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**A Study of Auditors' Skeptical Characteristics and  
Their Relationship to Skeptical Judgments and Decisions**

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VRIJE UNIVERSITEIT

A STUDY OF AUDITORS' SKEPTICAL CHARACTERISTICS AND  
THEIR RELATIONSHIP TO SKEPTICAL JUDGMENTS AND DECISIONS

ACADEMISCH PROEFSCHRIFT

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de Vrije Universiteit Amsterdam,  
op gezag van de rector magnificus  
prof.dr. L.M. Bouter,  
in het openbaar te verdedigen  
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van de faculteit der Economische Wetenschappen en Bedrijfskunde  
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De Boelelaan 1105

door

Lucas Mathias Quadackers

geboren te Wijnandsrade

promotor: prof.dr. T.L.C.M. Groot  
copromotor: prof.dr. A.M. Wright

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Luc Quadackers

Amsterdam, April 2009.

## ***Chapter 1 An overview of the dissertation***

### ***1.1 Introduction***

This dissertation contains two empirical studies on auditor professional skepticism. According to the glossary of the IAASB Handbook (2008), professional skepticism is ‘an attitude that includes a questioning mind and a critical assessment of evidence’. The primary objective of the two studies in this dissertation is to examine the association between auditors’ skeptical characteristics and auditors’ skeptical judgments and decisions.

It is important to study professional skepticism because if there would have been more skepticism on the side of the auditor this could have reduced the effects of major recent business ‘improprieties’ (cf., Bell *et al.*, 2005). For example, the Enron-scandal is considered to be an audit failure as a result of not applying a suitable level of professional skepticism (e.g., Benston and Hartgraves, 2002, p. 122). Furthermore, Beasley *et al.*, (2001, p. 65) found the lack of an appropriate level of professional skepticism to be number 3 (60% of the cases) among the top 10 list of audit deficiencies associated with fraud-related SEC cases. Number 1 on the list was gathering insufficient audit evidence (80% of the cases), which may also considered to be an element of professional skepticism (cf., Hurtt, 1999, 2007; and Hurtt *et al.*, 2003, 2008). Also in the report of the Panel on Audit Effectiveness, an analysis of SEC Accounting and Auditing Enforcement Releases concludes that auditors appeared to have demonstrated a lack of sufficient professional skepticism in many of the situations studied (POB, 2000, p. 227). Such situations are harmful to the quality of audits and the reputation of auditors (cf., Carpenter *et al.*, 2002, p.1).

There is widespread agreement on the importance of professional skepticism in audit practice (see e.g., Hurtt *et al.*, 2003, p.2; Nelson, 2009; Bell *et al.*, 2005). Society trusts financial auditors to exercise professional skepticism in conducting the audit (e.g., Kadous, 2000; Kopp *et al.*, 2003). Therefore, professional skepticism is an essential feature of contemporary audits.

Despite its importance, there exists no consensus on the definition and measurement of professional skepticism (e.g., Hurtt *et al.*, 2003; Nelson, 2009). Also there is criticism that auditing standards need to provide better guidance on how to implement the concept of professional skepticism (POB, 2000, p. 85; Pany and Whittington, 2001, p. 404). The recognized importance of professional skepticism, the lack of clarity concerning definitions and the need for more guidance warrant the need for research that explores the concept of

professional skepticism in depth. However, only limited research on this topic has been conducted to date (Hurt et al., 2003).

The first study of the dissertation involves an exploratory comparison of three skeptical characteristics of auditors (and a comprehensive professional skepticism scale) and how these are related to auditors' skeptical judgments and decisions (e.g., suspend judgment and engage in more substantive testing). This study also examines the impact of client risk on the hypothesized relationship between auditors' skeptical characteristics and auditors' skeptical judgments and decisions.

The second study entails a more detailed examination of the relationship between auditors' level of interpersonal trust and auditors' skeptical judgments and decisions. It uses a subset of the dataset used in the first study and extends the analyses of the first study. Interpersonal trust (or more precisely: its antithesis) is found to be the most significant predictor of skeptical judgments and decisions in the first empirical study of the dissertation. A factor analysis leads to the identification of three factors comprising the interpersonal trust variable: 'Honesty and Integrity', 'Institutional Trust' and 'Exploitation'. In addition, as an additional analysis, this study examines how auditors' level of interpersonal trust differs between auditor ranks and the extent to which auditors' professional rank is associated with skeptical judgments and decisions.

The findings show that interpersonal trust has the highest significance in predicting skeptical judgments and decisions. Furthermore, there appear to be significant interaction effects of the client control environment, an important client risk factor, on the relationships between skeptical characteristics and skeptical planning judgments and decisions. In addition, the results show that the general construct measuring interpersonal trust appears to be a better predictor of skeptical judgments and decisions than the individual factors comprising it. Additional findings show that auditor rank is positively associated with interpersonal trust (i.e., suggesting skeptical disposition decreases with rank). Partners, nonetheless, exhibit the most skeptical judgments and decisions, suggesting they compensate for higher interpersonal trust level.

This overview chapter is organized as follows. The broad construct of skepticism is briefly discussed from a philosophical perspective in Section 1.2. Other perspectives on skepticism are presented in Section 1.3, while auditor professional skepticism is defined in Section 1.4. An overview of the two studies in the dissertation is given in Section 1.5. Finally, the organization of the dissertation is described in Section 1.6. Note that the purpose of the dissertation is to present two self contained research papers that are in the form that is suitable

for submission to a research journal. Therefore, the papers can be read independently. As a result, to provide appropriate background in terms of the motivation for the research and relevant literature there is some overlap between the dissertation chapters in general and between the two empirical papers in particular.

## **1.2 *Skepticism from a philosophical perspective***

As will be discussed later, there exists opacity in the definitions of professional skepticism (see e.g., Hurtt, 2007; Hurtt *et al.*, 2003; and Nelson, 2009). In this respect, it is illuminating to briefly consider the philosophical treatment of skepticism.

The first mention of skeptics can be found in ancient philosophical writings. The word ‘skeptics’ in this literature referred to people who cultivated doubt and suspension of judgment (see e.g., Kurtz, 1992). The Concise Oxford Dictionary (tenth edition, 1999) defines a skeptic as ‘a person inclined to question or doubt accepted opinions’. In a review of the philosophical literature, Kurtz (1992, p. 21-22) summarizes:

‘... skeptikos means ‘to consider, examine’; skepsis means ‘inquiry’ and ‘doubt’. ... Skeptics always bid those overwhelmed by Absolute Truth or Special Virtue to pause. They ask, “What do you mean?”- seeking clarification and definition – and “Why do you believe what you do?”- demanding reasons, evidence, justification, or proof. ... they say, “Show me.” ... Skeptics wish to examine all sides of a question; and for every argument in favor of a thesis, they can usually find one or more arguments opposed to it.’

