DISHONEST INFORMATION DISCLOSURE IN ENTERPRISE INFORMATION SYSTEMS

WHY EMPLOYEES LIE AT WORK?

Master's Thesis

By Jonas Kolk

Student Number: 116507

M.Sc. in Business Administration and E-Business

Copenhagen Business School

Supervisor: Mari-Klara Stein

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List of Abbreviations

DV	Dependent Variable
EIS	Enterprise Information Systems
H	Hypothesis
H_A	Alternative Hypothesis
H_0	Null Hypothesis
IS	Information Systems
IV	Independent Variable
SID	Sensitive Information Disclosure
SP1	Subpopulation 1
SP2	Subpopulation 2

Abstract

More and more companies have started to adopt enterprise software solutions that leverage sensitive information disclosed from employees in order to improve workforce management and strategic decision-making. These data-driven solutions, however, can only unfold their full organizational benefits if employees reveal accurate information about themselves. Nevertheless, in a number of cases, employees may be tempted to provide inaccurate or false data for personal gain. The present study, therefore, examines essential influencing factors of employees' dishonest sensitive information disclosure behavior in enterprise information systems. For this purpose, an explanatory, quantitative study is conducted. Theory-based hypotheses are tested with experimental survey data from 147 employees of a multinational software company. In line with the predicted causal relationships, findings suggest that an increase in the probability of getting caught or perceived supervision decreases comfort with dishonesty. Watching others behave dishonestly, however, is not found to influence dishonest information disclosure behavior. The predicted negative relationship between state self-control capacity and dishonesty could also not be proven. The present study contributes to a better understanding of how specific factors influence employee's dishonest information disclosure in enterprise information systems. Furthermore, insights on how to study dishonesty in organizational environments and managerial implications are outlined.

Keywords: dishonesty, sensitive information disclosure, enterprise information systems, employee-data, self-concept maintenance theory, workplace, lying

1 Introduction

1.1 Motivation

Many organizations are leveraging enterprise software solutions that require employees to disclose sensitive information about their working behavior, skills, or opinions. Examples of such solutions are company-internal social networks, employee feedback systems, or performance assessment tools. Moreover, advanced HR analytics are frequently used to extract valuable insights from large amounts of employee-related data (Fecheyr-Lippens, Schaninger, & Tanner, 2015; van den Heuvel & Bondarouk, 2017). The fundamental objective of these employee-data-driven technologies is to enhance strategic decision-

making and to improve the way companies manage their workforce (De Romrée, Fecheyr-Lippens, & Schaninger, 2016; Momin & Mishra, 2015; Shah, Irani, & Sharif, 2017).
Notwithstanding, in the end, these solutions can only provide value to organizations if employees continuously provide correct information about themselves. Employees, however, may find themselves in situations in which they do not want to disclose certain information or are tempted to distort information in their favor (Vieira da Cunha, Carugati, & Leclercq-Vandelannoitte, 2015). Hence, companies do not only need to focus on employees' willingness to disclose the required information as investigated by previous studies (Träutlein, 2017), but also on the extent to which the information provided by their workforce is accurate. Yet, the veracity of information disclosed by employees through enterprise information systems (EIS) and related influencing factors have received little scientific attention. While only a few studies have examined data accuracy of self-disclosed information in information systems (IS), little to no research has been conducted on dishonest information disclosure in the enterprise space. This thesis seeks to fill this void by illustrating the research gap and providing an empirical study of relevant factors impacting employees' untruthful information disclosure in enterprise information systems.

1.2 Research Objective and Design

The goal of this thesis is to investigate essential influencing factors of employees' dishonest sensitive information disclosure behavior in enterprise information systems.

For this purpose, the present work first of all reviews the existing pool of IS literature on dishonest sensitive information disclosure (SID) to identify factors influencing dishonest information behavior. Since the IS literature on the research topic is sparse, an expanded literature review on dishonesty from a socio-psychological perspective is conducted. Relevant constructs that are of particular interest for EIS are identified and investigated in more detail. Thereupon, concrete research hypotheses are derived. To assess how the predefined set of influencing factors impacts employees' dishonest SID behavior in EIS, an explanatory, quantitative vignette study is conducted. The theory-based hypotheses are tested with experimental survey data from 147 employees of a multinational software company. By means of a causal analysis, hypotheses are eventually either confirmed, in whole or part, or rejected.

1.3 Relevance for Practice

Over the last decade, more and more companies have started to systematically collect and analyze employee-generated data with the goal of improving employee experience and increasing organizational success (Davenport, Harris, & Shapiro, 2010; Isson & Harriott, 2016). Related data-driven solutions allow companies, inter alia, to monitor employees' well-being, job engagement, or satisfaction with management. This trend of organizations implementing solutions relying on the disclosure of sensitive information from employees puts the veracity of the information provided by employees into focus. Without ensuring a high quality of information, managerial decision-making based upon employee-data may be distorted, leading to inexpedient business outcomes. Notwithstanding, this does not exclude opportunistic behavior of the employer.

Nevertheless, from an employee perspective, providing accurate information may not always be in the best interest of the individual. In fact, in a number of situations, employees may be tempted to misuse their power over data quality and disclose distorted information for their own social or monetary benefit. Previous scholars have shown how misreporting data in enterprise information systems may be used for demanding additional resources (Doolin, 2004) or managing personal impressions (Orlikowski, 1996). Hence, organizations need to consider that an employee may provide inaccurate information through the respective enterprise information systems.

With respect to designing and successfully implementing employee-data-driven solutions, this work provides insights on how certain factors influence employees' dishonest sensitive information disclosure in EIS. Moreover, suggestions on how to create a working environment facilitated by suitable software which supports employees to behave honestly, without infringing their right to privacy, are outlined. This study further reflects upon potential ethical implications that should be considered by organizations.

1.4 Relevance for Theory

Prior research has focused on studying dishonesty and its related influencing factors in laboratory experiments (see Section 3.2.). Natural field studies on dishonesty are scarce, and none of them have taken the enterprise context into account. This lack of research in more natural environments may be attributed to the fact that dishonesty constitutes a sensitive topic that is associated with many practical and ethical challenges, such as data

protection concerns (see Section 4.2). Relevant contributions examining the research topic in information systems are almost non-existent. The two contributions identified in the broader IS context deal with dishonesty and self-disclosure in social networks and microblogs. Since no relevant journals specifically examine the research subject in EIS and only two address the topic in IS in general, it is concluded that dishonest SID behavior in EIS has not been researched in detail yet.

The present thesis constitutes a first step in better understanding employees' dishonest SID behavior in EIS. Essential influencing factors are identified and further investigated in a natural context. Furthermore, the empirical study provides insights about how lying can be studied in organizational environments and delivers knowledge gain with regards to behavioral economic theories explaining dishonest behavior.

1.5 Structure of the Work

The present thesis is structured as follows. First, definitions and explanations of central terms and concepts are outlined in Chapter 2. Chapter 3 reviews and analyzes the existing pool of literature on dishonest sensitive information behavior and identifies related influencing factors. Thereafter, the implemented research design is illustrated. Moreover, Chapter 4 describes the methodological choices and employed data analysis in detail. The results of the study are presented in Chapter 5. Chapter 6 discusses and interprets findings with respect to theoretical and practical implications. Furthermore, the limitations of this study and recommendations for future research are outlined. Chapter 7 closes the work with a conclusion.

2 Basic Definitions

This chapter lays the key theoretical foundations with regard to the research subject and context. For this purpose, definitions and explanations of central terms and concepts are outlined.

2.1 Dishonest Behavior

In the following section, the taxonomic classification of the research subject is illustrated. Although dishonest actions can be reflected in many forms of behavior, such as bribery and treacherousness, this work explicitly focuses on the act of lying as it is closely intertwined with SID in EIS. Accordingly, a definition of acting dishonestly in terms of lying is provided.

Lying constitutes a natural part of human coexistence and occurs in great variety and contexts (Meibauer, 2018). There is the mother who tells her son that she loves the birthday gift because she knows how much effort he put into it or the person who messages a friend to be running late because of a delayed bus although he or she just set off too late. But then there is also the financial advisor who deliberately undermines default risks when selling high-yield bonds and the murderer who claims not to have killed the victim. A categorization of lies can be based on various features. Lies may be classified according to the degree they deviate from the truth, the motives for lying (Depaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996), or the consequences in case of getting caught. Thus, lies can be referred to as minor modifications of the truth or bald-faced lies, self-centered or altruistic lies, and low or high-stake lies. The distinction between different forms of lying is of particular importance for psychological research because it affords certain levels of measurement and thus, enables studying relationships between associated psychological factors (Suchotzki & Gamer, 2018).

Although most people have internalized a clear concept of what constitutes a lie, hence being able to intuitively make a judgment call (Peterson, 1995), defining the term has always posed a challenging task in research, not only due to the great variety of lies. Not surprisingly, a universally accepted taxonomy of lying amongst scholars does not exist (J. Mahon, 2008; Meibauer, 2018; Suchotzki & Gamer, 2018).

The traditional, most widely accepted notion defines a lie as "a statement made by one who does not believe it with the intention that someone else shall be led to believe it" (Isenberg, 1964, p. 466). Consequently, lying to others can be referred to as "making a believed-false statement to another person with the intention that the other person believes that statement to be true" (J. Mahon, 2008). Accordingly, four conditions need to be fulfilled.

- ***Statement condition.*** A person makes a statement.
- ***Untruthfulness condition.*** The statement is believed to be false.
- ***Addressee condition.*** The statement is made to another person.
- ***Intention to deceive condition.*** The person has the intention that the other person believes the statement to be true.

With respect to the research objective, namely examining the veracity of self-disclosed employee information in EIS, these four conditions are further specified (Mahon, J. E., 2008). The first condition states that lying requires a person to make a statement. According to Chisholm and Feehan (2006, p. 150), making a statement involves the use of conventional signs, for example, the term "Drinking water" above a water tap. In contrast, natural signs, such as people drinking water from the tap, do not qualify as making a statement. In conclusion, making a statement requires the use of language. In many cases, this refers to the use of spoken language. However, it is also possible for a person to lie by using sign language, gestures, Morse code, or the like as long as the meaning has been conventionally defined beforehand. Hence, remaining silent may also classify as making a statement if its meaning was previously agreed-upon. Nevertheless, omitting to make a statement generally does not qualify as lying (Griffiths, 2010, p. 33; J. E. Mahon, 2003).

The second condition further specifies the nature of the statement made by someone. Accordingly, lying requires the statement to be believed-false. Note that in order to meet this criterion, the statement does not need to be false but solely believed to be false by the person making the statement (Krishna, 1961). For example, if a person's Paris travel guide states that the Louvre museum is open throughout the whole week even though it is closed on Tuesdays, telling a friend that you can visit the museum every day is not a lie. However, scholars have made reasonable objections claiming that the traditional untruthfulness condition defines lying too narrowly. Carson (2006) and Shiffrin (2016, p. 13) find that lying does not require a statement to be believed-false. Instead, they argue that making a statement that is not believed to be true or believed to be most-likely false to be sufficient.

In the light of this adaption, the person would be lying to a friend if he or she has heard that most museums in Paris are closed on Tuesdays and the person knows that the travel guide's information is mostly outdated. In this case, Carson and Shiffrin would reason that the person may have believed the opening hours to be probably false and consequently lied.
Additionally, lying requires that a statement is made to another person. This includes making a statement to a general audience. Thus, it is possible to lie to someone without explicitly predefining every single addressee. For instance, one can lie by providing untruthful product information in an Instagram advertisement, misstating tax returns, or distributing misinformation through a newspaper. The only requirement that needs to be fulfilled, which is closely connected to the first condition is that the person making a statement believes the addressee(s) to be capable of understanding the information provided.
In the light of the first three conditions, ironic statements or jokes may be labeled as lies, although most people would disagree with this classification. Therefore, the traditional taxonomy of lying has adopted the intention to deceive the addressee condition. Accordingly, statements without the intention that the addressee believes the statement to be true cannot be lies (Morris, 1976).

Summarizing, this study adopts the following notion of lying. *Lying to others is defined as making a statement that is not believed to be true or believed to be most-likely false to another person with the intention that the other person believes that statement to be true* (J. Mahon, 2008). Considering the research context, lying specifically refers to employees disclosing information which they believe to be untrue or most-likely false, such as deliberately reporting inaccurate working hours or providing false feedback in an employee survey.

2.2 Sensitive Information Disclosure

The following section describes the theoretical background of the research context, namely, sensitive information disclosure in information systems. Accordingly, a definition and explanation of key notions are illustrated (based on Träutlein, 2017).

2.2.1 Sensitive Information

Depending on the type of information collected and processed by an external agent, whether it is a private person or an organization, people experience different levels of

discomfort with regard to privacy when disclosing information (Phelps, Nowak, & Ferrell, 2000; H. J. Smith, Milberg, & Burke, 1996). Consumers, for instance, classify certain types of information, like health or financial data, as more sensitive than others, such as personal interests or demographic data (Malhotra, Kim, & Agarwal, 2004; Phelps et al., 2000; Rohm & Milne, 2004; Sheehan & Hoy, 2003). This specification of information is often referred to as information sensitivity. Based on the work of Dinev et al. (2013), this paper defines *information sensitivity* as an information attribute characterizing the perceived level of discomfort associated with the disclosure of certain information to an external entity.

Although information sensitivity represents a subjective construct, thus, requiring individual assessment, by and large, certain types of information can be regarded as more private than others (Li, Sarathy, & Xu, 2011). In this context, the term *personal information* calls for special consideration (Liao, Liu, & Chen, 2011). According to European law, personal data is "any information relating to an identified or identifiable natural person" (European Union, 2016, Art. 4 (1)). A person is considered identifiable if he or she can be identified, directly or indirectly, by means of an identifier. These include a person's name, location data, and factors specific to one's social identity. Thus, also information that is not sufficient on its own to identify a person might be considered personal information when it allows for identification in combination with other information collected about the data subject. For example, information collected by a company on people's university degree alone is not considered personal as it applies to a large group of people. The same applies when collecting information about the place of study or graduation year. However, when put together, this information would in all likelihood enable the company to narrow down the group of people fulfilling these criteria so that a person could be reasonably identified (European Commission, 2019).
Further, specific categories of personal data, are explicitly considered as sensitive and thus, subject to higher protection. Under European law, these range from racial, health, and biometric data to information revealing political beliefs or sexual orientation (European Union, 2016, Art. 9 (1)).

While some information domains should generally be treated more sensitively, information sensitivity remains a perceived construct which has to be viewed in its context including, inter alia, the external agent requesting information as well as the purpose of information collection (Li et al., 2011). For example, when a financial institution asks a customer to

provide her income in the course of investment advice, he or she might be willing to disclose this information. However, in the case of an e-commerce website, a customer might hesitate to reveal such information. The same may apply in an organizational context. While a person might be comfortable answering a friend's question about his or her relationship status, this may not be true when his or her employer requests this private information.

In conclusion, information sensitivity constitutes a subjective and relative construct that varies with its contextual nature and purpose of information collection. *In this thesis, sensitive information refers to personal information and any other information that may be associated with a feeling of discomfort when disclosed within a specific EIS context.* With respect to the research context, sensitive information particularly comprises information that allows an organization to draw conclusions about an employee's working behavior, personal opinions, personality, or private life.

