Learning from Errors: An Exploratory Study Among Dutch Auditors

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September 2016
Very preliminary draft. Please do not circulate without permission.

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Acknowledgments: We are thankful for the extensive research support and advice provided by Elroy Huijsman, Simon de Graaf, and Nicoletta Dimitrova. We are grateful for suggestions and comments from Albert Bosch, Jeanine van Gestel, Peter Groenewegen, Tom Groot, Kris Hardies, Oscar van Mourik, Arnie Wright, the NBA Sounding Board, and workshop participants at the 2014 NBA Accountantsdag and the 2016 Conference of the European Accounting Association. Finally, we thank the NBA for financial and practical support and the interview participants for their time and valuable insights.

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Abstract: Despite the presence of substantial quality control measures present at audit firms, results from regulator inspections suggest that auditors make errors during their work. According to the error management literature, even though errors often lead to negative immediate consequences, they also offer powerful opportunities for individual and organizational learning. However, to fully exploit such opportunities, appropriate error management strategies are necessary. This exploratory study focuses on how auditors and audit firms deal with auditor-committed errors and whether they learn from them. There are two primary, mutually non-exclusive strategies that organizations use to deal with errors. Error prevention is aimed at reducing or eliminating the future occurrence of errors. However, focusing on error prevention has its limits because errors are ubiquitous and it is unrealistic to expect no errors to occur. Also, an exaggerated focus on error prevention may cause organizational members to avoid sharing committed errors, due to for example fear of sanctions, limiting the potential for learning in the long run. Error management strategies on the other hand stimulate open communication about errors, analysis of errors' root causes, with the ultimate goal of properly handling the consequences of errors and learning from errors. In this exploratory study, we conducted semi-structured interviews, using the Critical Incidents Technique, with twenty-four Dutch auditors employed at various types of audit firms and at multiple hierarchical levels. Preliminary analysis of the interviews suggests an overall high degree of error prevention in audit practice. Auditors describe a high degree of fear of being blamed for errors, which is a barrier to openly discuss errors with others. Overall, we observe that openness as a key element of an effective error management culture is recognized by auditors, but is rarely practiced. While learning through courses and training is takes place, the limited openness reduces the opportunities for learning from errors.

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1. INTRODUCTION

Every organization is confronted with errors, audit firms being no exception. This exploratory study focuses on how auditors and audit firms deal with auditor-committed errors and whether they learn from them. We define errors as unintended deviations from plans, goals, or adequate feedback processing, as well as incorrect actions resulting from lack of knowledge (Frese & Zapf, 1994; Reason, 1990, Van Dyck, Frese, Baer & Sonnentag, 2005, Zapf, Brodbeck, Frese, Peters, & Prümper, 1992). In contrast to many studies in the auditing research domain, the focus of the current research is not on financial statement errors, but on errors committed by auditors themselves in the course of the audit process. An example would be a staff auditor using sample-based statistical testing of a number of assertions, but subsequently not incorporating the sampling error when generalizing the findings back to the population. Another example of an auditor error is inadvertently failing to review the backside of a checklist and hence drawing conclusions on the basis of incomplete evidence. Audit firms have adopted numerous mechanisms to prevent or mitigate these and other errors, such as detailed working manuals, checklists, and automation of processes. Similarly, audit firms have strong mechanisms in place to detect errors and make sure they are corrected before the issuance of the audit opinion, such as the review process. However, consistent with the error management literature, we argue that errors cannot be completely eradicated, given that humans' cognition consists of relatively error-prone heuristic processing (Reason, 1990). Particularly complex environments (of which the audit industry is a prime example) are prone to the commitment of errors. Also, stress or work overload increases the probability of errors (Helmreich, 1998). Hence, an exclusive focus on error prevention has its limits. Indeed, the results of recent audit regulator inspections suggest that a multitude of audit deficiencies – or errors – were not prevented or detected and corrected on a timely basis and thus could have resulted in potential unadjusted errors in the financial statements, or – at the extreme – an erroneous audit opinion (e.g., AFM, 2014). Hence, even in the presence of well-developed error prevention and detection mechanisms, errors are omnipresent.

The consequences of errors arguably vary tremendously. While many errors go by virtually unnoticed, with no or very minor consequences, other errors carry severe negative consequences, such as the issuance of an erroneous audit opinion. Interestingly, however, aside from their negative consequences, errors can also offer powerful potential long-term positive consequences, such as individual and organizational learning (Sitkin, 1996). For example, realizing one made an error will help the individual to avoid this error in the future (individual learning) (Frese & Keith, 2015), and if shared, peers will also be less likely to repeat the same error (organizational learning). However, research in organizational psychology suggests that the realization of such positive potential effects greatly depends on the manner in which organizations handle errors, making an important distinction between error prevention and error management. While preventing errors from occurring is obviously important, rigid prevention produces a negative mind-set toward errors (Frese & Keith, 2015) that reduces the extent to which organizational members are willing to review their past actions for errors, analyze and share their error experiences. As a result, rigid error prevention reduces or even eliminates the beneficial potential for learning from errors.

Given that it is impossible to reduce the number of errors to zero, as discussed, organizations should explore ways in which they manage errors after they have occurred. In 1991, Frese introduced the concept of error management as an add-on strategy to error prevention. While prevention attempts to block erroneous action, error management effectively begins after an error has occurred and has the goal of (1) avoiding or reducing negative error consequences, (2) reducing the occurrence of the same error in the future, and (3) optimizing the positive consequences of errors, such as learning and sometimes even innovation[1] (Frese & Keith, 2015). Implementing error management practices (or an error management culture or climate) is a necessary condition for enabling learning from errors.

In studies with auditors, an error management climate has been shown to be associated with feeling more responsible for errors (Gronewold & Donle, 2011) and with more reporting of mechanical errors (Gold, Gronewold, & Salterio, 2014). Both are prerequisites to learning from errors. However, to date, we know very little about how auditors and audit firms handle errors in their

[1] The topic of innovation is beyond the scope of the current study; however, to illustrate, think of the invention of penicillin, post-it notes, or the pace-maker, which were all the consequence of mistakes made by scientists on alternative quests.

daily practice. It remains an empirical question whether error prevention is exercised exclusively (with the described adverse side effects), or whether audit firms are additionally utilizing the benefits of an error management strategy, which is a necessity for learning from errors. As a result, in an exploratory semi-structured, in-depth interview study with 24 auditors employed at different audit firm types and at multiple hierarchical levels, we examine (1) how auditors and audit firms handle errors and (2) the extent to which learning from errors occurs.[2] Our preliminary analysis of the interviews suggests an overall high degree of error prevention in audit practice. Auditors describe a high degree of fear of being blamed for errors, which is a barrier to openly discuss errors with others. We observe that openness as a key element of an effective error management culture is recognized by auditors, but is rarely practiced. While learning through courses and training is exercised extensively, the limited openness reduces the opportunities for learning from errors.