Several skeptical schools of thought have emerged.<sup>1</sup> These schools can be roughly divided into two basic types of skepticism (see e.g., Bunge, 1991; Hurtt, 1999, Hurtt *et al.*, 2003): (1) systematic skepticism, which states that absolute knowledge acquisition is impossible, since people cannot observe or experience causation; and (2) methodological skepticism, which accepts that knowledge acquisition is possible. This distinction is important since only the second form is useful in aiding inquiry, knowledge acquisition and decision making.

One form of systematic skepticism is ‘neutral skepticism’ of which Pyrrho of Elis was a proponent. Kurtz (1992, p. 36) summarizes Pyrrho’s philosophy as follows: (1) we can know nothing as to the nature of things; (2) hence the right attitude towards them is to withhold judgment; and (3) the necessary result of suspending judgment is ‘imperturbability’

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<sup>1</sup> Please refer to overview works of philosophical skepticism for a more in depth treatment (see e.g., Burnyeat and Frede, 1998; Popkin, 2003; Kurtz, 1992).

(i.e., calmness). This type of skepticism leads to a complete neutral stance and its adherents will neither affirm nor deny anything.

Methodological skepticism is more constructive (Bunge, 1991). The focus is on inquiry rather than on doubt. Under this view, skepticism is an essential phase of the process of inquiry.<sup>2</sup> According to Hurtt (1999) a methodological skeptic is ‘one who uses doubt and questioning to aid in the search for knowledge, while the dogmatic skeptic ... uses doubt and questioning to demonstrate the inability to obtain knowledge.’ Or as Kurtz (1992, p. 22) puts it: [e]xtreme skepticism cannot consistently serve our practical interests, for insofar as it sires doubt, it inhibits actions.’

Kurtz (1992, p. 29) notes that:

‘[s]kepticism, as a method of doubt that demands evidence and reasons for hypotheses, is essential to the process of scientific research, philosophical dialogue, and critical intelligence. It is also vital in ordinary life, where the demands of common sense are always a challenge to us to develop and act upon the most reliable hypotheses and beliefs available. It is the foe of absolute certainty and dogmatic finality. It appreciates the snares and pitfalls of all kinds of human knowledge and the importance of the principles of fallibilism and probabilism in regard to the degrees of certainty of our knowledge.’

Of great importance for a skeptical inquirer is that ‘doubt is not simply a theoretical state but an actual behavioral expression that he or she seeks to resolve’ (Kurtz, 1992, p. 67).

### **1.3 Other perspectives on skepticism**

Unlike the substantial body of philosophical literature on skepticism, there exist no comprehensive theories on skepticism in other academic disciplines. However, Hurtt (1999; 2007) provides an overview of four academic areas in which the term skepticism is used.<sup>3</sup> First, she describes skepticism of psychiatric professionals in diagnosing multiple personality disorder (see e.g., Cormier and Thelen, 1998; Dell, 1988; Dunn, 1992; Hayes and Mitchell, 1994). Second, skepticism in a legal context is distinguished, which is related to the examination of the effect of expert testimony on jurors’ belief in eyewitness evidence (e.g., Cutler *et al.*, 1989; Cutler *et al.*, 1988). Third, there is research in the consumer behavior area concerning skepticism about advertising (see e.g., Ford *et al.*, 1990; Mangleburg and Bristol, 1998; Koslow, 2000). Finally, there are studies on media skepticism, which examine the

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<sup>2</sup> This is also asserted by the literature on critical thinking (see e.g., Brookfield, 1987), in which skepticism is referred to as *reflective skepticism*. This will be discussed in the next section.

<sup>3</sup> See Hurtt (1999, 2007) for a detailed account of these studies.

extent to which individuals disbelieve or discount the information provided by the mass media (e.g., Cozzens and Contractor, 1987; Irving and Berel, 2001; Irving *et al.*, 1998). Hurtt (2007) concludes that these disciplines are concerned with more narrowly defined aspects of skepticism or with the skepticism of clients or customers and that their concept of skepticism is not particularly useful in an auditing context.

Furthermore, other studies on consumer and news media skepticism do define skepticism as distrust (e.g., Forehand and Grier, 2003, p. 350) and a subjective feeling of mistrust (e.g., Tsfati and Cappella, 2003, p. 506; Tsfati, 2003). Personality researchers and social psychologists view mistrust/distrust and trust as opposite ends of a single continuum (cf., Lewicky *et al.*, 1998, p. 440; Webb and Worchel, 1986, pp. 214-215). This view will be discussed more in Chapter 2 and 3 of this dissertation.

Another related, and more elaborate, body of literature is on critical thinking. The concept of critical thinking is particularly developed in the field of education (see e.g., Brookfield, 1987; Browne and Keeley, 2007; Facione *et al.*, 1995; Facione *et al.*, 2000). Brookfield (1987, pp. 7-9), for example, postulates four components of critical thinking: (1) identifying and challenging assumptions is central to critical thinking; (2) challenging the importance of context is crucial to critical thinking; (3) critical thinkers try to imagine and explore alternatives; and (4) imagining and exploring alternatives leads to reflective skepticism. In particular the fourth component appears to be of importance. Brookfield (1987, p. 9) notes: '[w]hen we realize that alternatives to supposedly fixed belief systems, habitual behaviors, and entrenched social structures always exist, we become skeptical of claims to universal truth or to ultimate explanations. In short, we exhibit what might be called *reflective skepticism*.'

Hence, strictly speaking, according to theory on critical thinking, skepticism is only part of critical thinking. This view on critical thinking is also exhibited by the accounting literature on critical thinking (see e.g., Nelson *et al.*, 2003; Baril *et al.*, 1998). For example, Nelson *et al.* (2003, p. 216) conclude that

'[t]he accounting education literature is replete with references to 'critical thinking', including calls for the improvement of critical thinking skills in accounting students ... and pedagogical techniques purported to improve those skills ... many definitions of 'critical thinking' have been proffered ... The definitions are generally quite broad, encompassing a wide range of competencies, including both cognitive and non-cognitive skills, attributes, attitudes and behaviors. Common components of these various definitions include reasoned judgment, ability to identify and solve

unstructured problems, professional skepticism, ability to distinguish between facts and claims, lack of bias etc.’

