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THE IMPACT OF MATERIAL WEAKNESS PRESENTATION STRUCTURE
AND INTERNAL CONTROL TERMINOLOGY ON INVESTOR PERCEPTIONS

A Dissertation Presented
by
MATTHEW WAYNE STARLIPER

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

MAY 2018
Management
THE IMPACT OF MATERIAL WEAKNESS PRESENTATION STRUCTURE AND INTERNAL CONTROL TERMINOLOGY ON INVESTOR PERCEPTIONS

A Dissertation Presented

by

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DEDICATION

I dedicate this manuscript to my dear wife Kayle. Thank you for being by my side through every step of this journey and for always believing in me.
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ABSTRACT

THE IMPACT OF MATERIAL WEAKNESS PRESENTATION STRUCTURE AND INTERNAL CONTROL TERMINOLOGY ON INVESTOR PERCEPTIONS

MAY 2018

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Management is required to disclose any material weaknesses discovered during its evaluation to prepare the company’s financial statements in their internal control over financial reporting (ICFR) report. Across two experiments, I examine the impact of two presentation characteristics of a material weakness made up of multiple, smaller problems—(1) the structure of the presentation of the material weakness, which is whether the material weakness is identified first, followed by descriptions of its individual parts (Top Down structure) or vice versa (Bottom Up structure) and (2) whether or not the parts of the weakness are labeled with ICFR terminology (“significant deficiencies” vs. “issues”). In my first experiment I find evidence that presenting the material weakness last, in comparison to presenting the material weakness first, increases the perceived number of distinct problems that investors perceive in a company’s ICFR, but I ultimately do not find that this structure significantly impacts investors’ perceptions of investment desirability. In my second experiment, I specifically examine how using (versus not using) ICFR terminology to identify the parts of the material weakness impact investors’ perceptions of the severity of the material weakness and how the presentation
structure moderates that relationship. I find that using ICFR terminology increases the perceived overall severity of the weakness, although the effect of presentation structure is insignificant. I also find that using ICFR terminology negatively affects the investment desirability of a company through two separate paths—ICFR terminology increases (1) the perceived number of distinct problems in ICFR and (2) the perceived severity of the individual parts of the material weakness. Both of these paths increase the perceived severity of the material weakness, which then decreases investment desirability. Lastly, providing a definition for the ICFR terminology (i.e., an explanation that “significant deficiencies” are relatively less severe deficiencies than material weaknesses) does not impact the effect of ICFR terminology on perceptions of weakness severity.

**Keywords**: internal control over financial reporting; material weakness; significant deficiency; presentation format.
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CHAPTER 1
INTRODUCTION

The Sarbanes-Oxley Act of 2002 (SOX) mandated a number of reforms regarding a company’s disclosure of internal control over financial reporting (ICFR). In particular, section 404a of SOX requires companies filing periodic financial statements with the Securities and Exchange Committee (SEC) to include a report that specifies management’s responsibility for establishing and maintaining internal controls and assesses the effectiveness of the internal control structure (U.S. House of Representatives 2002). The purpose of this dissertation is to examine the impact of one aspect of this ICFR report over which management has much discretion: the presentation of a material weakness when ICFR is deemed to be ineffective, in particular when the material weakness is the result of multiple, smaller deficiencies. I examine how changing the presentation structure of a material weakness and how using ICFR terminology to identify the parts of the material weakness impact investors’ perceptions of the severity of the material weakness. I also investigate mechanisms through which these aspects of material weakness presentation impact investors’ perceptions of the overall severity of the material weakness and, ultimately, the desirability of the company as an investment.

It is important to examine this issue because management’s report on ICFR can vary dramatically in presentation and content from firm to firm. The SEC requires few disclosures in the ICFR report beyond stating management’s responsibility over ICFR, the framework with which management evaluated ICFR, and management’s conclusions on the effectiveness of ICFR (SEC 2003). This statement is particularly true when a company’s internal control system is ineffective as management has great latitude in
describing the details of the control deficiencies and/or weaknesses (Rose et al. 2010; Tadesse 2015; Tan and Yu 2018). Because the disclosure of ineffective ICFR has a negative impact on companies (Hammersley et al. 2008; Ashbaugh-Skaife et al. 2009), it is important to understand how management’s discretion over different disclosure presentations of material weaknesses may differentially impact investors’ perceptions of the company’s ICFR. The presentation of this weakness can be structured to highlight either the overarching weakness or the individual parts of the weakness. Additionally, when a material weakness is the result of a number of less severe deficiencies, the parts of this weakness can be labeled with ICFR specific terminology (e.g., “significant deficiency”) or with terminology that is not unique to the ICFR context (e.g., “issues”, “factors”, etc.; see Appendix A for examples of different presentations of material weakness that vary in their terminology use and structure from actual ICFR reports). I conduct two studies to examine how these two aspects of the presentation of a material weakness made up of smaller control deficiencies impact investor perceptions of a company.

In my first study, I examine how the presentation structure of the material weakness impacts investors’ perceptions of the desirability of a company as an investment. Relying on partition dependence theory in psychology (Pelham et al. 1994; Fox, Bardole, et al. 2005), I predict that, absent any extra internal control instruction, a presentation structure that highlights the individual parts of a material weakness (or a Bottom Up structure) leads investors to perceive more internal control problems within ICFR, which leads investors to infer the material weakness to be more severe and reduces the investment attractiveness of the company as opposed to a structure that highlights the
overarching material weakness (or a Top Down structure). I also examine an intervention that provides investors with extra instruction concerning ICFR. This intervention explains to investors that it is the possibility of misstatement rather the number of issues that makes a weakness material. This intervention should reduce the impact of presentation structure on the perceived number of internal control problems by helping investors move away from the automatic processing caused by how the parts are structured (Monga and Bagchi 2012).

I perform a $2 \times 2 + 2$ between-subjects experiment using MBA students as proxies for non-professional investors to test my predictions. I manipulate the presentation structure variable as whether the material weakness as a whole is first disclosed after which the parts of the weakness are described (Top Down structure), or the individual parts of the material weakness are first disclosed and then are described together as a material weakness (Bottom Up structure). I also manipulate whether or not the participants receive the instruction that I explained previously.

First, I find evidence that, absent the internal control instruction, investors believe more strongly that there are multiple, distinct problems in ICFR when the material weakness is presented with the Bottom Up structure than when it is presented with the Top Down structure. Additionally, I find that this effect is moderated by the presence of the instruction insomuch that the impact of presentation structure on the perceived number of problems in ICFR is reduced. To test how material weakness presentation structure impacts the investment desirability of the company, I construct a model that theorizes that material weakness presentation structure impacts investment desirability through its effects on the perceived number of problems in ICFR and the perceived
severity of the material weakness. Conducting structural equation modeling (SEM), I initially find evidence that the Bottom Up (as opposed to Top Down) structure has a significantly negative indirect effect on investment desirability; furthermore, I find that this indirect effect is moderated by the internal control instruction. However, this indirect effect becomes insignificant based on an updated model where both the relationship between presentation structure and the perceived number of problems and between the perceived number of problems and perceived overall severity are free to vary with instruction.

In my second study, I examine another aspect of the presentation of a material weakness: the terminology used to identify the parts of the weakness. Based on prior research on technical jargon (Jardine and Hrudey 1997; Oppenheimer 2006) and the inherent affect associated with words (Warriner et al. 2013), I predict that using ICFR terminology (as opposed to using non-ICFR specific terminology) will increase investor perceptions of the severity of each individual parts of the material weakness because the affect inherent to the ICFR terminology (e.g., “significant deficiency”) is perceived to be more negative than non-ICFR terminology (e.g., “issues”, “factors”, etc.) (Warriner et al. 2013). Moreover, based on the previously mentioned partition dependence theory (Pelham et al. 1994; Fox, Bardolet, et al. 2005), I predict that the effect of ICFR terminology on perceptions of material weakness severity will be moderated by the presentation structure of the material weakness. A Bottom Up presentation structure should increase the differences in perceptions of severity when ICFR terminology (as opposed to non-ICFR terminology) is used because this structure leads investors to perceive there to be more distinct internal control problems within ICFR, which
highlights the negative affect inherent to the ICFR terminology. On the other hand, a Top Down presentation structure leads investors to perceive fewer distinct internal control problems because they fall under the overarching material weakness umbrella, which could reduce the impact that the terminology has on overall perceptions of the severity of the weakness. Finally, I predict that ICFR terminology will impact investors’ perceptions of the investment desirability of the company through its impact on the perceived severity of each individual parts of the weakness and the overall severity of the material weakness and that this indirect effect will be moderated by presentation structure.

I perform a $2 \times 2 + 2$ between-subjects experiment using MBA students as proxies for non-professional investors to test my predictions. I manipulate ICFR terminology by using either a term that is unique to the context of ICFR (“significant deficiency”) or a common-use English term (“issues”). I manipulate presentation structure using the two structures described in my first study: the Top Down structure or the Bottom Up structure. Finally, as an additional analysis I add two experimental groups where participants in both the Top Down and Bottom Up conditions are provided a definition of the ICFR terminology (i.e., “significant deficiency” + definition).

Consistent with my prediction, I find that investors perceive a material weakness to be more severe when the parts of that weakness are identified as “significant deficiencies” rather than “issues.” Contrary to my expectations, however, I do not find that presentation structure moderates this effect or impacts investors’ perceptions of the number of distinct problems in ICFR. Instead, I find that identifying the parts of the material weakness as “significant deficiencies” (as opposed to “issues”) significantly increases the perceived number of distinct problems in ICFR. One potential explanation
to this unexpected finding is that semantically unique words (such as “significant deficiencies”) in a specific context tend to be more “distinct” to readers (Schmidt 1985; Schmidt 1991). This distinctness may lead investors to evaluate the parts of a material weakness individually rather than as a whole. Moreover, words with negative connotations lead readers to put more attention and processing into those words compared with neutral words (Schmidt and Saari 2007), which also suggests that labeling the parts of a material weakness as “significant deficiencies” as opposed to “issues” increases the perceived number of distinct problems in ICFR.

I conduct a SEM analysis to test how using ICFR terminology impacts the investment desirability of the company. I find that ICFR terminology has two significantly negative indirect effects on investment desirability. On the one hand, identifying the parts of the weakness as significant deficiencies (as opposed to issues) increases the perceived number of distinct problems in ICFR, which increases the perceived overall severity of the weakness, which in turn decreases investment desirability; on the other hand, identifying the parts of the weakness as significant deficiencies (as opposed to issues) increases the perceived severity of each of the individual parts of the weakness, which increases the perceived overall severity of the material weakness, which in turn decreases investment desirability.

Finally, I do not find that providing investors with the definition of the ICFR terminology used in the report (i.e., significant deficiency) differentially impacts investors’ perceptions of the severity of the weakness even though providing the instruction does increase investors’ understanding of the difference in severity between material weaknesses and significant deficiencies.
These studies present a number of contributions to theory and practice. First, these studies contribute to the growing number of accounting studies that examine how management’s discretion over the disclosure of internal control issues impacts investors’ judgements and decisions. Prior research has found that the amount of details in a material weakness disclosure (Rose et al. 2010), the degree of responsibility that management accepts for the material weakness (Tan and Yu 2018), and the degree to which the material weakness is disaggregated (Tadesse 2015)\(^1\) influence investors’ perceptions of the company. I contribute to this stream of research by showing that the language used in an ICFR report, such as the specific terminology, impacts investors’ perceptions of the company while keeping the description of the material weakness constant.

This dissertation also contributes to the psychology literature by answering a call for research investigating different ways that influence how people subjectively partition a multi-part issue (Fox, Bardolet, et al. 2005). The results of my second study suggest that people partition a multi-part issue based on the terminology used to label the individual parts. Prior research has found that people partition a multi-part issue based on the partition structure suggested to them, such as the number of parts suggested, the visual placement of the parts, or even narrative suggestions of the grouping of the parts (Benartzi and Thaler 2001; Fox and Rottenstreich 2003; Fox and Clemen 2005; Shah and Oppenheimer 2011). However, as far as I am aware, no study has yet found that merely

\(^{1}\) Tadesse (2015) focuses on the effect of a physical disaggregation of a material weakness into its parts (moving from a description of a single material weakness to a description of a material weakness with separately identified control deficiencies, which involves a change in content of the material weakness description) while my study focuses on how presentation structure and ICFR terminology impact the conceptual partitioning of the weakness (i.e., a conceptual disaggregation) while keeping the content of the description of the weakness the same.
changing the label attached to the individual parts influences the number of distinct parts people perceive in a multi-part issue.

While my first study found evidence that presentation structure impacted how participants partitioned the material weakness, I did not replicate those results in my second study. Therefore, the conclusions that I can draw about presentation structure’s influence on subjective partitioning are limited. One potential reason that this result was not replicated in my second study is that participants in my second study had a significantly larger amount of professional work experience than those in my first study. It is possible that people with more work experience have learned how to access and analyze information necessary for their decision making so that they are less affected by partition structure as those without that experience. I leave to future research to examine whether professional work experience or other conditions may influence how presentation structure may affects how people partition a multi-part issue.

My second study also contributes to practice because its implications should be of interest to the management of public companies that issue ICFR reports and also to financial regulators who care about investor behavior. To public company management, this study shows that using ICFR-specific terminology when disclosing a material weakness made up of multiple smaller deficiencies can lead to negative investor reactions. My study also informs management that providing the definitions of ICFR terminology may not be beneficial, in terms of influencing investors’ reactions to the material weakness disclosure, even though it does increase investors’ understanding of the difference in severity of different deficiency types. Regulators should find my study informative because I show that management’s discretion in disclosing specific
information about a material weakness influences investors’ judgments and decisions. Specifically, management could improve the perception of a disclosed material weakness by merely changing the labeling of the parts of the weakness. Relatedly, regulators should be interested to know that investors do find information about the deficiencies that make up a material weakness useful in their evaluation of a company’s ICFR, which may lead regulators to consider additional regulation about the type of information management should be required to disclosure about a material weakness in ICFR.

The remainder of this dissertation is organized as follows. In Chapter 2, I provide some background information and a literature review concerning ICFR reports. In Chapter 3, I present the hypotheses, methodology, and results of Study 1. In Chapter 4, I present the hypotheses, methodology, and results of Study 2. Finally, I present my conclusions in Chapter 5.
2.1 Internal Control over Financial Reporting

ICFR includes those company policies and procedures that are meant to give assurance to outside investors of the reliability of the financial information provided by company; these controls provide investors assurance by reducing the risk of recording inappropriate or inaccurate transactions due to error or fraud (SEC 2003). Weak internal control systems increase the risk that investors make financial decisions based on materially misstated information. Prior research has shown that firms with weaker ICFR experience higher abnormal accruals, inherent risk, and information risk than firms with stronger ICFR because weaker ICFR suggests a high level of information uncertainty present in a firm’s publicly available financial information (Ashbaugh-Skaife et al. 2008; Hogan and Wilkins 2008).

The SOX provisions requiring companies to assess and report the effectiveness of their ICFR give investors an extra signal with which to assess the future profitability and cash flows of a company, which impacts their investing decisions (Lambert et al. 2007). Prior research has found that the market considers these signals informative, more so when ICFR has been assessed to be ineffective (Schneider et al. 2009). Research has found that disclosing ineffective ICFR leads to stock price decreases (Beneish et al. 2008; Hammersley et al. 2008; Ashbaugh-Skaife et al. 2009) and increased equity and debt cost of capital (Ashbaugh-Skaife et al. 2009; Dhaliwal et al. 2011). These studies suggest that companies are incentivized to find ways to reduce these negative consequences of disclosing ineffective ICFR. In this dissertation, I examine how different ways of
presenting a material weakness can influence investors’ perceptions of this negative signal.

The SEC develops specific rules on how companies should comply with section 404a of SOX. Regarding management’s report on ICFR, the SEC requires management to (1) state that they have the responsibility to establish and maintain adequate ICFR, (2) identify the internal control framework used by management to evaluate the effectiveness of ICFR, (3) conclude on the effectiveness of ICFR for the fiscal period and disclose any material weaknesses discovered, and (4) include a statement that a registered public accounting firm attested to management’s evaluation of ICFR (SEC 2003). Additionally, the SEC prohibits companies from concluding that their ICFR is effective if one or more material weaknesses are identified in the report (SEC 2003). It is important to note that companies are not required to disclose less severe internal control deficiencies such as significant deficiencies and control deficiencies, and firms that do disclose such deficiencies do so voluntarily (Doyle et al. 2007). There is little other guidance given to companies concerning the content to present in the report or how to present the content of the ICFR report.

Because companies face negative consequences of disclosing material weaknesses and regulators require little in terms of presenting material weaknesses, it is important to understand how different ways of presenting a material weakness influences investors’ perceptions of the company.