The next section describes the relevant theoretical concepts related to the research question. In section 3 the research methodology is described. The fourth section discusses the results of the study. Finally, section 5 presents conclusions of the study.

2. LITERATURE REVIEW

In this section we define errors, discuss how errors are different from other related concepts, explain the relationship between errors and learning, and summarize theories related to error prevention and error management.

Errors: What they are and what they are not

In this paper, we depart from an action-based definition of errors. An action is defined as "goal-oriented behavior that is organized in specific ways by goals, information integration, plans and feedback and can be regulated consciously or via routines" (Frese & Zapf, 1994, p. 271). According to Frese and Zapf (1994, p. 288), errors "appear in goal-oriented action, they imply the non-attainment of goals, and […] should have been potentially avoidable." Hence, an error means that a particular

[2] Coding and analysis of the held interviews is work in progress. In the current draft of the paper, we report preliminary findings, based on non-independent coding and analysis conducted jointly by the researchers. We are currently refining and validating the coding scheme and reviewing the allocation of quotations by means of independent coding.

aim has not been achieved, even though the intention was there. The literature also labels these instances 'honest mistakes' (Frese & Zapf, 1994; Reason, 1990).

In the context of this study, the distinction between errors and violations is very important: while both errors and violations are deviations from goals, plans or standards, errors are always unintended, whereas violations are conscious decisions not to adhere to agreed policies or rules. Violations can have their origin in self-interest, pride and apathy, and typically require a different response from organizations and leadership compared to unintentional acts (i.e., errors). Inadequate distinction between errors and violations may have severe consequences. For instance, consider a staff auditor making an (honest) error. Upon discovery, the supervisor of the staff auditor mistakenly characterizes the error as a violation, i.e., perceives it as a willful wrongdoing. A likely consequence of any violation is some kind of reprimand or even punishment (e.g., refusing or delaying promotion). Given staff auditor awareness of such responses by the superior, in the long term such handling of errors is likely to create a culture of fear, as a result of which auditors are less willing to discuss their errors with others, ultimately reducing the potential of learning from errors.[3]

Another important distinction needs to be made between errors and their consequences. In other words, errors are not large or small; rather, the *consequences* of errors are more or less severe. People and organizations generally have a tendency to focus primarily on errors with severe consequences. However, an undesired side effect is that errors with small consequences are ignored, which can be detrimental for the organization's learning potential, because repetition of the same error may lead to severe consequences in the future. Indeed, field research in the petrochemical industry reveals that organizations tend to learn less from errors with small consequences (Homsma, Van Dyck, De Gilder, Koopman, & Elfring, 2009). In the auditing context, think of an auditor inadvertently overlooking a piece of evidence because that part of the audit manual was unclear. Upon later discovery the evidence is verified but the conclusion is drawn that it did not contain any misstatements; hence there were no consequences for the appropriateness of the auditor's opinion. If the person discovering the error does not share it with his/her team, the same error may be committed

[3] It is however important to recognize that errors and violations frequently interact and/or co-occur (Frese & Keith, 2014).

again. The next time, the evidence may contain significant irregularities, putting the appropriateness of the auditor's opinion into question. Hence, by ignoring errors with small consequences, the potential of learning is missed.

Further, errors should be distinguished from inefficiency, since inefficient actions ultimately achieve their goals, albeit via detours (Frese & Keith, 2015). An exception is of course possible in case efficiency is a main objective.

Finally, a related but different concept from errors is the concept of risk. Risk taking is highly relevant in the conduct of an audit. According to the error management literature, risk is however different from error because miscalculations due to risk are not potentially avoidable, which is one of the error definition dimensions (Hofman & Frese, 2011). Consider for example an auditor who, based on the available evidence, assesses the risk of misstatement in a particular account to be low. Later on, it turns out that the account contained a material misstatement; however, also in hindsight given what the auditor knew at the time, he or she would have made the same assessment. The boundaries may not be all that black and white, because one could argue that the auditor may have made the error of not collecting sufficient evidence to make a qualified risk assessment. Hence, occurrences of error and risk are distinct but potentially highly interrelated.

Errors and learning

Learning takes place both at the individual and collective level. Our focus is primarily on collective learning from errors, which can be further broken down into learning at the (audit) team level, organizational (intra-firm) level, and (inter-firm) level of the profession (Watkins & Marsick, 1996). Collective learning consists of information sharing, storage, and retrieval. In this study, we focus primarily on the *sharing* element of learning, and more specifically sharing information about errors. Overall, research demonstrates that effective learning processes lead to better team and organizational performance in the long run (see e.g., Edmondson, 2004; Wilson, Burke, Pries and Salas, 2005; Watkins & Marsick, 1996).

Research further indicates that errors and their (negative) consequences can benefit organizational learning (e.g., Argyris, 1977). Overall, sharing information about committed errors

helps identify potential weaknesses in the organization (Frese et al., 1988). Also, people can learn more from negative outcomes resulting from an error than from successes resulting from error-free behavior. Errors stimulate the learning process because detecting them often create an element of surprise (Bell & Kozlowski, 2009), as opposed to "correct" actions (non-errors). More specifically, they affect memory and attention more than correct responses (Joung, Hesketh, & Neal, 2006). Interestingly, research also shows that attempts to learn from hypothetical errors are relatively ineffective. Such errors have no tangible consequences, as a result of which people are not emotionally affected (Ivancic & Hesketh, 2000), and hence will less likely identify with the error and its consequences.

A prerequisite for learning from errors is open communication about errors that have occurred. Unfortunately, in practice, there is a lot of resistance to sharing errors with others (Cannon & Edmondson, 2001). In fact, covering up of errors is not uncommon (Van Dyck et al., 2005). Organizational members can be hesitant to sharing their errors as they (1) may suffer from a decrease in self-confidence, (2) are fearful of the reactions of their peers, (3) anxious that their errors could harm their career, or (4) wish to avoid missing significant rewards (e.g., bonuses) or even receiving potential blame or reprimands (Cannon & Edmondson, 2005; Husted & Michailova, 2002). Such negative mind-sets about errors have their origins in the organizational view towards errors (Homsma et al., 2009). More specifically, many people and organizations hold the view that prevention of all errors is the primary goal: One does not like to be seen making an error; hence the best solution seems to be error prevention (Frese & Keith, 2015). And, consequently, if an organization holds a strong error prevention view, errors are unlikely to be tolerated. Hence, unless there is an explicit shared belief that making mistakes is acceptable, the willingness to engage in open discussion will be low (Edmondson, 1996), limiting or even eliminating learning from errors. Since communication about errors is essential for a learning organization, it is important to develop strategies that reduce these and other barriers to sharing errors, as first suggested by Frese (1991) and discussed in the next section.