Also here, skepticism is said to be a common component of critical thinking.

#### ***1.4 Auditor professional skepticism***

##### **The adjective ‘professional’**

Before further defining skepticism in the auditing context, first the adjective ‘professional’ will be briefly considered. Professions are occupations enjoying a unique position in the labor force of industrial countries (Collins, 1979; Rothman, 1987). These occupations have been able to ‘establish exclusive jurisdiction over certain kinds of services and to negotiate freedom from external intervention and control over the conditions and content of their work’ (Freidson, 1977). The core characteristics of a profession are autonomy and monopoly (Rothman, 1987). Or as Freidson (1996) puts it: ‘professionalism is occupational control of work’.

Although an auditor is a member of the auditing profession, the profession itself cannot make judgments and decisions while conducting an audit. Auditing is a profession whose principal function rests largely on the judgments of trained experts (e.g., Abdolmohammadi and Wright, 1987). For example, SAS 1 states that due professional care requires the auditor to exercise professional skepticism by using ‘the knowledge, skill, and ability called for by the profession of public accounting ...’ (AU Section 230.07). Therefore, the adjective ‘professional’ in ‘professional skepticism’ refers to the fact that auditors have been, and are continuously being, educated to be professionals and that they should judge and decide according to professional standards.<sup>4</sup>

##### **Professional skepticism in the auditing standards**

Professional skepticism is an important term that appears throughout auditing standards. The detailed genesis of the concept of ‘professional skepticism’ in auditing standards is not determinable.<sup>5</sup> It appears to have been first used in SAS No. 16 (1977, the predecessor standard to SAS No. 53), was reinforced by SAS 82 in 1997 (Cushing, 2000, p.

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<sup>4</sup> Note that the auditing profession is the only profession with an explicit legal requirement for and codified emphasis on (professional) skepticism (Hurt, 2003, p. 1).

<sup>5</sup> The technical managers of the Audit and Attest Standards of the AICPA checked the archives but were unable to find information on this issue. However, discussion in the 1970s regarding the lack of auditor independence and the lack of auditors’ ability to prevent fraud have probably been one of the causes of introducing the professional skepticism terminology into auditing standards (cf., Carmichael, 1975).

1) and superseded by SAS 99 in 2002.<sup>6</sup> The focus of all these standards is on considering fraud in a financial statement audit. As an alleged consequence of the US standards, IFAC introduced the concept of professional skepticism into ISA 240 at the start of this century. The apparent rationale behind the changes in the auditing pronouncements is the conjecture that the exercise of professional skepticism during the auditing process will improve the effectiveness of audits with respect to prevention and detection of fraudulent financial reporting (Cushing, 2000, p.1).

According to the standards (IFAC, 2008), the auditor should obtain sufficient appropriate evidence about whether the subject matter information is free of material misstatement (Framework, Section 39). In doing so, the auditor should plan and perform an audit with an attitude of professional skepticism, recognizing that circumstances may exist that cause the financial statements to be materially misstated (ISA 200:15). More specifically: an attitude of professional skepticism means that the auditor makes a critical assessment, with a questioning mind, of the validity of evidence obtained and is alert to evidence that contradicts or brings into question the reliability of documents and responses to inquiries and other information obtained from management and those charged with governance (ISA 200:16). When making inquiries and performing other audit procedures, the auditor is not satisfied with less-than-persuasive audit evidence based on a belief that management and those charged with governance are honest and have integrity. Accordingly, representations from management are not a substitute for obtaining sufficient appropriate audit evidence to be able to draw reasonable conclusions on which to base the auditor's opinion (ISA 200:16).

ISA 240:24 states that an auditor should recognize the possibility that a material misstatement due to fraud could exist, notwithstanding the auditor's past experience with the entity indicating the honesty and integrity of management and those charged with governance. ISA 240:23 stresses that due to the characteristics of fraud, the auditor's attitude of professional skepticism is particularly important when considering the risks of material misstatement due to fraud. Furthermore, with respect to those charged with governance,<sup>7</sup> maintaining an attitude of professional skepticism means that the auditor carefully considers the reasonableness of responses to inquiries of those charged with governance, and other information obtained from them, in light of all other evidence obtained during the audit (ISA 240:25). When evaluating management's responses to inquiries, the auditor maintains an

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<sup>6</sup> Analogously, the term 'healthy skepticism' appeared in a report by The Commission on Auditors' Responsibilities (1977).

<sup>7</sup> Such as the board of directors and the audit committee.



attitude of professional skepticism recognizing that management is often in the best position to perpetrate fraud. Therefore, the auditor uses professional judgment in deciding when it is necessary to corroborate responses to inquiries with other information. When responses to inquiries are inconsistent, the auditor seeks to resolve the inconsistencies (ISA 240:42).

### **Academic ‘definitions’ of professional skepticism**

There is no consensus in the academic literature on the definition and measurement of professional skepticism (e.g., Hurtt *et al.*, 2003; Nelson, 2009).<sup>8</sup> For example, as will be discussed in more depth in the remainder of this dissertation, the predominant focus of the academic literature on professional skepticism considers auditors’ skeptical disposition as the antithesis of trust (see e.g., Cushing, 2000; Choo and Tan, 2000; Payne and Ramsay, 2005, p. 324; Shaub, 1996; Shaub and Lawrence, 1996; Shaub and Lawrence, 1999). However, some studies describe trust as only one facet of an auditors’ skeptical disposition, along with other facets such as locus of control and need for closure (e.g., Hurtt, 1999; Hurtt *et al.*, 2003; 2008; Rose, 2007).<sup>9</sup>

Based on a review of the literature on professional skepticism, Nelson (2009, p. 9) defines professional skepticism as *‘indicated by auditor judgments and decisions that reflect a heightened assessment of the risk that an assertion is incorrect, conditional on the information available to the auditor’*. This definition refers to the concept of skepticism by its associated phenomena (i.e., judgments and decisions), but is actually not a definition of the concept of skepticism. This can be illustrated by an example. Assume that a person has an evil attitude. This attitude can be related to behavior of that person that is associated with an evil attitude (e.g., setting public schools on fire). However, that behavior is not the definition of an evil person, it is only exemplary behavior for an evil person. A definition of evil is *‘profoundly immoral and malevolent’* (Concise Oxford Dictionary, tenth edition, 1999). So an evil person is someone who is profoundly immoral and malevolent.