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2 SOX section 404b requires public companies to have an independent external auditor attest to the conclusions made by management in their section 404a report. Non-accelerated filers (those with public float under $75 million) were permanently exempted from the SOX 404b requirement for an external auditor to attest to management’s 404a report by the Dodd-Frank Act of 2010 (SEC 2010).
2.2 The Presentation of a Material Weakness Made Up of Multiple Parts

The SEC specifically defines a material weakness as “a deficiency, or a combination of deficiencies, in ICFR such that there is a reasonable possibility that a material misstatement of the registrant’s annual or interim financial statements will not be prevented or detected on a timely basis” (Securities and Exchange Commission 2007a, 17). This definition highlights that a material weakness does not have to be just one major deficiency; rather, it can be made up of a number of individually less severe deficiencies that have the combined effect of a material weakness (see also PCAOB’s AS 2201.65). While management is required to disclose any material weaknesses in its ICFR report, the rules established by the SEC do not specify how or to what extent management should disclose these material weaknesses, especially when a weakness is made up of multiple, less severe deficiencies.

In this dissertation, I focus on the situation where the firm has to disclose a material weakness which is made up of multiple parts. Prior research has found that the amount of details in a material weakness disclosure (Rose et al. 2010), the degree of responsibility that management accepts for the material weakness (Tan and Yu 2018), and the degree to which the material weakness is disaggregated (Tadesse 2015) influence investors’ perceptions of the company. In my dissertation, I examine two presentation features of material weaknesses made up of multiple, smaller parts: the presentation structure of the material weakness and the terminology used to identify the parts.

---

3 As described by the PCAOB, a deficiency “in internal control over financial reporting exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatements on a timely basis” (AS 2201.A3).
CHAPTER 3
STUDY 1

3.1 Hypothesis Development

3.1.1 Presentation Structure and the Perceived Number of Issues within ICFR

Research in psychology has found that when people evaluate a multi-part issue, they subjectively partition the issue into subgroups based on the partition most accessible to the individual (Fox and Rottenstreich 2003; Fox et al. 2005a). This is known as partition dependence theory. The main findings from this “partition dependence” research are that people’s judgments and decisions are impacted by how they perceive the partition of the issue under evaluation and that the partition people perceive can be influenced by how information is presented to them (Fox and Levav 2004). Research suggests that adoption of the partition tends to be automatic in that people accept and utilize the partition initially presented to them (Fox and Clemen 2005). These findings are robust and have been replicated in numerous experimental contexts including probability judgments, investment allocations, attribute weighting, financial aid distributions, and charitable giving (Weber et al. 1988; Benartzi and Thaler 2001; Fox and Rottenstreich 2003; Fox et al. 2005b).

In this first study, I examine how the presentation structure of the material weakness and the parts which make it up can act as a conceptual partition of the material weakness. In the Top Down structure, the material weakness is first disclosed and the parts of the weakness are then described. In this case, investors are less likely to perceive a partition because first disclosing the material weakness acts as an “umbrella” under which the parts of the weakness are then grouped. Under this umbrella, the parts of the
weakness could be more strongly inferred to be related to a similar issue (Steyvers et al. 2003), which could lead to a perception of fewer distinct problems for management to face within ICFR. On the other hand, in the Bottom Up structure, the parts of the weakness are disclosed first and then are described together as a material weakness. Because there is no initial higher-level “umbrella” for the parts to be grouped under, people will automatically create multiple partitions in the weakness because the parts appear to be more separated. The multiple partitions are automatically adopted; therefore, it is much harder to group them under the material weakness “umbrella” ex post, which could lead to a perception of more distinct problems within ICFR. This discussion leads to my first hypothesis:

**H1a:** Absent other instruction on ICFR, investors will perceive a higher number of problems in ICFR when the material weakness is presented in the Bottom Up structure than in the Top Down structure.

### 3.1.2 Intervention to Avoid Unconscious Partitioning

Because research suggests that the adoption of a specific partition tends to be an automatic, unconscious process (Fox and Clemen 2005), I investigate a strategy to help investors move away from automatically creating the partitions in the Bottom Up structure so that the material weakness presentation structure has a reduced impact on the perceived number of problems. The strategy I develop is a short intervention (“the instruction”) that explains to investors that it is the possibility of misstatement rather the number of issues that makes a weakness material. Prior research suggests that when there are multiple, hierarchical levels at which a subject can be partitioned, people can move away from using low order partitions, which in this case represent the individual parts of
the weakness, by helping them develop abstract mindsets (Monga and Bagchi 2012). I predict that providing the instruction will help investors consider the overall picture of the material weakness and how the parts come together to form the weakness rather than rely on the lower order partitions to infer the number of problems in ICFR. Therefore, the instruction should moderate the effect I predict in H1a so that there is a weaker relationship between the presentation structure and the perceived number of problems in ICFR. My next hypothesis is formally stated as follows:

**H1b:** Providing the instruction to investors will moderate the effect of material weakness presentation structure on the perceived number of problems in ICFR so that the perceived number of problems in ICFR differs less between presentation structures.

H1a and H1b jointly predict a two-way interaction between presentation structure and instruction. The graphical depiction of H1a and H1b is shown in Figure 1.

### 3.1.3 Impact of Presentation Structure on Investment Desirability

#### 3.1.3.1 Effect of Perceived Number of Problems on Weakness Severity

I predict in my first hypotheses that material weakness presentation structure will impact investors’ perception of the number of problems in ICFR. I further predict that material weakness presentation structure will have a negative effect on investors’ perceptions of the desirability of the company as an investment through its effect on the perceived number of problems in ICFR and the perceived overall severity of the material weakness.

Research in psychology has generally found that individuals tend to infer the size of an object or the likelihood of an event by the number of subunits into which it is
divided, particularly when individuals are motivated to be accurate and the task is difficult (Petty and Cacioppo 1984; Pelham et al. 1994; Pelham and Neter 1995; Burson et al. 2009). In the context of ICFR disclosure, the perceived number of problems in ICFR is the subunits into which the material weakness can be divided. Therefore, as the perceived number of problems in ICFR increase, the perceived “size” (i.e., severity) of the material weakness increases.

Investors tend to use this number of issues to infer the severity of the ICFR problems because investors face challenges with understanding how the internal control problems that management discloses may ultimately impact the financial statements (Lambert et al. 2007). For example, investors need to know how seriously the internal control failures weaken the reliability of the information in the financial statements and how easily or effectively management will remediate the failures. Unfortunately, such information is usually not readily available from management’s report, and investors have to infer these conclusions from the facts (i.e., evidence) management presents in its ICFR report.

As a result, investors (and non-professional investors in particular) should find evaluating an ICFR report to be a uncertain task because they do not clearly understand how the conclusions of the report may impact the financial statements (Arnold et al. 2011). With the uncertainty and difficulty in evaluating a company’s ICFR and its impact, investors are more likely to infer the severity of the ICFR problems in a heuristic way. Therefore, I expect that as the perceived number of problems in ICFR increases, the perceived severity of the material weakness will increase.
3.1.3.2 Effect of Weakness Severity on Investment Desirability

I expect that investors will use the severity signals they perceive from the company’s ICFR reports in their judgments of the desirability of the company as an investment. Management’s disclosure of an internal control issue represents a signal of the potential threat to the reliability of a company’s financial information (Ashbaugh-Skaife et al. 2009). Lambert et al. (2007) hypothesize that investors’ beliefs about a firm’s future cash flows depends in part on the quality of the accounting signal disclosed by management. Internal control issues that a firm discloses increases the noise of the firm’s accounting signal, and investors respond to the increased noise by requiring a higher cost of capital because of doubt that the expectations of future cash flows will be met. Therefore, I expect that the investment desirability of a firm decreases as the perceived severity of the material weakness increases.

3.1.3.3 Path Structure to Investment Desirability

Based on my predictions from H1 and the causal paths I predicted above, I theorize a model where material weakness presentation structure impacts the perceived number of problems in ICFR, which impacts the perceived overall severity of the material weakness which in turn impacts the investment desirability of the company. Furthermore, the indirect effect of structure on investment desirability will be moderated by the internal control instruction because the perceived number of problems path is moderated by internal control instruction. My predicted theoretical model is shown in Figure 2. My second hypothesis is formally stated as follows:

**H2:** Material weakness presentation structure will have a significantly negative indirect effect on investment desirability through the perceived number of
problems in ICFR and the perceived overall material weakness severity, and this indirect effect will be moderated by internal control instruction.

3.1.4 Research Question

While not the focus of this study, I examine the effect of an additional “paragraph” level of structure, where the material weakness and the parts of the weakness are presented in a single paragraph of prose (rather than in bullet-point format in which my Top Down and Bottom Up levels are operationalized). Prior research in psychology has shown that more visibly distinct groupings (e.g., bullet-point lists) increase the number of partitions people create when evaluating a subject than less visibly distinct groupings (Fox and Clemen 2005). Therefore, it is possible that moving from a paragraph structure of ICFR disclosure to a bullet-point format may increase the perceived number of problems in ICFR because of the more visibly distinct parts of the weakness in the bullet-point format.

A recent study (Tadesse 2015) examines the impact of disaggregating a material weakness by manipulating disaggregation as either prose or as a bullet-point list and finds evidence that presenting the material weakness in a bullet-point format improves the impression of the company as an investment. My study is different from Tadesse (2015) in that I specifically examine how the paragraph vs. bullet-point structures impact the perceived number of problems in ICFR, which is not examined in that study. It is possible that moving from a paragraph structure to a bullet-point structure negatively impacts investment desirability because of the increase in perceived number of problems while at the same time moving to the bullet-point structure may increase desirability for another reason (i.e., increase management credibility as in Tadesse 2015). Therefore, it is
still unclear how the prose-paragraph versus bullet-point format affects investors’ perceptions of the number of problems within ICFR.

**RI:** Does a prose style material weakness disclosure differentially impact the perceived number of problems within ICFR than a bullet-point style disclosure?

### 3.2 Method

**3.2.1 Design and Participants**

I conducted a $2 \times 2 + 2$ between-subjects experiment with presentation structure (Top Down, Bottom Up) and internal control instruction (absent or present) as my manipulated variables with paragraph structure (with the instruction absent or present) as the +2 cells. I used professional MBA students from a large public university in the U.S. as participants in my study. MBA students have been found to be suitable surrogates for non-professional investors because they perform similarly to non-professional investors on non-complex tasks (Elliott et al. 2007). Non-professional investors are an appropriate population with which to study the impact of material weakness presentation structure because there is evidence that management’s ICFR reports, in particular those that disclose ineffective ICFR, are more informative to small/non-professional investors than to professional investors (De Franco et al. 2005; Arnold et al. 2011).

The MBA students were offered course credit to participate in the study. I collected a total of 128 usable responses. The MBA participants were 38.3 percent female, had an average age of 33.7 years, had an average of 10.2 years of professional work experience, and had taken an average of 2.1 accounting classes (all untabulated).

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\[4\] A total of 134 MBA students participated in the study. I removed six observations because these participants indicated that they had already participated in this same survey for credit in another class (i.e., these six individuals were each enrolled in two of the classes I solicited for participation for Study 1).
3.2.3 Task and Procedures

Participants were sent a recruitment email inviting them to take part in the study with details of the class credit they would receive for completing the study. The students clicked on a link provided in the email and were brought to a Qualtrics® survey (see Exhibits 1-24 in Appendix D to see the survey on the Qualtrics® platform). Participants then indicated their consent to participate in the study. Participants were told that they were to assume the role of a general investor evaluating a public U.S. company named Griffin Inc., and they were told that they would be asked to make investing decisions and assess the severity of the internal control issues facing the company.

In the first section of the task, participants read the background information about Griffin and its products. They read selected financial information for the past three years. Next, participants read analyst forecast about the company, followed by stock price data over the past year, both of which suggested volatility in the company’s performance and uncertainty concerning the future prospects of the company.

The next part of the task introduced the internal control instruction variable. First, all participants read a definition of a material weakness regardless of condition. Then, depending on the condition, participants either read no other instruction (instruction absent condition) or an extra instruction (instruction present condition; see Appendix B for exact wording of the instruction). After reading these instructions, participants were asked a comprehension check question that quizzed them on the instruction they just received (no comprehension check question was given in the no instruction condition), and participants could not continue the task until they answered the question correctly.
Forcing participants to answer the question correctly helped to ensure that they understood the instruction before moving on.

Participants were then shown management’s report on ICFR. All participants read about management’s responsibility for establishing and maintaining ICFR and that management determined that ICFR was not effective as of the end of the fiscal year. At this point I introduced the presentation structure manipulation, and participants read about the material weakness with the Top Down, Bottom Up, or paragraph structure according to their assigned conditions, respectively. Finally, all participants read that management is committed to remediating internal controls and that the independent auditor conducted its own evaluation and identified the same weakness (the auditor’s report is not included in the case). For the second and third sections of the task, participants responded to questions regarding the primary dependent variables and demographic variables.

3.2.4 Independent Variables

My first independent variable is material weakness presentation structure. I note here that I keep the information of the individual details of the weakness constant in all three levels of the variable. I have included all three levels of the presentation structure variable in Appendix B. For the Top Down structure, the material weakness is identified first, followed by descriptions of its individual parts (in bullet-point format). For the Bottom Up structure, the parts of the weakness are described first (in bullet point format), which are then summarized into one material weakness. Finally, the paragraph structure (which is the +2 of my experimental design) is similar to the Top Down structure in that
the material weakness is first identified after which the issues are described, but the entire presentation is presented as prose (i.e., without bullet points).

My second independent variable is internal control instruction. See Appendix B for the exact wording of the instruction. The first level is the control condition where no extra instruction is presented to investors. The second level presents the instruction which informs investors that several issues that combine to a material weakness are not necessarily any more or less severe than a material weakness and that the number of internal control issues is not what makes a weakness material, but rather how together they make it reasonably possible for a material misstatement to exist in the financial statements.

3.2.5 Dependent Variables

The main variable of interest for H1 involves investor perceptions of the number of issues that management faces in their ICFR. To measure this variable, I asked participants the extent to which they agreed with two statements on a scale from 0 ("Definitely disagree") to 10 ("Definitely agree"): “Griffin mainly faces one issue within their internal controls” and “Griffin mainly faces multiple, distinct issues within their internal controls” (emphases as in the instrument). The wording of the statements and the range of the scale helped to avoid demand effects (e.g., participants respond based on what they think the experimenter wants) so that participants responded with their own interpretation of the facts of the case. I ran a factor analysis for these two questions. They were highly correlated and had a high degree of reliability (Pearson correlation = 0.79, p < 0.001; Cronbach’s alpha = 0.881), and the two questions loaded onto a single factor (hereafter referred to as “Problems”), which explains 89.5 percent of the variance.
The variables of interest for H2 involve investor perceptions of the severity of the material weakness and the investment desirability of the company. To measure the former, I asked participants to indicate the overall severity of the weakness on a scale from 0 (“Not severe at all”) to 10 (“Extremely severe”). Additionally, I asked participants to consider the likelihood of a material misstatement in Griffin’s financial statements on a scale from 0 (“Low likelihood”) to 10 (“High likelihood”). These two questions were highly correlated and had a high degree of reliability (Pearson correlation = 0.60, p < 0.001; Cronbach’s alpha = 0.75), and the two questions loaded on a single factor (hereafter referred to as “Severity”), which explains 80.1 percent of the variance.

To measure the investment desirability of the company, I asked three questions that have been used in previous studies of investor behavior. First, I asked participants about their willingness to invest in the company’s stock on a scale from 0 (“Absolutely not willing to invest”) to 10 (“Absolutely willing to invest”) (Elliott et al. 2015). Participants were then asked to assume that they already held the company’s stock and decide how they might change their investment on a scale from -5 (“Significantly decrease”) to 5 (“Significantly increase”) (Tan and Yu 2018). Finally, I asked participants their opinion as to how the company’s stock price will change as a result of the control weakness disclosure on a scale from -5 (“Significant decrease”) to 5 (Significant increase) (Rose et al. 2010). The three questions concerning investment desirability had a high degree of reliability (Cronbach’s alpha = 0.76) and loaded onto a single factor (hereafter referred to as “Desirability”), which explains 68.5 percent of the variance.
3.3 Results

3.3.1 Hypothesis Tests

3.3.1.1 Test of H1

H1 concerns the effect of the structure and instruction manipulations on investor perceptions of the number of internal control problems management faces in ICFR.$^5$ The focus of my analysis is on the effect of the Top Down and Bottom Up structures on the perceived number of problems in ICFR. I will discuss the paragraph structure cells in section 3.3.2.2. The means for Problems for the Top Down/Bottom Up and Instruction/No Instruction cells are graphically shown in Figure 3. Descriptive statistics for Problems are found in Panel A of Table 1. Results for the hypothesis tests are presented in Panel B and C of Table 1.

H1a and H1b jointly predict a two-way interaction between presentation structure and instruction. I conduct an ANOVA with Structure (Bottom Up and Top Down) and Instruction (Instruction or No Instruction) as the independent variables and Problems as the dependent variable. Panel B of Table 1 shows the results of this ANOVA. Results show a significant interaction between Structure and Instruction ($p = 0.009$, one tailed).