Error prevention versus error management

According to the error-handling literature, organizations use two primary strategies when dealing with errors: error prevention and error management (e.g., Hofmann & Frese, 2011). Organizations with a strong emphasis on error prevention aim to reduce or even entirely eliminate the occurrence of errors. While prevention mechanisms are a necessity for the functioning of organizations, as discussed, it is important to note that total elimination of errors is impossible for a number of reasons. First, humans make excessive use of heuristic processing, which by default is error-prone (Reason, 1997). Second, any working task (particularly complex ones in contexts of stressors, such as time pressure) requires attention, but attention is a limited resource (Hockey & Earle, 2006); hence errors likely occur. Third, attention is not exclusively determined by the task at hand; rather the mind has a tendency of wandering (Smallwood, 2013).

Hence, errors are ubiquitous, which is why an exclusive error prevention focus by default has its limitations. Of great relevance for the current study, the friction evolving between an organization's preventive strategy ('prevent all errors') and reality ('errors are ubiquitous') may have adverse consequences for organizational learning (Van Dyck et al., 2005). The shared belief held as part of an error prevention view of an error being something negative results in the view that errors are not tolerated and instead should be avoided at all costs. This may lead to reduced willingness to openly communicate about the error that inadvertently slips through, and the temptation of organizational members to cover up their mistakes for reasons discussed in the previous section. At the extreme, an excessive error prevention strategy leads to an error-aversion culture (Van Dyck et al., 2005). Due to such lack of openness, errors are not corrected, their cause is not analyzed, learning from errors is limited, and the risk of repeating the same error remains high.

In 1991, Frese introduced the strategy of error management as an addition to error prevention. The error management strategy acknowledges that mistakes can never be completely eradicated. It utilizes design and training to reduce the negative consequences of an error that has occurred (rather than preventing occurrence of the error), reduce the repetition of the error in the future and optimize the positive consequences of errors, such as long-term learning (Frese & Keith, 2015; Hofmann & Frese, 2011; Van Dyck et al., 2005). As such, a clear distinction is made between the *consequences* of

the error and the *error* itself (Frese, 1991; 1995). As discussed earlier, this distinction is important for organizational learning purposes, because it recognizes the importance of openly sharing the occurrence of every error, regardless of its consequences. In an environment where an error is only judged based on its consequences, the risk is that organizational members are tempted to cover up errors: An error with large consequences may lead to fear of repercussions; an error with small consequences may be seen as insignificant, hence negligible. Meanwhile, error management recognizes that organizations can learn from all errors, regardless of their consequences.

According to Van Dyck et al. (2005), to create an effective error management strategy the following organizational processes are necessary: The first and perhaps most important error management practice is *open communication* about errors, with the goal of sharing knowledge about errors collectively. A high degree of openness promotes the development of a mutual understanding of high-risk situations, effective error handling strategies, and helping each other in error situations (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000). Openness also facilitates rapid detection and correction of errors (Helmreich & Merritt, 2000). As a result, learning from errors is enabled. Open communication about errors should be rewarded rather than punished (Edmondson, 1999).

Unfortunately, organizations face numerous barriers to open and effective communication, such as for example hierarchical, cultural, and personality differences between team members. Also individual-level barriers play a role, such as associating errors with negative personal traits (e.g., deficient knowledge, skills, or intelligence) (Edmondson, 1990). In the late 1970s, researchers and experts in aviation started developing initiatives for the development of effective and open team communication. A safety training focusing on effective team management, known as Crew Resource Management (CRM), is now required for flight crews worldwide. CRM programs typically include educating crews about the limitations of human performance and the causes for (cognitive) errors. Operational practices incorporate inquiry, seeking relevant operational information, communicating proposed actions, conflict resolution, and decision-making. Other sectors are also implementing measures to facilitate communication about errors. Most prominently, the healthcare sector is similarly implementing CRM practices to improve patient safety (e.g., Kohn, Corrigan, & Donaldson,

2000). Of note, Van Dyck et al. (2005) discuss an American consulting firm which throws a party whenever a project fails to establish a situation where underlying errors can naturally be discussed in a positive and rewarding atmosphere. Open communication creates logical opportunities to properly *analyze* the causes and consequences of errors, enabling both the *detection*, *correction* of and *learning* from errors. With respect to the latter, open communication enables learning from others' errors rather than one's own errors only. In the long run, secondary error prevention can be accomplished because the same error is less likely to re-occur.

Empirical research demonstrates that organizations utilizing an error management strategy are indeed associated with higher levels of learning potential than organizations with an excessive focus on error prevention only (e.g., Frese, 1995; Nordstrom, Wendland & Williams, 1998), better economic performance (Van Dyck et al., 2005) and even innovation (Edmondson, 1999). Interestingly, error management does not only stimulate economic performance; Edmonson (1996) demonstrated that teams of nurses with the most error reports were also the best performing teams. Errors were discovered and corrected on a timelier basis and nurses learned from errors to a larger extent than teams with lower error reporting. In other words, errors were being better managed.

Importantly, Van Dyck (2009) points out that error prevention and error management are not entirely mutually exclusive, nor is one approach necessarily superior to the other. For example, even in an error management environment, serious attempts will be made to prevent errors from happening. Also, error prevention does not necessarily eliminate the strive to managing errors. Both prevention and management or errors are important; however there should be a common recognition that the occurrence of errors cannot be eliminated, and that error occurrence does not by default result in severe consequences.

Audit firms and error handling

A few studies have examined auditors' responses to variations in error handling climate, i.e., the implicitly or explicitly adopted and shared practices and procedures on dealing with errors. Gronewold and Donle (2011) conducted a survey among external, internal and public sector auditors in Germany and found that an audit firm's error handling climate positively affects auditors'

predisposition toward handling their own errors as well as client errors, i.e., when the climate accepts occurrence of errors, this promotes open communication about errors (i.e., high or open error management climate). In an experimental setting, Gold et al. (2014) studied the effects of an audit firm's error management climate, distinguishing between a 'blame' climate (where auditors committing an error are sanctioned; which could result from excessive error prevention) and an 'open' climate (where errors are seen as offering learning opportunities; i.e., an error management approach) on auditors' willingness to report discovered errors in workpapers. They found that a blame-oriented resulted in less willingness to report mechanical errors, compared to an open climate.