Interestingly, Nelson (2009, p. 9) states that, under his definition of professional skepticism, an auditor with higher professional skepticism *‘needs relatively more convincing (in the form of a more persuasive set of evidence) before concluding that an assertion is correct’*. Instead of judgments and decisions associated with professional skepticism this latter

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<sup>8</sup> See e.g., Hurtt (2003), Hurtt *et al.* (2003a) and Nelson (2007) for a more detailed discussion on defining professional skepticism.

<sup>9</sup> Furthermore, several authors argue that while trust and professional skepticism might be different constructs, they are potentially related (e.g., Popova, 2006; Kopp *et al.*, 2003).

definition more directly identifies what it means to be a skeptical person: they have a higher need for evidence (cf., Quadackers, 2008).

### **Direction of professional skepticism**

The literature and auditing standards are equivocal on whether professional skepticism entails a ‘neutral’ stance or mirrors ‘presumptive doubt’ (see e.g., Nelson, 2009). A neutral stance refers to the fact that the auditor assumes no bias in management’s representations *ex ante* (Nelson, 2009). For example, Cushing (2000, p. 2) states that skeptical auditors should attempt to be unbiased in forming their beliefs; there should be no bias in either a positive (‘trusting’) or negative (‘suspicion’) direction. Nelson (2009) argues that this is the basic idea underlying auditing standards.<sup>10</sup> In contrast, presumptive doubt takes a different view as used by forensic experts (e.g., POB, 2000, p. 88; Bell *et al.*, 2005). Bell *et al.* (2005) assert that an auditor assumes some level of dishonesty by management unless evidence indicates otherwise. This view is consistent with that of *forensic* auditors who generally assume dishonesty unless there is evidence to the contrary (POB, 2000, p. 76). The Panel on Audit Effectiveness recommends that auditors adapt the view used by forensic experts (POB, 2000, p. 88) and proposes a ‘forensic-type fieldwork’ phase of the audit. Similarly, McMillan and White (1993) state that professional skepticism entails ‘conservative bias’ and ‘conservative behavior’ in audit judgments, implying that skeptical auditors will focus on error-related evidence (cf., Smith and Kida, 1991).<sup>11</sup> This presumptive doubt perspective is visible in the auditing standards concerning fraud (e.g., ISA 240), since those standards focus on the possibility of an intentional material misstatement due to fraud.

In sum, there appear to be two directions of skepticism. However, according to Bell *et al.* (2005) there is a societal shift from the neutral stance perspective towards the presumptive doubt perspective of professional skepticism. They argue that this shift is caused by economic down turns and major business ‘improprieties’.

### **A model of auditor’s professional skepticism**

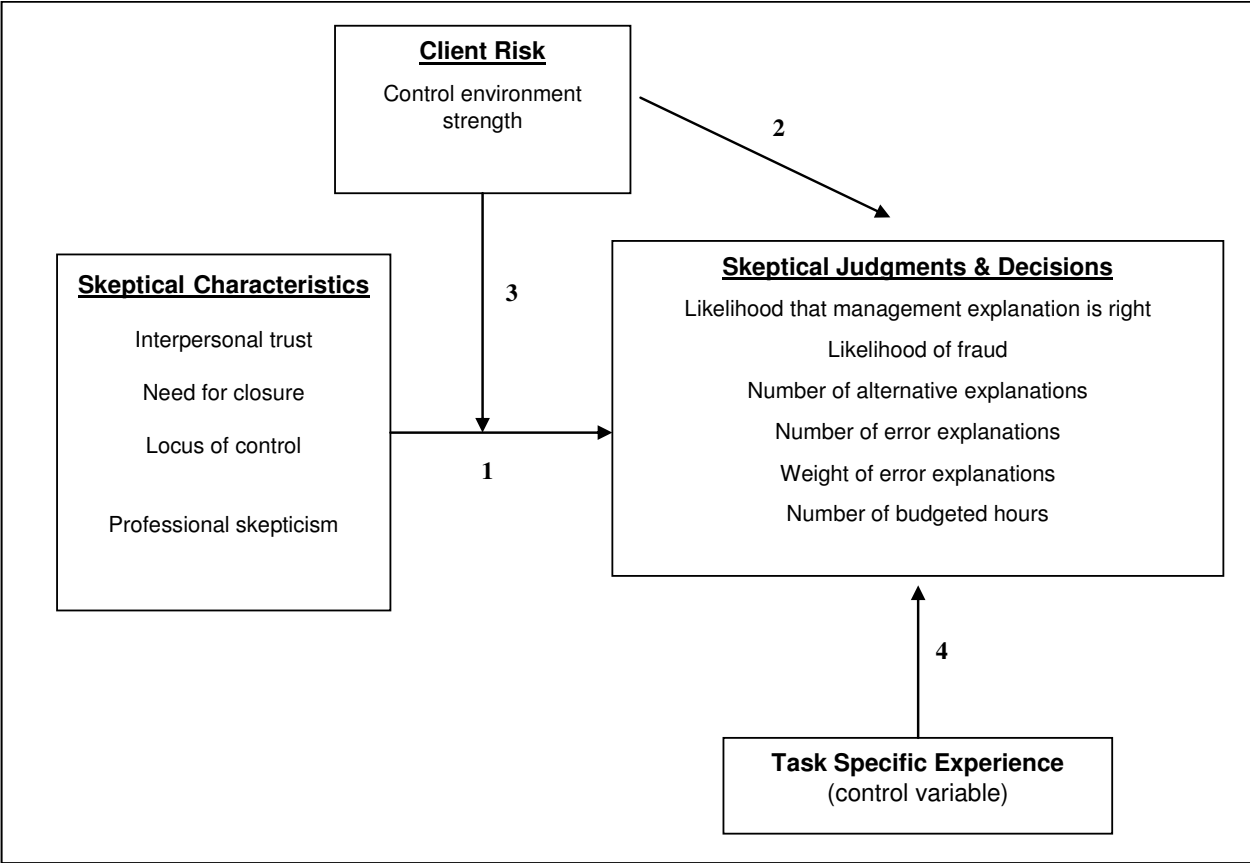
Several models of auditor’s professional skepticism have been developed (e.g., Hurtt, 1999; 2007; Hurtt *et al.*, 2003; Shaub, 1996; Nelson; 2009). Nelson (2009) presents a model

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<sup>10</sup> This viewpoint is explicitly expressed in the American SAS 1 (AU 230.07-09) since it states that an auditor neither assumes that management is dishonest nor assumes unquestioned honesty. This quote was also an explicit part of the ISA’s until 2005 (i.e. ISA 240), but has been removed, perhaps indicating a societal shift more towards the presumptive doubt perspective (Bell *et al.*, 2005). However, it still is stated in IAPS 1005:18.