In H1a, I predict that, without any extra internal control instruction, the Bottom Up structure would lead participants to perceive a higher number of problems in the company’s ICFR. To test H1a, I tested the simple effect of Structure on Problems when

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$^5$ Initial analyses showed that Problems severely violated normality assumptions in many of the experimental cells as determined by a Shapiro-Wilk test of normality (the p-values following the order of cells A, B, C, D, E, and F of Table 1 are: <0.001, 0.453, 0.001, <0.001, 0.015, 0.004). A visual inspection of the data showed the presence of outliers. I calculated a Cook’s Distance statistic (which is a measure for influential outliers) for each observation. Six observations (one from each experimental condition) had a Cook’s D greater than $4/n$, which is a cutoff found in previous research to represent very influential outliers (Bollen and Jackman 1985). I removed these observations from my sample, which greatly reduced the normality violations for Problems (the p-values following the order of cells A, B, C, D, E, and F of Table 1 are: 0.019, 0.930, 0.088, 0.072, 0.107, 0.013). Removing these observations left me 122 observations for my analysis (see Table 1).
no instruction is given. Panel C of Table 1 shows the result of this test. Consistent with H1a, the effect is positive (means: 0.264 vs. -0.200) and the contrast is significant (p=0.018, one-tailed). This result supports H1a by providing evidence that the Bottom Up (as opposed to Top Down) structure causes participants to feel more strongly that management faces multiple, distinct problems in their ICFR.

In H1b, I predict that providing participants with the extra instruction would moderate the effect predicted in H1a so that the impact of structure on Problems would be reduced. As I showed previously, the interaction term of the ANOVA test was significant, which suggests that the effect of Structure does change when the instruction is given. To further test H1b, I tested the simple effect of Structure on Problems when instruction is given. Consistent with H1b, there is no statistically significant effect of Structure on Problems (means: 0.120 vs. 0.389; p-value = 0.208), which suggests that the instruction does reduce the effect of structure on the perceived number of distinct problems in ICFR. However, the direction of the moderation is different than I anticipated. I originally predicted that the perceived number of problems in ICFR in the Bottom Up structure would decrease with instruction (see Figure 1), but as can be seen in Figure 3, the perceived number of problems in ICFR in the Top Down structure increases when the instruction is given. I discuss this result further in section 3.3.2.1.

3.3.1.2 Test of H2

In H2, I predict that structure would impact the investment attractiveness of a company (i.e., the Desirability variable) through its effects on the perceived number of problems in ICFR and the perceived overall severity of the material weakness and that this effect would be moderated by the extra instruction. In order to test this hypothesis, I
create a structural equations model using SPSS AMOS to test the theoretical model presented in Figure 2. The results of that model are presented in Figure 4. The model has good fit statistics ($\chi^2$: p=0.350; GFI=0.969; CFI=0.993; RMSEA=0.038), which suggests that the model fits the data well (see Kline 2011).

The results show that structure (the Bottom Up structure vs. the Top Down structure) is positively associated with Problems (estimate=0.464, p=0.015, one tailed), and the instruction moderates that relationship, as evidenced by the negative estimate on the interaction term (estimate=-0.734, p=0.007, one tailed). Problems is positively associated with Severity (estimate=0.338, p=0.002, one tailed), which suggests that as the number of problems participants perceive increases, their perceptions of the severity of the material weakness increases. Finally, Severity is negatively associated with Desirability (estimate=-0.520, p<0.001, one tailed), which suggests that as participants perceive the material weakness to be more severe they find the company to be less attractive as an investment.

Next, I test whether the indirect effect of structure on Desirability through Problems and Severity, when no instruction is given, is significant. AMOS calculates the indirect effect (equivalent to multiplying the coefficients of paths a, c, and d from Panel A, Figure 4) using 10,000 bootstrapped samples. Results for the indirect effect are shown in Panel B, Figure 4. I find that the indirect effect of presentation structure on Desirability through Problems and Severity is significantly negative (estimate=-0.082, 95 percent of bootstrapped estimates < -0.021). This represents the indirect effect of the simple effect of structure when no instruction is given.

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*If zero is not within 95 percent of the 10,000 indirect effect estimates, the indirect is determined to be significantly different from zero (Preacher and Hayes 2008; Hayes 2013).*
To test that this significant indirect effect is moderated by the instruction, I test whether the interaction term of structure and instruction in my SEM analysis has a significant indirect effect on *Desirability* through *Problems* and *Severity*. Hayes (2015) suggests that the indirect effect an interaction term in a SEM model represents an *index of moderated mediation*, or in other words, a test of whether the indirect effect of an independent variable is significantly moderated by another variable. If the indirect effect of the interaction term is significant, there is evidence of moderated mediation in the model. Results of this test are also found in Panel B, Figure 4. I find that the interaction term of structure and instruction has a significant, positive indirect effect on *Desirability* through *Problems* and *Severity* (estimate=0.129, 95 percent of bootstrapped estimates > 0.044). If I combine the negative indirect of the of the simple effect of structure when no instruction is given (-0.082) with the positive indirect effect of the interaction term (0.129), I get an indirect effect that is much closer to zero (0.047), which represents the indirect effect of the simple effect of structure when instruction is given. This shows that while presentation structure produces a negative effect on investment desirability when no instruction is given, the instruction effectively negates the negative impact that structure has on investment desirability, which is consistent with H2.

### 3.3.2 Supplemental Analyses

#### 3.3.2.1 Simple Effect of Instruction

In H1b, I predict that the instruction moderates the effect of structure on the perceived number of problems in ICFR. This moderation can occur in two ways. First, the moderation can come from a decrease in the perceived number of problems in the

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7 All bootstrapped confidence intervals reported here were bias-corrected.
Bottom Up condition when the instruction is present versus absent. The purpose of the instruction is to help participants in the Bottom Up condition refrain from merely counting the number of problems but consider how the problems come together to form a single material weakness. Second, the moderation can also come from an increase in the perceived number of problems in the Top Down condition when the instruction is present versus absent. The instruction makes participants more aware of the partition of the problems, which may have been overlooked by participants in the Top Down condition when the instruction is absent.

I use the simple effect of instruction to test the two possibilities mentioned above, I find that the perceived number of problems significantly increases in the Top Down condition when instruction is present compared to absent (means: 0.389 vs. -0.200; p = 0.006, untabulated). The number of problems does not differ between the Bottom Up conditions that does or does not include the instruction (means: 0.120 vs. 0.246; p = 0.510, untabulated)\(^8\).

These results show that instruction moderates the effect of structure on the perceived number of problems occurs by increasing the perceived number of problems in the Top Down condition, rather than by decreasing the perceived number of problems in the Bottom Up condition. This result provides evidence to support my theory that people tend to accept the partition given to them unconsciously (Fox and Clemen 2005) because the results show that, without the intervention, people accept the partitions, or more correctly the lack thereof, suggested with the Top Down structure; however, with the inclusion of the intervention, even though it was aimed at reducing the number of

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\(^8\) These statistics are based on the ANOVA model in Table 1.
perceived partitions, people think differently of the material weakness so that they perceive there to be more partitions with the Top Down structure.

### 3.3.2.2 Paragraph Structure

To investigate R1, I compare the paragraph structure level to the Top Down structure level with a separate $2 \times 2$ ANOVA, with instruction as the other independent variable. The Top Down and paragraph structures are the most similar because they both present the material weakness first and then describe the parts of the weakness last. An analysis of the simple effects show that there is no statistical difference between the paragraph and Top Down structures whether the instruction is absent (means: $0.080$ vs. $-0.200$; $p=0.171$, untabulated) or present (means: $0.151$ vs. $0.389$; $p=0.272$, untabulated). Based on this analysis, there is little evidence of an effect between these two levels of structure. Multiple reasons may explain this null effect. It is possible that the difference in format (prose vs. bullet points) is dominated by the Top Down structure as the paragraph structure can also be regarded as a prose-style Top Down structure. It is also likely that differences beyond presentation format, including issues related to readability (Tan et al. 2015), play a role here. Future research can continue to explore this issue of paragraph vs. bullet-point disclosure.

### 3.3.2.3 Alternative Model and Analysis

In H2, I predict that the presentation structure will have a significantly negative indirect effect on investment desirability through the perceived number of problems in ICFR and the perceived overall material weakness severity, and this indirect effect will be moderated by internal control instruction. In the model that I used to test this hypothesis (see Figure 2), I only allow the relationship between Bottom Up and Problems
(path “a”) to vary based on whether or not the instruction is given; I constrain paths “c” and “d” to not differ based on whether the instruction is given. The rationale behind this model is that the instruction intervention helped participants avoid automatically partitioning the material weakness, but I did not anticipate ex-ante that the instruction would impact the step after partitioning (i.e., path “c”).

However, it is possible that the intervention impacts the relationship between perceptions of the number problems and overall severity of the weakness because while the intervention aims to reduce the partitioning effect of structure, it also suggests to participants that the number of problems they perceived may not be important to their evaluation of the severity of the material weakness, which can result in a weakened relationship between perceived number of problems and material weakness severity. Therefore, the relationship between the perceived number of problems and the overall severity (path “c”) should be allowed to vary with instruction.

I present the updated model in Figure 5. Specifically, I allow both path “a” and path “c” to vary with instruction. I use the multi-group analysis feature in SPSS AMOS to test whether the model fit improves after allowing paths “c” and “d” to vary with instruction. Results show that the updated model has a marginally significant better fit compared to the original model (df = 1; $\chi^2$ difference = 2.881; p-value = 0.09; untabulated). Because the model with the unconstrained path “c” has a better fit, I use this updated model to re-estimate the indirect effect of presentation structure on the investment desirability of the company. The multi-group analysis feature also allows me to examine the paths from Bottom Up vs. Top Down to Desirability through Problems
and Severity individually for each of my two Instruction conditions. The results of the analysis are presented in Figure 59.

Path “a” of Panels A and B in Figure 5 are similar to results already discussed previously. Path “a” in Panel A, which is the effect of structure (Bottom Up vs. Top Down) on the perceived number of problems in ICFR when no instruction is given, has the same coefficient as in the original analysis in Figure 4 (estimate = 0.464; p-value = 0.021, one tailed). The coefficient on Path “a” in Panel B, which is the effect of the Bottom Up structure on the perceived number of problems in ICFR when the instruction is given, is the same as the simple effect of the Bottom Up structure on Problems when the instruction is given that I discuss in the results for H1 (see section 3.3.1.2; estimate = -0.270; p-value = 0.166).

Path “c” of Panels A and B in Figure 5 is where the results from this model deviate from those in Figure 4. In Panel A, I do not find that the perceived number of problems is associated with the perceived overall severity of the material weakness when no instruction is given (estimate = 0.146; p-value = 0.310). However, in Panel B, I do find strong evidence of a statistically significant relationship when the instruction is given (estimate: 0.535; p-value = 0.002). These results suggest that the significant relationship that I find between the perceived number of problems and perceived overall severity of the material weakness in my original model primarily results from the condition where participants receive the instruction. The direction of this coefficient is opposite my initial belief about how the instruction may impact the relationship between perceived number of problems and overall severity of the material weakness. In section 3.3.2.1, the results

9 Fit statistics for the model in Figure 5 are generally good; $\chi^2$ p-value=0.519; GFI = 0.962. Other indices are not interpretable because the $\chi^2$ statistic is less than df: CFI = 1.00; RMSEA = 0.00.
suggest that the instruction may *increase* the salience of the partitioning of the material weakness; therefore, it may be that the instruction also *strengthens* rather than weakens participants’ belief about the importance of the number of perceived problems on judgments of the severity of the material weakness.

Finally, I test whether the indirect effect of structure on *Desirability* through *Problems* and *Severity* is significant in the two *Instruction* conditions. The results in Panel C show that there is no evidence of a statistically significant indirect effect of structure on *Desirability* when no instruction is given (estimate: -0.036, 95 percent bootstrapped confidence interval between -0.162 and 0.014, which includes zero in the interval) or when instruction is given (estimate: 0.076, 95 percent bootstrapped confidence interval between -0.017 to 0.245, which includes zero in the interval).10 Changing the model I use to test H2 changes the conclusions that I can draw about how the presentation structure of the material weakness impacts investors’ perceptions of the investment desirability of a company.

### 3.4 Discussion

In my first study I examined how ways of structuring the presentation of a material weakness and the parts that make up that weakness impact investors’ perceptions of the number of issues that management faces in their ICFR, and how this effect flowed through to impact the perceived severity of the material weakness and investors’ financial

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10 Using the multi-group analysis function in SPSS AMOS, I tested the indirect effect of the Bottom Up structure on *Desirability* through *Problems* and *Severity* when both of the coefficients on paths “c” and “d” were constrained to be the same between *Instruction* conditions. This analysis is analogous to the analysis of my original model described in section 3.3.1.2 and shown in Figure 4. The indirect effect when no instruction was given was qualitatively similar to this same indirect effect shown in Figure 4, which suggests that the type of analysis (the multi-group analysis function) was not the cause of the contradictory results between the original and updated models.
judgments. I also examined how providing investors with an internal control instruction moderated the effect of material weakness structure on investors’ perceptions.

I found that, absent extra internal control instruction, investors perceived there to be more distinct internal control problems in ICFR when the material weakness was structured in such a way that the individual parts of the material weakness were first disclosed and then were described together as a material weakness (Bottom Up structure) compared to a structure where the material weakness as a whole was first disclosed after which the parts of the weakness were described (Top Down structure). Giving participants an internal control instruction that discussed how smaller internal control problems can aggregate to a material weakness moderated this effect by increasing the perceived number of issues in ICFR when the material weakness was presented in the Top Down structure. My results provide evidence that participants tended to automatically adopt the partition suggested by the presentation of the material weakness grouping and that they could move away from automatically adopting the suggested partition (albeit in an unexpected manner) when given an instruction that encouraged a deeper consideration of the material weakness and its parts.

I also initially found that the Bottom Up structure (vs. the Top Down structure) had a statistically significant negative indirect effect on investment desirability through the perceived number of internal control problems and perceived severity of the material weakness and that this indirect effect was moderated by the inclusion of the internal control instruction. However, this indirect effect becomes insignificant based on an updated model where both the relationships between presentation structure and participants’ perceived number
of problems and participants’ perceived number of problems in ICFR and participants’ perceived overall severity of the material weakness could vary with instruction.

In conclusion, this study provides mixed results. While my finding that presentation structure can impact how people partition a material weakness is interesting and is a contribution to the psychology literature of partition dependence theory, my lack of evidence of a significant indirect effect between presentation structure and investor perceptions and judgments brings into question how informative my results are to accounting practice. My second study examines another aspect of ICFR presentation, the terminology used to identify the parts of a material weakness, and how presentation structure may moderate terminology’s impact on investor perceptions of material weakness severity and investing desirability of a company.
CHAPTER 4

STUDY 2

4.1 Hypothesis Development

4.1.1 ICFR Terminology

Section 404 of SOX requires management to assess ICFR and report its conclusions on ICFR effectiveness as of the end fiscal year in their annual financial statements (SEC 2003). During this assessment, management may discover control deficiencies, which occur “when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatements on a timely basis” (AS 2201.A3). Management must then use judgment to determine the magnitude of the potential misstatement that could result from the deficiency: a deficiency that has the potential to cause a misstatement that is material in magnitude is identified as a material weakness, and a deficiency that has the potential to cause a misstatement that is significant in magnitude (but not material) is identified as a significant deficiency (Messier et al. 2017).

This discussion illustrates that ICFR assessments and reporting involve a great deal of context-specific terminology. The language and vocabulary involved with disclosing internal control weaknesses within ICFR represent a form of accounting jargon because they involve accounting terms that have very specific definitions in the context of ICFR that are probably not understood by those untrained in the context and may be misunderstood because the terms have a plain English meaning that differs outside of the context.

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11 The SEC defines a significant deficiency as “A deficiency, or a combination of deficiencies, in internal control over financial reporting that is less severe than a material weakness, yet important enough to merit attention by those responsible for oversight of the registrant’s financial reporting” (Securities and Exchange Commission 2007b).
ICFR context (Jardine and Hrudey 1997; Oppenheimer 2006; Castro et al. 2007). Investors come from diverse backgrounds and most likely do not fully understand the intricacies of ICFR or the differences between the types of deficiencies and how they may ultimately impact the financial statements. For example, Ashbaugh-Skaife et al. (2009) do not find evidence that investors react differently to the disclosure of material weaknesses or less severe deficiencies, and the authors suggest that this result may be because investors are uncertain about how to distinguish the different deficiency types, indicating that investors perceive different ICFR terminologies to have similarly negative connotations. One implication of this research is that investors may rely on other contextual clues about a subject, such as how they feel about it, when they do not understand the meaning of the subject in its specific context.

