also be used to an organizations benefit

As stated in section 6.2, while research on biases in the field of project escalation mostly seems to focus on the harmful effects of biases and how they can lead to irrational decision

making, there appears to be relatively little attention on how to best deal with biases beyond trying to prevent them. An alternative approach of dealing with biases is to investigate, when they are already present, how they might potentially be used to our advantage. In other words, if a bias is there, how do we make the best of it? As mentioned in section 6.2, our study on framing indicates that when managers use framing, that a listener aware of framing effects may actually be able to obtain valuable additional information from their framing usage. This again indicates that it is important to be aware of the effects of such biases rather than ignoring them. Such knowledge may be helpful not only in being able to understand, detect, predict and/or prevent irrational decision making caused by these biases, but it may also provide the organization with additional insights and means to best deal with biases that are present. I propose that this is something which thus far perhaps has not received enough attention and which could have a lot of untapped potential.

6.4   Limitations & Future research

Of course, this dissertation is not without its limitations. The studies in Chapters 2-5 looked at potential causes of project escalation which thus far had received little or no attention, or which had thus far not been used in this manner. While this adds to the contribution that this dissertation makes, it also indicates that the robustness of these factors remains relatively untested. Just because we found empirical support for our hypotheses in this dissertation, does not automatically mean that these effects will always be obtained in other studies testing the same relationships. While the outcomes of the studies in this dissertation are an important first step, replication and the testing of these effects in a variety of contexts is important in order to assure the validity and the robustness of these results. As such, we recommend this for future research.

Another limitation results from the choice of research methods in this dissertation. There unfortunately is no perfect research method and each methodology has certain disadvantages. It is important to recognize these limitations. Experiments have the advantage of having a high degree of internal validity and that they are capable of testing causal relationships. A disadvantage is that this artificial nature of the experiment generally comes at the expense of a lower level of external validity due to an experiment being unable to perfectly replicate a real life situation (at least in the case of project management). As such, there is always the risk that effects observed in the lab may not occur with real practitioners and real projects in actual organizations. While hypothesizing and testing causal effects, such as the ones observed in this dissertation, is an important first step, future research is needed to test whether these effects indeed also occur in real life organizational contexts. Contrary to our experimental studies, our study on framing usage by decision makers had a high degree of external validity due to the fact that real project managers were used who were completely free to choose their own wordings and

who talked about real life projects from their personal experience. However this research methods also has limitations and due to the exploratory nature of this research, the findings regarding the usage of framing by managers will need to be tested empirically before they can be generalized. As such, we recommend for future research to quantitatively investigate whether there is indeed empirical support for a link between managers' framing usage and their view of a project, in line with theory on information leakage.

While we found evidence suggesting that the factors investigated in this dissertation can be linked to project escalation, these are not the first or the only causal factors of project escalation which have been identified. While this dissertation adds to the existing knowledge on IS project escalation and further increases our understanding of the phenomenon and its causes, it in itself does not provide a full model for project escalation. This is a limitation. However, just because the factors investigated in this dissertation are not the only factors of relevance, or even the most important ones, that does not mean that they should be ignored. Our findings indicate that these factors do have an effect and each new causal factors of escalation that is identified furthers our combined understanding of the phenomenon and can bring us one step closer to preventing or eliminating it. Future research should continue to focus on combining these factors with the goal of creating a model which allows us to better understand, predict, prevent or eliminate the problem of project escalation than a model involving only a single factor can. Just as we should not close our eyes to relevant factors from other fields, we should also not close our eyes to factors which have previously been linked to project escalation in our own field.

A final recommendation for future research that we would like to make is to not only pay attention to how such psychological factors and biases can lead to irrational decision making, but to also start looking more at how they can actually be used to nudge people towards more rational decision making. As said, looking at how nudging can be used to guide project managers to make decisions which are in line with the best interest of the organizations is something which thus far perhaps has not received enough attention and which could have a lot of untapped potential.

6.5 Reflection

One main goal of this dissertation was to investigate and identify causal factors of escalation which thus far have received little to no attention. In line with our hypotheses, we found that even if a factor at first glance may seem innocent or irrelevant to decision makers, that this may not be the case. In particular, we found that there is a difference between a factor which "should not matter" and a factor which "does not matter". Even though most people know the sayings that "a rose by any other name would smell as sweet" and that we should not "judge a book by its cover", that apparently does not stop them from judging a project by its name. For that reason, I propose that it is important to

realize that even though decision makers may believe that (1) a factor should not play a role in their decision and (2) that the factor did not influence their decision, that this does not mean that the factor can't still bias their decision making regardless. I believe that only once we are open to the possibility that we can be influenced by these types of factors that we can begin to better understand ourselves, our potential biases, and, most importantly, how to deal with them such that we can make our decision making process more rational.