<sup>11</sup> This definition is an analogue to the definition of Hogarth and Einhorn (1992) who defines a skeptic as a person being highly sensitive to negative evidence and disregards positive evidence.

based on a literature review of professional skepticism, including the models by Hurtt (1999; 2007) and Shaub (1996). In general, the Nelson model identifies determinants of professional skepticism in audit performance. The focal point in the model is skeptical judgments and decisions.<sup>12</sup>



**Figure 1.1** Research model of the determinants of skeptical judgments and decisions.

Nelson stipulates that skeptical judgments and decisions are directly determined by dispositional characteristics<sup>13</sup>, incentives, knowledge and indirectly by audit experience and training (via knowledge).<sup>14</sup> Based on the Nelson model, the research model that will be

<sup>12</sup> Nelson differentiates between skeptical judgment and skeptical action, since skepticism must reach some threshold before action is taken (e.g., Shaub, 1996). Although the relationship between skeptical judgments and actions is very important, it is not the focal point of this dissertation. For reasons of brevity, skeptical judgments and actions are combined into one node of the model. Furthermore, the term ‘decisions’ is used rather than ‘actions’ since it better reflects the previous auditing literature on judgment and decision-making (see e.g., Bonner, 2008).

<sup>13</sup> Nelson (2009) refers to traits rather than dispositional characteristics. However, the term dispositional characteristics will be used to avoid confusion as a result of terminology.

<sup>14</sup> Nelson (2009) also considers evidential input and outcome in his model. The evidential input includes any information collected and considered during the course of the audit (Nelson, 2009, p. 10) and is an important input to the judgment and decision making process. Since evidential outcomes as a result of skeptical judgments

examined in this dissertation is depicted in Figure 1.1. The specific interpretation of the variables in the model and links studied in this dissertation are discussed next.

*The relationship between skeptical characteristics and skeptical judgments and decisions (link 1)*

Prior research in psychology has found that dispositional characteristics influence judgments and decisions (cf., Eagly and Chaiken, 1993; 2005; Ajzen, 2005, pp 34-37). A disposition is defined as ‘a person’s inherent qualities of mind and character; an inclination or tendency’ (Concise Oxford Dictionary, tenth edition, 1999). In the research model, dispositional *skeptical* characteristics are studied as an input to skeptical judgments and decisions.

Professional skepticism requires auditors to evaluate the reliability of management assertions and to develop an audit program (Shaub and Lawrence, 1999, p. 62). According to the research model it is posited that this will be dependent upon an auditor’s skeptical characteristics. Prior empirical auditing literature provides some evidence of a main effect of auditors’ skeptical disposition on skeptical behaviors (e.g., Hurtt *et al.*, 2008; Shaub, 1996).<sup>15</sup> In this dissertation, three widely recognized skeptical characteristics will be studied: (1) interpersonal trust (and factor analyzed interpersonal trust factors); (2) suspension of judgment<sup>16</sup>; and (3) locus of control. Furthermore, the strength of association between skeptical disposition and skeptical judgments and decisions is compared for a comprehensive professional auditor skepticism scale developed by Hurtt (1999; 2007) and the three constructs.

*The relationship between client risk and skeptical judgments and decisions (links 2 and 3)*

Although judgments and decisions are expected to be related to dispositional characteristics (see e.g., Rotter, 1971), judgments and decisions are also related to situational characteristics, such as decision setting (see e.g., Eagly and Chaiken, 1993; 2005; Ajzen, 2005; Kee and Knox, 1970; Rotter, 1980; Webb and Worchel, 1986, p. 228). Accordingly, it is likely that skeptical judgments and decisions are situation and person specific (Bhattacharya *et al.*, 1998, p. 461).

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and decisions are new evidential input via an auditor’s experience and knowledge, the model is recursive. For simplicity, the evidential input and outcome are not explicitly considered in this dissertation.

<sup>15</sup> For detailed reviews of research on professional skepticism please consult Hurtt (1999), Hurtt *et al.* (2003) and Nelson (2009). Subsequent chapters will provide a review of studies most relevant to the dissertation.

<sup>16</sup> As will be discussed in Chapter 2, suspension of judgment is measured as the reverse of need for closure.

An auditor experiences numerous incentives which may increase (e.g., potential litigation) or decrease (e.g., client pressure) professional skepticism (see Nelson, 2009, for an overview). One of the important incentives is client risk, which is expected to increase skeptical judgments and decisions (see e.g., Johnstone *et al.*, 2001; 2002; Nelson, 2009). Client risk is a client characteristic that increases the risk of a material misstatement. In this dissertation, a particular client risk, the strength of a client's control environment, will be studied as an incentive for auditor skepticism.

In addition, previous auditing studies suggest that an interactive effect exists between risk and skeptical characteristics in explaining judgments and decisions (see e.g., Popova, 2006; Hurtt *et al.*, 2008). The rationale for the interaction is that the relationship between skeptical characteristics and skeptical judgments and decisions might be dependent on the situation. However, there is not a strong theory to guide the nature of the potential interaction. ISA 240.63 states that engagements with a higher risk of material misstatement due to fraud should be audited with increased professional skepticism (IFAC, 2008). This directive may result in auditors exhibiting skeptical judgments and decisions in a high risk situation regardless of skeptical disposition. Skeptical judgments and decisions may then differ according to skeptical characteristics only in a low risk setting. Alternatively, auditors may show similar levels of low skeptical judgments and decisions in the low risk setting (regardless of skeptical disposition), since they may judge the situation as having little exposure for users and the auditing firm. However, then skeptical judgments and decisions might be dependent on skeptical characteristics in high risk settings with auditors exercising a high level of skepticism particularly attuned to the situation and thereby taking highly cautious actions. To extend the literature, this dissertation also examines the existence and nature of the interaction between skeptical characteristics and client risk.

#### *The relationship between task specific experience and skeptical judgments and decisions (link 4)*

Skeptical auditors must understand the directional implications of evidence of client risk and should be able to apply their knowledge of evidential patterns and error/non-error frequencies to determine whether a given set of evidence suggests heightened risk (see e.g., Nelson, 2009, p. 12). Nelson (2009) follows the Libby and Luft (1993) model by viewing an auditor's knowledge as being a result of traits (i.e., dispositional characteristics) and prior experience (including training). See, for example, Bonner (2008) for a review of the literature. Prior task specific experience is often used as a proxy for knowledge since knowledge is not

directly observable (see e.g., Tan, 2001; Barrick and Spilker, 2003). Therefore, task specific experience will be used as a control variable in this dissertation.