To date, we know little about how auditors and audit firms handle errors in their daily practice. It remains an empirical question whether error prevention is exercised exclusively (with the described side effects), or whether audit firms are also utilizing the benefits of an error management strategy, which is a necessity for learning from errors. As a result, in this exploratory study, we examine (1) how auditors and audit firms handle errors and (2) the extent to which learning from errors occurs.

3. RESEARCH METHOD

In our exploration of the manner in which audit firms handle and learn from errors, we used a semi-structured interview approach. In the spring of 2014 the Netherlands Institute of Chartered Accountants (NBA) posted a call for participation in the interview study on their website. In response to this call, fourteen auditors responded. In addition to the fourteen registrants, we approached ten auditors individually with the request to take part in the study, because the initial group consisted primarily of male partners at smaller firms. In this way we achieved a more balanced distribution. See Table 1 for a breakdown of respondents across firm type, rank, primary activities, and gender.

[Insert Table 1 about here]

The interviews were conducted in the spring/summer of 2014 and each interview lasted on average one and a half hour. Interviewees were asked for permission to tape record the interview, which was granted in each instance. We assured anonymity to the interviewees and their employing organization.

Most interviews were conducted in the offices of the participants; some were held at the university. The recordings were consequently transcribed verbatim.

Prior to the interviews, participating auditors were asked to think about specific cases in which "something went wrong in their organization",[4] for example during their own work or the work of a colleague. These cases formed the starting point – and guidance for – the interview. This methodological approach is called the Critical Incidents Technique (Flanagan, 1954), a technique which stimulates a thorough discussion of the various aspects of how errors are dealt with and learned from. Interviewees were given the opportunity to talk freely about the error, and were then asked how the organization responded to the respective error occurrence, what they felt they and the organization had learnt from the error, and whether the error had led to any changes in the organization. During the course of each interview, the specific case naturally moved toward the background, creating room for discussion about other topics considered relevant by the interviewee and the researchers. The approach to the interviews was guided by our research question and literature review, which culminated in the formulation of two overarching concepts ("handling errors" and "learning from errors") and a number of relevant sub-topics (errors, error prevention, strain (fear), openness, analysis; learning at the team, organizational and level of the profession), see Table 2. Rather than following a rigid and structured interview scheme, the interviewer saw to it that all concepts and sub-topics were covered during each interview, allowing for a free discussion format.

[Insert Table 2 about here]

Interview transcripts were segmented and coded.[5] Please note that the coding and analysis of the interviews is still work in progress. Hence, in the current paper, we report preliminary findings, based on non-independent coding and analysis conducted jointly by the researchers; i.e., the researchers jointly determined interpretation of the segments. The coding scheme was based on the above-mentioned concepts and topics. We are currently validating and further refining the coding scheme.

[4] In this first contact with the respondents, we advertently avoided using the term "error" because of its negative connotations. During the interviews we verified that they discussed errors (rather than for example violations).
[5] We analyzed the Dutch transcripts and translated only those quotes to English that were selected for the current manuscript.

4. RESULTS

The results section is structured in line with the two overarching concepts, handling errors and learning from errors. First, as part of the first concept, "handling errors," we discuss the error concept as it is viewed by the interviewed auditors. Then we discuss the manner in which auditors handle errors, where the following sub-topics based on the literature on handling errors are addressed: prevention, strain (fear), openness, and analysis. Finally, we discuss the concept "learning from errors," including learning at the team level, organizational level, and the level of the profession.

Errors

In this section, we will first present a few examples of errors that were brought up during the interviews. Pursuant, we will discuss the extent to which a distinction is made between errors and their consequences by interviewees. Finally, we discuss the relationship between errors, norms and professional discretion as experienced by the interviewed auditors.

Examples of errors

Using the Critical Incidents Technique we came across a great variety of errors during the interviews. Some errors occurred during everyday activities and others during complex judgments. We provide three illustrating examples of errors experienced by different interviewed auditors.

> *It is recommended never to furnish the draft figures that are sent to the client with an audit opinion. Recently I completed a draft […], which still included the audit opinion from last year. The watermark indicated this was a concept. I should have removed the opinion from last year, but I didn't. The draft was sent to the client. My client was in a rush as a result of which he filed the draft with the Chamber of Commerce. That is wrong, that was my mistake; the opinion should never have been part of the draft.*
>
> *partner, small firm*

> *Last year I submitted draft financial statements. Everything was recalculated and verified, including the textual parts. I had checked it and the partner had checked it. Then the partner mailed it to the client. And that's when it appeared that there was an error in the balance. It was really something stupid. A small difference. That's when you don't see it anymore. Because you think, "it balances," but those last three numbers did not. So the balance was not correct, and the client detected it. And that was incredibly annoying.*
>
> *manager, Next 9*

So I had prepared an unqualified audit opinion. But the auditor in charge put a stop to that. He changed it into a disclaimer of opinion. Because, strictly speaking, […] you had to account for certain liabilities. And my client could not provide the evidence we needed. To gather this evidence we had to go to the administrations of related parties. This was impossible because we are not the auditor of those organizations.

manager, Next 9

Errors and their consequences

As discussed, the error-handling literature emphasizes that a distinction should be made between errors and their consequences. Errors should not be divided into small or large; only the *consequences* of errors are more or less severe. However, the interviews show that this decoupling of error and consequences is currently limited in audit practice. For example, during the analysis of an error that is not detected on time, auditors clearly distinguish between errors that have a material effect on the financial statements and those that don't. Despite the potential of learning from errors with no (or very minor, immaterial) consequences for the financial statements or the auditor's opinion, such behavior suggests that errors with less severe consequences are largely being ignored. A manager's quote illustrates this attitude:

Only, there is a difference between an error, which ultimately has no effects on the opinion and an error that does have an effect on the opinion.

manager, Big 4

Errors and violation

The interviews demonstrate that auditors make limited distinction between intentional and unintentional acts that lead to deviations from standards and regulations, so between violations and errors. In the perception of the interviewed auditors, these acts lead to sanctions and negative publicity, regardless of whether they are intentional or not. This indicates that errors are sometimes seen as violations. In the conclusion section, we will discuss the potential consequences of failing to differentiate between errors and violations for learning.

Errors and norms

In order to identify errors as such, a clear and generally accepted norm or expectation is necessary. However, the interviewed auditors point out that uncertainties arise from constant changes in the norm

given frequent modifications of rules and regulations. Acts that were previously not considered an error are now increasingly seen as one.

> *But what is that norm? And will today's norm be the same next year? When am I doing it correctly and when aren't I? That needs to be made explicit.*
>
> *partner, small firm*

It is not always clear to auditors what is correct, what is sufficient and what is insufficient.