2.2.2 Sensitive Information Disclosure in Information Systems

Information disclosure, in general, can be defined as the act of communicating personal information about oneself to another entity (Collins & Miller, 1994; Cozby, 1973; Jourard, 1964). Cozby (1973) further suggests classifying information disclosure by means of three dimensions: the amount of information externalized (breadth), the intimacy of information revealed (depth) and the time spent on disclosing information (duration). With regard to the first two parameters, Jourard (1964) hypothesizes that due to the risk involved in disclosing information, people carefully select with whom to share which amount and depth of information. Studies support this view and have found that people tend to reveal more information when a recipient is seen as a trustworthy and likable person. Recipients, conversely, tend to like people more when they disclose sensitive information to them (Collins & Miller, 1994). Although the research objective is to examine factors influencing dishonest employee behavior associated with SID in EIS, it is important to acknowledge that SID, in general, has to be seen in the light of its social context touching upon aspects, such as trustworthiness, likeability and relationship building.

In IS research, the recipient of SID is primarily represented by digital entities, such as social networking websites (Christofides, Muise, & Desmarais, 2009; Sun, Wang, Shen, & Zhang, 2015; Utz, 2015), mobile applications (Keith, Thompson, Hale, Lowry, & Greer, 2013; Ward, 2016) , or Internet of Things services providers (Hsu & Lin, 2016; Kim, Park, Park, & Ahn, 2019). Although information disclosed in information systems can be of various nature,

many multi-sided Internet platforms (Osterwalder & Pigneur, 2010, p. 77) have in common that their business models depend heavily on the collection and processing of sensitive user data, for instance, enabling personalized advertising (Tucker, 2014).

With regard to an organizational context, it can be concluded that *SID in EIS describes any act whereby employees communicate sensitive information about themselves to their employer through an enterprise information system.*

Lying (dishonest behavior)	Lying to others is defined as making a statement that is not believed to be true or believed to be most-likely false to another person with the intention that the other person believes that statement to be true (J. Mahon, 2008)
Sensitive Information	Sensitive information refers to personal information and any other information that may be associated with a feeling of discomfort when disclosed within a specific enterprise information systems context (Dinev et al., 2013)
Sensitive Information Disclosure in Enterprise Information Systems	Sensitive information disclosure in enterprise information systems describes any act whereby employees communicate sensitive information about themselves to their employer through an enterprise information system (Cozby, 1973; Jourard, 1964)

Table 1
Overview of Basic Definitions

For an overview, Table 1 illustrates all basic definitions adopted in this work. Based on the provided working definitions, the next chapter reviews the existing pool of literature on dishonest SID behavior in EIS specifically.

3 Dishonest Sensitive Information Disclosure Behavior - A Literature Review

Against the background of the research objective, this chapter aims to review the existing information systems literature on lying[1] and to identify factors influencing dishonest employee behavior related to SID.

Therefore, the first section provides an overview of the pertinent literature concerning determinants of dishonest SID in EIS and IS in general. Research gaps are identified and, as a result, an expanded literature review on dishonesty from a socio-psychological perspective is conducted in Section 3.2. Based on the reviewed literature, influencing factors of dishonest SID are presented. Constructs subject to this study and their underlying theories are explained in more detail.

3.1 Dishonest Sensitive Information Disclosure Behavior in Information Systems

Following Webster and Watson's (2002) structured review approach, the pertinent literature is identified by searching and screening the Google Scholar database for relevant keywords. Moreover, a forward and backward search is conducted for all relevant search results. As a first step, a search string reflecting the research subject and context was developed, resulting in the following expression:

[(('Honesty' OR 'Dishonesty' OR *'Untruthfulness')* AND *('Self-Disclosure'* OR *'Information Disclosure'))* OR *('Lying' OR 'Lie')]* AND *('Information System' OR 'Enterprise System')*

Thereafter, search results were screened to extract research about influencing factors of dishonest SID behavior in EIS. No relevant papers investigating determinants of dishonesty in enterprise information systems were found. Consequently, the screening was extended to IS in general. The extended screening resulted in only two relevant contributions (Liu, Min, Zhai, & Smyth, 2016; Wang, Yan, Lin, & Cui, 2017).

Wang et al. (2017) examine influencing factors of self-disclosure intention and honesty in Chinese mobile social networking by means of an online survey. Considering the determinants of honesty, they explicitly research the impact of monetary rewards, such as

1 The terms "lying" and "dishonest information disclosure behavior" are used interchangeably.

discounts or coupons, and social rewards from using social networks, such as satisfaction or enjoyment. It should be noted that due to the research method, all measures are based on participants' self-assessment as further emphasized in their limitations. The study results do not support any significant impact of monetary rewards but reveal a positive correlation between honesty and social rewards.

Adopting similar research instruments, Liu et al. (2016) assessed the impact of social benefits and costs on self-disclosure in Chinese microblogs, of which information accuracy reflects one out of five dimensions. Social benefits include, among other things, relationship building, self-presentation, and enjoyment. Social cost refers to privacy concerns, intrusiveness, and anonymity. Although their study finds an influence of social benefits and costs on self-disclosure in general, no significant direct correlation related to honesty is shown.

Since the literature review yielded no relevant journals specifically addressing the research subject in EIS and only two IS studies related to the topic in focus, it can be concluded that to the best of my knowledge, dishonest SID behavior in EIS has not been researched in detail yet. The two identified contributions address dishonest information disclosure in social networks and micro-blogs with limited external validity for the EIS context. As a result, the two studies were not found sufficient to serve as a profound basis for studying this work's research objective. Nevertheless, it should be noted that the influencing factors assessed in both studies are inspired by research in psychology, sociology, and behavioral economics[2]. Thus, the review is extended by taking a more in-depth look at social science and related economic disciplines.

3.2 Dishonest Sensitive Information Disclosure Behavior

Due to the sparsity of relevant contributions in the IS literature, this section illustrates a more generic overview of factors influencing dishonest SID behavior, i.e., lying. The objective of this extended review is to identify and better understand the determinants of dishonesty and lay the theoretical foundation for further empirical research of the most relevant constructs from a practical IS standpoint.

2 Interdisciplinary study of economics and social sciences

Following a similar approach as previously applied in the IS literature, the Google Scholar database is searched by using the following expression:

(('*Honesty*' OR '*Dishonesty*' OR '*Untruthfulness*') AND ('*Self-Disclosure*' OR '*Information Disclosure*')) OR ('*Lying*' OR '*Lie*')

Search results were screened to identify those contributions examining influencing factors of dishonesty. Again, a forward and backward search of relevant articles was conducted. After screening and filtering search results, 39 studies were classified as relevant. Thereafter, sources were analyzed with respect to the independent variables (IV) in focus and the design of the construct dishonest behavior. An overview of all influencing factors of dishonesty is shown in Figure 1. An exhaustive concept matrix comprising all relevant academic articles and studied constructs can be found in Appendix I. An explanation of the economic and psychological approach is provided in Subsection 3.2.2.

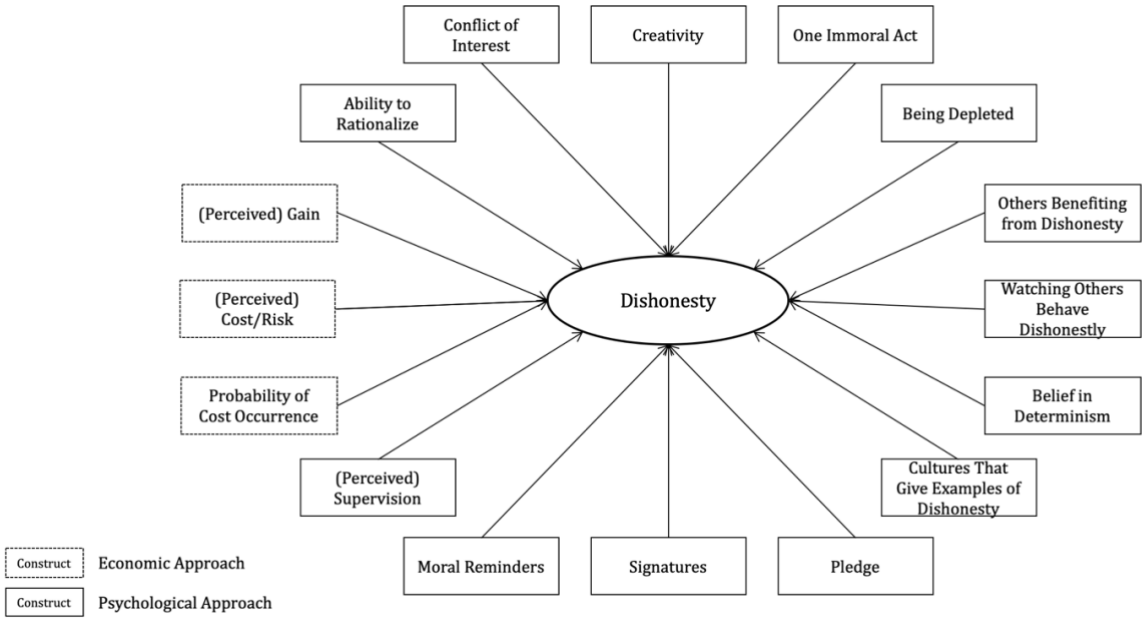

Figure 1
Overview of Influencing Factors on Dishonesty (Ariely, 2012)

3.2.1 Overview

As shown in Figure 2, almost all relevant sources study dishonesty generically. They assess dishonesty through social games, population inferred or individually inferred cheating tasks (Jacobsen, Fosgaard, & Pascual-Ezama, 2018). An example of the latter task group is the perceptual dot-task (Mazar & Zhong, 2010) in which participants are asked to indicate on which side of the split-screen more dots appeared (see Appendix II for an illustration). Participants are always paid a little more when they choose to indicate the right side, regardless of whether it actually contains more dots. Consequently, participants are sometimes tempted to lie and pick the right side with fewer dots in order to receive larger monetary rewards. This way, researchers are able to identify lying.

Moreover, the analysis showed that only a minority of studies take a look at dishonest behavior in a more natural environment (n=12). Consequently, it can be concluded that the existing literature on dishonesty examines the subject primarily in a generic manner by means of laboratory experiments.

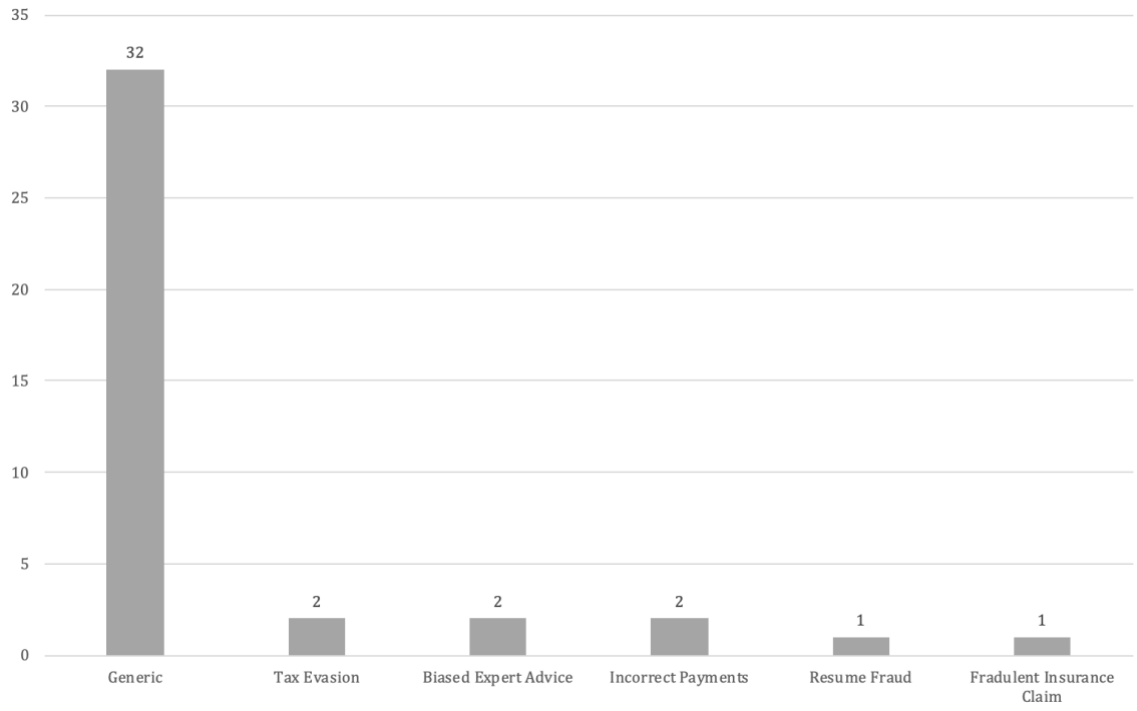

Figure 2
Overview: Design of the Construct Dishonest Behavior

3.2.2 Underlying Theories

During the analysis of the relevant pool of literature, it was found that scholars follow one of two schools of thought. This section introduces the two approaches explaining dishonest behavior.

3.2.2.1 The Economic Approach

According to the economic optimization approach rooted in the *magna opera* of Thomas Hobbes (1651) and Adam Smith (2008), the individual is a rational, self-serving human being with the goal of maximizing personal gain. Aware of his personal preferences, the so-called *homo economicus* makes individual choices by trading-off the costs and benefits of possible options (Mazar, Amir, & Ariely, 2008).

Adopting the rational theory of individual choice, Becker (1996) introduced an economical approach to dishonest behavior, namely the act of committing a crime. Accordingly, an individual's decision of whether a crime is worth it or not is made by comparing the perceived gain and the expected costs of the illegal act (Ariely, 2012, pp. 11–31). Thus, the economic approach proposes that individuals deliberately carry out dishonest acts as long as the external rewards outweigh the external costs of the individual behavior (Allingham, 1972; Becker, 1996; Mazar et al., 2008; Mazar & Ariely, 2006).

3.2.2.2 Self-Concept Maintenance Theory

According to the economic approach, individuals are driven by external rewards and inhibited by external costs when it comes to engaging in dishonest behavior. However, in many situations, people neither bend the truth as much as they can just to maximize personal gain, nor do they always behave unethically when the associated probability of getting caught or punishment is negligible. Considering these observations, many social sciences, particularly psychology, suggest going beyond the economic approach. Accordingly, individuals do not only make their decision whether to act dishonestly based on external benefits but also internal rewards mechanisms (Jacobsen et al., 2018; Mazar et al., 2008).

Contrary to the classic economic perspective, Mazar et al. emphasize the role of self-concept and identity as internal forces guiding people's choices. Their theory of self-concept maintenance argues that people constantly strive to uphold a positive self-image and

consequently only engage in dishonest behavior as long as they can do so without abandoning to see themselves as moral and honest people. The rationale behind this view is that honesty and morality hold intrinsic value to people meaning it is part of their internal reward system (Dana, Weber, & Kuang, 2007; Greenwald, 1980; Griffin & Ross, 1991; Sanitioso, Kunda, & Fong, 1990). Therefore, people try to avoid to negatively update their self-image by behaving in a way that complies with their internal standards of morality. In other words, people may be driven by external rewards, but they will only act dishonestly up to a specific moral limit. Balancing these two forces, people bend the truth only a little so that they can reap the benefits from behaving dishonestly and still perceive themselves as honest, honorable human beings. Finding this compromise between benefiting from cheating and maintaining a positive self-concept constitutes a process of rationalization which is influenced by a number of mechanisms (Ariely, 2012, pp. 11–31; Jacobsen et al., 2018; Mazar et al., 2008).