### **1.5 An abstract of the two studies**

In this section an abstract of the two empirical studies in the dissertation is provided.

#### **Study 1: Auditors' skeptical characteristics and their relationship to skeptical judgments and decisions**

The purpose of the first, exploratory study is to examine how auditors' skeptical characteristics are related to auditors' skeptical judgments and decisions.<sup>17</sup> Despite the importance of auditors' skeptical judgments and decisions, there is a lack of consensus and empirical data on the nature of an auditor's skeptical characteristics, how they are measured and the extent to which skeptical characteristics map with auditors' skeptical judgments and decisions. Gaining insight on this issue is important as a basis for auditor recruitment and training, guidance in audit tools, and future research.

Three widely recognized constructs from the psychology and auditing literatures are compared: (1) interpersonal trust; (2) suspension of judgment; and (3) locus of control. Furthermore, a comprehensive professional skepticism scale developed for the field of auditing is compared with the three constructs. Finally, to extend prior research and gain knowledge on how the relationship between auditors' skeptical characteristics and skeptical judgments and decisions is dependent on control environment strength, this study examines the existence and nature of the interaction effect of this important client risk. Hence the first study examines link numbers 1, 2 and 3 of the model in Figure 1.1.

An experimental study is conducted to address these issues involving a sample of 376 auditors from offices of the Big Four auditing firms in The Netherlands with experience ranging from staff to partner. The results show that the strength of the effects on skeptical judgments and decisions is different across skeptical characteristics. Overall, interpersonal trust displays the highest significance in predicting skeptical judgments and decisions.

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<sup>17</sup> This study is also presented in a working paper by Quadackers *et al.* (2009), but will be referred to in this dissertation as 'Chapter 2'.

## **Study 2: The relationship between auditors' interpersonal trust factors and skeptical judgments and decisions**

Prior research has primarily viewed professional skepticism as being the antithesis of trust. Further, the findings of the first study indicate that this measure is most closely associated with skeptical judgments and decisions among the four measures examined. Therefore, using a subset of the dataset used in the first study, the purpose of the second study is to examine Rotter's Interpersonal Trust Scale (1967) in more depth by exploring the association between individual interpersonal trust factors and skeptical judgments and decisions.<sup>18</sup> Hence, this study also examines links 1, 2 and 3 of the model in Figure 1.1. However, it should be noted that the interpersonal trust variable is factor analyzed and for the resulting factors links 1 and 3 are also subsequently studied. As additional analyses, this study also looks at the relationship between auditor rank and interpersonal trust and skeptical judgments and decisions.

The sample includes 291 auditors from offices of three of the Big Four auditing firms in The Netherlands, with experience ranging from staff to partner. The results suggest that the general construct measuring interpersonal trust across a set of social objects and situations appears to be a better predictor of skeptical judgments and decisions than the individual factors comprising it.

Furthermore, additional analyses show that rank is positively associated with both skeptical judgments and decisions (also across control environment strength settings) and interpersonal trust. Apparently organizational rank appears to compensate for higher interpersonal trust levels. Auditors at higher ranks, thus, learn to adopt conservative evidence gathering approaches to deal with enhanced risk.

### ***1.6 Organization of the dissertation***

The remainder of the dissertation contains three chapters. In Chapter 2 the first study is described, while the second study is described in Chapter 3. In Chapter 4 the two studies will be summarized and synthesized along with a discussion of the implications of the findings for future research and audit practice. The limitations of the research are also identified.

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<sup>18</sup> This study is also presented in a working paper by Quadackers (2009), but will be referred to in this dissertation as 'Chapter 3'.

## ***Chapter 2 Auditors' skeptical characteristics and their relationship to skeptical judgments and decisions<sup>19</sup>***

### ***Abstract***

The purpose of this exploratory study is to examine how auditors' skeptical characteristics are related to skeptical judgments and decisions and to assess what skeptical characteristic is most significantly related to auditors' skeptical judgments and decisions. Despite the importance of auditors' skeptical judgments and decisions, there is a lack of consensus and empirical data on what an auditor's skeptical characteristics are, how they are measured and the extent to which skeptical characteristics map with auditors' skeptical judgments and decisions in specific settings. As will be discussed more fully, gaining insight on this issue has important implications for auditor recruitment and training, guidance to provide in audit tools, and future research.

Three widely recognized skeptical characteristics from the psychology and auditing literatures are compared: (1) interpersonal trust; (2) suspension of judgment; and (3) locus of control. Furthermore, a comprehensive professional skepticism scale developed for the field of auditing is also compared with the three constructs. Finally, to examine the effect of client risks, the influence of control environment strength on the relationship between skeptical characteristics and auditors' judgments and decisions is studied.

An experimental study is conducted to address these issues involving a sample of 376 auditors from offices of the Big Four auditing firms in The Netherlands with experience ranging from staff to partner. The results show that the strength of the relationship between the alternative skeptical characteristics and skeptical judgments and decisions varies significantly. Overall, interpersonal trust displays the highest significance in predicting skeptical judgments and decisions.

### ***2.1 Introduction***

Professional skepticism is considered to be an essential ingredient of the financial statement audit, as reflected in professional auditing standards (e.g., IFAC, 2008) and the

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<sup>19</sup> We are indebted to the Big Four auditing firms that participated in this study. Furthermore, we are grateful for the comments received at the ARNN Accounting Symposium 2007 in Leuven, the EAA Annual Congress 2008 in Rotterdam and the International Symposium on Audit Research 2008 in Pasadena. In particular we would like to thank the discussants Joël Branson (ARNN) and Peter Moizer (EAA). In addition we would like to thank the participants at the research seminars at Bentley College, Northeastern University and the Universiteit Maastricht. We would like to thank all people who have helped in developing the research materials, coding and analyzing the results.



audit methodologies of international audit firms.<sup>20</sup> Furthermore, the academic and professional auditing literatures emphasize the importance of the use of professional skepticism (see e.g., Hurtt *et al.*, 2003a, p.2; Kadous, 2000; Nelson, 2009). In addition, analyses of fraud related SEC cases conclude that a lack of sufficient professional skepticism is often the reason auditors fail to detect material misstatements (e.g., Beasley *et al.*, 2001; Public Oversight Board, 2000; Benston and Hartgraves, 2002, p. 122). Hence, studying professional skepticism is important.