Prior research in accounting and psychology has found that affective contextual information can impact people’s decision making (Shiv and Fedorikhin 1999; Kida et al. 2001; Moreno et al. 2002). Therefore, investors are may react to the affect inherent to particular words and incorporate that affect in their perceptions of a material weakness. Warriner et al. (2013), a study in psychology, examined the affective valence of thousands of different English-language words, including the words “deficiency” and “issue”, which are common terms to refer to the parts of a material weakness in ICFR reporting. Using their data, I found that people perceive word “deficiency” to have greater negative valence than the word “issue” (which is the term I use in my experiment to represent non-ICFR terminology). I predict that disclosing the parts of the material weak

12 Words were rated on a scale from 1 (negative valence) to 9 (positive valence). Using the data that the Warriner et al. (2013) made available online, I performed a two-sample t-test and found that the word “deficiency” is perceived to be more negative than the word “issue” (means: 2.74 vs. 3.95; t=-2.25; p=0.015, one tailed).
weakness with an ICFR specific terminology (i.e., significant deficiency) rather than a common-use English term (e.g., issue, factor, etc.) will increase the perceived severity of the material weakness because the context-specific ICFR term has an inherent affect that is more negative than the common-use, non-ICFR one. However, as I discuss below, the impact of using ICFR terminology on perceptions of material weakness severity may depend on the presentation structure of the material weakness in the ICFR report.

4.1.2 Interaction of ICFR Terminology and Presentation Structure

I examine the same two material weakness presentation structures that I examined in Study 1: the material weakness is disclosed first after which the parts that make up the weakness are described (“Top Down”), or the parts that make up the weakness are described first after which they are described together as a material weakness (“Bottom Up”) (see Appendix A for anecdotal examples of ICFR using combinations of ICFR terminology and presentation structures).

As I did in Study 1, I utilize partition dependence theory in psychology to hypothesize how presentation structure will impact investor perceptions. As a review, the main findings from partition dependence research are that people’s judgments and decisions are impacted by how they perceive the partition of the issue under evaluation and that the partition people use can be influenced by how information is presented to them (Fox and Levav 2004). Research suggests that adoption of the partition tends to be automatic in that people accept and utilize the partition initially presented to them but then may update the partition as they learn new information (Fox and Clemen 2005).

Similar to Study 1, I posit that material weakness presentation structure will act as a conceptual partition of the material weakness, and that this conceptual partition will
moderate the effect of ICFR terminology on perceptions of severity. In the Top Down structure, describing the material weakness first acts as an “umbrella” under which the parts of the weakness are then presented. This “umbrella” leads to a perception of fewer partitions because the parts of the weakness could be more strongly inferred to be related to a similar issue (Steyvers et al. 2003; Shah and Oppenheimer 2011), which could lead to a perception of fewer distinct problems within ICFR. Unique to this study is how the conceptual partition caused by presentation structure may impact the terminology used to identify the parts of the material weakness. The terminology used to identify the parts may not matter as much to investors’ perceptions when the parts of the weakness are under this “umbrella” of the overall material weakness in the Top Down structure because investors perceive the parts to belong to a single underlying problem in ICFR. Therefore, the impact of the more negative ICFR terminology on the overall severity of the weakness will be less under the Top Down structure.

On the other hand, in the Bottom Up structure where there is no initial higher-level “umbrella” for the parts to be grouped under, people will automatically create multiple partitions in the weakness because the parts appear to be more separated, which could lead to a perception of more distinct problems within ICFR. With the Bottom Up structure, the use of ICFR terminology should matter to a greater extent because the terminology used to identify the parts of the weakness becomes more salient as investors perceive the parts of the weakness to be more distinct, which leads to greater perceptions of overall severity when the more inherently negative ICFR specific terminology identifies the parts of the weakness. This discussion leads to my first hypothesis, and the graphical depiction of H3 is shown in Figure 6:
**H3:** Investors will perceive the material weakness to be more severe when the parts of the weakness are labeled with ICFR terminology than with non-ICFR terminology; this effect will be stronger when the material weakness has a Bottom Up than Top Down structure.

**4.1.3 Impact of Terminology and Structure on Investment Desirability**

I predict in my third hypothesis that using an ICFR term to identify the parts of the material weakness increases the perceived severity of the material weakness in the Bottom Up structure but that this effect would be reduced in the Top Down structure. In this section, I expand and extend that hypothesis to describe how ICFR terminology may impact the investment desirability of a company and how presentation structure moderates that relationship. I also hypothesize how presentation structure itself may separately impact the investment desirability of the company.

**4.1.3.1 Path from ICFR Terminology to Perceived Weakness Severity**

I posit that identifying the parts of the material weakness with an ICFR specific term will increase the overall perceived severity of the material weakness because the affect inherent to the ICFR term is more negative than a non-ICFR specific term that is more affect neutral, and each of the parts of the material weakness will be evaluated as such. Specifically, I predict that this severity evaluation occurs on the individual deficiency level. For example, identifying an internal control problem as a “significant deficiency” will make it appear worse than if it were referred to as something with a more neutral connotation such as “issue”. As investors perceive each of the individual parts of the weakness to be more severe, their perception of the overall severity of the weakness will increase. However, as I hypothesized in H3, material weakness presentation structure
could moderate this relationship. As I discussed previously, the terminology used to identify the parts of the material weakness may not matter as much to investors when they evaluate the severity of each part of the weakness in the Top Down structure because the parts fall under the overall umbrella of the weakness, which makes the parts appear to stem from a singular problem in ICFR. I expect the opposite effect in the Bottom Up structure where each of the parts is made more salient when not initially under the overall material weakness umbrella. Therefore, I expect an interaction effect whereby ICFR specific terminology makes each individual part of the weakness appear more severe to investors in the Bottom Up structure and that the impact of ICFR terminology on the perceived severity of the individual parts decreases in the Top Down condition.

4.1.3.2 Path from Structure to Perceived Weakness Severity

In addition to moderating the impact of ICFR terminology on investors’ perceptions of the perceived severity of the individual parts of the weakness, I posit that using a Bottom Up (as opposed to Top Down) presentation structure will separately cause investors to perceive there to more distinct problems for management to face in ICFR, which in turn should cause investors to perceive the material weakness to be more severe. Research in psychology has generally found that individuals tend to infer the total quantity of an object by the number of subunits into which it is divided, particularly when individuals are motivated to be accurate and the task is difficult (Petty and Cacioppo 1984; Pelham et al. 1994; Pelham and Neter 1995; Burson et al. 2009). As I explained previously, presenting the parts of the material weakness first in the Bottom Up structure should lead investors to partition the weakness into a greater number of subunits, which
increases the perceived number of distinct problems there are in ICFR (Fox et al. 2005; Shah and Oppenheimer 2011). On the other hand, when the material weakness is presented first in the Top Down structure, investors should not partition the weakness into subunits, which decreases the perceived number of distinct problems there are in ICFR. Therefore, as the perceived number of distinct problems increases, the perceived severity of the weakness will also increase.\textsuperscript{13}

\textbf{4.1.3.3 The Effect of Perceived Material Weakness Severity on Investment Desirability}

I expect that investors will use the severity signals they perceive from the company’s ICFR reports in their judgments of the desirability of the company as an investment. Lambert et al. (2007) hypothesize that investors’ beliefs about a firm’s future cash flows depends in part on the quality of the accounting signal disclosed by management. Internal control issues that a firm discloses increases the noise of the firm’s accounting signal, and investors respond to the increased noise by requiring a higher cost of capital because of doubt that the expectations of future cash flows will be met. Therefore, I expect that the investment desirability of a firm decreases as the perceived severity of the material weakness increase.

In summary, based on my predictions from H3 and the causal paths I predicted above, I theorize a model where ICFR terminology negatively impacts investment desirability through its effects on investors’ perceptions of the severity of the individual parts of the weakness which then impacts their perceptions of the overall severity of the weakness.

\textsuperscript{13} Both Studies 1 and 2 were designed simultaneously, and I only had knowledge of the initial findings of Study 1 by the time I collect data for Study 2 at the end of September 2017. I had not yet re-run the analysis for Study 1 with the alternative model until the first week of October 2017. Therefore, the predictions for Study 2 are based theory and the initial findings from Study 1 (see Figure 4).
weakness. I also expect presentation structure to moderate terminology’s impact on investment desirability insomuch that terminology’s negative impact on investment desirability will be reduced with the Top Down structure. Additionally, I expect presentation structure to have its own impact on investment desirability by increasing the perceived number of problems in ICFR which should also increase the perceived overall severity of the weakness. My predicted theoretical model is shown in Figure 7. My second hypothesis is formally stated as follows:

**H4a:** ICFR terminology will negatively affect investment desirability by increasing the perceived severity of the individual parts of the weakness which will increase the perceived overall severity of the material weakness. Presentation structure will moderate this effect so that the impact of ICFR terminology is reduced in the Top Down structure.

**H4b:** The Bottom Up structure will negatively impact investment desirability by increasing the perceived number of distinct problems in ICFR, which will increase the perceived overall severity of the material weakness.

### 4.1.4 Research Question

While not the focus of this study, I examine the impact of an instruction that provides investors with the definition of the ICFR term used in the report. Although not required to do so, many companies include the definitions of ICFR terminology in their ICFR reports. Specifically, I provide investors with a definition of a significant deficiency based on how the SEC defines it. The SEC defines a significant deficiency as being “less severe” than a material weakness (see footnote 3 for the full definition, SEC 2007b). In this definition, the SEC gives a comparative statement concerning the
difference between a significant deficiency and material weakness. As I discussed previously, prior research finds that investors react similarly to the disclosure of the different deficiency types, and that research suggests that is probably because of a lack of understanding about the difference in deficiency types (Ashbaugh-Skaife et al. 2009). Therefore, I test whether providing the definition of the ICFR terminology used in the report impacts the perceived severity of the weakness.

In one possibility, providing this definition reduces the perceived severity of the material weakness because with a better understanding of the differences between ICFR deficiencies (i.e., material weakness and significant deficiencies) investors perceive the term “significant deficiency” to convey different information than the overall “material weakness” term (i.e., the parts of the weakness are in fact less severe than the term used to identify the whole problem). On the other hand, providing this definition may not impact the perceived severity of the material weakness because investors still rely on the inherent negative affect of the ICFR terminology, which still sounds bad even with this definition provided. Because of these two possibilities, I propose a research question to investigate how providing this instruction will impact the perceived severity of the material weakness when the ICFR terminology is used in the report.

R2: How does providing investors with the definition of an ICFR term impact the perceived severity of the material weakness when the ICFR term is used?

4.2 Method

4.2.1 Design and Participants

I conducted a 3x2 between-subjects experiment with ICFR terminology (“issues”, “significant deficiencies”, or “significant deficiency” with definition) and presentation
structure (Top Down, Bottom Up) as my manipulated variables. I used professional MBA students from a large public university in the U.S. as participants in my study.\textsuperscript{14} MBA students have been found to be suitable surrogates for non-professional investors (Elliott et al. 2007). Non-professional investors are an appropriate population with which to study the impact of material weakness grouping because there is evidence that management’s ICFR reports, in particular those that disclose ineffective ICFR, are more informative to small/non-professional investors’ judgments than those of professional investors (De Franco et al. 2005; Arnold et al. 2011).

The MBA students were offered course credit to participate in the study. I collected a total of 155 usable responses.\textsuperscript{15} The MBA participants were 31.6 percent female, had an average age of 35.9 years, had an average of 13.1 years of professional work experience, and had taken an average of 2.0 accounting classes (all untabulated).

\textbf{4.2.2 Task and Procedures}

Participants were sent a recruitment email inviting them to take part in the study with details of the class credit they would receive for completing the study. The students clicked on a link provided in the email and were brought to a Qualtrics© survey. Participants then indicated their consent to participate in the study. Participants were told that they were to assume the role of a general investor evaluating a public U.S. company named Griffin Inc., and they were told that they would be asked to make investing decisions and assess the severity of the internal control issues facing the company.

\textsuperscript{14} The subjects for Study 2 came from the same MBA population as Study 1 but did not participate in Study 1.

\textsuperscript{15} A total of 173 MBA students participated in the study. I removed 18 observations because these participants indicated that they had already participated in this same survey for credit in another class (i.e., these 18 individuals were enrolled in two (or more) of the classes that I solicited to participate in the study).
In the first section of the task, participants read the background information about Griffin and its products. They read selected financial information for the past three years. Next, participants read analyst forecast about the company, followed by stock price data over the past year, both of which suggested volatility in the company’s performance and uncertainty concerning the future prospects of the company.

The next part of the task provided participants with some ICFR instruction. First, all participants read a definition of a material weakness regardless of condition. Then, depending on the condition, participants either read no other instruction or an extra instruction (see below for details of the instruction). After reading these instructions, participants were asked a comprehension check question that quizzed them on the instruction they just received (no comprehension check question was given in the no extra instruction conditions), and participants could not continue the task until they answered the question correctly. Forcing participants to answer the question correctly helped to ensure that they understood the instruction before moving on.

Participants were then shown management’s report on ICFR. All participants read about management’s responsibility for establishing and maintaining ICFR and that management determined that ICFR was not effective as of the end of the fiscal year. At this point I introduced both the ICFR terminology and the presentation structure manipulations, and participants read about the material weakness with the Top Down or Bottom Up structure, and the parts of the material weakness were presented as “issues” or “significant deficiencies”. There were four parts to the material weakness presented in bullet-point format. Finally, all participants read that management is committed to

16 Providing the definition of a material weakness is a very common practice in public company ICFR reports.
remediating internal controls and that the independent auditor conducted its own
evaluation and identified the same weakness (the auditor’s report is not included in the
case). For the second and third sections of the task, participants responded to questions
regarding the primary dependent variables and demographic variables.

4.2.3 Independent Variables

My first independent variable is ICFR terminology. I note here that I keep the
wording of the individual parts of the weakness constant in all three levels of the variable.
I have included all three levels of the ICFR terminology variable in Appendix C. In the
non-ICFR terminology condition, the individual parts of the material weakness are
identified as “issues” that make up the material weakness. In the ICFR terminology
condition (without instruction) the individual parts of the weakness are identified as
“significant deficiencies”. In the final level of this variable, the parts of the weakness are
identified as “significant deficiencies”, and before reading the ICFR report, participants
also read a definition of a significant deficiency, which is based on the definition
provided by the SEC.

My second independent variable is material weakness presentation structure. For
the Top Down structure, the material weakness is identified first, followed by
descriptions of its individual parts. For the Bottom Up structure, the parts of the weakness
are described first, which are then summarized into one material weakness.

4.2.4 Dependent Variables

Almost all of the dependent variables I used in Study 2, save Individual Severity,
are identical to those in Study 1, but I repeat their explanations here as a reminder. The
variable of interest for H1 involves investor perceptions of the severity of the material
weakness. To operationalize this construct, I asked participants to indicate their perception of the overall severity of the weakness on a scale from 0 (“Not severe at all”) to 10 (“Extremely severe”). Additionally, I also asked participants their perceived likelihood of material misstatement in Griffin’s financial statements on a scale from 0 (“Low likelihood”) to 10 (“High likelihood”). These two questions that asked about participants’ perceptions of material weakness severity had a high degree of reliability (Cronbach’s alpha = 0.81), and the two questions loaded onto a single factor, which explains 85.5 percent of the variation. Therefore, I constructed a new variable Severity that is a factor score of these two questions.

The main variables of interest for H2 include investor perceptions of the number of distinct problems that management faces in their ICFR, the perceived severity of each of the individual parts of the material weakness, and the investment desirability of the company. To operationalize the first construct (number of distinct problems), I asked participants the extent to which they agreed with two statements on a scale from 0 (“Definitely disagree”) to 10 (“Definitely agree”): “Griffin mainly faces one issue within their internal controls” and “Griffin mainly faces multiple, distinct issues within their internal controls.” The formulation of the question and the range itself helped to avoid demand effects (e.g., participants respond based on what they think the experimenter wants) so that participants responded with their own interpretation of the facts of the case. I ran a factor analysis for these two questions. They had a high degree of reliability (Cronbach’s alpha = 0.83), and the two questions loaded onto a single factor (hereafter referred to as “Problems”), which explains 85.8 percent of the variation.
For the second construct, I presented the description of the material weakness section of the ICFR report again to participants exactly as they saw it in the ICFR report and asked them to rate the severity of each of the four parts of the material weakness individual on a scale from 0 (“Not severe”) to 10 (“Very severe”). The four severity questions had a high degree of reliability (Cronbach’s alpha = 0.74). I average the responses to these four questions to get a measure of the severity of each individual part of the weakness (hereafter referred to as “Individual Severity”).