> *Of course the AFM [Dutch oversight body] tests when we comply and when we don't. But is it wrong or right? That is also a difficult issue. Is it a 10 or a 7 [on a 10-point scale] or is it really a failure?*
>
> *manager, next 9*

> *There are so many grey areas. What am I supposed to do, and what am I not supposed to do, what has been decided? It is not always straightforward. Because most of our audit and accounting standards are not only based on hard rules but also require interpretation.*
>
> *partner, small firm*

Since auditors work with unclear norms and/or in grey areas, it appears to be difficult to determine whether they are dealing with an error or a violation when they evaluate their own work. Thus, there is a need for unambiguous interpretation of norms and regulations.

Furthermore, interviewees experienced a restriction of their professional discretion by an excessive focus on norms and rules.

> *Unless you are in close contact with clients on a regular basis, it is hard to understand how complex an issue can be. Complexity that is almost impossible to define in rules.*
>
> *partner, Big 4*

The focus on rules is possibly reinforced by external oversight as suggested in the following quote.

> *The AFM is more rule-driven or more legally oriented, like: "these are the audit standards, or according to the standards verifying an estimation requires these exact five steps to be taken. I have reviewed the audit file and found four steps performed and documented, the fifth step is not documented." Well, but how do we approach this? I [the auditor] need to verify whether the financial statements as a whole are true and fair, and they [the statements] say this provision is a bit conservative and another provision is somewhat aggressive. The net effect of both is quite balanced. Kind of an economic consideration. But the AFM says, "No, you don't understand what I am saying, where in your audit file is point five? Oh, it's not there? That means your audit file is incomplete and as a consequence you have an insufficient basis for your opinion.*
>
> *partner, Big 4*

In addition to uncertainty about the norms, our interviewees frequently point to the increasing burden of regulatory pressure.

Let me put it this way, the reaction of everyone, including the NBA (The Netherlands Institute of Chartered Accountants) is to create more rules once things are not going well. It's funny that they always pursue principle-based, but in reality it is increasingly becoming rule-based.

partner, other

Issues published in the Monday morning Telegraaf [newspaper] will be on the agenda on Tuesday during the question hour in Dutch parliament and this most likely leads to a call for more rules. Whether it's education or health care, or banking or accountancy. The ultimate question is whether this is effective. What you now see in the healthcare sector is the first signs of developing and introducing so many rules that it is no longer feasible to understand and comply with them. As auditors in the healthcare sector we can therefore no longer conclude whether the financial statements of these clients give a true and fair view. The rules can no longer be applied.

partner, Big 4

I dare to say that there are so many rules in this manual that there will always be issues that have not been dealt with in accordance with the standards.

partner, Big 4

Handling errors

Error prevention

Interviewees indicate that audit firms currently take a multitude of measures, for example using checklists, protocols and instructions, to prevent errors from occurring. A risk here, which is also widely recognized by the interviewed auditors, is that such an excessively preventive approach may have negative consequences. Interviewees also suggest that rules are not always effective. For instance, a partner of a small audit firm raises the question of whether the requirement to add initials to each and every audit step in the workpapers leads to the desired goal, i.e. greater involvement and commitment. Interviewees generally doubt whether rules and regulations improve the quality of audit work.

But now it's all in written and reconfirmed I'm not sure whether it improved compared to the way it was. And that's not because I have a romantic view of the world that everything used to be better, but the question is whether all the rules and behavioral changes through protocols, techniques and methods should and can replace the passion for doing responsible work; this seems highly questionable.

partner, Next 9

In the following quote a partner recognizes the need for formal commitments but also highlights the risks.

Before you know it you are just staring at the file all day and only completing checklists. But you need to talk to people to find out exactly how things work. And I think this is indeed what auditors do, but the focus has shifted towards documentation. I'm not saying that is not important, but it is much more important that your ultimate judgment is correct. These two need to be separated.

partner, Big 4

Overall, the evidence suggests that audit firms follow a preventive error approach. According to the error handling literature, prevention as such is not amiss: obviously errors should be avoided wherever possible. However, as mentioned before, it brings along the risk that too much emphasis on prevention creates a fear of making errors.

Strain/Fear

A major barrier to the effective functioning of error management and thus to the learning potential of an organization is the fear of making an error. Generally, interviewed auditors confirm the presence of fear in their profession and acknowledge that fear can have undesirable effects:

I think fear [is] a poor incentive. If you are really scared you are going to make mistakes. Once you are that stressed, every document you sign can become the next issue.

partner, Big 4

The probability of internal reviews and AFM supervision and inspections are often cited as causes of fear, as illustrated by the following quote.

Yesterday I got an email saying there will be an internal quality review and that these files can also be selected by the AFM. All the alarm bells start ringing and not because I didn't do my work, but, the potential consequence of something coming out, is that you will be beaten with a stick. This triggers a culture of fear. The question is whether this is a positive development for the organization.

*m*anager, Big 4

The following quote implies that the learning effect is outweighed by the fear of possible errors.

Someone who says, "This [a review] is nice, I can learn from it," is crazy. The rules are very strict and it's just frightening to anticipate the outcome of such a review.

partner, Big 4

One manager noted that she indirectly experiences pressure from the AFM supervision.

The feeling that I personally experience is the fear that 'there's someone looking into our files and what if ...'. Quality at all the large firms has been assessed as unsatisfactory. I find this very difficult because even though you can use it to improve your quality, now I notice a kind of fear. Driving people to formally comply with everything just to cover their base.

manager, Next 9

Although errors are by definition unintentional we observe in the interviews that there is a reasonable level of fear of sanctions as a result of errors (e.g., not being promoted or not receiving a bonus). An

error management culture should inhibit such sanctions in order to prevent fear; in this respect, some interviewees acknowledge the adverse effects of punishing errors.

> *And the compliance department can now keep an eye [on the list of errors] but they are not supposed to act upon it. Unless errors have to do with criminal law, so something happened which really should not.*
>
> *partner, Big 4*

> *The AFM says, 'next time our findings will have consequences, which could be fines.' Then you find yourself in such a culture. That in itself is a pity.*
>
> *manager, Next 9*

The following two quotes illustrate that fear of how negative publicity plays an important role.

> *In our view fines are actually a derivative, publicity is much worse.*
>
> *partner, Other*

> *You do not want to find your name on the front page [of a newspaper] for that reason.*
>
> *partner, Big 4*

Fear of negative publicity may also result from the fact that it is difficult to go into the nuances of the story in the media.

> *It gets so incredibly oversimplified. That makes me really angry. You can't share relevant details and tell the real story.*
>
> *partner, Big 4*

The fear of not complying with regulations is not only a barrier to learning but also a potential barrier to innovation, as illustrated by the following quotes.