Dispositional skeptical characteristics of auditors may be predictive of auditors' skeptical judgments and decisions (e.g., Nelson, 2009; cf., Ajzen, 2005).<sup>21</sup> For example, if an auditor in general has a suspicious nature, this may lead to more skeptical judgments and decisions in specific situations (e.g., Shaub, 1996). This study looks at whether auditors differ in their skeptical characteristics, and how such characteristics are related to skeptical judgments and decisions. Auditor skepticism is studied based on the relationships between four skeptical characteristics, a situational factor (control environment strength) and auditors' skeptical planning judgments and decisions in an analytical procedures task.<sup>22</sup> Knowing what characteristics are related to skeptical judgments and decisions provides important insights. This work can lead to a definition of the key attributes of skepticism for incorporation in audit manuals and training. To enhance skepticism, audit firms may consider other actions such as stressing the importance of professional skepticism traits when hiring new auditors and when marketing the audit profession in 'the hopes of discouraging' people with low professional skepticism traits from applying (Nelson, 2009). Firms may also administer personality tests to their personnel in order to assess the skepticism characteristics (e.g., Nelson, 2009). Furthermore, knowing auditors' scores on key attributes of skepticism may be used to balance skepticism within audit teams.

Moreover, the insights gained from this study will also help in focusing future auditing research, since it provides evidence on what skeptical characteristics are most closely related to skeptical judgments and decisions.

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<sup>20</sup> The detailed genesis of the concept of 'professional skepticism' in the auditing standards is not determinable. The technical managers of the Audit and Attest Standards of the AICPA checked the archives but were unable to find information on this issue. However, it appears to have been first used in SAS No. 16 (1977, the predecessor standard to SAS No. 53).

<sup>21</sup> A disposition is defined as 'a person's inherent qualities of mind and character; an inclination or tendency' (Concise Oxford Dictionary, tenth edition, 1999).

<sup>22</sup> For reasons of brevity, the comprehensive professional scepticism scale studied is also referred to as a 'characteristic' although it actually is a combination of several characteristics.

Three hundred and seventy-six auditors participated in an experiment in which they considered an analytical procedures task and completed questions on how they would respond in terms of risk and audit planning. In addition, they completed instruments measuring skeptical characteristics.

In total, four skeptical characteristics are studied: (1) interpersonal trust (as measured by the Interpersonal Trust Scale, Rotter, 1967); (2) suspension of judgment (as measured by the reverse of the Need for Closure Scale, Webster and Kruglanski, 1994); (3) locus of control (as measured by the Locus of Control Scale, Rotter, 1966); and (4) a comprehensive professional skepticism scale (i.e., the Hurtt Professional Skepticism Scale, Hurtt, 2007). These scales are widely recognized and cited in the decision science and/or auditing literatures and will be described in depth in the next section.

The findings show that interpersonal trust has the highest significance in predicting skeptical judgments and decisions. Furthermore, there appear to be significant interaction effects of the client control environment on the relationships between skeptical characteristics and skeptical planning judgments and decisions.

The remainder of the paper is organized as follows. In Section 2.2, the theory, literature and hypotheses are described. The research method will be discussed in Section 2.3 and the results are presented in Section 2.4. The final section provides a discussion of the findings and their implications for future research.

## ***2.2 Theory, literature and hypotheses***

### **Auditors' skeptical characteristics**

There is no universally accepted definition of professional skepticism (see e.g., Hurtt, 2007; Nelson, 2009; Doucet and Doucet, 1996). Considering various skeptical characteristics enables a careful identification of factors that engender skeptical judgments and decisions. This study examines four skeptical characteristics which are of particular importance for auditors. These characteristics are discussed next along with the associated findings of prior empirical auditing studies.

#### *Interpersonal trust*

Prior auditing research has predominantly considered auditors' skeptical disposition as the antithesis of trust (see e.g., Cushing, 2000; Choo and Tan, 2000; Payne and Ramsay, 2005, p. 324; Shaub, 1996; Shaub and Lawrence, 1996; Shaub and Lawrence, 1999).

However, some studies describe trust as only one facet of an auditors' skeptical disposition (e.g., Hurtt, 1999; Hurtt *et al.*, 2003a; 2008; Rose, 2007).<sup>23</sup>

Interpersonal trust can be defined as 'a generalized expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon' (Rotter, 1967, p. 651; Rotter, 1980, p. 1). The basic thought is that if an auditor has a lower level of interpersonal trust he is assumed to be more skeptical (e.g., Shaub, 1996; Hurtt, 2007). To measure trust, Shaub (1996) used the trustworthiness and independence parts of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974). Furthermore Shaub (1996) used a self-developed Client Trust scale. Rose (2007) also used the trustworthiness part of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974). Choo and Tan (2000) used a modified version of the Rempel *et al.* Trust Scale (1985), originally measuring trust in the relationship with a person's life partner. To a limited extent these scales showed significant main and/or interaction effects in explaining skeptical judgments and decisions. The trustworthiness and independence parts of the Wrightsman Philosophies of Human Nature Scale do not significantly relate to the auditor decision to trust a client in the Shaub (1996) study. However, the trustworthiness part of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974) is significantly related to skeptical judgments in the Rose (2007) study. More particularly, less trusting auditors pay more attention to evidence of aggressive reporting and increase the belief that intentional misstatement has occurred. Hence, the results of using the Wrightsman subscale are inconclusive. Furthermore, Shaub's Client Trust Scale only shows significant results in two of the 18 regressions tested. In those two instances there was an incentive present to overstate sales. The Rempel *et al.* Trust Scale showed some significant results: class room instruction interacted with skeptical attitude (as measured by the trust scale) in affecting the ability to detect frauds. Overall, none of the scales yield strong results.

Importantly, this study extends prior auditing research by using the Rotter Interpersonal Trust Scale (1967) which has not been considered previously, despite the fact that this scale is widely accepted in other fields (see e.g., Hoell, 2004; Johnson-George and Swap, 1982; Stack, 1978; Webb and Worchel, 1986). The Interpersonal Trust Scale covers a wider range of situations, involving a number of different social agents including parents, salespeople, the judiciary, people in general, political figures, as well as news media. In non-auditing studies Rotter's Interpersonal Trust Scale has been associated more strongly with

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<sup>23</sup> Furthermore, several authors argue that while trust and professional skepticism might be different constructs, they are potentially related (e.g., Popova, 2006; Kopp *et al.*, 2003).

actual behaviors than other interpersonal trust scales, such as the trustworthiness part of Wrightsman's Philosophies of Human Nature Scale (Stack, 1978, p. 569; Rotter, 1980, p.2).