Since the self-concept maintenance theory incorporates reasonable aspects of the economic approach and is widely supported by recent studies on dishonesty, this work adopts this behavioral economic approach (Jacobsen et al., 2018). The next subsection describes a set of influencing factors of dishonesty of particular interest for employees' SID in EIS.

3.2.3 Analysis of Influencing Factors

Although many factors influence dishonest SID behavior, this study focuses on four specific constructs (see also Subsection 4.2.1): *the probability of getting caught, perceived supervision, watching others behave dishonestly, and state self-control capacity (ego depletion)*. These factors were chosen because of their contextual fit with enterprise software solutions that build upon SID from employees and their broad applicability in information systems which, by design, often facilitate monitoring through information transparency. This subsection explains these influencing factors in more detail and derives hypotheses that provide the basis for the empirical study.

3.2.3.1 Probability of Getting Caught

According to the model of rational crime (Becker, 1996), individuals engage in a criminal act as though they consider three determinants: *the expected benefit gained from committing the crime, the likelihood of being caught, and the magnitude of punishment*. For example, if the expected costs of speeding in the city are lower than the perceived gains from arriving

earlier and thereby being on time for a job interview, the rational individual would risk receiving a traffic offense fine according to Becker's model. Following this rationale, criminal law systems often adopt the assumption that crimes can be contained by either increasing the magnitude of punishment, or the probability of getting caught (Becker, 1996; Jacobsen et al., 2018; Mazar & Ariely, 2006). With regard to the research in focus, the cost-benefit perspective generates the following hypothesis:

(H1) *Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS increases as the probability of getting caught decreases.*

3.2.3.2 Perceived Supervision

In the second book of "The Republic", Plato tells the myth of the Ring of Gyges (Jowett, 1892) raising the question of whether a person would act well and just if he or she did not have to fear any reputational damage for committing a crime. The story chronicles a simple shepherd called Gyges who gains possession of a mythical ring that gives him the power to become invisible. With his new power, he decides to embark on a journey to the king's court and conquer the throne. Gyges seduces the queen, murders the king and eventually appoints himself heir to the throne. With the aid of this story, Plato suggests that people may be more tempted to do wrong when they can do so without being exposed to others. Conversely, being watched by others may decrease dishonesty (Ariely, 2012, pp. 217–237).

In line with Plato's notion, research has found evidence that social presence can underline social norms (Robert B Cialdini, Reno, & Kallgren, 1990; Reno, Cialdini, & Kallgren, 1993), limit categorization malleability and thereby inhibit unethical behavior (Hoffman et al., 2015; Mazar et al., 2008).

A study by Bateson et al. (2006), for instance, examined whether the mere feeling of being watched has a positive impact on prosocial behavior. For this purpose, the researchers set up a ten-week experiment in which they placed different images over an "honesty" box which is used to collect money for beverages consumed in the common room. For the first five weeks, participants were shown images of flowers. For the second period, the image pictured a pair of eyes. Their results demonstrated that in the glaring eyes condition, the level of contribution to the "honesty" box was almost three times higher than in the flower condition. Bateson et al. suggest that the image of a pair of eyes encourages prosocial

behavior as it evokes a feeling of being watched. This implied relationship between social gaze and unconscious perception is supported by neuroscientific research (Emery, 2000; Haxby, Hoffman, & Gobbini, 2000) Further behavioral economic experiments by Haley and Fessler (2005) and Zhong et al. (2010) illustrate that despite constant anonymity, the mere feeling of being observed decreases dishonest behavior.

Apart from perceived supervision by humans, Bering et al. (2005) and Shariff and Norenzayan (2007) illustrated that supernatural primes, such as the belief in an observing ghost, can also promote ethical behavior. Similar effects have also been found for robots that were designed to convey social presence (Hoffman et al., 2015).

In conclusion, it can be hypothesized that the feeling of being watched by others decreases unethical behavior as it highlights social norms, restricts categorization and undermines a sense of anonymity. Accordingly, the following hypothesis is derived:

(H2) *Given the possibility to lie for monetary rewards, perceived supervision inhibits dishonest SID behavior by employees in EIS.*

3.2.3.3 Watching Others Behave Dishonestly

According to the Broken Windows Theory (Wilson & Kelling, 1982), people are more tempted to break a window of a building when it already has a few broken windows. Wilson and Killing, therefore, argue that further vandalism can be prevented by repairing the broken windows right away. Generally speaking, the authors suggest to act immediately upon crimes even though they might appear neglectable as not doing so may encourage further, possibly worse unethical behavior (Ariely, 2012, pp. 191–217).

Although not scientifically proven, Gino et al. (2009; 2012; 2013) adopted the fundamental idea of the Broken Windows Theory and examined whether dishonesty may underlie a similar logic. With the goal of assessing how other people who behave dishonestly may impact another person's actions, their research considers different sources of interpersonal influence on unethical behavior (Gino et al., 2009; Moore & Gino, 2013).

First, a person may reconsider the probability of being caught when others appear to get away with behaving dishonestly. In line with the rational model of crime, dishonesty would

increase as perceived risks decrease. For instance, a student who observes other students cheating in an exam may re-estimate the risk of getting caught and consequently be more likely to behave dishonestly. Despite this compelling logic, Gino et al.'s findings suggest that risk considerations do not affect the impact of other's unethical behavior on the observer's actions.

However, socio-psychological mechanisms may come into play when others behave dishonestly. Considering that social norms have been found to guide human behavior (Robert B. Cialdini, Kallgren, & Reno, 1991), a change of a person's general expectations towards a particular behavior through others may have a significant influence on dishonesty. Eager to act in conformity with social norms, people are found to be constantly looking for external social cues (Bettenhausen & Murnighan, 1985). In other words, "one means we use to determine what is correct is to find out what other people think is correct" (R. B. Cialdini, 1993, p. 116). Thus, the action or inaction of others in a specific situation can shape people's "moral compass" by providing proof which behavior can be considered socially acceptable so that a positive self-concept can be maintained (Bandura, Ross, & Ross, 1961, 1963).

However, the social proof mechanism appears to be dependent on another related interpersonal process. Social categorization, i.e., the differentiation of in-group and out-group members based on similarity, defines the extent to which we identify with others. Building upon the social identity theory (Tajfel, 1982), various studies suggest in-group behavior to have a stronger impact on people's social norms than out-group actions (Goldstein, Cialdini, & Griskevicius, 2008; Hornstein, Fisch, & Holmes, 1968; Wenzel, 2005). Consequently, people tend to imitate in-group behavior and may distance themselves from out-group behavior. In line with this notion, studies have proven that watching in-group participants cheat increases the dishonest behavior of the observer. Conversely, it was shown that out-group cheating decreases the level of dishonesty (Gino et al., 2009; Gino & Galinsky, 2012).

Considering that peer influence seems to constitute a decisive factor for dishonest behavior, the following hypothesis is formulated:

(H3) *Given the possibility to lie for monetary rewards, watching other employees behave dishonestly increases the dishonest SID behavior of observing employees in EIS.*

3.2.3.4 State Self-control Capacity (Ego Depletion)

Self-control refers to the current "ability to override or change one's inner responses, as well as to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them" (Tangney, Baumeister, & Boone, 2004, p. 274). Thus, self-control empowers individuals to resist short-term temptations and thereby bring their behavior in harmony with longer-term goals and social norms (Carver & Scheier, 1981; Gino, Schweitzer, Mead, & Ariely, 2011; Heatherton, T. F., & Tice, 1994).

According to the strength model of self-control (Baumeister, Vohs, & Tice, 2007), the exertion of self-control draws from a common yet limited pool of resources in the short term (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Similar to a muscle losing strength after each contraction, a person's capability to self-control decreases with each act of self-regulation, consequently impairing subsequent acts of self-control. This short-term adverse effect of exerting self-control in a previous situation on a subsequent, ostensibly unrelated self-regulation task is known as *ego depletion* (Baumeister et al., 2007; Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009). Studies demonstrated the impact of ego depletion in various domains strengthening the external validity of the model (Gino et al., 2011). For instance, Shiv and Fedorikhin (1999) showed that consumer decisions tend to be guided more by affective dimensions than by cognition when a consumer's processing resources are limited.

Examining the importance of self-control on antisocial behavior, Gottfredson and Hirschi (1990) assert that one's capacity for self-control represents the most crucial element of criminal behavior. Considering the motivational conflict an individual faces given the opportunity to behave dishonestly, the situational capability to self-control may be playing a decisive role in resisting the temptation of gaining external rewards (Mead et al., 2009). Following this rationale, Mead et al. (2009) and Gino et al. (2011) examined the relationship between ego depletion and lying. Results consistently suggest that lying increases when people's self-control capacity is impaired. Resisting the temptation to lie was found to both require and consume participant's self-regulation resources. Additionally, their experimental studies show that depleted participants tend to expose themselves more to contexts in which they are tempted to behave dishonestly. Adopting the notion of ego depletion, Kouchaki and Smith (2014) carried out a study to assess whether time during the day has a significant influence on behaving unethically. Their results support their

hypothesis that self-control resources decrease throughout the day. As a result, participants are found to cheat more in the afternoon than in the morning.

With respect to the research objective, the following hypothesis is derived:

(H4) *Given the possibility to lie for monetary rewards, employees with lower state self-control capacity are more likely to engage in dishonest SID behavior in EIS.*

All derived research hypotheses associated with the set of constructs in focus are summarized in Table 2.

H#	Hypothesis
H1	Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS increases as the probability of getting caught decreases.
H2	Given the possibility to lie for monetary rewards, perceived supervision inhibits dishonest SID behavior by employees in EIS.
H3	Given the possibility to lie for monetary rewards, watching other employees behave dishonestly increases the dishonest SID behavior of observing employees in EIS.
H4	Given the possibility to lie for monetary rewards, employees with lower state self-control capacity are more likely to engage in dishonest SID behavior in EIS.

Table 2
Overview of Derived Hypotheses

4 Methodology

The following section explains the methodological choices made in order to answer the research question. Accordingly, the first section outlines the underlying research philosophy, approach, and strategy. Furthermore, a detailed description of the selected research methods is provided in Section 4.2.

4.1 Research Design

4.1.1 Research Philosophy

Considering the overall research objective, namely assessing how specific factors influence dishonest SID behavior in an EIS context, a quantitative, explanatory approach aligning with the *positivist view* is chosen. Following the stance of a natural scientist, this study assumes that credible and meaningful knowledge creation requires observable and measurable human behavior (Crotty, 1998). Hence, dishonesty is viewed as an objective and quantifiable phenomenon. Following a highly-structured methodology, the predefined hypotheses are tested using a strictly scientific empiricist data collection and causal analysis (Gill & Johnson, 2010). In line with the objective axiology, the researcher thereby constantly seeks to remain neutral in order to yield pure facts that are not influenced by human bias or interpretation (Crotty, 1998; Saunders, Lewis, & Thornhill, 2016, pp. 135–138).

4.1.2 Research Approach

With the goal of examining relationships between influencing factors and dishonest SID behavior (dependent variable; DV), relevant constructs are identified by reviewing the existing literature. Following a *deductive approach* towards theory development, hypotheses are derived with respect to relevant findings of previous research and the self-concept maintenance theory. Thereafter, the extracted hypotheses are tested by means of a *quantitative study*[3]. As a result, the hypotheses and thus, their underlying theory can be either confirmed, in whole or part, or rejected (Saunders et al., 2016, pp. 144–145).

3 Additionally, a marginal amount of qualitative data is gathered providing supplementary guidance concerning the interpretation of the quantitative data. Since the qualitative part represents a mere fraction of this study, it does not justify a separate qualitative analysis.

4.1.3 Research Strategy

In many cases, lying constitutes a human behavior that is difficult to identify because it involves illegal or at least morally reprehensible actions. Thus, most people try to hide such behavior (Jacobsen et al., 2018). Considering this distinctive nature of lying, especially in the sensitive research context of EIS, this study implements an *experimental survey strategy*. Since the explicit disclosure of lying by employees is unlikely and may lead to ambiguous results regarding causal relationships, experimental elements are used to control independent variables and accurately identify dishonesty preferences (Cavanaugh & Fritzsche, 1985)[4]. Moreover, this mixed strategy was chosen because it combines two valuable propositions: a rigorous examination of the likelihood of change in an independent variable causing a change in dishonest SID behavior (experiment), and an efficient and scalable collection of standardized data (survey).

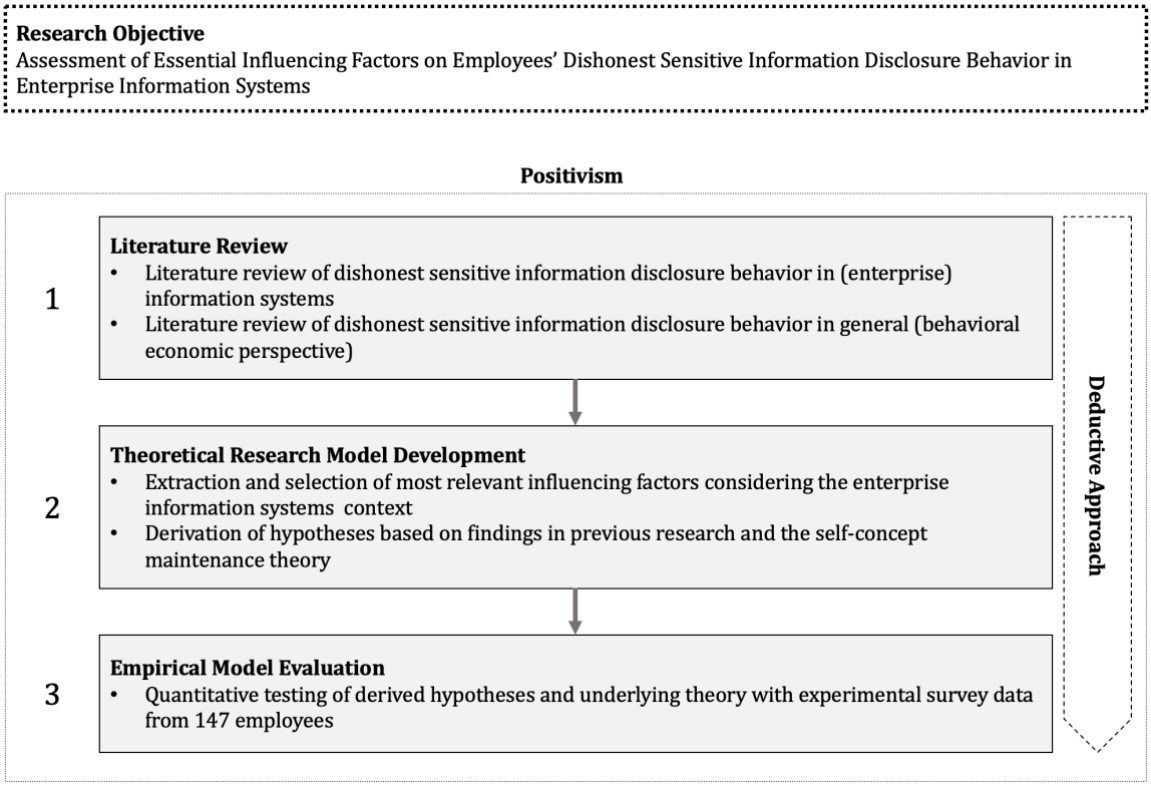

Figure 3
Research Design

[4] The way the present study deals with the challenge of capturing dishonest behavior is addressed in more detail in Section 4.2.