> *Auditors are used to audit the financial statements in the traditional way, being compliant with auditing standards. Data analytics is a kind of 'out of the box' thinking, which requires one to dare to make choices. Today, sampling is generally accepted. Also by the regulators. But data analytics is new and we don't know yet if it is accepted by the regulators. This ultimately prevents auditors from applying [data analytics]. It is much more thorough, but we don't dare to use it.*
>
> *manager, Big 4*

> *It is wrong to be afraid to make mistakes. It blocks that creative process which we as auditors need in order to innovate the audit process.*
>
> *manager, Big 4*

According to one interviewee, fear can be reduced by knowing that firm leadership will stand up for their people.

> *I will also make mistakes. When that happens I hope I will receive support […] and that I won't be slapped immediately.*
>
> *partner, Big 4*

Such support is perceived at lower ranks:

But I did not detect it [the error]. I appreciated that he did not cast blame on me. Rather, he said, 'I did not see it either. Stupid.'

manager, Next 9

Meanwhile, the following statement by a partner in a small office is that one generally does not experience fear.

But I have not yet noticed that someone is afraid to admit he made a mistake. The typical reaction is 'Hey, how are we going to fix this?'

partner, Small

In conclusion we note that fear of making errors is perceived as a problem, even though staff-level auditors typically experience such fear to a lesser extent, probably because they find themselves in a formal learning process where making mistakes is somewhat more accepted. In addition, they carry less responsibility for the audit than for example the audit partner or manager.

Openness

As discussed in the literature review, an error management culture offers opportunities to communicate openly about errors so they can be shared among organizational members, with the ultimate goal of learning. Interviewed auditors would clearly like to see such openness in practice, as illustrated by the following quotes.

That's the environment I really would like our people to experience. Where you can just come out with your misery. Because misery is everywhere and every day.

partner, Next 9

And my motto is: You should be able to report errors without sanctions, blame-free.

partner, Big 4

The following example confirms that auditors acknowledge the benefits of openness but also suggests that openness in practice can be significantly improved.

We first always engage in a kind of independent fact-finding. And then, if all is well – while, to be honest, I do not do this often enough – we sort of debrief the team.

partner, Next 9

Next, we will first discuss some quotes that imply an increase in openness, followed by some quotes that suggest reduced openness to discuss errors.

Examples of openness

The following two quotes imply an increase in openness.

What you fortunately see […] is that things are becoming more open, and more people dare to say it when something is wrong or when an error has been made. This is also what we do internally. In this respect we have technical meetings or partner meetings a few times a year, in which we also raise issues, oftentimes on an anonymous basis, but in the end, everybody knows what it is about.

partner, Next 9

You see changes in level of openness. And that also means that you get to know each other more, and are aware of problems in other teams or departments.
This allows you to talk about problems in the open. Given that we are organized relatively centrally, we can quite easily observe where the problems are.

manager, Next 9

The following quote is noteworthy because the partner states explicitly not to get upset if an error is communicated. This likely leads to less fear about being open.

Take an employee who comes to me and says, 'I've made an error'. I never get angry; I'm glad they inform me. Then you can start solving the issue.

partner, Small

A manager indicates that problems are openly shared.

Everyone is attending. It is sufficiently open to simply put the issues on the table. Like, 'Oh, that was not good, how do you deal with it?'

manager, Next 9

In workshops and courses, auditors appear to discuss errors in general terms, but openness about auditors' own errors is very limited.

But there was also something that I occasionally thought of as 'we have discussed this incident,' in a kind of workshop about making errors. And in the following weeks, there were still colleagues who informed me 'look, I have a similar issue.' Or somebody calls and says, 'Gosh, if you are in the neighborhood, can you come over?' That's not bad. Look, receiving a general pardon is impossible; if you've really made an error we have to act accordingly. But please, inform me about things like that. Only if you do we can help you and solve the issue together.

partner, Next 9

We did not actually organize a session about that particular audit file, but more about that topic. We have broadened the issue: 'What kind of things can go wrong?' The debate that followed was the start of the current transparency.

partner, Next 9

Examples of lack of openness

The interviews produced many examples of lack of openness and even mechanisms that limit the sharing of errors. Interestingly, (professional) pride appears to explain such behavior in some cases, as illustrated by the following quote:

If pride is leading, you will not admit the error and won't be open. Then you get stuck and think 'it will pass'. And I have seen examples of this. Actual engagements where… well I leave the example for what it is: one audit file was filed for almost two years in the cabinet waiting for better times. This has proved to be quite symptomatic of what happens elsewhere in our practice.

partner, Next 9

Also, auditors sometimes perceive difficulties in finding an appropriate time to share information about errors. A manager explains this by referring to alternating teams.

You may work for five different clients. What happens with the other 25 clients, you might get some information in the corridors. However, if an error is made in an audit file, I will not hear about it right away. And I can imagine that it is not written on the bulletin board. Typically, there won't be a suitable moment to share it. You are busy with another team in another engagement.

manager, Next 9

The following quote elaborates how partners' sense of responsibility for an error incentivizes them to stop involving the team. Such behavior arguably reduces the opportunity for team learning.

Sometimes you see partners pull issues from the team, making it their problem because they think they have to solve it themselves. And that's a little tricky because there is still a team that will expectantly look at you and ask, 'what are you going to do about it?' You are their role model. So you deprive them information and at some point in time they will think, 'he has tucked it away'. The team will recognize this before you do yourself. And they will remember that for a long time. This is where the true 'number one' error occurs: 'Pulling the issue from the team, taking care of it yourself'. And finally, the team continues working on the next engagement.

partner, Next 9

In contrast to our earlier remark, the following staff auditor feels constrained to speak up about errors because of career-related concerns.

But you won't say anymore, 'I came through the last review quite well. I had made some errors: lucky me!' That is not something you speak up about. If it would happen to me, I would not tell others in the corridors.

staff auditor, Big 4

The manager in the following quote agrees that errors are typically not being made public, even though openness would be desirable.

I would also like it [discussing a specific case], but that's not something we communicate within the team or with anyone else. In fact, everybody is aware that something went wrong, but we won't broadcast the issue.

manager Big 4

The following partner claims that sharing errors leads to punishment rather than reward. As a result, error management and learning from errors are obstructed (Edmondson, 1999).

So a colleague of mine signaled an error and solved it, in consultation. I think he deserves a compliment. But there won't be a compliment, rather a reprimand.

partner, Big 4

The fear of 'naming and shaming' creates another constraint to openness.

We won't know that someone in Amsterdam did something wrong. The result would be 'naming and shaming' and that wouldn't solve anything at all.

partner, Big 4

Conversely, one interviewed manager perceives the 'naming and shaming' phenomenon as an incentive to improve quality.