Finally, to measure the investment desirability of the company, I asked three questions that have been used in previous studies of investor behavior. First, I asked participants about their willingness to invest in the company’s stock on a scale from 0 (“Absolutely not willing to invest”) to 10 (“Absolutely willing to invest”) (Elliott et al. 2015). Participants were then asked to assume that they already held the company’s stock and decide how they might change their investment on a scale from -5 (“Significantly decrease”) to 5 (“Significantly increase”) (Tan and Yu 2018). Finally, I asked participants their opinion as to how the company’s stock price will change as a result of the control weakness disclosure on a scale from -5 (“Significant decrease”) to 5 (Significant increase) (Rose et al. 2010). The three questions concerning investment desirability had a high degree of reliability (Cronbach’s alpha = 0.76) and loaded onto a single factor (hereafter referred to as “Desirability”), which explains 68.4 percent of the variation.

4.3 Results

4.3.1 Manipulation Check

I asked participants to indicate what the individual control problems in Griffin’s internal control report were labeled as, issues or significant deficiencies. One hundred
and one (65.2%) participants correctly answered this manipulation check question. A $\chi^2$ test for a 3x2 frequency table showed that there was not a significant relationship between incorrectly answering the manipulation check question and my manipulated variables ($\chi^2=2.16$, p-value=0.34). Because my theory relies on the fact that investors notice and react differently to the presence of the ICFR/non-ICFR terminology, I removed those participants that did not correctly answer this manipulation check question. This left me with 101 usable responses. I did not have a manipulation check for the manipulation of the Top Down/Bottom Up structures because my theory suggests that the structure’s effect on the perceived number of issues in ICFR should be automatic and unconscious (Fox and Clemen 2005); therefore, my examination did not require participants to remember exactly the structure that was presented to them.

4.3.2 Hypothesis Tests

4.3.2.1 Test of H3

H3 predicts that identifying the parts of the material weakness with ICFR terminology (rather than with a non-ICFR term) will increase investors’ perceptions of the severity of the weakness with a Bottom Up structure and that this effect will be moderated when the material weakness is presented with a Top Down structure. Descriptive statistics for Severity (for all six experimental conditions) are found in Panel A of Table 2. Results for the hypothesis tests are presented in Panel B of Table 2.

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17 All p-values are two-tailed unless otherwise specified.

18 Using all participants does impact my results. With all participants, the main effect of using ICFR terminology on perceived severity is marginally significant (p<0.10), and the main effect of ICFR terminology on the perceived number of problems is no longer significant (p>0.10). Further, the negative indirect effect of ICFR terminology on investment desirability through the perceived number of problems and perceived severity of the weakness is no longer significant (zero is included in the 95 percent bootstrap confidence interval). These results are logical because I would not expect participants to react more negatively or perceive there to be more issues in ICFR in the presence of the term “significant deficiency” over “issues” if they did not notice the word in the first place.
To test H3, I conduct a 2x2 ANOVA just using the four cells without instruction. Inconsistent with H1, I do not find evidence of an interaction between ICFR terminology and presentation structure ($F_{1,52}=0.001; p\text{-value}=0.487$, one-tailed). Instead, I find a significant main effect of identifying the individual parts of the weakness as significant deficiencies vs. issues (means: 0.061 vs. -0.530, $F_{1,52}=6.569, p\text{-value}=0.013$; see Figure 8). The results suggest that presentation structure does not moderate the effect of ICFR terminology on the perceived overall severity of the material weakness; rather, identifying the parts of the material weakness with ICFR terminology increases the perceived overall severity of the material weakness regardless of the presentation structure.

4.3.2.2 Test of H4

In H4a, I predict that ICFR terminology would negatively impact investment desirability through its effect on the perceived severity of the individual parts of the weakness and the perceived severity of the overall weakness but that this effect would be moderated by presentation structure. In H4b, I also predict that presentation structure itself (specifically the Bottom Up structure as compared to the Top Down structure) would negatively impact investment desirability through its effects on the perceived number of problems in ICFR and perceived overall severity of the weakness. I use a structural equations model to test the significance of the indirect effects I predict in H4. The coefficients for the direct effects for each link in the model are shown in Panel A of Figure 9.
The fit of the model appears to be good, with $\chi^2$/df of 1.42 (p>0.10) and CFI of 0.94 (Iacobucci 2010). The results show that the main effect of using ICFR Terminology is positively associated with Individual Severity (estimate=1.00, p-value=0.006), indicating that identifying the parts of the weakness as significant deficiencies makes each part appear to be more severe. I do not find evidence that presentation structure moderates the impact of ICFR Terminology on Individual Severity (estimate=-0.112, p-value=0.57, one tailed). Individual Severity is positively associated with (overall) Severity. I do not find evidence that the Bottom Up presentation structure (as opposed to the Top Down structure) is associated with Problems (estimate=-0.054, p-value=0.59, one tailed). I discuss this result more in depth in section 4.3.3.1. Additionally, Problems is positively associated with (overall) Severity (estimate=0.277, p-value=0.01, one tailed). Finally, Severity is positively associated with Desirability, which suggests that as participants’ perceptions of the severity of the material weakness becomes more severe, they perceive the company to be less desirable as an investment.

I calculate indirect effects and 95 percent bootstrapped confidence intervals for the three indirect effects predicted in H4 using SPSS AMOS. Results for the indirect effects are shown in Panel B of Figure 9. First, I find that the indirect effect of ICFR Terminology on Desirability through Individual Severity and (overall) Severity (represented as path a x c x f in Figure 9) is negative and statistically significant.

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19 RMSEA for the model is 0.087, which is larger than the common cutoff for good model fit of less than 0.05. However, Kenny et al. (2015) suggests that RMSEA is not a reliable indicator of model fit for models with small sample sizes and small degrees of freedom, both of which seem to be met in my study.

20 I code ICFR Terminology (Bottom Up vs. Top Down) to be -0.5 and 0.5 for the “issues” and “significant deficiencies” (Top Down and Bottom Up) conditions, respectively. This is known as main effects parameterization and makes it so that the coefficients on ICFR Terminology and Bottom Up vs. Top Down represent the main effects of those variables rather than just the simple effect, which is the interpretation under the standard [0, 1] coding scheme (Hayes 2013).
(estimate=-0.102, 95 percent of bootstrapped estimates were less than -0.024). To test whether this significant indirect effect is moderated by presentation structure, I test whether the interaction term of ICFR Terminology and Bottom Up vs. Top Down in my model had a significant indirect effect on Desirability through Individual Severity and (overall) Severity (represented as path b x c x f in Figure 9). As I described in Study 1, Hayes (2015) suggests that the indirect effect of an interaction term in a model represents an index of moderated mediation. If the indirect effect of the interaction term is significant, it provides evidence of moderated mediation in a model. I do not find evidence of a statistically significant indirect effect of the interaction term and Desirability (estimate=0.012, 95 percent of bootstrapped estimates were greater than -0.081, which includes zero in the interval). These two results suggest that using ICFR specific terminology does negatively impact how participants perceived the company as an investment but that presentation structure does not moderate this relationship. Therefore, these results are somewhat inconsistent with H4a.

Finally, I do not find evidence of a statistically significant indirect effect of using the Bottom Up structure (compared to the Top Down structure) on Desirability through Problems and Severity (represented as path d x e x f in Figure 9) (estimate=0.008, 95 percent of bootstrapped estimates were less than 0.183, which includes zero in the interval). This result is inconsistent with H4b.

4.3.3 Supplemental Analyses

4.3.3.1 Effect of Structure and Terminology on Number of Problems

In Study 1, I predict and find that the Bottom Up presentation structure is associated with a greater number of perceived problems in ICFR than the Top Down
structure (see Panel C Table 1). In this study I examine this same relationship in the experimental conditions that exactly mirror those in the Study 1, which are the Top Down/Bottom Up conditions that use non-ICFR specific terminology (i.e., “issues”). I examine the relationship between presentation structure and the perceived number of problems using a 2 × 2 ANOVA in which I include ICFR terminology as the second factor. I do not find a statistically significant difference between participants’ perceptions of the number of problems in ICFR in the Bottom Up and Top Down condition (estimate= -0.098, p-value=0.63, one tailed, untabulated). There are no standout reasons that may explain the contradictory results between Study 1 and Study 2. I compare demographic data, using a series of one-way ANOVAs, between the participants in the two Top Down/Bottom Up cells of Study 1 and the same two cells in Study 2 (where the parts of the weakness are identified as “issues”). There are no statistically significant differences between Study 1 and Study 2 participants in terms of the time they took to complete the study, their age, the number of accounting classes they have taken, or their pre-survey understanding of the terms “material weakness” and “significant deficiency” (p-values all greater than 0.10, untabulated). However, I do find that the number of years of work experience of participants in Study 2 is significantly greater than that of participants in Study 1 (14.7 vs. 10.5 years, F_{1,66}=4.01, p=0.049, untabulated). It could be possible that because participants with more professional work experience are “wiser”, in the sense that over the course of many years of experience they have learned how to access and analyze information necessary for their decision making, they may not be as beholden to partition dependence as those without that experience. In other words, people with more work experience may be less likely to automatically accept a partition
structure given to them. Future research can examine this potential relationship between professional work experience and partition dependence.

One interesting and unexpected finding that I find in the analysis of presentation structure’s effect on participants’ perceived number of problems in ICFR is that using ICFR terminology does impact participants’ perceptions of the number of distinct problems in ICFR. Specifically, I find that the main effect of labeling the parts of the material weakness as significant deficiencies rather than issues significantly increases the perceived number of problems in ICFR (means: 0.130 vs. -0.325; \( F_{1,52}=4.695; p=0.035 \), untabulated)\(^{21}\). This result suggests that using ICFR terminology impacts not only the perceived severity of each individual part of the material weakness, but also how participants partition the material weakness. Two theories can potentially explain this unexpected finding. The first theory emphasizes the uniqueness of the term “significant deficiency” in the context of ICFR reporting. Prior research has found that words that are semantically unique in specific contexts are more “distinct” to the reader (Schmidt 1985; Schmidt 1991). Therefore, investors may perceive the “significant deficiencies” of the material weakness to be more “distinct” items that need to be evaluated individually rather than to be considered together as a group (Shah and Oppenheimer 2011), which would lead investors to perceive there to be more distinct problems in ICFR.

The second theory emphasizes the negative connotation associated with the word “deficiencies” as opposed to “issues” (Warriner et al. 2013). Prior research has shown that words with negative connotations are also more “distinct” to readers than neutral words, and readers give more attention and processing to these words (Gaillard et al. 2006; Schmidt and Saari 2007; Kousta et al. 2009). Therefore, negative affect is likely to

\(^{21}\) The interaction term of this ANOVA was not statistically significant (\( F_{1,52}=0.018, p\text{-value}=0.893 \)).
be induced by the term “significant deficiencies,” leading investors to view the individual parts of the weakness more distinctly rather than the view the parts as belonging to the weakness as a whole. Both theories lead to the same conclusion about the impact of ICFR terminology on the perceived number of distinct problems in ICFR. I do not intend to differentiate between the two theories in this dissertation. I leave it to future research to better understand this unexpected finding.

4.3.3.2 Alternative Model and Analysis

Based on the unexpected finding described in the previous section, I consider an alternative model where ICFR specific terminology influences investment desirability through two paths: ICFR terminology increases the perceived severity of the individual parts of the weakness, which then increases the perceived overall severity of the weakness (similar to what I posited in the model shown in Figure 7); and ICFR terminology increases the perceived number of problems in ICFR, which also increases the perceived overall severity of the material weakness. Figure 10 depicts my alternative model where the first box of the model is the main effect of ICFR terminology. I once again use a structural equations model (via SPSS AMOS) to test the significance of the indirect effects that I just enumerated above. The coefficients for the direct effects for each link in the model are shown in Figure 10.

The fit of the model was good, with a $\chi^2$/df of 1.86 (p>0.10) and CFI of 0.981 (Iacobucci 2010).22 The results show that ICFR terminology is positively associated with Problems (estimate=0.455, p=0.023), indicating that the use of ICFR terminology

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22 RMSEA for this model is 0.125, which is above the traditional cutoff for good model fit of 0.05. Once again, (Kenny et al. 2015)suggests that RMSEA is not a reliable indicator of model fit for models with small sample sizes and small degrees of freedom.
increases the perceived number of distinct problems in ICFR. *Problems* is positively associated with *Severity* (estimate=0.273, p=0.009, one tailed), which suggests that as the perceived number of problems increases, the perceived overall severity of the material weakness increases. ICFR terminology is also positively associated with *Individual Severity* (estimate=0.991, p=0.008), indicating that the impact of ICFR terminology also occurs on the individual deficiency level. *Individual Severity* is positively associated with *Severity* (estimate=0.195, p=0.032, one tailed). Finally, *Severity* is negatively associated with *Desirability* (estimate=-0.516, p=.002, one tailed).

Next, I test whether the two indirect effects of using ICFR terminology on *Desirability* through *Problems* and *Individual Severity*, respectively, are significant. Results for the indirect effects are shown in Panel B of Figure 10. First, I find that the indirect effect of using ICFR terminology on *Desirability* through *Problems* is significantly negative (estimate=-0.064, 95 percent bootstrapped confidence interval was between -0.223 and -0.008\(^2\)). Second, I find that the indirect effect of using ICFR terminology on *Desirability* through *Individual Severity* is also significantly negative (estimate=-0.100, 95 percent bootstrap confidence interval was between -0.289 and -0.012). Finally, the total effect of ICFR terminology on investment desirability is significantly negative (p=0.039), although the direct effect of ICFR terminology on investment desirability (controlling for indirect effects) is not significant (p=0.379).

In summary, using an alternative model I find evidence that using ICFR terminology to identify the parts of a material weakness negatively impacts the investment desirability of the company through two separate effects on perceived severity.

\(^2\) If zero is not within 95 percent of the 10,000 indirect effect estimates, the indirect effect is determined to be significantly different from zero (Preacher and Hayes 2008; Hayes 2013).
of the weakness. Not only do I find that identifying the parts of the weakness as significant deficiencies makes each part “sound worse”, I also find that the significant deficiency label fundamentally changes how participants partition the material weakness insomuch that calling the parts “significant deficiencies” makes each part of the material weakness appear to be a more distinct problem than when they are just referred to as “issues”. While these results do not fully support my initial prediction for H4, I believe the results do fit the theory I use to develop H2 albeit from an alternative perspective.

4.3.3.3 Impact of the Definition Instruction

In R1, I question whether providing the ICFR definition to investors would affect their perceptions of the severity of the material weakness compared to when no such definition is provided. To investigate R1, I compare Severity between the “significant deficiencies” and the “significant deficiencies + definition” conditions at each level of presentation structure. Descriptive statistics for these four cells are presented in Panel A of Table 1. The ANOVA results show no significant main effect of including the definition (means: 0.144 vs. 0.061, F=0.277 p=0.600, untabulated). These results suggest that providing a definition for the ICFR terminology does not alleviate investors’ concerns of the negative affect of the ICFR specific term.

I further test whether providing the definition of significant deficiency improves investors’ understanding of the difference between material weaknesses and significant deficiencies. I asked the following question: “Based on your understanding of the two terms, what is the relative severity of significant deficiencies and material weaknesses to

24 I do not find evidence that the alternative model fits the data better than the original model (difference in $\chi^2 = 5.241$, df = 4, p-value = 0.263).

25 The interaction is not significant (p=0.583).
each other?” on a scale ranging from -5 (“Significant deficiency definitely more severe”) to 5 (“Material weakness definitely more severe”), with 0 as the mid-point (“Similarly severe”). Results show that the mean response is significantly greater when participants are given the instruction than when no instruction is given (means=3.18 vs. 0.589, F=15.11, p<0.001). These results suggest that the instruction helps to improve investors’ understanding of the difference in severity between material weakness and significant deficiencies, but is not sufficient to affect investors’ perceptions of the severity of the material weakness itself.

4.4 Discussion

In this second study, I expand on the ideas of Study 1 by examining how the terminology used to identify the parts of a material weakness could impact investor perceptions of the severity of the material weakness and how material weakness presentation structure may moderate that relationship. Additionally, I simultaneously examine how ICFR terminology and presentation structure impact investor perceptions of the investment desirability through their effects on the perceived severity of the individual parts and the perceived number of distinct issues in ICFR, respectively. Finally, I examine how providing investors with a definition of the ICFR terminology impact the perceived severity of the material weakness.

I find that using ICFR terminology to identify the parts of the material weakness, as opposed to using non-ICFR terminology, significantly increases the perceived severity of the material weakness. Contrary to my predictions, I do not find that material weakness presentation structure (whether the material weakness was first identified after which the parts of the weakness were described or vice versa) moderates the effect of
ICFR terminology on perceived severity of the weakness. Contrary to the results of Study 1, I do not find that presentation structure impacted the perceived number of distinct problems in ICFR or has a significant indirect effect on investment desirability.