In line with the experimental strategy, this study anticipates the existence of relationships between variables in the form of hypotheses (see 4.2.3.2). These predictions are subsequently tested statistically. Consequently, this work employs a set of predictive hypotheses rather than open research questions (Saunders et al., 2016, pp. 178–182).

The research design is summarized in Figure 3.

4.2 Research Method

The research method aims to test the hypothesized causal relationships between independent variables (the probability of getting caught, perceived supervision, watching others behave dishonestly, and state self-control capacity) and the dependent variable, dishonest SID behavior in a natural EIS scenario. Yet, the methodological choice for studying dishonesty in a natural field environment emerged to be a challenging task. Examining the subject in a real-life context by means of non-experimental methods, for instance, questionnaires, may promote external validity. Testing causal hypotheses, however, is notoriously difficult as these methods often lack control over relevant variables. In contrast, experiments in laboratory environments enable precise measurements and allow researchers to include relevant variables while excluding confounding factors, consequently maximizing internal validity. Yet, external validity presents a common weakness of these methods. Considering these trade-offs with respect to the research context, a *natural field experiment approach* was pursued to study dishonesty.

However, conducting experiments about dishonesty in an EIS context involves certain practical and ethical challenges, for instance, data protection concerns concerning information needed to identify lying and limited possibilities to implement certain measures for manipulating independent variables. In order to face these challenges of classical experiments, an *experimental vignette method* was chosen as suggested by Aguinis et al. (2014). A *vignette* can be defined as a ‘‘a short, carefully constructed description of a person, object, or situation, representing a systematic combination of characteristics’’ (Atzmüller & Steiner, 2010, p. 128)[5]. An experimental vignette study is particularly useful when there is a need to control variables to collect evidence concerning causation, but experimental manipulation in a natural setting is difficult due to practical or ethical

5 See, for instance, an explanatory vignette study by Sauer (2011)

manners (Pierce, Aguinis, & Adams, 2000). Hence, hypothetical scenarios are used to examine factors influencing the sensitive topic of dishonesty in an experimentally controlled but natural setting.

In the interest of traceability and replicability, the following subsections describe the process of designing and implementing the quantitative vignette study in detail (Aguinis & Bradley, 2014). Moreover, the quantitative data preparation and analysis is outlined.

4.2.1 Design and Materials

4.2.1.1 Determining the Vignette Population

The first step in designing a vignette study is determining the vignette population, which will be shown to participants for explicit response eliciting their attitudes regarding dishonest SID behavior. For this purpose, the number and levels of the manipulated factors under investigation need to be defined according to the predicted causal relationships (Aguinis & Bradley, 2014; Atzmüller & Steiner, 2010). Considering the set of hypotheses derived from the existing literature, the vignette population is constructed by means of a 1 x 3 x 2 factorial vignette design, with one dependent variable (A) comprising one level and three independent variables (B) including two levels (C). Table 3 illustrates the resulting factorial vignette matrix (Atzmüller & Steiner, 2010).

It should be noted that the independent variable, *state self-control capacity*, is excluded from the vignette study since it constitutes a characteristic individual to the participant and remains approximately constant throughout the experimental vignette part[6]. Consequently, another experimental task is used to measure the construct (see 4.2.3.2).

	Perceived Supervision ($B = b_0$)		Watching Others Behave Dishonestly ($B = b_1$)		Probability of Getting Caught ($B = b_2$)	
	Constant ($c = c_0$)	Increased ($c = c_1$)	Absent ($c = c_0$)	Present ($c = c_1$)	Constant ($c = c_0$)	Increased ($c = c_1$)
Dishonest SID Behavior Yielding Monetary Rewards ($A = a_0$)	a_0,b_0,c_0	a_0,b_0,c_1	a_0,b_1,c_0	a_0,b_1,c_1	a_0,b_2,c_0	a_0,b_2,c_1

Table 3
Factorial Vignette Matrix

[6] Potential fluctuations in self-control capacity are addressed through randomization of the order vignettes are presented to the participant. See also Subsection 4.2.4.

By implementing a control scenario (a_0,b_{0-2},c_0) comprising a_0,b_0,c_0 , a_0,b_1,c_0, and a_0,b_2,c_0, the vignette population can be reduced from six to four vignettes. The remaining four scenarios are illustrated in Table 4.

	Scenario 1* (a_0,b_{0-2},c_0)	Scenario 2 (a_0,b_0,c_1)	Scenario 3 (a_0,b_1,c_1)	Scenario 4 (a_0,b_2,c_1)
Perceived Supervision (IV)	Constant (marginal)	**Increased**	Constant (marginal)	Constant (marginal)
Watching other behave dishonestly (IV)	Absent	Absent	**Present**	Absent
Probability of getting caught (IV)	Constant (marginal)	Constant (marginal)	Constant (marginal)	**Increased**
Dishonest SID Behavior Yielding Monetary Rewards (DP)	Consistent (present)	Consistent (present)	Consistent (present)	Consistent (present)

*Control Scenario

Table 4
Overview of Vignette Population and Manipulated Variables

Hereafter, the scenarios are labeled according to their manipulated construct:

- Scenario 1 - *Control Scenario*
- Scenario 2 - *Supervision Scenario*
- Scenario 3 - *Watching Others Scenario*
- Scenario 4 - *Getting Caught Scenario*

4.2.1.2 Construction of Vignettes

4.2.1.2.1 Setting

Before constructing the four hypothetical scenarios, a concrete setting describing an explicit dishonest SID behavior in an EIS context is defined. Focusing on individual decisions to act dishonestly, this vignette study examines hourly-paid working students' reporting of working hours via a digital time recording system. The setting is chosen for a number of reasons. First, it clearly addresses the disclosure of sensitive information to the employer represented by the respective manager through an information system. In addition to the

digital time recording system, the setting provides the option to include complementary software, such as automatic working activity tracking systems. Second, reporting more hours than actually worked is unambiguously viewed as dishonest. Third, engaging in such behavior obviously yields a quantifiable, monetary reward. Fourth, time reporting represents a frequent practice for many professionals, such as freelancers, lawyers, or accountants who often bill their clients by the hour. With respect to an appropriate sample selection, working students may also be less reserved compared to other full-time employees who might fear to lose their job and thus, for instance, not being able to support their family.

Although vignettes are often presented in written format, videos or other forms of media can be used to enhance the level of immersion and thereby increase realism, i.e., the similarity between the experimental and the natural setting. Participants consuming more immersive vignettes are found to be more engaged, allowing them to remember specific features and differences between the scenario more easily (Aguinis & Bradley, 2014; Hughes & Huby, 2002). Therefore, the constructed vignettes are presented by means of 1-2-minute animation videos (see Appendix III) which were produced with the video animation tool Vyond Studio[7].

4.2.1.2.2 Overview

Each vignette introduces the participants to a different hourly-paid student assistant who is working about two days per week at a software firm. All students are working for a different organization. At the end of each day, the students are supposed to record their actual working hours in a digital time recording system. Nevertheless, each student reports an additional 30 minutes of working time that day. The students are paid at the beginning of the month given that the respective manager approved the recorded hours at month-end. Lately, their employer introduced a new workplace analytics tool that tracks employee's everyday working activities based on calendar entries, usage of email, and other business applications[8]. The tracked activity time matches the students' actual working hours. Although the workplace analytics software tracks working activities for all students in the

7 https://www.vyond.com/

8 For instance, Microsoft Workplace Analytics (https://products.office.com/en-US/business/workplace-analytics?ms.officeurl=workplaceanalytics)

same manner, their companies follow different approaches towards using the analytics tool and recording working time in general.

4.2.1.2.3 Manipulations

In the following, manipulations of the independent variables with two levels each are outlined.

Perceived Supervision (B_0)

In order to increase perceived supervision (a_0,b_0,c_1), all working students of one company have to record their hours via a large touch screen that is installed in an open office space. In contrast to the other vignettes in which the students fill in their working hours on their personal computers alone at their desks, the students in this company are likely to be watched by other colleagues. In other words, the feeling of being watched by others is increased through a broader exposure of social presence (Ariely, 2012, pp. 217–237).

Watching Others Behave Dishonestly (B_1)

This variable is manipulated by simply stating that it is known among the student workers at the respective company that other students record longer working hours than they have worked. By referring to other students' behavior, the scenario aims to present the dishonest act as an in-group behavior (Gino et al., 2009; Moore & Gino, 2013). In all other scenarios, dishonest behavior by others is not mentioned and thus, implicitly assumed to be absent. The absence, however, is not explicitly stated to avoid an increase in the salience of dishonesty which is found to influence lying (Gino & Galinsky, 2012).

Probability of Getting Caught (B_2)

In all vignettes, the reporting-line manager is a frequent traveler and thus, not able to track working hours in person. An increase in the probability of being caught is achieved by providing the manager with access to the student's workplace analytics, including recorded activity time. Consequently, it is more likely that the student gets caught by the manager compared to the other scenarios in which the workplace analytics tool is solely open to the respective student. In order to avoid an increase in the probability of getting caught when students report their hours via a touchscreen in front of colleagues who might tell the manager (see Perceived Supervision B_0), it is explicitly stated that other colleagues would never tell the respective manager.

4.2.1.3 Experimental Design

Since time represents a scarce resource in an organizational context and presenting too many vignettes may lead to information overload, a *mixed research design* decreasing the size of the vignette subpopulation, i.e., the number of scenarios presented to each participant is chosen. In a mixed approach, different groups of participants are assigned to different vignette subpopulations. Within a group, respondents are shown the same vignettes. As a result, more scenarios and thereby, variables can be tested without giving up the opportunity to make comparisons between vignettes within the same person. A pure between-subject approach was rejected as participants' judgments may not be accurately reflected when no other vignettes are given as a reference point (Aguinis & Bradley, 2014; Atzmüller & Steiner, 2010).

In this vignette study, three scenarios are presented to each participant. While the *Control Scenario* and *Supervision Scenario* are tested within-subjects, the remaining vignettes are implemented between-subjects. Consequently, participants are randomly assigned to either vignette subpopulation SP1 ($a_0,b_{0\text{-}2},c_0$, a_0,b_0,c_1, and a_0,b_1,c_1), or SP2 ($a_0,b_{0\text{-}2},c_0$, a_0,b_0,c_1, and a_0,b_2,c_1) as shown in Table 5.

	Control Scenario ($a_0,b_{0\text{-}2},c_0$)	Supervision Scenario (a_0,b_0,c_1)	Watching Others Scenario (a_0,b_1,c_1)	Getting Caught Scenario (a_0,b_2,c_1)
Subpopulation SP1	x	x	x	
Subpopulation SP2	x	x		x

Table 5
Mixed Vignette Design with Two Subpopulations with Each Three Vignettes

4.2.2 Participants

To ensure a high level of realism, this study focuses on participants who are familiar with the situations presented in the experimental vignettes. Hence, the ideal participant constitutes an hourly-paid student who is working either alongside or as part of his or her study program at a software company that uses a digital time recording system. Considering these criteria, empirical research is conducted in a multinational software company in which the majority of students are required to record their working hours via a digital reporting system. Students employed at the company include interns, working students as

well as thesis, doctoral and vocational students. In total, 151 students from 11 countries in Europe and North America were recruited. Predominant locations were the United States of America and Germany which correspond approximately with the biggest locations of the case company. 114 students are paid on an hourly basis and consequently have to report their hours. Notwithstanding, the remaining participants have eventually not been discarded due to the mixed research design and related adequate sample size needed to achieve sufficient statistical power (see Subsection 4.2.7 and Chapter 5).

4.2.3 Measures

4.2.3.1 Dishonesty Measurement

The design of the dishonesty measure seeks to induce participants to respond in a way that elicits how they would have behaved in that specific situation. For this purpose, respondents are presented with the following question after each scenario:

"What do you think? How comfortable would other student workers you know be about recording 8 instead of 7.5 hours in student X's case?"

The study intentionally does not ask participants to state how comfortable they feel or what they would have done. The reason for this is that self-assessments of one's own dishonest behavior are found to be highly prone to biases, notably concerning social desirability, since it is "easier for subjects to misrepresent their attitudes than to misrepresent what behavior they have or have not engaged in" (Fernandes & Randall, 1992, p. 191). This bias can also not be reduced to an adequate extent by anonymity (Fernandes & Randall, 1992; Randall & Fernandes, 1991; Wason, Polonsky, & Hyman, 2002). Therefore, this study implements a questioning method suggested by Ariely (2012, pp. 191–217) in which participants are asked to estimate the level of comfort of other in-group members concerning a specific dishonest behavior and thereby elicit one's own attitude towards the behavior. A 7-point Likert scale (from 1 extremely uncomfortable to 7 extremely comfortable) is used to measure the level of comfort with dishonesty (Dawes, 2008).

4.2.3.2 State Self-control Capacity Measurement

Based on the work of Singh and Göritz (2019), this study adopts a modified version of the frequently used color-naming *Stroop task* (MacLeod, 1991) to measure participants' state self-control capacity (Hagger, Wood, Stiff, & Chatzisarantis, 2010). In a Stroop task,

respondents are asked to correctly identify the colors that words are displayed in as quickly as possible. The words themselves are color words. In case the ink color and the color word differ, for instance, the word “blue” is displayed in red, participants have to resist the temptation of selecting the color word. In other words, the incongruence between word meaning and displayed color (incongruent trial) causes an interference of the stimuli ink color. Trials in which word meaning and displayed color are the same are labeled congruent.