A second main goal of this dissertation was to not only identify causal factors which has thus far have remained (mostly) unexplored, but also to investigate whether an existing bias could be studied and applied in a different way. Studies on framing have focused almost exclusively on how decision makers react to framed information. Only a few studies have looked at how people themselves might use framing naturally (i.e. not consciously and purposely, such as in marketing) and what we can learn from it. In Chapter 4 we described how text analysis on transcripts of interviews with project managers suggests that managers indeed use framing when talking about projects. As such, recipients of the message may experience similar framing effects as the subjects in prior framing experiments, though this was not directly investigated in our study.

In addition to demonstrating that even for existing biases there are novel ways of applying them, I believe that this study also demonstrates that taking a different approach to biases could provide us with valuable new insights, which thus far remain relatively unexplored in the field of project escalation. Many studies on biases in the field of project escalation, and perhaps in general, appear to focus on identifying biases and on investigating the negative effect of these biases, i.e. how they can lead to irrational decision making. However, this is not all there is to biases. A complementary approach of dealing with biases is to investigate how, if they are already present, they can actually be used to our advantage as much as possible. This may reduce the overall negative impact of the biases. For example, the findings from Chapter 4 suggest that when managers use framing, that a listener aware of framing effects may actually be able to obtain valuable additional information from their framing usage. I believe that research on applications for nudging in a project setting could provide us with a valuable additional tool for dealing with biases and irrational decision making, one which in my opinion may have a lot of untapped potential.

To summarize, in this dissertation we have identified both causal factors of project escalation, which thus far had remained mostly unexplored, as well as investigated a different application of a bias which has been linked to escalation. While the outcomes of our studies are promising and empirical support was found for effects of project names and CLT, as well as for mediations of these effects, it is important to realize that this dissertation is only a first step. In particular, it is important to acknowledge this is the first time that these factors have been linked to project escalation in such a way. As such, future research is recommended to verify these findings and to test the robustness of these effects.

Similarly, these effects should not only be tested in theory or in the artificial settings of an experiment but should also be tested in practice. After all, project escalation is a real world problem that we are trying to solve.

While our findings suggest that the factors investigated in this dissertation matter, it is important to note that they are by no means the first or the only factors that have been linked to project escalation. Rather, we aimed to make a modest contribution and extension to the growing list of causal factors of project escalation which has been built by the project escalation research community over the years. Similarly, there may be other factors in a project which may have a bigger impact on the decision to continue or not than those studied in this dissertation. For example, while a project name can have some effect, a great project with a bad name will probably still succeed. The attributes of the project, and particularly information pertaining factors such as costs, benefits and risks are, and always have been, important to project decision making. Rather than a replacement, we argue that psychological factors and biases of the decision maker are a complement to these factors which can help us to better understand, predict and potentially prevent irrational decision making.

However, just because a factor is not the only or even the biggest contributor to the decision and escalation, I believe that that does not mean that it should be ignored, that they do not matter or that they are not worthy of research. The results from our studies indicate that these factors do matter and, ceteris paribus, can lead to different decisions and can lead to project escalation. Despite significant efforts over several decades, the problems of IS projects failing to meet targets and project escalation are still very much existent. I believe that if we want to solve this problem that it is important to achieve an even better understanding of what causes it and how it can lead managers to make irrational decisions. By identifying new potential causes factors, as well as a new application for a known causal factor, we aimed to contribute to and extend the existing list of potential causal factors of escalation, and psychological factors in particular.

As this list of factors grows, we will hopefully be able to increase our understanding of why certain decisions are made, to better predict irrational behavior, and perhaps to prevent/reduce escalation, for example by being able to detect problems at an earlier stage. As such, I hope that with this dissertation we have made a contribution to this process and to the existing literature on project escalation even if it is a modest one. However, the road ahead may still be long and there is much which we may still not know. Excitingly, as this dissertation has shown, there may yet still be causal factors of project escalation which remain unexplored. I very much look forward to travelling on that road and further studying these factors in the future.

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Summary

The importance of information systems to organizations continues to grow. Large sums of money are invested in information system (IS) projects. However, many IS projects fail to meet their targets or even fail completely. In the effort to successfully control such projects, there appears to be relatively little focus on the people who are actually making the decisions for the project. Prior research has shown that these decision makers aren't always perfectly rational and that they may (consciously or subconsciously) use heuristics (mental shortcuts) which can lead to systematic biases and irrational decision making. Such biases can result in project escalation where resources continue to be devoted to a failing project despite the presence of information which indicates that the project is in trouble.