However, I do find, unexpectedly, that using ICFR terminology to identify the parts of the weakness significantly increases participants’ perceived number of distinct problems in ICFR. Based on this unexpected finding, I construct an alternative model and find that using ICFR terminology has two significantly negative indirect effects on investment desirability: (1) ICFR terminology increases the perceived number of distinct problems in ICFR, which increases the perceived severity of the weakness, and (2) ICFR terminology increases the perceived severity of the individual parts of the weakness, which also increases the perceived severity of the weakness. As perceptions of material weakness severity increases, the investment desirability of the company decreases.

Finally, I do not find that including an instruction that defines significant deficiencies (vs. not including the definition) significantly impacts the perceived severity of the weakness even though the instruction does increase participants’ understanding of the relative difference between different types of ICFR terminology (i.e., material weaknesses and significant deficiencies).
CHAPTER 5
CONCLUSION

Management’s ICFR report offers investors valuable information with which to make informed financial decisions. However, SEC regulations allow management a lot of discretion concerning how to disclose internal control problems to investors. In this dissertation I specifically examine the scenario where the material weakness that management discloses is made up of multiple smaller problems and management discloses those multiple problems in their ICFR report. Over the course of two studies, I examine how material weakness presentation structure and ICFR terminology impact investor perceptions of material weakness severity and the desirability of the company as an investment.

I find mixed results in Study 1. I find that first presenting the parts of the material weakness (Bottom Up structure), as opposed to disclosing the overall material weakness first (Top Down structure), increases the number of distinct problems participants perceive there to be in ICFR and that providing participants with an instruction that deemphasizes the importance of partitioning the weakness decreases the impact of this relationship. In addition, I initially find that this presentation structure negatively impacts the investment desirability of the company because the Bottom Up structure (as opposed to the Top Down structure) increases the perceived number of problems in ICFR, which increases the perceived overall severity of the material weakness, which decreases investment desirability. However, with an alternative model that allows the relationship between the perceived number of problems in ICFR and perceived material weakness severity to vary based on whether participants are given the instruction, I ultimately do not find a significant relationship between presentation structure and investment.
desirability. These mixed results limit the conclusions I can draw from this study and how they contribute to theory and practice.

In Study 2, I find that using ICFR specific terminology to identify the parts of a material weakness negatively impacts the desirability of the company as an investment in two ways: (1) ICFR terminology increases the perceived severity of each individual part of the weakness, which increases overall perceptions of material weakness severity and (2) ICFR terminology increases the perceived number of distinct problems in ICFR, which also increases overall perceptions of material weakness severity. My results suggest that using ICFR terminology to identify the parts of the material weakness increase the perceived severity of the weakness not only because the ICFR terminology “sounds worse” than the non-ICFR terminology but also because using ICFR terminology fundamentally changes how investors partition the material weakness insomuch that they perceive there to be more distinct problems in ICFR when ICFR specific terminology is used.

The results of this second study contribute in a number of ways to both theory and practice. They contribute to the psychology literature on partition dependence because I show that the terms used to identify the parts of a multiple-part issue can impact how people partition the issue. My results suggest that terms that are semantically unique in a context and/or have more inherently negative affect associated with them (e.g., “significant deficiencies”) can cause people to feel more strongly that those parts are more distinct problems rather than belonging to a single problem.

The results of this second study also contribute directly to practice. Management can pull many levers when it comes to disclosing a material weakness in ICFR. In context
of the experiment that I conducted in my second study, management could identify four significant deficiencies in ICFR that it determines to be a material weakness, and management could disclose that material weakness as being made up of four “issues” or four “significant deficiencies”. According to my results, management should avoid using specific ICFR terminology when disclosing a material weakness made up of smaller control deficiencies, which could help management avoid a negative impact on the investment desirability of their company. Management should also find it useful to know that providing investors with instruction that defines ICFR terminology may not help them reduce the negative impact of disclosing the parts of the material weakness with ICFR terminology. Regulators, on the other hand, should find my study informative for the reasons I just explained for why management would find these findings interesting: they should be aware that management can get away with making their ICFR appear better just by using different terms to describe their material weakness. They should be aware that investors find this terminology information useful in their decision making.

Finally, one major discrepant finding between Study 1 and Study 2 is that I do not replicate my finding in Study 1 that using a Bottom Up presentation structure increases participants’ perceptions of the number of distinct problems in ICFR in Study 2. Because I do not replicate this finding, I cannot conclude that presentation structure impacts the way participants partition the material weakness. While I do not have a definitive explanation for why this result does not replicate in my second study, an analysis shows that the participants in Study 2 have a significantly greater amount of professional work experience than the corresponding participants in Study 1. It is possible that some aspect of work experience makes it so that people do not automatically accept the partition
structure that is given to them (Fox and Clemen 2005). Future research can examine if there is a relationship between professional work experience and people’s adoption of subjective partitions.
Figure 1
Study 1: Predicted Results H1: Perceived Number of Problems

This figure displays the shape of the marginal means of participants’ ratings of the number of perceived problems in ICFR as predicted in H1.

Structure: Bottom Up presents the individual parts of the weakness first before disclosing the overall material weakness while Top Down does the opposite.

Instruction: Participants receive either no extra instruction or they receive an instruction that informs that that it is not the number of problems that make a weakness material, but whether an issue, or combination of issues, creates a reasonable possibility of material misstatement in the financial statements.
Notes:

- **Bottom Up vs. Top Down** is a manipulated variable where the material weakness is either identified first followed by a description of the parts (Top Down) or the parts are described first and then the material weakness is identified (Bottom Up).

- **Instruction** is a manipulated variable where participants are either given or not given an extra instruction on ICFR.

- **Problems** is a composite factor variable made up of two questions that get at participants’ perceptions about the number of issues that make up the material weakness.

- **Severity** is a composite factor variable made up of two questions that get at participants’ perceptions of overall severity of the weakness and the likelihood of material misstates in the financial statements.

- **Desirability** is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.
This figure displays the observed shape of the marginal means of participants’ ratings of the number of perceived problems in ICFR.

Structure: Bottom Up presents the individual parts of the weakness first before disclosing the overall material weakness while Top Down does the opposite.

Instruction: Participants receive either no extra instruction or they receive an instruction that informs that it is not the number of problems that make a weakness material, but whether an issue, or combination of issues, creates a reasonable possibility of material misstatement in the financial statements.

Problems: A factor score made up of two questions that ask participants how strongly they believe that there are multiple, distinct problems in ICFR.
Figure 4
Study 1: Structural Equations Model for H2

Panel A: Direct Path Coefficients

Panel B: Tests of Indirect Paths

<table>
<thead>
<tr>
<th>Indirect Path Significance Test</th>
<th>Predicted sign</th>
<th>Path estimate</th>
<th>95% one-tailed bootstrapped confidence interval</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path from Bottom Up vs. Top Down (simple effect) to Desirability through Problems and Severity (i.e., a x c x d)</td>
<td>-</td>
<td>-0.082</td>
<td>95% of bootstrapped estimates &lt; -0.021</td>
<td>Significant</td>
</tr>
<tr>
<td>Path from the interaction of Instruction and Bottom Up vs. Top Down to Desirability through Problems and Severity (i.e., b x c x d)</td>
<td>+</td>
<td>0.129</td>
<td>95% of bootstrapped estimates &gt; 0.044</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Notes:
- **Bottom Up vs. Top Down** is a manipulated variable where the material weakness is either identified first followed by a description of the parts (Top Down) or the parts are described first and then the material weakness is identified (Bottom Up).
- **Instruction** is a manipulated variable where participants are either given or not given an extra instruction on ICFR.
- **Problems** is a composite factor variable made up of two questions that get at participants’ perceptions about the number of problems that make up the material weakness.
- **Severity** is a composite factor variable made up of two questions that get at participants’ perceptions of overall severity of the weakness and the likelihood of material misstatements in the financial statements.
- **Desirability** is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.
• All of the p-values displayed in the model are one tailed.

• The simple effect of Instruction on Problems (only Top Down conditions) in the model is 0.589 with p=0.004.

• The indirect paths are tested using 10,000 bootstrapped samples to create bias-corrected confidence intervals (Preacher and Hayes 2008; Hayes 2013).
Figure 5  
Study 1: Alternative Structural Equations Model for H2

Panel A: Direct Path Coefficients in No Instruction Condition

Panel B: Direct Path Coefficients in Instruction Condition

Panel C: Tests of Indirect Paths

<table>
<thead>
<tr>
<th>Indirect Path Significance Test</th>
<th>Path estimate</th>
<th>95% bootstrapped confidence interval</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Panel A: Path from Bottom Up vs. Top Down to Desirability through Problems and Severity (i.e., a x c x d)</td>
<td>-0.036</td>
<td>-0.162 to 0.014</td>
<td>Not Significant</td>
</tr>
<tr>
<td>From Panel B: Path from Bottom Up vs. Top Down to Desirability through Problems and Severity (i.e., a x c x d)</td>
<td>0.076</td>
<td>-0.017 to 0.245</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Notes:

- **Bottom Up vs. Top Down** is a manipulated variable where the material weakness is either identified first followed by a description of the parts (Top Down) or the parts are described first and then the material weakness is identified (Bottom Up).

- **Problems** is a composite factor variable made up of two questions that get at participants’ perceptions about the number of issues that make up the material weakness.

- **Severity** is a composite factor variable made up of two questions that get at participants’ perceptions of overall severity of the weakness and the likelihood of material misstates in the financial statements.

- **Desirability** is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.

- All p-values are one tailed unless otherwise noted.

- Path “d” was constrained to be the same in both Instruction conditions, which is why it has the same coefficient and p-value in both Panel A and B.
• The indirect paths are tested using 10,000 bootstrapped samples to create bias-corrected confidence intervals.

• The models in Panel A and B are tested using the multi-group feature in SPSS AMOS.
Figure 6
Study 2: Predicted Results H3: Perceived Overall Severity

This figure displays the shape of the marginal means of participants’ ratings of the perceived severity of the material weakness as predicted in H3.

Structure: Bottom Up presents the individual parts of the weakness first before disclosing the overall material weakness while Top Down does the opposite.

ICFR Terminology: Issues labels the individual parts of the weakness as “issues” while Significant Deficiencies labels the individual parts of the weakness as “significant deficiencies”.

[Graph showing the relationship between structure and perceived severity]
Figure 7
Study 2: Theoretical Model of H4

Notes:

- **ICFR Terminology**: the parts of the material weakness are labeled as “significant deficiencies” or “issues”.

- **Bottom Up vs. Top Down**: the parts of the weakness are described first and then the material weakness is identified (Bottom Up), or the material weakness is identified first followed by a description of the parts of the weakness (Top Down).

- **Individual Severity** is the average of four questions that get at participants’ perceptions of severity for each of the four parts of the material weakness.

- **Problems** is a composite factor variable made up of two questions that get at participants’ perceptions about the number of distinct problems that make up the material weakness.

- **Severity** is a composite factor variable made up of two questions that get at participants’ perception of the overall severity of the material weakness as well as their perception of the likelihood of a material misstatement in the financial statements.

- **Desirability** is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.
This figure displays the shape of the observed marginal means from the ANOVA analysis of participants’ ratings of the perceived severity of the material weakness.

Structure: Bottom Up structure presents the individual parts of the weakness first before disclosing the overall material weakness while Top Down does the opposite.

ICFR Terminology: Issues identifies the individual parts of the weakness as “issues” while Significant Deficiencies identifies the individual parts of the weakness as “significant deficiencies”.

Figure 8
Study 2: Observed Results for H3: Perceived Overall Severity
Panel A: Direct Path Coefficients

![Diagram showing direct path coefficients]

Panel B: Tests of Indirect Effects

<table>
<thead>
<tr>
<th>Indirect Effect</th>
<th>Predicted sign</th>
<th>Indirect Effect</th>
<th>95% bootstrapped confidence interval</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICFR Terminology on Desirability (i.e., a x c x f)</td>
<td>-</td>
<td>-0.102</td>
<td>95% of estimates &lt; -0.024</td>
<td>Significant</td>
</tr>
<tr>
<td>Bottom Up vs. Top Down x ICFR on Desirability (i.e., b x c x f)</td>
<td>-</td>
<td>0.012</td>
<td>95% of estimates &lt; 0.183</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Bottom Up vs. Top Down on Desirability (i.e., d x c x f)</td>
<td>-</td>
<td>0.008</td>
<td>95% of estimates &lt; 0.077</td>
<td>Not Significant</td>
</tr>
</tbody>
</table>

Notes:

- **ICFR Terminology**: the parts of the material weakness are labeled as “significant deficiencies” or “issues”.
- **Bottom Up vs. Top Down**: the parts of the weakness are described first and then the material weakness is identified (Bottom Up), or the material weakness is identified first followed by a description of the parts of the weakness (Top Down).
- **Individual Severity** is the average of four questions that get at participants’ perceptions of severity for each of the four parts of the material weakness.
- **Problems** is a composite factor variable made up of two questions that get at participants’ perceptions about the number of distinct problems that make up the material weakness.
• **Severity** is a composite factor variable made up of two questions that get at participants’ perception of the overall severity of the material weakness as well as their perception of the likelihood of a material misstatement in the financial statements.

• **Desirability** is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.

• All p-values reported are one tailed.

• The coefficients for paths “a” and “d” in Panel A represent the main effects of *ICFR Terminology on Individual Severity* and *Bottom Up vs. Top Down on Problems*, respectively.

• The indirect paths are tested using 10,000 bootstrapped samples to create bias-corrected confidence intervals.
Figure 10
Study 2: Alternative Structural Equations Model for H4

Panel A: Direct Path Coefficients

Panel B: Tests of Indirect Effects

<table>
<thead>
<tr>
<th>Indirect Effect Significance Test</th>
<th>Indirect Effect</th>
<th>95% bootstrapped confidence interval</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Path 1</td>
<td>-0.064</td>
<td>-0.223 to -0.008</td>
<td>Significant</td>
</tr>
<tr>
<td>Path 2</td>
<td>-0.100</td>
<td>-0.289 to -0.012</td>
<td>Significant</td>
</tr>
</tbody>
</table>

- *ICFR Terminology* is a manipulated variable where the parts of the material weakness were labeled either as “significant deficiencies” or “issues”.

- *Individual Severity* is the average of four questions that get at participants’ perceptions of severity for each of the four parts of the material weakness.

- *Problems* is a composite factor variable made up of two questions that get at participants’ perceptions about the number of issues that make up the material weakness.

- *Severity* is a composite factor variable made up of two questions that get at participants’ perception of the overall severity of the material weakness as well as their perception of the likelihood of a material misstatement in the financial statements.

- *Desirability* is a composite factor variable made up of three questions that get at participants’ willingness to invest in the company, intentions to change their holdings in the company given they owned stock, and predictions of future stock price movements.

- Path 1 represents the effect of *ICFR Terminology* on *Desirability* through *Number of Problems* and *Severity*.

- Path 2 represents the effect of *ICFR Terminology* on *Desirability* through *Individual Severity* and *Severity*. 
- The 95 percent confidence intervals of both indirect effects tested (a x c x e and b x d x e) are two tailed.

- The indirect paths are tested using 10,000 bootstrapped samples to create bias-corrected confidence intervals.

- The total effect of ICFR Terminology on Desirability is significantly negative (p=0.039). The direct effect, controlling for indirect effects, is not significant (p=0.379).
TABLE 1
Study 1: Test of H1: Problems

Panel A: Descriptive Statistics – Mean (Standard Deviation) [Sample Size]

<table>
<thead>
<tr>
<th></th>
<th>Structure</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Top Down</td>
<td>Bottom Up</td>
<td>Paragraph</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Instruction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.200</td>
<td>0.264</td>
<td>0.080</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.773)</td>
<td>(0.668)</td>
<td>(0.653)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell A</td>
<td>Cell C</td>
<td>Cell E</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[22]</td>
<td>[18]</td>
<td>[22]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instruction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.389</td>
<td>0.120</td>
<td>0.151</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.499)</td>
<td>(0.735)</td>
<td>(0.720)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cell B</td>
<td>Cell D</td>
<td>Cell F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[20]</td>
<td>[21]</td>
<td>[19]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: ANOVA Model

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>0.189</td>
<td>1</td>
<td>0.189</td>
<td>0.408</td>
<td>0.525</td>
</tr>
<tr>
<td>Instruction</td>
<td>0.994</td>
<td>1</td>
<td>0.994</td>
<td>2.143</td>
<td>0.147</td>
</tr>
<tr>
<td>Structure × Instruction</td>
<td>2.709</td>
<td>1</td>
<td>2.709</td>
<td>5.843</td>
<td>0.009 *</td>
</tr>
<tr>
<td>Error</td>
<td>35.701</td>
<td>77</td>
<td>0.464</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel C: Simple Effects

<table>
<thead>
<tr>
<th></th>
<th>Bottom Up</th>
<th>Top Down</th>
<th>t-value (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Instruction</td>
<td>0.264</td>
<td>-0.200</td>
<td>2.15 (0.018) *</td>
</tr>
<tr>
<td>Instruction</td>
<td>0.120</td>
<td>0.389</td>
<td>1.27 (0.208)</td>
</tr>
</tbody>
</table>

* Directional prediction, p-value is based on one-tailed test

The dependent variable Problems is the composite factor score based on participants’ agreement with the following two statements: “Griffin mainly faces one issue within their internal controls” and “Griffin mainly faces multiple, distinct issues within their internal controls”, on a scale from 0 (“Definitely disagree”) to 10 (“Definitely agree”).