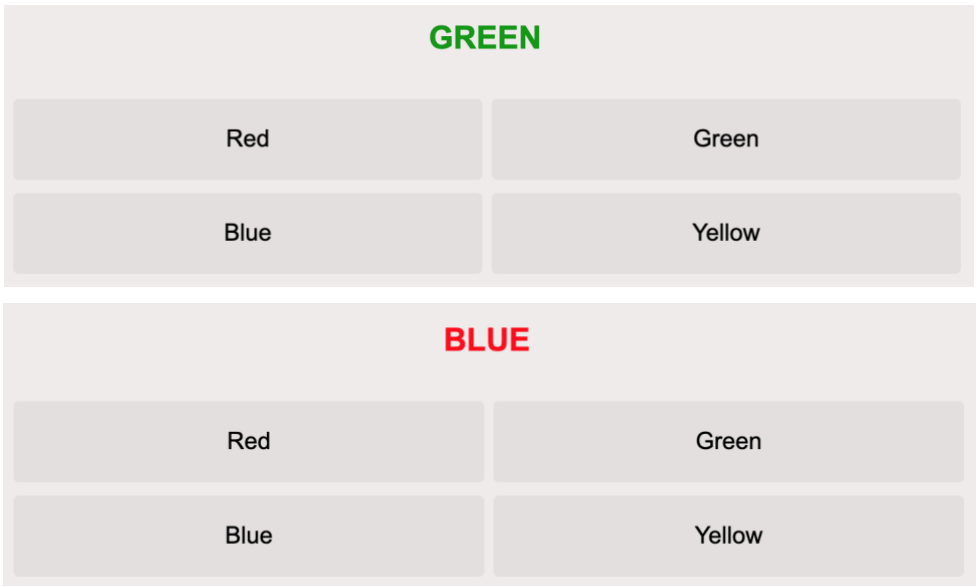

Figure 4
Example of a Congruent and an Incongruent Trial

With the goal of emphasizing speed, each trial is displayed for a maximum of 3 seconds and auto advances thereafter. The next trial is presented subsequent to a response or in case the maximum time elapsed. Answers cannot be corrected. Below the trial word, a 2 x 2 grid of buttons labeled with the four colors is displayed. Participants are asked to enter the color of the trial word while ignoring its meaning by selecting one of the four buttons. Figure 4 illustrates an example of a congruent (“GREEN” displayed in green; correct answer: green) and an incongruent trial (“BLUE” displayed in red; correct answer: red). The overall exercise comprised 36 trials, of which 18 were congruent, and the other half were incongruent. Colors that the words are displayed in are equally distributed. In the classical Stroop task, participants are presented with two separate blocks of trials without mixing congruent and incongruent ones. To enhance engagement, in this study, however, congruent and incongruent trials are presented in random order. Moreover, the randomization of trials

supports a more accurate measurement of current self-control capacity due to its increased difficulty (Singh & Göritz, 2019).

In order to measure participants' state self-control capacity, two measures can be considered: reaction times and error rates. This study uses aggregated reaction times over error rates because participants of exercises with relatively few trials tend to make almost no errors. Moreover, aggregated reaction times provide a more fine-grained measure. To exclude potential noise from incorrect answers in which participants treat incongruent trials as congruent ones, only reaction times from correct answers are considered.

The classical Stroop task focuses on the difference between aggregated congruent and incongruent reaction times. It suggests that ego depletion leads to an increased difference between the two measures as participants are confronted with of the stimuli ink color by the stimuli word meaning when responding to an incongruent trial. Yet, the randomization of trials in this study demands participants' self-control for both congruent and incongruent trials (Logan & Zbrodoff, 1979). The reason for this is that participants follow different strategies depending on the trial type. When confronted with an incongruent trial, respondents try to suppress the word meaning in order to ignore the interference and thus, quickly identify the ink color. In congruent trials, participants are more likely to base their decision on the word meaning (Bugg, Jacoby, & Toth, 2008). Since participants of a mixed, randomized task cannot anticipate whether the next trial is congruent or incongruent, they first need to identify the trial type in order to decide which strategy to apply. Consequently, a mixed Stroop task further requires self-control with regard to task switching (A. L. Cohen, Bayer, Jaudas, & Gollwitzer, 2008). Hence, all three measures of reaction times may be considered.

Studies (Singh & Göritz, 2019) examining randomized, mixed tasks show that both congruent and incongruent reaction times increase with ego depletion. The difference of both, however, is not found to be decisive. Therefore, this study uses aggregated reaction times of both correct congruent and incongruent trials as measures for state self-control capacity.

4.2.4 Procedure

Participants of this study were recruited by means of homogeneous sampling targeting students working at the case company. For this purpose, invitations were sent out to 16 company-internal, student-related email distribution lists, as well as multiple WhatsApp

and Telegram groups. To exclude employees who still do not meet the required sample criteria, participants were asked to assure that they are students. Moreover, respondents were required to state whether they are paid hourly and thus, record their working hours.
The data was gathered in July 2019 by means of a survey[9] (see Appendix IV) which was developed with the Qualtrics Survey Platform. The use of a responsive[10], online survey facilitated an easy and scalable distribution and increased realism by enabling participation in the examined natural environment. With the goal of maintaining similar conditions throughout the survey, a single session approach is implemented. The comparability of vignette responses is of particular importance with respect to the measured state self-control capacity (Aguinis & Bradley, 2014).
At the beginning of the survey, participants were informed that responses are treated completely anonymous, and data is solely collected for academic reasons without being distributed to the case company. These measures were taken to address the sensitivity of the research context and reduce potential response biases. For instance, participants may fear great consequences in case personal information associated with the research topic becomes available to the employer.

Prior to the experimental vignette study, participants had the option to disclosure their country of residence. Moreover, respondents were asked to indicate which gender they identify most with. To maintain anonymity, participants were assured that this data is not collected by the survey tool and solely used to adjust the survey flow of the vignette study.
In the very beginning, respondents were introduced to the overall setting by means of a short animation video[11]. Thereafter, participants were randomly assigned to one of the two vignette subpopulations (SP1; SP2). Considering a potential question order bias, the order of the three scenarios shown to each participant is randomized. Depending on the indicated gender, protagonists of the animated vignette videos presented were either female or male. The idea behind this segmentation is that participants who identify most with a female (resp. male) person have an easier time to put themselves in the perspective of a female (resp. male) protagonist. Following each video vignette, respondents indicated the level of comfort other students they know, may experience in the presented scenario on a 7-point

9 Link to Survey: https://copenhagenbusiness.eu.qualtrics.com/jfe/form/SV_5aJ4Y6Wg3DEmP1b
10 Depending on the device type, the survey is either optimized for personal computers or mobile devices.
11 Comparable to the information given in 4.2.1.2.2

Likert scale (see 4.2.3.1). Additionally, participants were given a text entry option to explain their thought process.

Subsequent to the vignette study, an instruction of the Stroop task is provided. To verify whether the task is correctly understood, a congruent and incongruent practice trial is given, followed by an explanation of the correct answer. Thereafter, participants start with the actual exercises consisting of 36 trials. While the importance of speed is emphasized beforehand, the reaction time recording is not visible during the task to prevent distraction. After completing the exercise, error rates are displayed to the participant. Due to a lack of features in the survey tool, reaction times could not be presented straight away. At the very end of the survey, participants were informed about the research topic.

4.2.5 Validity and Reliability Assessment

As already touched upon at the very beginning of this chapter, quantitative vignette studies bring together ideas from classical experiments and surveys to offset each method's weaknesses. While experiments are associated with high internal validity, survey methodologies allow for high external validity. Since the weakness of one method can be complemented by the strength of the other, vignette studies can offer both high internal validity and high external validity (Atzmüller & Steiner, 2010). However, a number of scholars (Cullen, 2010; Faia, 1980; Stolte, 1994) have emphasized the potential drawbacks of a vignette methodology (Evans et al., 2015). Therefore, this section illustrates the validity and reliability assessment of the methods used.

4.2.5.1 Construct Validity

To ensure high construct validity, questions and tests used as measures of this study build upon relevant findings from previous research. With regard to the independent variable state self-control capacity, the Stroop task is implemented since it constitutes an extensively studied and frequently used task to measure self-control. To sustain the accuracy and fine-granularity of the measure in a time-limited context, the original task is modified based on a recent study by Singh and Göritz (2019) (see 4.2.3.2).

The existing pool of literature on measuring dishonesty, on the other hand, is scarce and focuses on generic tasks in laboratory experiments. These measures, however, cannot be applied to a concrete dishonest SID behavior in a natural context, such as inaccurate time reporting. Self-assessment measures of one's own behavior were also neglected due to

validity concerns highlighted by various scholars. As a result, a questioning method focusing on the assessment of peer behavior by Ariely (Ariely, 2012, pp. 191–217) is implemented. Yet, no further research has investigated the validity of this approach in a natural environment (see Subsection 3.2.1). Even though this approach was found to be the most appropriate measure given the research context, construct validity issues need to be considered. Furthermore, it should be noted that the 7-point Likert response scale suggests a utilitarian judgment of dishonest behavior and does not allow for further explanation (Hyman & Steiner, 1996). To address this issue, participants were provided with the option to outline their thoughts after rating each scenario. Hence, participants who categorically refuse any form of lying and thus, consistently indicate a low comfort level may be identified (Wason et al., 2002).

Additionally, the vignette survey was pilot tested by other students who are also working alongside their studies. Respondents (n=5) provided feedback concerning the clarity of questions and instructions so that potential issues with respect to the understanding or answering of questions could be resolved beforehand. The initial dishonesty measure question, for instance, contained the term "average working student", which lead to a lot of confusion. Hence, it was changed to "other students you know", which proved to be much clearer to students (Saunders et al., 2016, p. 473).

4.2.5.2 Internal Validity

As the internal validity of this study largely depends upon the successful manipulation of each construct in the respective scenario, this subsection also examines to which extent the vignette design reflects the intended change in the independent variables.

Even though IS research concerning the implementation of the predefined variable manipulation is scarce, findings of previous social studies could be transferred to the examined setting (see 4.2.1.2.3). In particular, simulating an increase or presence of the examined constructs builds upon various empirical evidence. Establishing an absence of constructs, however, proved to be difficult in some cases. Since the mere mentioning of not watching others behave dishonestly may lead to including confounding factors, such as moral reminders, the absence is assumed in all other vignettes (*Control, Supervision, Getting Caught*). Hence, not knowing about other people cheating is implied to be the usual case. Moreover, it should be noted that the design of the *Getting Caught Scenario* simulating an increase in the likelihood of getting caught may further impact the perceived level of

supervision. Notwithstanding, it can be concluded that the scenarios approximately reflect the intended variable manipulations.

Due to the implementation of a control scenario, the impact of many confounding factors on within-subject comparisons may be less severe[12]. For instance, in the case of cultural differences between participants (see Subsection 4.2.2), responses may be influenced, but since all scenarios are likely to be impacted to a similar extent, the distortion may be negligible. To reduce the noise of factors varying throughout the study, for example, the construct 'one immoral act', the order of vignettes is randomized. Additionally, this survey followed a single session approach to ensure similar conditions and thus, address potential threats to validity, for instance, related to the time of the day (see Subsection 4.2.4).

Due to a missing reference point with respect to state self-control capacity, the relationship between dishonesty and self-control capacity is more prone to potential biases, especially in the light of non-probability sampling. Yet, overall, a number of measures are implemented to limit the influence of confounding factors.

4.2.5.3 External Validity

With respect to external validity, two aspects need to be considered: The extent to which findings can be generalized to other people and the transferability of results to other relevant real-world situations (Saunders et al., 2016, pp. 202–204).

Although the homogenous sampling ensured that participants are familiar with the presented scenarios, it cannot be concluded that the sample is generalizable to a larger population (Aiman-Smith, Scullen, & Barr, 2002). Due to the indispensable anonymity of responses, the sample cannot be assessed in hindsight by means of demographic data. Notwithstanding, participants are not likely to be representative of the company's employees or beyond since students represent only a minority of the total workforce. Even though respondents have been employed in at least 11 countries within Europe and North America, including two of the three largest locations, the geographical distribution is not representative in the light of regional offices in over 150 countries (Aguinis & Bradley, 2014). Ensuring generalizability to a larger population by sampling through a selected distribution of the survey to a representative group of employees turned out to be infeasible due to company-internal data protection policies.

12 Assuming the same magnitude across all scenarios.

Moreover, vignette studies are frequently criticized for providing unrealistic scenarios (Hughes & Huby, 2002). Especially, purely attribute-driven vignette designs in which variables in focus are implemented in a way that they are uncorrelated to each other tend to produce hypothetical situations that cannot be easily generalized (Aguinis & Bradley, 2014). This study addresses these concerns by carefully selecting the examined variables (see Section 3.2) and consequently constructing the respective scenarios similar to real-world situations at the potential expense of forfeiting internal validity. Moreover, the level of realism is enhanced by presenting vignettes in the form of immersive animation videos (see 4.2.1.2.1). Summarizing, it should be noted that despite representativeness concerns, this study shows a higher external validity in comparison to most laboratory dishonesty experiments since it examines the topic in a natural environment.

4.2.5.4 Reliability

With the goal of enabling other researchers to assess and replicate this study's research process, all methods and procedures implemented are illustrated in detail. In addition, all experimental materials are made available for free to enhance transparency and reusability (Aguinis & Bradley, 2014).

Respondents' tendency to answer questions in a way that presents them in the best possible light is addressed by providing anonymity and reframing measures prone to social desirability, such as dishonest behavior (see 4.2.3.1). Moreover, demand characteristics are reduced by omitting any communication between the researcher and participants that might affect their expectations and perception of the experiment (Orne, 1996). Hence, the research purpose was not disclosed until the very end of the survey.

In line with the positivist view, results are treated objectively and considered as facts to reduce the influence of the researcher's personal opinions (Saunders et al., 2016, p. 203).

4.2.6 Data Preparation

The collected data set is cleaned and prepared for subsequent data analysis using Microsoft Excel and IBM SPSS Statistics. At first, all responses with a duration below 4 minutes (n=4) were discarded as finishing the survey in a shorter time frame is unrealistic considering the length of the animation videos and the Stroop task. Since different versions (mobile/desktop; female/male) of each scenario were implemented in the survey resulting in four identical table structures, comfort ratings and open text responses were merged into

a single table structure[13]. Furthermore, string dishonesty responses (extremely uncomfortable - extremely comfortable) were transformed into numeric values (1 - 7). Stroop task responses demonstrating an incongruent trial error rate above $\frac{5}{18}$ and hence, indicating a misunderstanding of the exercise were excluded. Reaction times of correct congruent and incongruent trials were aggregated. Thereafter, the arithmetic mean of each trial type was calculated. The cleaned data set can be found in Appendix V.

4.2.7 Data Analysis

4.2.7.1 Experimental Hypotheses

Since experimental studies build upon the formulation of two opposing hypotheses for statistical testing, Table 6 recapitulates the derived hypotheses from the existing literature accordingly. The *null hypothesis (H_0)* predicts the absence of a significant difference or relationship between variables. In case the null hypothesis is refuted as a result of the statistical analysis, the *alternative hypothesis (H_A)* is accepted indicating a significant difference or relationship between the variables tested (Saunders et al., 2016, p. 179).

Probability of Getting Caught	
$H1_0$	Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS *does not increase* as the probability of getting caught decreases.
$H1_A$	Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS *increases* as the probability of getting caught decreases.
Perceived Supervision	
$H2_0$	Given the possibility to lie for monetary rewards, perceived supervision *does not inhibit* dishonest SID behavior by employees in EIS.
$H2_A$	Given the possibility to lie for monetary rewards, perceived supervision *inhibits* dishonest SID behavior by employees in EIS.

[13] Total of 8 columns: Two columns for each scenario, one containing the rating, the other one containing the optional text response (thought process).