In this dissertation, several biases are studied which thus far have remained (mostly) unexplored as potential causal factors of project escalation. In two experiments it was tested whether, ceteris paribus, a difference in the name of a project could influence decision making preferences. The results of these experiments indicate that project names can lead to an overall more positive or negative view of the project (Chapter 2) and that they are capable of drawing decision makers' attention towards specific project attributes (Chapter 3). The outcomes of our study on the effects of differences in construal levels show that decision makers with a higher construal level are more likely to escalate commitment to a project (Chapter 5). Because the construal level of decision makers can be influenced by factors that are completely unrelated to the project, this implies that even these types of factors can indirectly influence the likelihood of project escalation. In addition, this dissertation also includes a study on a previously known causal factor of project escalation, framing, but applies it in a novel manner (Chapter 4). The results of the text analysis process, based on interviews with managers, suggest that there is a strong link between the natural framing usage of managers and the view that they have of a project. This implies that the framing usage of managers could provide valuable additional information about their underlying project view.

The studies in this dissertation demonstrate that factors which at first sight may seem innocent or unimportant, are quite capable of influencing the likelihood of project escalation. In fact, even factors that are completely unrelated to the project appear to be capable of indirectly influencing project decision making. These findings underline the importance of not only focusing on charecteristics of the project and the organizational context but also on the potential biases of the decision maker in order to obtain a more complete view when evaluating projects.

Nederlandse Samenvatting (Summary in Dutch)

Informatiesystemen worden alsmaar belangrijker voor organisaties. Jaarlijks worden er grote bedragen geïnvesteerd in informatiesysteem (IS) projecten. Veel IS projecten slagen er echter niet in om hun doelstellingen te realiseren of falen zelfs compleet. Bij het beheersen van dergelijke projecten lijkt er relatief weinig aandacht te zijn voor degenen die daadwerkelijk beslissingen over het project nemen. Eerder onderzoek toont aan dat mensen ecther niet altijd even rationeel besluiten nemen en dat ze (bewust of onbewust) gebruik maken van heuristieken die kunnen leiden tot systematische biases en irrationele beslissingen. Dergelijke biases kunnen resulteren in projectescalatie, een situatie waarin middelen gepompt blijven worden in een falend project ondanks de beschikbaarheid van informatie die aangeeft dat het project in problemen verkeerd.

Dit proefschrift richt zich op biases die tot dusver niet of nauwelijks onderzocht zijn als mogelijke veroorzakers van projectescalatie. In twee experimenten wordt getest of, bij gelijke informatie, een verschil in projectnaam kan leiden tot andere beslissingen. De uitkomsten geven aan dat projectnamen kunnen leiden tot een algeheel positiever dan wel negatiever beeld van het project (Hoofdstuk 2) en dat ze de aandacht kunnen trekken naar specifieke aspecten van het project (Hoofdstuk 3). De resultaten van een studie naar de effecten van verschillen in construal level (Hoofdstuk 5) tonen aan dat mensen met een hoger construal level eerder geneigd zijn tot projectescalatie. Doordat construal level ook beïnvloed kan worden door factoren die niets met het project te maken hebben, impliceert dit dat zulke factoren (indirect) ook kunnen leiden tot projectescalatie. Tevens wordt in dit proefschrift een reeds bekende veroorzaker van projectescalatie, framing (woordgebruik), op een nieuwe manier toegepast. De resultaten van een text-analyse, op basis van interviews met managers (Hoofdstuk 4), geven aan dat er een sterke link is tussen het natuurlijke framinggebruik van managers en het beeld dat zij hebben van een project. Dit impliceert dat het framinggebruik van managers waardevolle extra informatie kan verschaffen over hun onderliggende projectbeeld.

De studies in dit proefschrift laten zien dat ook factoren die in eerste instantie onschuldig of onbelangrijk lijken wel degelijk de kans op projectescalatie kunnen vergroten. Zelfs factoren die niets met het project te maken hebben lijken in staat om indirect de besluitvorming te beïnvloeden. Dit onderstreept het belang om naast de eigenschappen van het project en de organisatie ook aandacht te besteden aan de mogelijke biases van degene die de besluiten neemt om zo een completer beeld te krijgen bij de evaluatie van een project.