Mean square error and degrees of freedom used to calculate the F statistics are based on the 2 × 2 ANOVA with Structure (Bottom Up and Top Down) and Instruction (Instruction or No Instruction) as independent variables.
### TABLE 2

**Study 2: Test of H3: Severity<sup>a</sup>**

#### Panel A: Descriptive Statistics – Mean (Standard Deviation) [Sample Size]

<table>
<thead>
<tr>
<th></th>
<th>ICFR Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Issues</td>
</tr>
<tr>
<td><strong>Presentation Structure</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Top Down</strong></td>
<td>-0.581 (1.047)</td>
</tr>
<tr>
<td><strong>Bottom Up</strong></td>
<td>-0.487 (0.924)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>-0.530 (0.966)</td>
</tr>
<tr>
<td></td>
<td>[28]</td>
</tr>
</tbody>
</table>

#### Panel B: ANOVA Model<sup>b</sup>

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4.763</td>
<td>1</td>
<td>4.763</td>
<td>6.569</td>
<td>0.013</td>
</tr>
<tr>
<td>Structure</td>
<td>0.141</td>
<td>1</td>
<td>0.141</td>
<td>0.195</td>
<td>0.661</td>
</tr>
<tr>
<td>ICFR Terminology x Structure</td>
<td>0.001</td>
<td>1</td>
<td>0.001</td>
<td>0.001</td>
<td>0.487 *</td>
</tr>
<tr>
<td>Error</td>
<td>37.703</td>
<td>52</td>
<td>0.725</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>*</sup> Directional prediction, p-value is one-tailed

<sup>a</sup> *Severity* is a composite factor variable made up of two questions that get at participants’ perception of the overall severity of the material weakness as well as their perception of the likelihood of a material misstatement in the financial statements.

<sup>b</sup> Based on the 2x2 ANOVA for cells A, B, C, and D (instruction cells excluded).
APPENDICES

APPENDIX A

ANNECDOTAL EXAMPLES OF STRUCTURE AND TERMINOLOGY

Excerpt from A123 Systems, Inc.’s 2011 ICFR Report (Top Down/ICFR Terminology)

We have not designed or maintained effective internal controls over the financial statement close and reporting process. Such controls are necessary to ensure the accurate and timely preparation of financial statements in accordance with Generally Accepted Accounting Principles. The following deficiencies contribute to the material weakness:

- we have had significant turnover in several key financial roles, including Chief Finance Officer and Chief Accounting Officer. The new finance team has not had sufficient time to complete the reorganization of the finance and accounting departments, train employees on their new roles and responsibilities, and design and implement all controls necessary to mitigate the risk of a material misstatement,

- our design and implementation of certain controls are incomplete or overly reliant on manual reviews and we had insufficient time to determine if controls developed throughout 2011 were implemented and operating effectively,

- we have not yet designed and implemented certain key information technology controls, including controls in certain manufacturing locations, access controls, and change management controls; and the departure of our Chief Information Officer further delayed the design and implementation of these controls,
• we have not designed and implemented key controls to ensure the timely communications of operating issues that could have a material impact on our financial statements and disclosures,
• we did not perform an adequate fraud risk assessment or design and maintain a comprehensive, enterprise-wide fraud risk management program to sufficiently mitigate our fraud risks and exposures.

These deficiencies collectively result in a reasonable possibility that a material misstatement in our annual or interim consolidated financial statements may not be prevented or detected on a timely basis.

Excerpt from China Direct Industries, Inc.’s 2011 ICFR Report (Bottom Up/ICFR Terminology)

Based on that evaluation solely as a result of the significant deficiencies in our internal control over financial reporting identified in our Annual Report on Form 10-K for the fiscal year ended September 30, 2011, our management, including our CEO and CFO, concluded that our disclosure controls and procedures were not effective as of June 30, 2011.

The specific significant deficiencies identified by our management were as follows:

• A lack of a fully integrated corporate-wide financial accounting system,
• A lack of qualified accounting personnel who have sufficient knowledge in dealing with the complex U.S. GAAP accounting and financial issues in our cross border operations.
Excerpt from NII Holdings, Inc.’s 2010 ICFR Report (Top Down/non-ICFR Terminology)

The errors in recording VAT expense and the reporting in our press release of the revenue-based tax credits without sufficient supporting documentation were not material and did not require adjustments to, or restatements of, our financial statements for the prior periods; nevertheless, we determined that our controls were not effective at preventing what could have been material errors in our financial statements. Accordingly, we concluded that circumstances identified below as underlying factors contributing to these errors in recording VAT expense and the reporting in our press release of the revenue-based tax credits without sufficient supporting documentation constitute a material weakness in our internal controls over financial reporting. The Company has completed an assessment related to the control failure and the underlying factors contributing to the errors in recording VAT expense identified in the fourth quarter of 2010 and the improper reporting of revenue-based tax credits identified in the third quarter of 2010 in our Brazil operating segment. These factors, which relate solely to our Brazil operating segment, include:

- understaffing and turnover of personnel in key job functions within the accounting department
- lack of documentation of key procedures related to the financial close process;
- insufficient training for newly hired personnel; and
- underinvestment in systems resulting in increased and inappropriate reliance on manual spreadsheets and procedures.
In light of the material weakness identified and the underlying factors that increase the level of risk related to financial reporting, we have performed additional procedures, including reviews and validations by groups other than those performing the financial close procedures in our Brazil operating segment, to ensure that the financial results are reliable.

*Excerpt from Hi-Tech Pharmacal Co., Inc.’s 2009 ICFR Report (Bottom Up/non-ICFR Terminology)*

We have made a substantial investment to ensure that the ERP System will provide effective internal control over financial reporting, and we have evaluated our controls that are not intended to change with the implementation of the ERP System. Because of implementation issues encountered, the system was not fully implemented at the “go-live” date and as a result certain internal controls surrounding the modification, processing, retrieving and monitoring of financial data were not fully operational as of year end. Additionally, certain financial reporting capabilities were not operational at year end which resulted in some controls around the underlying financial data not being fully operational or performed on a timely basis. We believe these factors result in a material weakness in our internal control over financial reporting and result in an assessment of our control environment as ineffective as of the end of the period covered by this report.
APPENDIX B

EXPERIMENTAL MANIPULATIONS FOR STUDY 1

*Top Down Structure*

As a result of management’s assessment, management identified a **material weakness** related to the following issues:

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.

- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.

- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.

- **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

*Bottom Up Structure*

As a result of management’s assessment, management identified following issues:

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.

- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.

- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
• **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these issues, when aggregated, was determined to be a material weakness.

**Paragraph Structure**

As a result of management’s assessment, management identified a material weakness related to insufficient resources, inadequate segregation of duties, communication controls, and the financial closing process. Specifically, we have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting; we have an inadequate number of personnel to properly implement control procedures; we lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion; and we did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

**Internal Control Instruction Manipulations**

**No Instruction Condition**

[Nothing goes here]

**Instruction Condition**

Several issues that combine to a material weakness are not necessarily any more or less severe than a material weakness. What makes a weakness material is not the number of issues that make up the material weakness, but whether an issue, or combination of
issues, creates a reasonable possibility of material misstatement in the financial statements.
APPENDIX C

EXPERIMENTAL MANIPULATIONS FOR STUDY 2

Top Down and Significant Deficiencies (Issues) Conditions

As a result of management’s assessment, management identified a material weakness related to the following significant deficiencies (issues):

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.

- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.

- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.

- **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

Bottom Up and Significant Deficiencies (Issues) Conditions

As a result of management’s assessment, management identified following significant deficiencies (issues):

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.

- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.
• **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.

• **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these significant deficiencies (issues), when aggregated, was determined to be a material weakness.

*Instruction in level of ICFR Terminology Variable*

A significant deficiency is also an issue within internal controls that is generally less severe than a material weakness and is only disclosed when individually, or in combination, it reaches the severity of a material weakness.
APPENDIX D

STUDY 1 RESEARCH INSTRUMENT

EXHIBIT 1

First Screen

Informed Consent

You are invited to participate in a research study titled “The impact of internal control reports on investors’ perceptions about the company and their investment decisions”. This study is being done by Matthew Starliper, Yao Yu, and David Piercey from the University of Massachusetts Amherst. You were identified to participate in this study because you are an MBA student and we are interested in your investment judgments relating to a hypothetical company.

The purpose of this research study is to better understand how investors use internal control reports in their investment decision making. If you agree to take part in this study, you will be asked to complete an online survey/questionnaire. This survey/questionnaire will ask about an investing decision for a hypothetical company, and we will also ask you a few questions about yourself. We estimate that it will take you approximately 15 minutes to complete.
Your participation is completely voluntary and you may withdraw at any time. We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach of confidentiality is always possible. To the best of our ability your answers in this study will remain confidential. At the end of the study you will be redirected to another page where you will be asked to provide your name and identify your professor for extra credit purposes only. This information will not be linked to your responses. We will minimize any risks by deleting all identifying information linked to your responses. All reported results will be aggregated, so your individual responses will be completely confidential.

If you have questions about this project or if you have a research-related problem, you may contact the researcher(s), Matthew Starliiper via email at mstarliiper@som.umass.edu, Yao Yu via email at yyu@isenberg.umass.edu, or David Piercey via email at piercey@isenberg.umass.edu. If you have any questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

By clicking "I agree" below you are indicating that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. Please print a copy of this page for your records.
EXHIBIT 3

Second Screen

GENERAL INSTRUCTIONS

You are to assume the role of a general investor, evaluating a publicly traded U.S. company (Griffin Inc.).

This case material provides company background, financial summaries, and management’s report on internal control over financial reporting. You will be asked to make investment decisions and to assess the severity of the internal control issues facing the company.

It is important to read and complete the case materials in order. Please DO NOT skip questions. Although you will not have all of the information available that you would typically have when you make real-life judgments and decisions, it is important that you make the judgments required in the case to the best of your abilities given the limited information set.

We appreciate your full attention and concentration on this survey. Please try to avoid distractions while completing this survey.
EXHIBIT 4

Third Screen

1. Background Information

Griffin Inc. is a publicly traded corporation that designs, manufactures, markets, and services products primarily for specialized applications in the analytical instruments markets. Griffin manufactures products by using similar techniques and methods at two plants located in the U.S. Griffin also provides on-site installation, service, and after-sale support of its products to ensure customer satisfaction.

The following are excerpts from the company’s financial statements:
EXHIBIT 5

Third Screen Continued

**Selected Financial Data**
*(Fiscal years ended March 31)*

THREE YEAR FINANCIAL SUMMARY
(In thousands, except per share data)

<table>
<thead>
<tr>
<th>FISCAL YEAR</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESULTS OF OPERATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>$81,373</td>
<td>$72,107</td>
<td>$75,194</td>
</tr>
<tr>
<td>Net income</td>
<td>$8,824</td>
<td>$5,205</td>
<td>$6,254</td>
</tr>
<tr>
<td>Net income per share (diluted)</td>
<td>$0.42</td>
<td>$0.39</td>
<td>$0.40</td>
</tr>
<tr>
<td>FINANCIAL POSITION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working capital</td>
<td>$32,670</td>
<td>$21,771</td>
<td>$23,422</td>
</tr>
<tr>
<td>Additions to property, plant, and equipment</td>
<td>$17,725</td>
<td>$10,176</td>
<td>$12,658</td>
</tr>
<tr>
<td>Total assets</td>
<td>$65,459</td>
<td>$54,408</td>
<td>$52,619</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>$178</td>
<td>$364</td>
<td>$537</td>
</tr>
<tr>
<td>Stockholders' equity</td>
<td>$46,081</td>
<td>$43,884</td>
<td>$40,469</td>
</tr>
</tbody>
</table>
EXHIBIT 6

Fourth Screen

Analysts’ Recommendations

Analysts have shown mixed feelings for the company. Several analysts have spoken positively about the company including the potential for Griffin Inc. to provide increasing earnings per share for investors. However, other analysts say that there are risks that Griffin Inc. will slip up this year.

Stock Price Changes

![Adjusted Close Price (Fiscal 2016)](image)
EXHIBIT 7

Fifth Screen No Instruction Conditions

2. Terms used in Internal Control Reports

A material weakness is an issue or combination of issues in internal control over financial reporting such that there is a reasonable possibility of a material misstatement in the company's annual financial reporting.
EXHIBIT 8

Fifth Screen Instruction Conditions

2. Terms used in Internal Control Reports

A material weakness is an issue or combination of issues in internal control over financial reporting such that there is a reasonable possibility of a material misstatement in the company's annual financial reporting.

Several issues that combine to a material weakness are not necessarily any more or less severe than a material weakness. What makes a weakness material is not the number of issues that make up the material weakness, but whether an issue, or combination of issues, creates a reasonable possibility of material misstatement in the financial statements.

The number of issues discovered is the most important factor in determining whether a material weakness exists within internal controls?

- True
- False
EXHIBIT 9

Sixth Screen Top Down Conditions

3. Management's Report

Please carefully read the following report prepared by Griffin Inc.'s management.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified a material weakness related to the following issues:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 10

Sixth Screen Bottom Up Conditions

3. Management’s Report

*Please carefully read the following report prepared by Griffin Inc.’s management.*

**MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING**

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified the following issues:

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.
- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these issues, when aggregated, was determined to be a material weakness.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
3. Management’s Report

Please carefully read the following report prepared by Griffin Inc.’s management.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified a material weakness related to insufficient resources, inadequate segregation of duties, communication controls, and the financial closing process. Specifically, we have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting; we have an inadequate number of personnel to properly implement control procedures; we lack sufficient resources to implement an effective communication system, which means we are unable to collect, process, and deliver information related to internal controls in a timely and precise fashion; and we did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 12

Seventh Screen

Assume you are a general investor; please answer the following questions based on the Griffin Inc. case you just read. Please select the number that best describes your answer.

**How willing are you to invest in Griffin’s stock?**

<table>
<thead>
<tr>
<th>Absolutely not willing to invest</th>
<th>Absolutely willing to invest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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</tr>
<tr>
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<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

**Suppose you already hold Griffin’s stock. How would you change your holdings of Griffin’s stock after reading the case materials?**

<table>
<thead>
<tr>
<th>Significant decrease</th>
<th>Significant increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>5</td>
</tr>
<tr>
<td>-4</td>
<td></td>
</tr>
<tr>
<td>-3</td>
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<tr>
<td>0</td>
<td></td>
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<tr>
<td>1</td>
<td></td>
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<tr>
<td>2</td>
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<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**In your opinion, how will the stock price of Griffin Inc. react to the control weakness disclosure?**

<table>
<thead>
<tr>
<th>Significant decrease</th>
<th>Significant increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>5</td>
</tr>
<tr>
<td>-4</td>
<td></td>
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<td>0</td>
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<td></td>
</tr>
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<td>2</td>
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</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 13

Eighth Screen

Please assess the overall severity of the internal control weakness in Griffin.

<table>
<thead>
<tr>
<th>Not severe at all</th>
<th>Extremely severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
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<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

What do you think is the likelihood of material misstatement in Griffin’s financial statements?

<table>
<thead>
<tr>
<th>Low likelihood</th>
<th>High likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
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<td>2</td>
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<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

What do you think is the likelihood of material misstatement in Griffin’s future financial statements?

<table>
<thead>
<tr>
<th>Low likelihood</th>
<th>High likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
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<td>8</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

How successful do you believe management will be at remediating (i.e., fixing) the internal control weakness?

<table>
<thead>
<tr>
<th>Not successful</th>
<th>Very successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<tr>
<td>1</td>
<td>2</td>
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<tr>
<td>8</td>
<td>9</td>
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<tr>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
EXHIBIT 14

Ninth Screen

How competent do you believe Griffin's management to be?

<table>
<thead>
<tr>
<th>Not at all competent</th>
<th>Extremely competent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  1  2  3  4  5  6  7  8  9  10</td>
<td></td>
</tr>
</tbody>
</table>

How honest do you believe Griffin's management to be?

<table>
<thead>
<tr>
<th>Not at all honest</th>
<th>Extremely honest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  1  2  3  4  5  6  7  8  9  10</td>
<td></td>
</tr>
</tbody>
</table>

How trustworthy do you believe Griffin's management to be?

<table>
<thead>
<tr>
<th>Not at all trustworthy</th>
<th>Extremely trustworthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0  1  2  3  4  5  6  7  8  9  10</td>
<td></td>
</tr>
</tbody>
</table>

How do you feel about Griffin's management's internal control report?