Watching Others Behave Dishonestly	
H3$_0$	Given the possibility to lie for monetary rewards, watching other employees behave dishonestly *does not increase* the dishonest SID behavior of observing employees in EIS.
H3$_A$	Given the possibility to lie for monetary rewards, watching other employees behave dishonestly *increases* the dishonest SID behavior of observing employees in EIS.
State Self-Control Capacity	
H4$_0$	Given the possibility to lie for monetary rewards, employees with lower state self-control capacity *are not more likely* to engage in dishonest SID behavior in EIS.
H4$_A$	Given the possibility to lie for monetary rewards, employees with lower self-control capacity *are more likely* to engage in dishonest SID behavior in EIS.

Table 6
Null and Alternative Hypotheses

4.2.7.2 Analysis of Vignette Study

This subsection describes the statistical tests used to determine if there is a significant difference in comfort with dishonest SID behavior between pairs of scenarios. The statistical analysis process and the related implementation in SPSS Statistics are inspired by Laerd Statistics (2015).

Since within a subpopulation participants are presented to the same vignettes, the effect of each influencing factor on comfort with dishonest SID behavior can be derived by comparing dishonesty ratings of each manipulated scenario with the *Control Scenario*. For instance, the effect of increased perceived supervision on comfort with dishonest SID behavior can be extracted by examining the difference in comfort between the *Supervision Scenario* and the *Control Scenario*.

In the light of the experimental design, comfort with dishonest SID behavior represents the independent variables measured at continuous, interval level. The independent variable of the model (categorical) specifies the type of scenario presented. Figure 5[14] illustrates the study design used for statistically testing.

[14] In this study, treatment/condition refers to the compared scenarios.

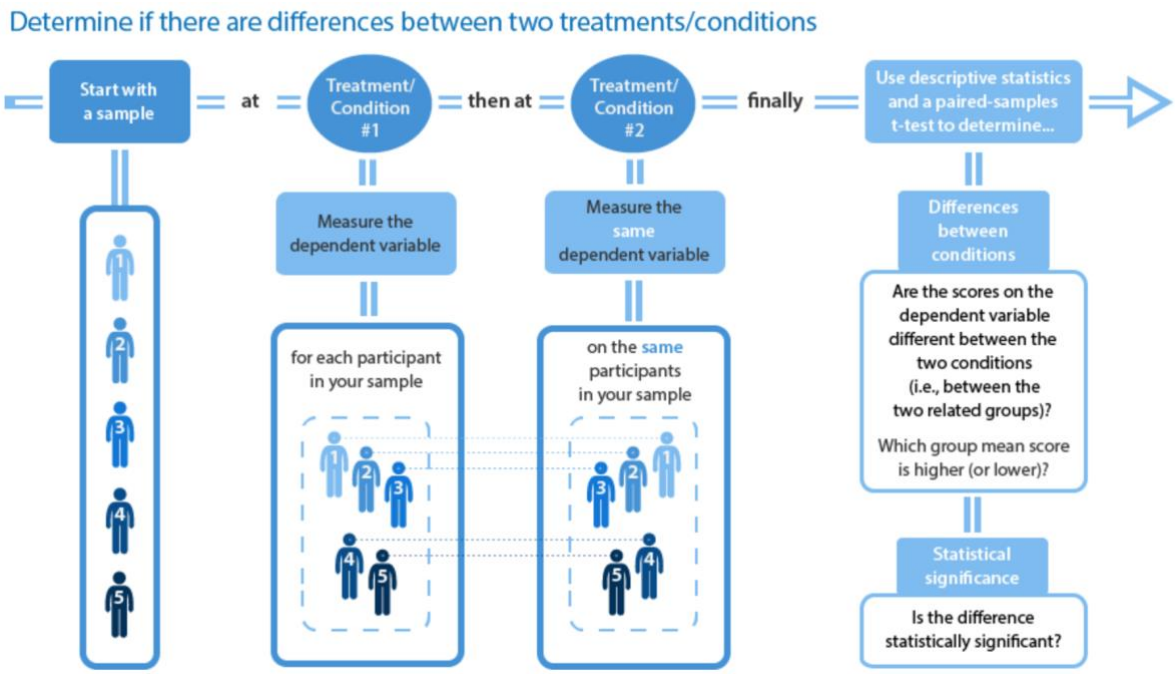

Figure 5
Study Design for Statistical Testing (Laerd Statistics, 2015)

A *paired-samples t-test* is used to determine whether there is a statistically significant difference ($\Delta \neq 0$) between two scenarios. Before running a paired t-test, two assumptions have to be met. First, there should be no extreme outliers in the difference between comfort scores of the two compared scenarios. Second, the distribution of these differences should be approximately normally distributed. For this purpose, the differences in comfort with dishonesty between the compared scenarios are calculated and stored in a new variable. Outliers are detected by means of a boxplot. Data points that are more than 3 box-length away from the edge of the box are considered extreme and thus, excluded from the analysis.

For example, when comparing the *Supervision Scenario* and the *Control Scenario,* 13 outliers were detected that are more than 1.5 box-lengths from the edge of the box in the boxplot (Figure 6). The inspection of their values revealed four of them to be extreme (*). The extreme outliers (24, diff. 5; 66, diff. 5; 88, diff. -4; 91, diff. 5) were removed from the analysis. The others were kept in the analysis.

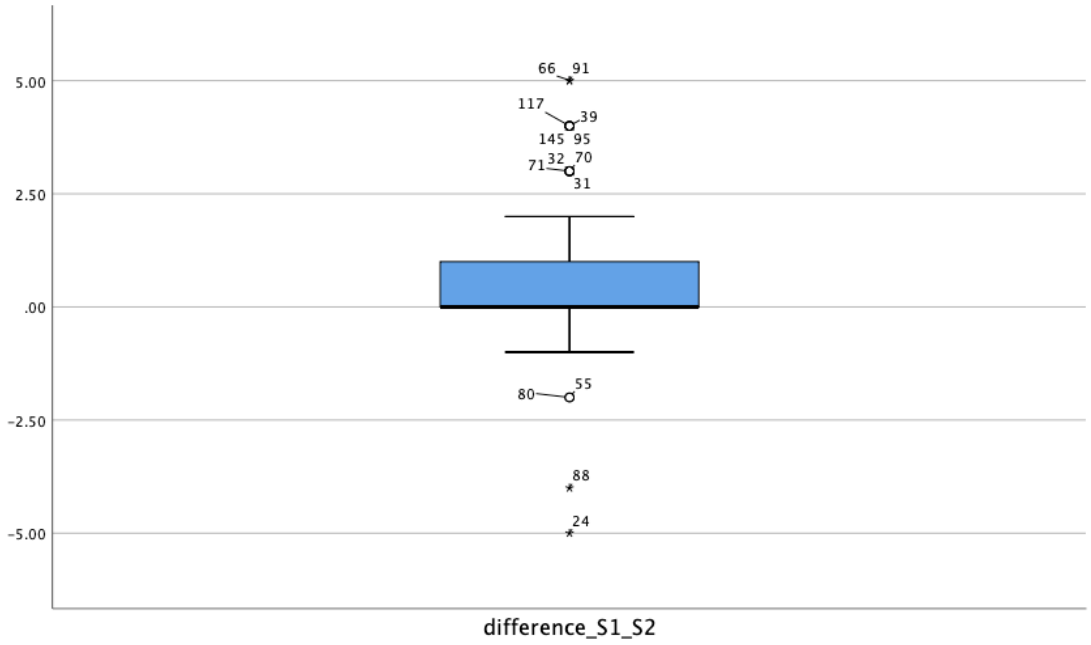

Figure 6
Boxplot (Control Scenario S1 and Supervision Scenario S2)

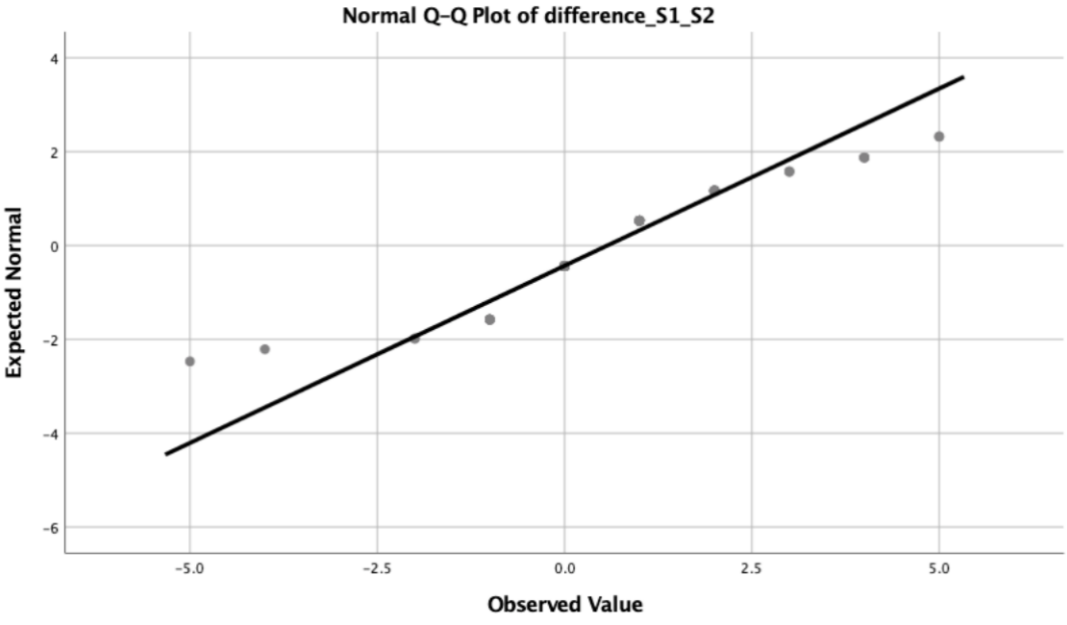

Figure 7
Normal Q-Q Plot (Control Scenario S1 and Supervision Scenario S2)

Considering the sample size (n > 50), the second assumption, normal distribution, is assessed by visual inspection of a Normal Q-Q Plot, a method that is particularly meaningful for larger samples. A normal distribution is given if the difference scores are approximately positioned along the diagonal line in the Normal Q-Q Plot. Figure 7 provides an example of the graphical method. As assessed by visual inspection of the Normal Q-Q Plot, it can be concluded that the differences in comfort scores for the *Control Scenario* (S1) and the *Supervision Scenario* (S2) are approximately normally distributed.

Provided that both assumptions are met (see Appendix VI for the SPSS output), a paired-samples t-test in SPSS Statistics is performed using a 95% confidence interval. To validate hypotheses H1-H3, each scenario (Supervision, Watching Others, Getting Caught) is pairwise compared to the *Control Scenario*. Accordingly, a number of three paired-sample t-test are performed. It should be noted that the sample size for within comparisons involving the Watching Others (n=70) or the *Getting Caught Scenario* (n=77) is reduced since these scenarios are only presented within one of the two subpopulations (See Table 5 in 4.2.1.3). Resulting descriptive statistics, the mean difference between the compared scenarios and related statistical significance are reported in Chapter 5.

4.2.7.3 Analysis of Stroop Task

To assess the strength and direction of the relationship between comfort with dishonest SID behavior (continuous) and the state self-control capacity[15] (continuous), both Pearson's product-moment correlation and Spearman's rank-order correlation are used by means of SPSS Statistics (Laerd Statistics, 2015). While Pearson's correlation evaluates a linear relationship between two continuous variables, Spearman's correlation is additionally performed to also examine monotonic relationships. In contrast to a linear relationship in which variables tend to change together at a constant rate, a monotonic relationship also includes cases in which the change rate is not always constant. Both correlations are computed despite the fact that the visual inspection of the respective scatterplots (see Appendix VI) did not indicate a linear or monotonic relationship between comfort with dishonest SID behavior and the state self-control capacity. This finding of the preliminary data analysis is further discussed in Chapter 6 (see Subsection 6.1.1).

15 The arithmetic mean of the two aggregated reaction time measures are tested (incongruent, congruent).

5 Results

In this chapter, the results of the statistical hypothesis testing are illustrated (Laerd Statistics, 2015). First, the results of the vignette comparisons and thus, the influence of manipulated variables on comfort with dishonest SID behavior are discussed. Thereafter, the correlational analysis results of the Stroop task data are outlined.

5.1 Vignette Study Results

5.1.1 Descriptive Statistics

As a first step, a descriptive analysis of dishonesty responses associated with each of the compared scenarios was conducted. As mentioned in Subsection 4.2.3.1, the level of comfort with dishonest SID behavior is measured by means of a 7-point Likert scale. Accordingly, a score of 1 indicates extreme discomfort. Conversely, extreme comfort is reflected by a score of 7. The mean comfort score and standard deviation are of particular interest as they reveal which scenario resulted in a higher/lower average comfort score and whether the variation in each scenario is similar. Table 7 illustrates the descriptive results for all scenarios. Since the vignette study follows a mixed approach and consequently includes two subpopulation samples, results for the *Control Scenario* are presented for the total sample of 147, sub-sample SP1 of 70, and sub-sample SP2 of 77 participants.

	N	Mean	Standard Deviation
Control Scenario (S1)			
Total	147	4.56	1.877
SP1	70	4.67	1.808
SP2	77	4.47	1.944
Supervision Scenario (S2)	147	3.99	1.734
Watching Others Scenario (S3)	70	4.63	1.819
Getting Caught Scenario (S4)	77	3.55	1.832

Table 7
Descriptive Statistics

All mean comfort scores vary between values of 3.55 and 4.67, indicating that participants, in general, predict others to feel rather more comfortable than uncomfortable with the presented dishonest SID behavior. While the *Getting Caught Scenario* led to the lowest level of comfort, the *Control Scenario* (only for sub-sample SP1) resulted in the highest level of comfort followed by the *Watching Others Scenario* with a mean score of 4.63. Participants predict others to feel less comfortable in all manipulated scenarios compared to the *Control Scenario*.

Standard deviations range from 1.734 to 1.944 in comfort. Variability across all scenarios is similar with the highest variation in responses of sub-sample SP2 (1.944) related to the *Control Scenario* and the lowest in the *Supervision Scenario*.

5.1.2 Differences Between Scenarios

As explained in Subsection 4.2.7.2, paired-samples t-tests were used to determine whether there was a statistically significant mean difference between the comfort level in the *Control Scenario* and the remaining scenarios (*Supervision, Watching Others, Getting Caught*). Table 8 illustrates the results of the three performed t-tests and their statistical significance. The results show the mean difference in predicted comfort of other students about the dishonest SID behavior, the interval in which the true mean difference lies with a 95% confidence, and the statistical significance value (i.e., p-value). The mean difference between two scenarios is statistically significant for $p < .05$. Conversely, a p-value above .05 shows that the mean difference is not statistically significant.

	Paired Differences				
			95% Confidence Interval of the Difference		
	Mean	**Standard Deviation**	**Lower**	**Upper**	**Sig. (2-tailed)**
S2 - S1	-.571	1.324	-.787	-.356	**.000***
S3 - S1	-.043	1.592	-.422	.337	.822
S4 - S1	-.922	1.965	-1.368	-0.476	**.000***

* Correlation is significant at the 0.05 level

Table 8
Paired Samples Statistics

Increased Perceived Supervision (S2 - S1)

To extract the effect of an increased supervision on predicted comfort of others with dishonest SID behavior, it was determined whether there is a statistically significant mean difference in comfort between the *Supervision* and *Control Scenario*. The t-test results indicate that the *Supervision Scenario* elicited a statistically significant decrease in the mean level of comfort with cheating compared to the *Control Scenario* of .571 (95% CI, -0.787 to -0.356), $p < .0005 < .05$. Thus, the null hypothesis is rejected, and the alternative hypothesis is accepted. In other words, the results indicate that given the possibility to lie for monetary rewards, perceived supervision *inhibits* dishonest SID behavior by employees in EIS.