The AFM recently acquired more tools. Their findings at firm level will be made public as of this year. So 'naming and shaming' will be applied. I think this might even be a greater incentive to improve quality than a fine.

manager, Next 9

In summary, interviewed auditors recognize openness as a key element of an error management culture but the majority of interviewees points to its limited enactment in practice.

Analysis

According to the error management literature, learning from errors requires a proper analysis of the error (Van Dyck et al., 2005). Analysis of errors can be argued to be one of the core activities performed by an auditor. When an error is discovered one of the tasks of the auditor is to assess whether its effect on the audit may lead to the failure of discovering material errors in the financial statements or not. Many interviewees mention this type of analysis. However, as discussed in our review of the literature, the consequences of an error (whether severe or mild; material or immaterial) should be distinguished from the error itself in order to learn from an error regardless of its consequences.

Members of an organization with an error management culture analyze the *cause* of an error not only with the aim to *correct* the error, but also to *learn* from it. Interviews do not feature discussions of analysis with this latter objective, which is probably related to the previously discussed mixed findings regarding the level of openness at audit firms.

Some interviewees indicate that auditor errors are sometimes analyzed with the aim of building a 'wall of defense'. The following partner explains that when an error is made, auditors tend to instinctively try to defend their actions, leading to a delay in the analysis of said error.

> *Nevertheless, errors are made and will continue be made. For me personally, the first reaction when I make an error is, 'no, this can't be true, I'm going to fight it.' And the effect or risk thereof is that you defer the issue for a few days. Finally, professionalism will usually prevail by instinct, like, ' Now, I'm going to do something about it.'*
>
> *partner, Big 4*

Such a defensive wall is also observed in the context of engagement reviews, resulting in reduced learning potential.

> *The consequence of a review is that a line of defense is raised. The auditor knows that if he has organized her defense insufficiently, that will have consequences for her and the audit firm. This makes it very difficult to be able to learn and to be open to feedback.*
>
> *manager, Next 9*

Another partner relates such defensive actions to the fact that auditors are held accountable for their errors and explicitly recognizes the adverse consequences for learning potential.

> *Since consequences can be serious, there is a temptation to think, 'It's not documented in the file, but I've still done a lot of work. Can't you take that into account?' Those are all defensive impulses that arise because you will be held accountable for your errors. This applies not only to the partners but also to auditors in general. Yes, it's difficult while being criticized to think, 'this is a fantastic learning opportunity'.*
>
> *partner, Big 4*

Another barrier to properly analyzing (and learning from) an error is the nature of the auditor-client relationship.

> *There is a client who says, 'listen I have had a fraud, you stood by and watched it happening, who will pay?' The first thing you will do is purely defensive by explaining and motivating why we haven't done anything wrong. That's really the approach. You tell the client that you are being neutral, but you are not neutral; you just want to build your first wall of defense.*
>
> *partner, Other*

A possible cause of the frequently discussed tendency to use defense mechanisms is the fear of the consequences an error can have. Such mechanisms may inhibit learning from errors.

In the next section we examine how the findings regarding the sub-topics of handling errors relate to the issue of learning from errors.

Learning

Interviewees frequently bring up instances of learning for example during training and courses. However, the focus of our study is on *learning from errors*, occurring both at the individual and the collective level. Accomplishing that type of learning necessitates open communication about the committed errors. However, as discussed earlier, such openness appears to be generally limited in practice. While individual learning is also clearly important, we focus primarily on collective learning from errors at the level of the team, the organization (audit firm) and the (inter-firm) profession. In the remainder of this section, we will discuss the findings with respect to learning from errors at these three levels.

Learning from errors at the team level

Some auditors recognize that learning from errors made by other team members is possible. In the words of a partner from a Big 4 firm:

> *To make a long story short. I learned quite a lot from an error (made by a colleague) as I can tell exactly what happened although it was three years ago. So sharing that kind of information is very effective. Actually, everyone should reach this kind of wisdom.*
>
> *partner, Big 4*

However, one of the interviews also reveals that lack of openness frequently prevents information from being shared at the team level, leading to difficulties in learning from errors.

> *It has not really been an issue at the team because that discussion has been kept from them.*
>
> *manager, Big 4*

Hence, while learning at the team level occurs, there are significant barriers that limit this potential.

Learning from errors at the organizational level

Moving on to the firm level, a manager from a Big 4 firm emphasizes that learning is generally limited to the team level. The resulting risk is that similar errors can be made in other teams.

> *So we're going to instruct people at the team level, in the form of a workshop, and tell them what went wrong and why it is so important.*
>
> *manager, Big 4*

We also observe that errors and incidents are primarily shared in generic format terms during firm-wide courses and training. As a result, learning from concrete errors does not seem to occur extensively at the organizational level during internal courses.

But such incidents are indeed sometimes shared during internal courses as generic examples.
manager, Big 4

A partner of a Big 4 firm confirms that the extent of learning is extensive, but not on the basis of made errors.

Learning is promoted but certainly not on the basis of errors made.
partner, Big 4

Another partner at a Big 4 firm provides an interesting example that is in contrast with most of what we observe in the remaining interviews. This particular firm has established a body at the organizational level in which discovered errors in the financial statements are discussed with the purpose of analyzing these errors, and subsequently correcting them and learning from them. This appears to be a step in the direction of an error management culture. As shown by the quote below, the firm acknowledges the need to foster open communication and to minimize fear of punishment.

I think it's important that if you make a mistake you discuss this openly [in a specifically assigned committee or panel] to analyze and reach an understanding of the causes, so you can eventually learn and, if necessary, take the appropriate measures. At the same time, we also have a compliance office. If an auditor does not report an error and the compliance office later finds out about this error, the auditor has a big problem. We share the list of errors with the compliance office, but I tell them they are not supposed to take any action. Those involved must first analyze and address the error. Unless of course something happened that is really unacceptable.
partner, Big 4

Learning from errors at the level of the profession

For learning in a more general sense at the level of the profession, audit firms sometimes make use of (in)formal networks as a resource and sounding board. A manager at a Next-9 firm "picks up signals from other organizations" via colleagues, classmates, newsletters and practitioner journals. However, as noted by a partner at a small firm, sharing issues is only possible if the offices are geographically sufficiently dispersed to avoid exchange of information among competitors. A manager of a Big 4 firm confirms that competition concerns could prevent audit firms from sharing errors with each other.

Confidentiality is further mentioned as a barrier to learning at the level of the profession. Quoting a partner at a small firm:

Something came up for discussion and then I suggested to her what could have possibly caused it. I gave her the minimum level of information because of my duty of confidentiality.

partner, Small firm

Interviewees also referred to the Netherlands Institute of Chartered Accountants (NBA), which facilitates various professional meetings where knowledge about regulatory developments is shared. This occurs both at the level of the profession and at the branch level (e.g., auditors specializing in healthcare). While learning at these meetings is obviously key, their exclusive focus in not on learning from errors in particular.