<table>
<thead>
<tr>
<th>Not</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Angry</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Satisfied</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Disappointed</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
EXHIBIT 15
Tenth Screen

*Please answer the following questions based on your understanding of Griffin Inc.*

In your personal opinion, to what extent do you agree with the following statements?

Griffin mainly faces **one issue** within their internal controls.

<table>
<thead>
<tr>
<th>Definitely Disagree</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Griffin mainly faces **multiple, distinct issues** within their internal controls.

<table>
<thead>
<tr>
<th>Definitely Disagree</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
EXHIBIT 16

Eleventh Screen

How important was considering the material weakness as a whole (rather than the individual parts of the weakness) in your evaluation of Griffin's internal controls?

<table>
<thead>
<tr>
<th>Not important</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely important</th>
<th>10</th>
</tr>
</thead>
</table>

How important was considering the individual parts of the weakness (rather than the weakness as a whole) in your evaluation of Griffin's internal controls?

<table>
<thead>
<tr>
<th>Not important</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely important</th>
<th>10</th>
</tr>
</thead>
</table>

The number of issues discovered is the most important factor in determining whether a material weakness exists within internal controls:

- True
- False

How easy or difficult did it feel to read the internal control report provided in the case material?

<table>
<thead>
<tr>
<th>Very easy</th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
EXHIBIT 17

Twelfth Screen Top Down Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified a material weakness related to the following issues:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th>Not severe</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>We have an inadequate number of personnel to properly implement control procedures.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
EXHIBIT 18

Twelfth Screen Bottom Up Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified the following issues:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these issues, when aggregated, was determined to be a material weakness.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th></th>
<th>Not severe</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

106
EXHIBIT 19
Twelfth Screen Paragraph Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified a material weakness related to insufficient resources, inadequate segregation of duties, communication controls, and the financial closing process. Specifically, we have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting; we have an inadequate number of personnel to properly implement control procedures; we lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion; and we did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th>Not severe</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**EXHIBIT 20**

Thirteenth Screen

Please answer the following questions.

**Gender:**
- Male
- Female

**Age:**

**Education level:**
- No degree
- High school degree
- High school degree with college experience
- Associate degree
- Bachelor’s degree
- Graduate or Professional degree
EXHIBIT 21
Thirteenth Screen Continued

How many accounting-related courses have you taken?

How many finance-related courses have you taken?

How many economics-related courses have you taken?

Have you ever taken a financial statement auditing course?

Yes  
No

How many years and months of working experience do you have?

Years:  
Months:
EXHIBIT 22
Thirteenth Screen Continued

Are you currently working?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

How familiar were you with each of the following terms in the context of internal controls over financial reporting before participating in this study?

<table>
<thead>
<tr>
<th>Not familiar</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material weakness</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Significant deficiency</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Have you already taken this survey, or a similar version, for another class? (If you have, you will still get extra credit, but we need to set aside your second response for research purposes.)

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
EXHIBIT 23

Fourteenth Screen

Thank you for participating in our study. Please click the next button to continue to separate survey to record your information for extra credit purposes.
EXHIBIT 24

Fifteenth Screen

Thank you for participating in our study. Please fill in your first and last name and your professor's last name so that you can be awarded extra credit for your participation. Your first and last names are only collected for the purposes of awarding extra credit.

Your first name

Your last name

Your professor's name

- Pam Trafford
- Susan Machuga
- Bernd Schliemann
APPENDIX E

STUDY 2 RESEARCH INSTRUMENT

EXHIBIT 25

First Screen

Informed Consent

You are invited to participate in a research study titled "The impact of internal control reports on investors' perceptions about the company and their investment decisions". This study is being done by Matthew Starliper, Yao Yu, and David Piercey from the University of Massachusetts Amherst. You were identified to participate in this study because you are an MBA student and we are interested in your investment judgments relating to a hypothetical company.

The purpose of this research study is to better understand how investors use internal control reports in their investment decision making. If you agree to take part in this study, you will be asked to complete an online survey/questionnaire. This survey/questionnaire will ask about an investing decision for a hypothetical company, and we will also ask you a few questions about yourself. We estimate that it will take you approximately 15 minutes to complete.

Your participation is completely voluntary and you may withdraw at any time. We believe there are no known risks associated with this research study; however, as with any online related activity the risk of a breach of confidentiality is always possible. To the best of our ability your answers in this study will remain confidential. At the end of the study you will be redirected to another page where you will be asked to provide your name for extra credit purposes only. This information will not be linked to your responses. We will minimize any risks by deleting all identifying information linked to your responses. All reported results will be aggregated, so your individual responses will be completely confidential.

If you have questions about this project or if you have a research-related problem, you may contact the researcher(s), Matthew Starliper via email at mstarliper@som.umass.edu, Yao Yu via email at yyu@isenberg.umass.edu, or David Piercey via email at piercey@isenberg.umass.edu. If you have any questions concerning your rights as a research subject, you may contact the University of Massachusetts Amherst Human Research Protection Office (HRPO) at (413) 545-3428 or humansubjects@ora.umass.edu.

By clicking "I agree" below you are indicating that you are at least 18 years old, have read and understood this consent form and agree to participate in this research study. Please print a copy of this page for your records.

I agree  I do not agree
EXHIBIT 26

Second Screen

GENERAL INSTRUCTIONS
You are to assume the role of a general investor, evaluating a publicly traded U.S. company (Griffin Inc.).

This case material provides company background, financial summaries, and management’s report on internal control over financial reporting. You will be asked to make investment decisions and to assess the severity of the internal control issues facing the company.

It is important to read and complete the case materials in order. Please DO NOT skip questions. Although you will not have all of the information available that you would typically have when you make real-life judgments and decisions, it is important that you make the judgments required in the case to the best of your abilities given the limited information set.

We appreciate your full attention and concentration on this survey. Please try to avoid distractions while completing this survey.
EXHIBIT 27

Third Screen

1. Background Information

Griffin Inc. is a publicly traded corporation that designs, manufactures, markets, and services products primarily for specialized applications in the analytical instruments market. Griffin manufactures products by using similar techniques and methods at two plants located in the U.S. Griffin also provides on-site installation, service, and after-sale support of its products to ensure customer satisfaction.

The following are excerpts from the company's financial statements:

Selected Financial Data
(Fiscal years ended March 31)

THREE YEAR FINANCIAL SUMMARY
(In thousands, except per share data)

<table>
<thead>
<tr>
<th>FISCAL YEAR</th>
<th>2017</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESULTS OF OPERATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>$81,373</td>
<td>$72,107</td>
<td>$75,194</td>
</tr>
<tr>
<td>Net income</td>
<td>$8,824</td>
<td>$5,205</td>
<td>$8,254</td>
</tr>
<tr>
<td>Net income per share (diluted)</td>
<td>$0.42</td>
<td>$0.39</td>
<td>$0.40</td>
</tr>
<tr>
<td>FINANCIAL POSITION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working capital</td>
<td>$32,670</td>
<td>$21,771</td>
<td>$23,422</td>
</tr>
<tr>
<td>Additions to property, plant, and equipment</td>
<td>$17,725</td>
<td>$10,176</td>
<td>$12,958</td>
</tr>
<tr>
<td>Total assets</td>
<td>$65,499</td>
<td>$54,406</td>
<td>$52,619</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>$178</td>
<td>$364</td>
<td>$537</td>
</tr>
<tr>
<td>Stockholders' equity</td>
<td>$46,081</td>
<td>$43,984</td>
<td>$40,469</td>
</tr>
</tbody>
</table>
EXHIBIT 28

Fourth Screen

Analysts’ Recommendations

Analysts have shown mixed feelings for the company. Several analysts have spoken positively about the company including the potential for Griffin Inc. to provide increasing earnings per share for investors. However, other analysts say that there are risks that Griffin Inc. will slip up this year.

Stock Price Changes

Adjusted Close Price (Fiscal 2016)
EXHIBIT 29

Fifth Screen No Instruction Conditions

2. Terms used in Internal Control Reports

A material weakness is an issue or combination of issues in internal control over financial reporting such that there is a reasonable possibility of a material misstatement in the company’s annual financial reporting.
2. Terms used in Internal Control Reports

A material weakness is an issue or combination of issues in internal control over financial reporting such that there is a reasonable possibility of a material misstatement in the company’s annual financial reporting.

A significant deficiency is also an issue within internal controls that is generally less severe than a material weakness and is only disclosed when individually, or in combination, it reaches the severity of a material weakness.

A significant deficiency is more severe than a material weakness:

<table>
<thead>
<tr>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 31

Sixth Screen Top Down/Non-ICFR Terminology Conditions

3. Management’s Report

Please carefully read the following report prepared by Griffin Inc.’s management.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified a material weakness related to the following issues:

- Insufficient Resources — We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties — We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls — We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and proper fashion.
- Financial Closing Process — We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 32

Sixth Screen Top Down/ICFR Terminology Conditions

3. Management’s Report

Please carefully read the following report prepared by Griffin Inc.’s management.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified a material weakness related to the following significant deficiencies:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 33

Sixth Screen Bottom Up/Non-ICFR Terminology Conditions

3. Management's Report

Please carefully read the following report prepared by Griffin Inc.'s management.

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified the following issues:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these issues, when aggregated, was determined to be a material weakness.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 34

Sixth Screen Bottom Up/ICFR Terminology Conditions

3. Management’s Report

*Please carefully read the following report prepared by Griffin Inc.’s management.*

**MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING**

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Management determined that internal controls over financial reporting were not effective as of March 31, 2017.

As a result of management’s assessment, management identified the following significant deficiencies:

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.
- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these significant deficiencies, when aggregated, was determined to be a material weakness.

Management is committed to improving its internal controls and will implement measures to remediate this material weakness. The independent auditor has also conducted its own evaluation of Griffin’s internal control over financial reporting, and identified the same control weakness.
EXHIBIT 35

Seventh Screen

Assume you are a general investor; please answer the following questions based on the Griffin Inc. case you just read. Please select the number that can best describe your answer.

### How willing are you to invest in Griffin’s stock?

<table>
<thead>
<tr>
<th>Absolutely not willing to invest</th>
<th>Absolutely willing to invest</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

### Suppose you already hold Griffin’s stock. How would you change your holdings of Griffin’s stock after reading the case materials?

<table>
<thead>
<tr>
<th>Significant decrease</th>
<th>-5</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>No effect</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>Significant increase</th>
<th>5</th>
</tr>
</thead>
</table>

### In your opinion, how will the stock price of Griffin Inc. react to the control weakness disclosure?

| Significant decrease | -5 | -4 | -3 | -2 | -1 | No effect | 0 | 1 | 2 | 3 | 4 | Significant increase | 5 |
### Eighth Screen

Please assess the overall severity of the internal control weakness in Griffin.

<table>
<thead>
<tr>
<th>Not severe at all</th>
<th>Extremely severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8</td>
<td>9 10</td>
</tr>
</tbody>
</table>

What do you think is the likelihood of material misstatement in Griffin's financial statements?

<table>
<thead>
<tr>
<th>Low likelihood</th>
<th>High likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8</td>
<td>9 10</td>
</tr>
</tbody>
</table>

What do you think is the likelihood of material misstatement in Griffin's future financial statements?

<table>
<thead>
<tr>
<th>Low likelihood</th>
<th>High likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8</td>
<td>9 10</td>
</tr>
</tbody>
</table>

How successful do you believe management will be at remediating (i.e., fixing) the internal control weakness?

<table>
<thead>
<tr>
<th>Not successful</th>
<th>Very successful</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 1 2 3 4 5 6 7 8</td>
<td>9 10</td>
</tr>
</tbody>
</table>
**EXHIBIT 37**

**Ninth Screen**

<table>
<thead>
<tr>
<th>How competent do you believe Griffin's management to be?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all competent</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How honest do you believe Griffin's management to be?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all honest</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How trustworthy do you believe Griffin's management to be?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all trustworthy</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How do you feel about Griffin's management's internal control report?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Angry</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Disappointed</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 38

Tenth Screen

Please answer the following questions based on your understanding of Griffin Inc.

In your personal opinion, to what extent do you agree with the following statements?

Griffin mainly faces one issue within their internal controls.

<table>
<thead>
<tr>
<th>Definitely Disagree</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

Griffin mainly faces multiple, distinct issues within their internal controls.

<table>
<thead>
<tr>
<th>Definitely Disagree</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>
EXHIBIT 39

Eleventh Screen

How important was considering the material weakness as a whole (rather than the individual parts of the weakness) in your evaluation of Griffin's internal controls?

<table>
<thead>
<tr>
<th>Not important</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely important</th>
<th>10</th>
</tr>
</thead>
</table>

How important was considering the individual parts of the weakness (rather than the weakness as a whole) in your evaluation of Griffin's internal controls?

<table>
<thead>
<tr>
<th>Not important</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Definitely important</th>
<th>10</th>
</tr>
</thead>
</table>
EXHIBIT 40

Twelfth Screen

<table>
<thead>
<tr>
<th>&quot;Significant Deficiency&quot; definitely more severe</th>
<th>-5</th>
<th>-4</th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>&quot;Material Weakness&quot; definitely more severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similarity severe</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 41

Thirteenth Screen

A significant deficiency is more severe than a material weakness:

True

False

How easy or difficult did it feel to read the internal control report provided in the case material?

<table>
<thead>
<tr>
<th>Very easy</th>
<th></th>
<th>Very difficult</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>
What were the individual internal control problems in Griffin's internal control report labeled as?

<table>
<thead>
<tr>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant deficiencies</td>
</tr>
</tbody>
</table>
EXHIBIT 43

Fifteenth Screen Top Down/Non-ICFR Terminology Conditions

Here is a recap of the material weakness shown to you:

As a result of management's assessment, management identified a **material weakness** related to the following issues:

- **Insufficient Resources** – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- **Inadequate Segregation of Duties** – We have an inadequate number of personnel to properly implement control procedures.
- **Communication Controls** – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- **Financial Closing Process** – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Vary severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 44

Fifteenth Screen Bottom Up/Non-ICFR Terminology Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified the following issues:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these issues, when aggregated, was determined to be a material weakness.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th>Not severe 0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
EXHIBIT 45

Fifteenth Screen Top Down/ICFR Terminology Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified a material weakness related to the following significant deficiencies:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th>Not severe</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 46

Fifteenth Screen Bottom Up/ICFR Terminology Conditions

Here is a recap of the material weakness shown to you:

As a result of management’s assessment, management identified the following significant deficiencies:

- Insufficient Resources – We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.
- Inadequate Segregation of Duties – We have an inadequate number of personnel to properly implement control procedures.
- Communication Controls – We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.
- Financial Closing Process – We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.

The number and nature of these significant deficiencies, when aggregated, was determined to be a material weakness.

How severe did you perceive each of the following internal control problems to be?

<table>
<thead>
<tr>
<th>Description</th>
<th>Not severe</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Very severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;We have an inadequate number of personnel with requisite expertise in the key functional areas of finance and accounting.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We have an inadequate number of personnel to properly implement control procedures.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We lack sufficient resources to implement an effective communication system, which means we are unable to collect, process and deliver information related to internal controls in a timely and precise fashion.&quot;</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;We did not have sufficient personnel to perform adequate independent review and preparation of the financial statements.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EXHIBIT 47

Sixteenth Screen

Please answer the following questions.

Gender:
- Male
- Female

Age:

Education level:
- No degree
- High school degree
- High school degree with college experience
- Associate degree
- Bachelors degree
- Graduate or Professional degree
EXHIBIT 48
Sixteenth Screen Continued

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many accounting-related courses have you taken?</td>
<td></td>
</tr>
<tr>
<td>How many finance-related courses have you taken?</td>
<td></td>
</tr>
<tr>
<td>How many economics-related courses have you taken?</td>
<td></td>
</tr>
<tr>
<td>Have you ever taken a financial statement auditing course?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>How many years of working experience do you have?</td>
<td>Years:</td>
</tr>
<tr>
<td>Are you currently working?</td>
<td>Yes, No</td>
</tr>
</tbody>
</table>
EXHIBIT 49

Sixteenth Screen Continued

How familiar were you with each of the following terms in the context of internal controls over financial reporting before participating in this study?

<table>
<thead>
<tr>
<th></th>
<th>Not familiar</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Very familiar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material weakness</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
<tr>
<td>Significant deficiency</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td></td>
</tr>
</tbody>
</table>

Have you already taken this survey, or a similar version, for another class? (If you have, you will still get extra credit, but we need to set aside your second response for research purposes)

Yes

No
Thank you for participating in our study. Please click the next button to continue to separate survey to record your information for extra credit purposes.
EXHIBIT 51

Eighteenth Screen

Thank you for participating in our study. Please fill in your first and last name and indicate your professor's name and the corresponding 5 digit class number (on Spire) so that you can be awarded extra credit for your participation. Your first and last names are only collected for the purposes of awarding extra credit.

Your first name

Your last name

Your professor's name

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