Watching Others Behave Dishonestly (S3 - S1)

To examine whether watching others behave dishonestly increases the predicted comfort of others with dishonest SID behavior, it was determined whether there is a statistically significant mean difference in comfort between the *Watching Others* and *Control Scenario*. The t-test results demonstrate that the *Watching Others Scenario* elicited a slight decrease in predicted comfort with cheating compared to the *Control Scenario* of .043 (95% CI, -0.422 to -0.337). However, there was no statistically significant difference between means ($p = .822 > .05$), and therefore, the null hypothesis is accepted. Consequently, it can be concluded that given the possibility to lie for monetary rewards, perceived supervision does not inhibit dishonest SID behavior by employees in EIS.

Increased Probability of Getting Caught (S4 - S1)

The impact of increasing the probability of being caught on predicted comfort of others with dishonest SID behavior was determined by testing whether there is a statistically significant mean difference in comfort between the *Getting Caught* and *Control Scenario*. The t-test results indicate that the *Getting Caught Scenario* elicited a statistically significant decrease in the mean level of comfort with cheating compared to the *Control Scenario* of .922 (95% CI, -1.368 to -0.476), $p < .0005 < .05$. Therefore, the null hypothesis is rejected, and the alternative hypothesis is accepted. Accordingly, the results suggest that given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS *increases* as the probability of getting caught decreases.

The results of the three performed t-tests suggest that an increased *probability of getting caught* elicits the largest statistically significant decrease in predicted comfort with

dishonesty (0.922). Increased *perceived supervision* is found to have a similar statistically significant effect on the dishonesty measure but to a lower magnitude. There was no significant mean difference in comfort scores between the *Watching Others* and *Control Scenario*. The results of the quantitative vignette study will be further discussed and interpreted in the discussion (Chapter 6).

5.2 Stroop Task Results

This section outlines the correlational analysis results examining the relationship between predicted comfort of others with the dishonest SID behavior and a participant's state self-control capacity.

5.2.1 Linear Relationship

To assess the strength and direction of potential linear relationships between comfort and state self-control capacity, Pearson's correlation is used. The association is measured by means of the generated correlation coefficient *r*. The correlation coefficient can range from -1 to +1, where a negative coefficient indicates a negative direct relationship between variables and vice versa. A value close to 0 suggests that there is no direct linear relationship. The strength of a relationship is indicated by the magnitude of the correlation coefficient. Based on Cohen's general guidelines (1988), the strength of an association is interpreted according to Table 9.

Correlation Coefficient Value	Strength of Relationship/Association
$0.1 < \lvert r \rvert < 0.3$	Small correlation
$0.3 < \lvert r \rvert < 0.5$	Moderate correlation
$\lvert r \rvert > 0.5$	Strong correlation

Table 9
Interpretation of Strength of Association

Statistical significance is again demonstrated by the significance value *p,* where $p < .05$ indicates that a linear relationship is statistically significant. Alternatively, $p > .05$ suggests that there is no statistically significant linear relationship between the variables.

Table 10 shows the correlation coefficients between state self-control capacity measured by average reaction times of correct trials (congruent and incongruent trials) and the level of comfort in each scenario.

		Control Scenario (S1)	Supervision Scenario (S2)	Watching Others Scenario (S3)	Getting Caught Scenario (S4)
Avg. Congruent Reaction Times	**Pearson Correlation**	-0.121	-0.152	**-.0.389****	-0.026
	Sig. (2-tailed)	0.144	0.066	0.001	0.822
	N	147	147	70	77
Avg. Incongruent Reaction Times	**Pearson Correlation**	-0.155	**-0.166***	**-0.250***	**-0.234***
	Sig. (2-tailed)	0.062	0.045	0.037	0.041
	N	147	147	70	77

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 10
Pearson Correlation Matrix: State Self-Control Measures and Comfort Scores

Since shorter reaction times indicate a higher state self-control capacity, a negative linear relationship between reaction times and mean comfort score suggests that lower state self-control is associated with a lower level of comfort with cheating. According to the correlation matrix, only four correlations are statistically significant ($p < .05$) of which three show a small strength negative association between comfort and the average incongruent reaction times. The statistically significant negative relationship between comfort in the *Watching Others Scenario* and the average congruent reaction time, however, is moderate (r = -0.389). Summarizing, no positive linear relationship between reaction times and comfort is found.

5.2.2 Monotonic Relationship

In addition to linear associations, monotonic relationships between the predicted level of comfort with dishonesty and current self-control capacity measured by aggregated reaction times are assessed by means of Spearman's rank-order correlation. Similar to the Pearson correlation, Spearman's correlation generates a coefficient r_s measuring the direction and strength of the association. The interpretation of the correlation coefficient follows the same logic as in the case of the Pearson correlation coefficient. Also, statistical significance

is evaluated in the same manner. Table 11 presents the results of Spearman's correlations for each scenario and two measures of state self-control capacity.

		Control Scenario (S1)	Supervision Scenario (S2)	Watching Others Scenario (S3)	Getting Caught Scenario (S4)
Avg. Congruent Reaction Times	**Spearman Correlation**	-0.131	**-0.193***	**-0.329****	-0.014
	Sig. (2-tailed)	0.113	0.019	0.005	0.903
	N	147	147	70	77
Avg. Incongruent Reaction Times	**Spearman Correlation**	-0.160	**-0.194***	-0,228	-0.143
	Sig. (2-tailed)	0.053	0.019	0.057	0.215
	N	147	147	70	77

** Correlation is significant at the 0.01 level
* Correlation is significant at the 0.05 level

Table 11
Spearman Correlation Matrix: State Self-Control Measures and Comfort Scores

Results show a statistically significant negative monotonic relationship between state self-control capacity and comfort in three cases, suggesting that participants with lower self-control capacity tend to be less likely to cheat. While associations between both self-control measures and comfort scores in the *Supervision Scenario* are of little strength, the average congruent reaction time and comfort in the *Watching Others Scenario* are moderately correlated (r_s = -0.329). Summarizing, also no positive monotonic relationship between reaction times and the level of comfort is found.

It can be concluded that correlational results for both monotonic and linear associations do not provide evidence for the predicted positive relationship between reaction times and comfort with dishonesty (H4). Hence, the null hypothesis is accepted, suggesting that given the possibility to lie for monetary rewards, employees with lower *state self-control capacity* are not more likely to engage in *dishonest SID behavior in EIS*. Instead, in some scenarios, results even show a small to moderate negative association implying that employees with lower state self-control capacity are less likely to cheat. However, in general, the results are mixed and need to be considered carefully as linear and monotonic relationships were not indicated by visual inspection of scatterplots (see 4.2.7.3). The correlational results with

regard to the Stroop task will be further discussed and interpreted in the discussion (Chapter 6).

5.3 Evaluation of Experimental Hypotheses

Table 12 summarizes the evaluation of all experimental hypotheses.

Probability of Getting Caught		**Result**
H1$_0$	Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS *does not increase* as the probability of getting caught decreases.	Rejected
H1$_A$	Given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS *increases* as the probability of getting caught decreases.	Accepted
Perceived Supervision		
H2$_0$	Given the possibility to lie for monetary rewards, perceived supervision *does not inhibit* dishonest SID behavior by employees in EIS.	Rejected
H2$_A$	Given the possibility to lie for monetary rewards, perceived supervision *inhibits* dishonest SID behavior by employees in EIS.	Accepted
Watching Others Behave Dishonestly		
H3$_0$	Given the possibility to lie for monetary rewards, watching other employees behave dishonestly *does not increase* the dishonest SID behavior of observing employees in EIS.	Accepted
H3$_A$	Given the possibility to lie for monetary rewards, watching other employees behave dishonestly *increases* the dishonest SID behavior of observing employees in EIS.	Rejected
State Self-Control Capacity		
H4$_0$	Given the possibility to lie for monetary rewards, employees with lower state self-control capacity *are not more likely* to engage in dishonest SID behavior in EIS.	Accepted
H4$_A$	Given the possibility to lie for monetary rewards, employees with lower self-control capacity *are more likely* to engage in dishonest SID behavior in EIS.	Rejected

Table 12
Evaluation of Null and Alternative Hypotheses

6 Discussion

The goal of this study was to investigate essential influencing factors on employees' dishonest sensitive information disclosure behavior in enterprise information systems. For this purpose, the derived hypotheses (see Subsection 3.2.3 and 4.2.7.1) were tested with experimental survey data from 147 employees. The results of the vignette data analysis show a negative impact of increased *probability of getting caught* and *perceived supervision* on comfort with dishonest SID behavior. *Watching others behave dishonestly*, however, is not found to influence participants' stated level of comfort. The correlational results related to the Stroop task are inconclusive and vary with the used measure for *state self-control capacity* as well as the examined scenario. In the end, results provided no evidence for the predicted negative relationship between *state self-control capacity* and comfort with dishonesty.

This chapter explains and discusses the results of the data analysis with respect to theoretical (Section 6.1) and practical implications (Section 6.2). Furthermore, the limitations of the study (Section 6.3) and recommendations for future research (Section 6.4) are illustrated.

6.1 Implications for Research

The present study constitutes one of the few scientific contributions examining dishonest sensitive information disclosure behavior in information systems. As a first step towards theory development, this work presents a comprehensive overview of relevant influencing factors of dishonesty. Since determinants of dishonest SID behavior by employees in EIS have not yet been investigated, this study employs findings from existing research in social science. Thereupon, a set of hypotheses that are of particular interest for enterprise information systems are derived. The results of this study suggest that multiple dishonesty constructs from behavioral economics are applicable to dishonest SID behavior in a natural EIS environment (Subsection 6.1.1). Moreover, findings provide evidence that supports the underlying theory of self-concept maintenance (Subsection 6.1.2).

6.1.1 Influencing Factors of Dishonesty

This subsection explains and interprets findings from the data analysis in light of the existing dishonesty research. Hence, results related to each hypothesized influencing factor of dishonest SID behavior are discussed separately.

6.1.1.1 Probability of Getting Caught

In this study, the probability of getting caught appears to have the largest impact on comfort with dishonesty across all factors tested in the vignette study. Results show that the *Getting Caught Scenario* elicits a statistically significant decrease in the level of comfort with dishonesty compared to the *Control Scenario*. It is, therefore, concluded that in line with Becker's model of rational crime (1996), the likelihood of being caught constitutes one important determinant of engaging in dishonest behavior. Although not tested separately, the experimental data further provides evidence regarding another influencing factor highlighted by Becker, namely the expected benefit gained from acting unethically. In general, participants of this study predict that others feel rather more comfortable than uncomfortable when lying for monetary rewards (based on the overall average comfort score of each scenario). In conformity with the cost-benefit perspective, this finding suggests that the external monetary reward gained from misreporting working hours incentivizes engaging in such behavior.

Comments from participants further support Becker's rationale emphasizing that they would feel less comfortable "as [in the *Getting Caught Scenario*] there is a way to actively catch [them] for misreporting" their working hour (see Appendix VII for all comments). Moreover, a few students remarked to be influenced by a feeling of being watched. This indicates that the manipulation in the *Getting Caught Scenario*[16] (see 4.2.1.2.3) increased not only the probability of getting caught but also the perceived level of supervision (see Subsection 6.3.2). While this bias is plausible, it is assumed that considering the results of the *Supervision Scenario,* the change in comfort with dishonesty can primarily be traced back to the increased probability of getting caught. *Hence, this study suggests that given the possibility to lie for monetary rewards, dishonest SID behavior by employees in EIS increases as the probability of getting caught decreases.* The practical implications of this finding and whether taking measures to attain a high likelihood of getting caught is desirable will be discussed in Section 6.2.

[16] The likelihood of getting caught is increased by providing the reporting-line manager access to the employee's workplace analytics tool which automatically tracks his/her working activity.

6.1.1.2 Perceived Supervision

With regard to social presence, the vignette study finds that perceived supervision inhibits dishonest SID behavior as comfort scores in the *Supervision Scenario* are significantly lower than in the *Control Scenario*. Results support findings from existing studies suggesting that the feeling of being watched by others decreases dishonest behavior (Bateson et al., 2006; Hoffman et al., 2015; Mazar et al., 2008). Whether this effect is caused by highlighting social norms (Robert B Cialdini et al., 1990; Reno et al., 1993) cannot be validated based on the quantitative vignette data. However, a number of comments related to the participant's thought process support this association indicating that the decreased level of comfort with dishonesty does not stem from simply being monitored but rather a feeling of injustice towards other students in case of cheating (see Appendix VII). This finding emphasizes that social norms may play an important role with respect to dishonest behavior. *Summarizing, results indicate that in line with findings from previous studies, perceived supervision inhibits dishonest SID behavior by employees in EIS.*

6.1.1.3 Watching Others Behave Dishonestly

The results of the data analysis show no statistically significant difference in mean comfort score between the *Watching Others* and the *Control Scenario*. Hence, the predicted positive impact of watching others behave dishonestly on comfort with dishonesty ($H3_A$) could not be proven.

While this finding may just be reflecting participants' actual judgments in this specific context, comments hint that there may be another explanation (see Appendix VII). Across all scenarios, many participants emphasized that "recording more [working] hours [...] is a common practice". Therefore, it can be concluded that participants evaluate the scenarios, in particular, the *Control Scenario*, as if they know about others cheating anyway. Since the *Watching Others Scenario's* manipulation is based upon the assumption that not knowing about others cheating is the usual case (see 4.2.5.2), results may be distorted. Consequently, explicitly stating that others behave dishonestly may not have influenced participants' dishonesty responses since the students inherently presumed such behavior.

With respect to the underlying theory, it may further be the case that no effect is found since personas presented in the scenarios or other students are not considered as in-group members. As shown by previous studies (Gino et al., 2009; Gino & Galinsky, 2012), only watching in-group participants, i.e., people we identify with, elicit a negative impact on dishonest behavior. Out-group cheating, in contrast, is suggested to decrease dishonesty.

Since also a decrease in comfort with dishonesty is not evident, the only explanation for the results found may be that some participants considered others as in-group members, while some did not. Consequently, the effects of in-group and out-group behavior on dishonesty counterbalanced each other.

A third explanation for the results may be that a positive effect of social norms (in-group) on dishonesty is nullified by drawing a person's attention to moral standards which is found to decrease dishonesty (Bryan, Adams, & Monin, 2012; Gino & Margolis, 2011; Mazar et al., 2008; Pruckner & Sausgruber, 2013; Shu, Gino, & Bazerman, 2011). Comparable to the effect of social presence, perceiving unethical behavior may highlight a person's own standards, i.e., acting as a moral reminder, and thus, favor lower tendencies to act dishonestly. In line with this rationale, experiments by Gino et al. (2009) found participants to cheat less as the salience of dishonesty increases. As a result, stating that other students are cheating may have stressed misreporting hours as a dishonest behavior and thereby inhibited dishonest information disclosure.