One might further argue that audit firms have the potential of learning from inspection outcomes at other firms. However, even though auditors take note of public inspection reports, true learning from other firms' errors appears to remain limited. A manager at a Big 4 firm confirms this notion.

Of course there is the AFM report [about errors] but that information is very generic. But it would be good if you could learn from each other by sharing the details.

manager, Big 4

A manager at a Next 9 firm explains that verdicts by the auditors' disciplinary court are being analyzed with the aim of learning from them.

So the disciplinary court apparently issued a norm that we apply in our organization: What does this mean to our organization? Who is involved in our organization? What kind of engagements are at stake? […] Considering the consequences for our organization creates awareness. The conclusions are then reported in written. And when you read that report you think: 'Ouch'.

manager, Next 9

The following manager confirms the need to learn from others' errors at the level of the profession.

I think knowledge across the profession, transcending individual firms, should be shared. This will greatly help us to learn. And to promote learning from other's errors but also to learn from innovative ideas and creativity. That's very important.

manager, Big 4

Concluding, the interview results demonstrate that when errors are discovered, audit firms aim to manage the consequences; however, at the most, only the members of the respective team benefit from learning effects. Learning from errors is clearly a goal, but the errors and what can be learned from them is typically discussed in stylized and anonymized form only. Further, it is highly unusual to analyze the details of the cause of an error, arguably leading to limited learning potential. Audit firms focus primarily on error prevention, and lack the required stimulation of error management. While

audit firms have an obvious ability to learn, specific learning from errors seems to be limited in practice.

5. CONCLUSIONS AND DISCUSSION

This study is a qualitative exploration of how audit firms handle errors and learn from them. First, we conclude that auditors make an insufficient distinction between violations and errors. As a result, it is unclear for an auditor making an error how the environment will respond, leading to the risk that auditors anticipate sanctions that would typically follow from a violation. Such lack in nuance between errors and violations may hinder the establishment of an error management culture, because auditors are reluctant to discuss their errors amongst each other as a result.

In terms of errors versus error consequences, audit firms seem to pay limited or no attention to errors during (audit) activities that have no or an immaterial impact on the financial statements. As a result, such errors are not learned from, even though we know from the literature that one can learn from errors, regardless of their consequences (Van Dyck, 2009). Learning from such errors may prevent errors (with possibly much more severe consequences) in the future.

We further note a generally high degree of error prevention perceived in practice. Even though a preventive attitude is a necessity, putting too much emphasis on prevention creates the signal that errors should be prevented or avoided at any cost. This in turn can cause reduced willingness to talk openly about errors that do occur, because the anticipated response is one of blame. While interviewees understand that openness is a key element of an error management culture, its use in practice is relatively limited.

The interviews demonstrate a high degree of strain or fear. Strain represents a potential barrier to openness and thus to learning from errors. Strain can result from potential ‘naming and shaming’ (i.e., negative publicity and reputation loss). In current practice, publicizing the name of the person who made an error automatically means damaging this person’s reputation (‘shaming’). Ideally, the environment should be such that ‘naming’ does not automatically lead to ‘shaming’. In an effective error management culture, publicizing the error committer’s name should be stimulated and perhaps even rewarded; at the least, naming should not carry any negative consequences for the error

committer.[6] Several interviewed auditors note that fear can be reduced if the organization supports and stands up for the person who made an error.

According to the error management literature, one important goal of error analysis is to learn from errors. Interview results fail to show extensive evidence of such practices. Instead, error analysis is primarily used with the goal of correcting errors and sometimes even to construct a "wall of defense" out of fear for the negative consequences of an error.

Respondents suggest that audit firms spend a lot of time and resources on learning in general by means of training and courses. However, during such training, the emphasis is typically placed on the *prevention* of errors, while learning from actual discovered errors is limited. Meanwhile, we note that errors are discussed in the form of fictitious, anonymized or stylized cases. Unfortunately, previous research shows that learning from hypothetical errors is less effective than learning from actual errors, because the consequences of these errors are not experienced directly (Ivancic and Hesketh, 2000). Discussing actual errors would lead to greater learning potential.

We recognize that this study faces a number of limitations. First, the sample is relatively small and may not be fully representative of the population of auditors. For instance, we interviewed a relatively large number of partners compared to other ranks. Since this is an interview study, the presence of self-reporting biases and inaccuracies cannot be excluded. Also, we don't claim that we test the efficacy of error management theory; rather, we provide some preliminary insights into how auditors and audit firms deal with errors.

As discussed, an error management culture leads to learning from errors, but it may also stimulate innovation, innovative thinking and formulating new goals. Innovation is not only focused on improving existing processes (*single-loop learning*) but also to develop new processes (*double-loop learning*, see for example Argyris, 1977). In this study, we did not consider the relationship between handling errors and innovation. Further research is desirable because innovation for the sustainability of the accounting profession and the quality of future audits is clearly important (e.g., NBA, 2014).

[6] In this video clip, an unsuccessful surgery is being analyzed and the importance of naming without shaming is illustrated: https://www.youtube.com/watch?v=JzlvgtPIof4

Future research should also explore hands-on mechanisms through which error management can be stimulated and improved at audit firms, such as for example forms of Crew Resource Management, a training program which is frequently implemented in the aviation and healthcare sectors.

As noted, the current study is work in progress; hence, additional topics surfacing in the interviews are currently being analyzed. For instance, we notice that the role of auditing oversight is frequently brought up by interviewed auditors when they talk about how errors are being dealt with, suggesting that it forms a substantial barrier to open communication. Hence, based on the data gathered for this study, we will further examine the role of oversight and regulation in the context of error handling and learning.

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TABLE 1: Interview Participants

		n	%
Firm type	Big 4	11	46%
	Next 9[7]	9	38%
	Small	2	8%
	Other	2	8%
Rank	Partner/director	15	63%
	Manager	4	17%
	Audit senior	1	4%
	Staff auditor	4	17%
	Other	0	0%
Primary activities	Audit	18	75%
	Technical department or compliance	4	17%
	Advisory	1	4%
	Other	1	4%
Gender	Male	19	76%
	Female	5	24%
Total		**24**	

TABLE 2: Interview Concepts and Topics

Concepts	**Sub-Topics**
Error handling	Errors
	Error prevention
	Strain/fear
	Openness
	Analysis
Learning	Team level
	Organizational level
	Level of the profession

[7] Non-big 4 audit firms licensed to audit public interest entities.