About the Author

Nick Benschop was born on January 29, 1987 in Gouda. He graduated cum laude for his M.Sc. degree in Economics & Informatics, with a specialisation in Economics & ICT, from the Erasmus University Rotterdam in 2011. His interest in (research on) escalation of commitment and biases was formed during the master seminar on IS project escalation. This seminar was hosted by Dr. Arno Nuijten who later became his master thesis supervisor as well as the copromotor for this dissertation. While still a student, Nick submitted his master thesis research to the 2011 Bled e-Conference in Bled, Slovenia. His research was accepted into the main conference, which gave him his first experience of what performing research and being part of a scientific community was like. After this visit to Slovenia, the choice was quickly made to pursue a career in academics.

In 2011, shortly after obtaining his M.Sc. degree, Nick started his PhD research at the Erasmus University Rotterdam. During his time as a PhD student, he discovered his passion for teaching and was involved in several courses related to information systems, behavioral economics and project management/escalation at the Erasmus School of Accounting & Assurance (ESAA), the Erasmus School of Economics (ESE) and the Rotterdam School of Management (RSM). Nick attended and/or presented his work at several conferences such as European Conference on Internal Audit and Corporate Governance (IACG) and the European Conference of Information Systems (ECIS). His work has been published in several conference proceedings and in Management & Organisatie (M&O). As a PhD candidate, Nick went on three research visits to the Georgia State University in Atlanta. There he met with Prof. dr. Mark Keil whose work sparked his initial interest to do research. These research visits led to collaboration on several studies in this dissertation. Prof. Keil provided invaluable support and feedback and has since become Nick's third promotor. Nick currently serves as a lecturer and researcher and the Erasmus School of Accounting & Assurance (ESAA).

Nick is engaged to Manon whom he will marry on June 4th, 2016. In his free time he likes spending time with friends, going out to dinner and enjoys watching, as well as attending, Formula 1 races. He is also interested in many aspects of current technology-enabled developments such as charitable and non-charitable crowdfunding, cyber security, hacktivism, net neutrality and privacy.

Portfolio

Publications

Publications in journals and conference proceedings:

Benschop, N., Nuijten, A.L.P. & Pijl, G.J. van der (2015). Het beeld achter de woorden: Framing en informatielekkage in projectrapportages. *Management & Organisatie*, 69(4), 59-76.

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Articles under review:

Benschop, N., Nuijten, A.L.P., Keil, M., Rohde, K.I.M. & Commandeur, H.R. (under review). The effect of project name on escalation: An affect heuristic perspective.

Articles in progress:

Benschop, N., Nuijten, A.L.P., Keil, M., Rohde, K.I.M. & Commandeur, H.R. How Emphasizing Time in an IS Project Name can Affect Escalation Decisions.

Benschop, N., Nuijten, A.L.P., Keil, M., Lee, J.S., Rohde, K.I.M. & Commandeur, H.R. The Effect of Construal Levels on Project Escalation Decisions (working title).

Research visits

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Teaching & supervising activities

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Introductie gedragseconomie (Introduction to Behavioral Economics), Erasmus School of Economics (ESE), 2014 & 2015.

Project Management & Auditing, Rotterdam School of Management (RSM), 2014 & 2015.

Project & Programma Management (Project & Program Management), Erasmus School of Accounting & Assurance (ESAA), 2015.

IT-fundamentals, Erasmus School of Accounting & Assurance (ESAA), 2015.

Lecture on project escalation & framing, Erasmus School of Accounting & Assurance (ESAA), 2012.

Supervision of bachelor & master theses, Erasmus School of Economics (ESE), supervision of 'referaat', Erasmus School of Accounting & Assurance (ESAA).

Ph.D. Courses:

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BIASES IN PROJECT ESCALATION

NAMES, FRAMES & CONSTRUAL LEVELS

Many information system (IS) projects are unable to meet their targets or even fail completely. Decision makers in these projects unfortunately aren't always perfectly rational and they may be prone to biases which can lead to irrational decision making. As a result of such biases, project escalation can occur where resources continue to be devoted to a failing project.

In this dissertation, several biases are studied which thus far have remained (mostly) unexplored as causal factors of project escalation. Results from three studies indicate that both project names and construal levels can bias decision makers and that they can increase the likelihood of project escalation. A fourth study applies a previously known causal factor of escalation, framing, in a novel manner by investigating whether managers themselves use framing when discussing projects. The findings suggest that there is a strong link between the framing of managers and their view of a project.

Combined, the studies demonstrate that factors which at first sight may seem innocent or unimportant are quite capable of influencing the likelihood of project escalation. In fact, even factors that are completely unrelated to the project itself also appear to be capable of influencing project decision making indirectly. These findings underline the importance of not only focusing on characteristics of the project and the organizational context but also on the potential biases of the decision maker in order to obtain a more complete view when evaluating projects.

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