While in the light of participants' comments, the first explanation appears to be most likely, no definite conclusion can be drawn without further research (See Section 6.4). *Consequently, the null hypothesis ($H3_0$) is accepted, stating that given the possibility to lie for monetary rewards, watching other employees behave dishonestly does not increase the dishonest SID behavior of observing employees in EIS.*

6.1.1.4 State Self-Control Capacity

Since the preliminary visual analysis of scatterplots (reaction times vs. comfort scores) did neither indicate a linear nor monotonic relationship between *state self-control capacity* and level of comfort with dishonesty, no meaningful results were expected by computing the respective correlations. Accordingly, the correlational results did not provide any support for the predicted negative relationship between current self-control capacity and dishonesty. Surprisingly, some correlations even suggest the contrary, namely that lower state self-control capacity is associated with higher comfort levels with dishonesty. Notwithstanding, this finding has to be viewed with caution considering that the computed correlations solely measure the direction and strength of a relationship under the assumption that a linear or respectively monotonic relationship is given. These assumptions, however, are not met for the collected data of this study (Laerd Statistics, 2015; Schober & Schwarte, 2018). These inconclusive results may, in fact, call attention to potential validity issues with respect to confounding factors of dishonesty as outlined in

Subsection 3.2.5.2. Limitations of the implemented measures are further explained in Subsection 6.3.2.

Consequently, this study cannot confirm findings from previous studies (Gino et al., 2011; Kouchaki & Smith, 2014; Mead et al., 2009) which suggest that lower state self-control capacity is associated with a higher level of dishonesty. *Accordingly, the null hypothesis is accepted, stating that given the possibility to lie for monetary rewards, employees with lower state self-control capacity are not more likely to engage in dishonest SID behavior in EIS.*

6.1.2 Self-Concept Maintenance Theory

According to the self-concept maintenance theory, people are driven by external rewards (see 3.2.2.1), such as monetary benefits, but they will only act dishonestly up to a certain extent that allows them to still perceive themselves as honest, honorable human beings. Hence, behaving dishonestly is not just the result of a cost-benefit analysis but further subject to internal moral forces related to one's self-concept and identity (Jacobsen et al., 2018; Mazar et al., 2008).

The results of the data analysis revealed that at least two constructs, namely the probability of getting caught and perceived supervision, have an impact on dishonest SID behavior. Further, monetary benefits seem to act as an incentive for lying. While the likelihood of being caught and monetary rewards are associated with external cost-benefit considerations, perceived supervision constitutes an attribute of internal moral standards. When examining the *Getting Caught* and *Supervision Scenario*, this interplay between external and internal reward mechanisms becomes evident. The first scenario showed that in line with the purely economic approach (see 3.2.2.1) increasing the probability of getting caught decreases comfort with dishonesty (Allingham, 1972; Becker, 1996; Mazar et al., 2008; Mazar & Ariely, 2006). According to the cost-benefit perspective, the results of the *Supervision Scenario* in which the student can be sure not to be caught should consequently indicate a very high level of comfort. However, this study demonstrates only a slight feeling of comfort. Even though this study does not determine up to which level a person would cheat, this finding indicates that internal forces may hold people back from being entirely comfortable in situations where no negative external consequences have to be feared.

Even though participants in the *Supervision Scenario* demonstrate to be more comfortable with dishonesty than in the *Getting Caught* Scenario, increased supervision, in general, is found to inhibit dishonest behavior. Comparing the *Control* and *Supervision Scenario,* both

including the same negligible likelihood of being caught[17], further emphasizes that non-economic factors guide a person's decision-making process associated with dishonest behavior. Therefore, this study suggests that individuals engage in dishonest SID behavior as though they consider not only external but also internal rewards determinants. Whether the latter can be traced back to the fact that individuals seek to uphold a positive self-image and thus, only act dishonestly as long as they do not have to negatively update their self-concept, cannot be conclusively assessed based on the quantitative data. Nevertheless, comments by participants give reason to suspect that people strive to rationalize why dishonest SID behavior may be tolerable, for instance, by arguing that misreporting working hours by a little should not be an issue if the tasks given by the manager are completed (see Appendix VII). By doing so, participants may be able to avoid downgrading their own perception of being honest people and maintain their current self-concept.

Considering findings from the quantitative study and additional comments concerning participants' thought processes, this study, by and large, supports the self-concept maintenance theory and highlights the limits of the economic approach.

6.2 Implications for Practice

6.2.1 Managerial Implications

The present study provides a better understanding of influencing factors of dishonest SID behavior by employees and shows that socio-psychological dishonesty research can be applied in enterprise information systems. In an organizational context, gained insights may serve two purposes: preventing dishonest SID behavior or counteracting existing excesses of dishonesty. With respect to EIS specifically, organizations should, thus, focus on designing and implementing software applications in ways that facilitate honest behavior.

The quantitative results of this study demonstrated that employees who perceive a higher probability of getting caught or supervision tend to cheat less in EIS. Hence, organizations may consider the implementation of software that enables greater monitoring of employee's working behavior. However, research has shown that close, direct monitoring of job performance may lead to distrust by employees which is associated with retaliation and deviance (R. B. Cialdini, 1996, pp. 44–56; Westin, 1992). When being closely monitored, employees attribute their working performance rather to external monitoring than their

[17] Including the same monetary reward

internal longing for working effectively. As a result, employees tend to engage more often in dishonest behaviors in other situations where they cannot be caught (R. B. Cialdini, 1996, pp. 44–56). The association between tight monitoring and opportunistic working behaviors is further supported by Deutsch-Salamon and Robinson (2002) who suggest that the elicited distrust in management perceived by employees undermines social norms and thereby fosters dishonesty.

Although this study's findings related to the risk of getting caught may support strict paternalistic control mechanism á la 'Big Brother is watching you' (Orwell, 2009), in the light of previous research, this study suggests to make use of management practices and supporting software applications that encourage indirect monitoring and supervision without impairing trust (Zweig, 2005).

Organizations could, for example, take advantage of agile practices and related software solutions (e.g., Atlassian Jira[18]). By promoting agile methods, such as collaborative task planning, daily standup meetings and regular retrospectives, companies can implement within-team measures that increase the perceived level of supervision and to a certain degree also the expected probability of getting caught without undermining personal autonomy and trust (Augustine, Payne, Sencindiver, & Woodcock, 2005; McHugh, Conboy, & Lang, 2012; Schwaber & Beedle, 2002).

With respect to the self-concept maintenance theory, comments by participants suggested that employees seek to justify why their dishonest SID behavior may be tolerable. Even though this study did not explicitly investigate the rationalizations used by employees, findings indicate that satisfied employees may have fewer reasons which could justify dishonest behavior and thus, avoid such behavior to maintain a positive self-concept. Therefore, this study suggests organizations to leverage enterprise software solutions that facilitate the collection and analysis of employee-data with respect to job satisfaction and overall well-being. For instance, companies may implement feedback survey tools that allow employees to make themselves heard and inform their employer about their concerns on a continuous basis. Thereby, companies are able to detect and address potential problems early on and create a working environment that gives employees fewer reasons to justify dishonest behavior. Summarizing, this work argues for the use of employee-data-

18 https://www.atlassian.com/software/jira

driven technologies that focus on managing employee experience rather than strictly monitoring working behavior (DeTienne, 1993).

6.2.2 Ethical Reflections

In line with previous research (Mazar & Ariely, 2006), this study suggests that not always telling the plain truth is part of our professional life. While organizations can help to provide an environment that fosters honesty, they need to ask themselves at which costs dishonest behavior may be prevented. For instance, being constantly monitored by video surveillance or similar tracking software may not only result in an invasion of employee privacy and loss of autonomy but also potential violation of human dignity (Vieira da Cunha et al., 2015). Moreover, negative effects on employees' work engagement and retention rates should be considered (Ali Chughtai & Buckley, 2008; Cartwright & Holmes, 2006; Ellett, Ellis, Westbrook, & Dews, 2007).

Furthermore, it is open for discussion whether every dishonest behavior should be classified as unethical behavior[19]. Notwithstanding the above, organizations need to acknowledge that employees are also just human beings, which means they may not always be able to resist the temptation of behaving dishonestly even though they want to see themselves as honest, honorable people. Therefore, organizations should seek to provide a working environment facilitated by suitable software solutions, which encourages rather than forces employees to behave honestly.

6.3 Limitations of the Study

The present study has several limitations with respect to the employed research methodology that should be considered. The following subsections reflect upon the used research design and methods.

6.3.1 Research Design Reflections

The present study employed a quantitative, explanatory research approach aligning with the positivist view. The research philosophy was chosen as it facilitates an objective and clear-cut measurement of dishonest behavior that is required for the quantitative causal analysis of influencing factors. Notwithstanding, especially in natural environments, the

19 A classic example is the scenario in which a Nazi officer knocks at the door of a person who is hiding Jews and gets asked whether there are any in the house. According to Kant, lying is universally wrong. Utilitarian philosophers take a different view.

classification of human behavior as dishonest behavior may not always be unambiguous. This became particularly clear when choosing a suitable setting to study the topic in a natural EIS context (see 4.2.1.2.1).

Against the background of the underlying definition of lying (see Section 2.1), the evaluation of whether a person intended to deceive another person may be, by and large, subjective. Thus, in many situations, human behavior needs to be seen in its broader context and cannot be universally labeled as dishonest. Since positivist studies are limited to measurable facts, an interpretive perspective can be of advantage when studying dishonesty as it allows researchers to make sense of subjective and socially constructed meanings associated with human behavior. This attribute may be of special interest for qualitative field studies which may be, for instance, used to explore reasons for behaving dishonestly. Despite these limitations, this study adopts a positivist view since it facilitates the quantitative, causal analysis required to test the theory-based hypotheses objectively.

With respect to the research approach, it should be noted that this study focuses on validating findings from previous studies in a different natural context. Hence, results provided a deeper understanding of dishonesty constructs in EIS but do not suggest additional factors that have not been identified yet. An inductive approach to theory development may allow exploring additional influencing factors going beyond constructs identified in previous studies.

In conclusion, this study by design is limited to validating constructs from existing research in a new context by means of objective evidence.

6.3.2 Research Methods Reflections

The choice of research methods results in a number of limitations. First, the data was collected by means of an experimental survey that has not been scientifically evaluated. Although pilot testing helped to improve reliability, it has not been explicitly tested whether the vignette constructions led to the intended changes in variables. Additionally, it should be noted that this study did not measure actual behavior but rather the willingness to act dishonestly in certain situations.

Furthermore, the survey approach may have overemphasized rational considerations and undermined irrational forces[20] with respect to dishonest behavior. Hence, participants may tend to better predict conscious decisions, for instance, related to the probability of getting caught. In contrast, socio-psychological constructs, such as perceived supervision, may be underestimated when rating comfort with dishonesty. Thus, especially unconscious factors of dishonesty may be better tested in classical experiments that do not depend on participants' assessments.

Second, this study was conducted over a short time frame in only one company focusing on a specific group of employees. Apart from generalization implications, the limitation to one data source may result in single-source biases, for instance, distortion through transient mood states of participants (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although various measures were taken to prevent potential biases in general (See Subsection 4.2.5), a temporally distributed data collection from multiple companies would additionally help prevent data variations and inaccuracies. Moreover, a distribution over several companies would have helped to inhibit potential concerns by employees to provide sensitive information which may impact the employee-employer relationship[21].

6.4 Future Research

This thesis contributes to a better understanding of employees' dishonest SID behavior in EIS. Nevertheless, further research should be conducted on the research subject considering that the present study was limited to a small set of influencing factors in one specific setting. Particularly in the view of the non-existent IS literature on dishonest SID behavior by employees, there are still several open questions that should be addressed in future studies. Hence, this chapter touches upon challenges of this study and suggests relevant areas of future research.

In light of internal validity, the employed measures and vignette manipulations should be further assessed. Notably, this study demonstrated that measures of dishonesty in natural environments substantially lack scientific foundations. Although identifying dishonest

20 D. Ariely labels constructs associated with the psychological approach as irrational drivers. Economic factors are considered rational forces (Ariely, 2012).

21 Despite the fact that participants were assured that no data is transmitted to the employer and responses are collected anonymously, participants may still be concerned.

behavior in field studies appears notoriously difficult, valid ways of eliciting dishonesty through self-disclosure or peer assessment (see 4.2.3.1) should be further explored. Moreover, it should be reviewed to which extent certain modifications related to enterprise software (see 4.2.1.2.3) elicit changes in influencing factors of dishonesty. Hence, future research could, for instance, investigate to which extent software facilitating task transparency between peers increases perceived supervision (see Section 6.2).

Findings from the conducted literature review revealed a substantial research gap with regard to research on dishonesty outside of the laboratory environment. This thesis demonstrated that dishonest behavior is subject to multifold influencing factors. Since only four factors are explicitly tested in this study, future research should investigate the impact of other constructs of relevance for EIS, such as conflicts of interest or moral reminders (see Subsection 3.2).

Apart from exploring additional factors, further studies should examine constructs subject to this study, in particular *watching others behave dishonestly* and *state self-control capacity*, in more detail. Specifically, with respect to the effect of self-control, studies should consider using reference values to reduce bias from confounding factors and thereby ensure more valid measurements. For this purpose, future research may, for instance, measure state self-control capacity and dishonesty within the same sample at different times, which can then be compared[22].

With regard to the self-concept maintenance theory, further qualitative studies could research rationalization processes that individuals apply to avoid negatively updating their self-concept when acting dishonestly. For instance, future studies could focus on exploring individual justifications of behaving dishonestly.

With respect to external validity, findings of this study should be validated in other EIS contexts, such as employee satisfaction surveys or peer performance reviews. Future research should also aim to collect data from more representative samples.

22 See, for instance, (Kouchaki & Smith, 2014)

7 Conclusion

The present work investigated essential influencing factors of employees' dishonest sensitive information disclosure behavior in enterprise information systems. To validate the set of hypotheses derived from previous research, a quantitative vignette study by means of an experimental survey was conducted in a multinational software company.

Findings suggest that comfort with dishonesty decreases as the *probability of getting caught* or *perceived supervision* increases. Contrary to the predicted positive impact on dishonesty, *watching others behave dishonestly*, was not found to influence participants' stated level of comfort. Further, no evidence for the predicted negative relationship between *state self-control capacity* and dishonesty was provided. Notwithstanding, results support the underlying theory of self-concept maintenance.

The implemented research methodology resulted in several limitations. This study by design is limited to assessing influencing factors from existing research in an organizational context by means of objective, hard facts. Moreover, it should be noted that this study was conducted over a short time frame in only one company focusing on a specific, non-representative group of employees.

This thesis constitutes a first step towards better understanding employees' dishonest SID behavior in EIS. Future research should focus on validating findings in other contexts by means of more representative samples. Since this study is limited to four constructs, additional influencing factors of interest for enterprise information systems should be explored. Furthermore, future studies should examine practical ways of measuring dishonesty in more natural environments.

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