### *Suspension of judgment and need for closure*

Suspension of judgment is noted by many as one of the main characteristics of skeptics (e.g., Bunge, 1991; Kurtz, 1992; Hurtt *et al.*, 2003a). Suspension of judgment is assumed to be negatively correlated with need for cognitive closure, as will be explained later. Kurtz states that 'suspension of judgments ... is a necessary ingredient of skeptical inquiry' (1992, p. 41). According to Bunge (1991, p. 131) '[s]keptics do not accept naively the first things they perceive or think; they are not gullible. Nor are they neophobic. They are just critical; they want to see evidence before believing.' Skeptics particularly suspend judgment concerning whatever has not been checked (Bunge, 1991, p. 132). Skeptics keep on gathering evidence until no reasonable person would doubt the claim stated (Kurtz, 1992, p. 132).

Consistent with this approach, auditing standards (IFAC, 2008) state that the auditor should gather sufficient and competent audit evidence to the point that reasonable conclusions can be drawn on which to base the audit opinion (ISA 200.16). In, particular, when there is a risk of material misstatement due to fraud, the auditor's professional skepticism can be affected in two ways (ISA 240.64). First, it may increase the auditor's assessment of the risk of material misstatement and sensitivity in the selection of the nature and extent of documentation. Second, it may increase the auditor's recognition of the need to corroborate management explanations or representations concerning material matters. This action leads to a suspension of judgment.

The construct used in this study to measure suspension of judgment is need for cognitive closure. Need for cognitive closure is one of the important dispositional constructs affecting the knowledge acquisition process (e.g., Kruglanski and Ajzen, 1983). If a person has a higher need for closure then it might hinder that person's hypothesis-generation process because conflicting hypotheses would threaten an existing or 'inherited' conclusion (Bailey *et al.*, 2006). Research evidence suggests that the need for quickly reaching a decision leads to the tendency to seek cognitive closure and to refrain from critical probing of a given seemingly adequate solution to a problem (Kruglanski and Freund, 1983, p. 450).

The Need for Cognitive Closure Scale measures the desire for an answer on a given topic, any answer, as compared to confusion and ambiguity (see e.g., Kruglanski, 1990, p. 337; Webster and Kruglanski, 1994). The proposition is that a skeptical person will suspend

judgment until he or she knows more about an ambiguous situation (i.e., there is no need for an immediate answer) and hence will have a lower score on this scale.

Thus an auditor with a higher need for closure is expected to be less willing to suspend judgment when confronted with a management explanation (i.e., he will be more eager to accept the explanation) and hence will behave less skeptically. Improper consideration of initial hypotheses may cause problems by affecting auditors' subsequent evidence evaluation and judgment (see e.g., Bailey *et al.*, 2006).

The only auditing study to examine the need for closure was conducted by Bailey *et al.* (2006). They report that the need for closure is significantly less for auditors at higher ranks than at lower ranks. Furthermore, a series of experiments show that need for closure affects judgment and decision making in professional settings. For example, auditors with a higher need for cognitive closure spend less time on tasks. This study extends existing research by integrating the need for closure measure and by relating it to a more elaborate set of auditors' skeptical judgments and decisions.

### *Locus of control*

An external locus of control indicates a pervasive belief that outcomes cannot be influenced by one's personal efforts, while an internal locus of control implies the belief that outcomes are contingent upon personal actions (Lefcourt, 1991, p. 414). Persons with a more external locus of control are referred to as 'externals' and persons with a more internal locus of control are referred to as 'internals'.

The importance of locus of control has been widely recognized (Phares, 1978, p. 276). Previous research shows that externals can be persuaded more easily and are more confirming and accepting of information from others than internals (see e.g., Phares, 1978 for an overview). Internals are associated with a more active pursuit of valued goals, information seeking (e.g., they have better learning skills in identifying and searching for task relevant cues) and autonomous decision making, and are better able to cope with stress (e.g., Lefcourt, 1991, p. 414; Phares, 1978). Internals generally appear to be more competent and personally effective than externals (e.g., Phares, 1978, p. 278) and they approach situations with a more directive and alert posture than externals (Phares, 1978, p. 276). Although acceptance by an internal of the control of another does happen, it will most certainly be thoughtful and analytic rather than blind and unthinking (Phares, 1978, p. 279).

The characteristics of internals mentioned above appear to be highly relevant for auditors' professional skepticism. For example, in terms of accepting management assertions,

internals are likely to be more critical than externals, which is considered to be important by auditing standards and an aspect of professional skepticism (e.g., ISA 240, par. 42, IFAC, 2008). Hurtt (2007) used locus of control facets in developing a comprehensive professional skepticism scale.

Furthermore, in auditing surveys, several potential reasons for practicing a low level of professional skepticism in auditing have been identified. Pasewark *et al.* (1992) find that auditors may not take skeptical action because of intimidation or concerns about clients' reactions. In addition, Behn *et al.* (1997) found a negative relationship between professional skepticism and client satisfaction (i.e., the more skeptical the auditor was, the unhappier the client became). This is also noted by Nelson (2009). These situations may result in pleasing the client but at the same time reducing skepticism. Therefore, skeptical judgments and decisions in such situations may benefit from auditors with an internal locus of control.

The locus of control construct has not been extensively used in prior research on auditor skepticism. However, some studies are of importance. Bernardi (1994) examines the link between locus of control and auditor's fraud detection. The detection rate for fraud was not significantly higher for internal locus of control auditors than externals. However, high-moral-development, internal-locus-of control managers are more sensitive to information concerning client integrity and competence and have higher detection rates than low-moral-development, external locus-of-control managers. Tsui and Gul (1996) find a main effect of locus of control on auditor's judgments and decisions in an audit conflict situation. Externals were more likely to ignore unrecorded liabilities as wanted by management. Donnelly *et al.* (2003) find that externals are more accepting of dysfunctional audit behavior (e.g., premature sign-off, gathering of insufficient evidence). This study extends existing research by including Rotter's Locus of Control scale (1966) in explaining a more refined set of skeptical judgments and decisions.

#### *A comprehensive professional skepticism scale*

The need for development of a specific professional skepticism scale for auditing has been stressed by several authors (e.g., Choo and Tan, 2000; Hurtt, 2007). Hurtt (2007) developed such an instrument, deriving three sets of skeptical characteristics from philosophical literature, auditing standards and existing literature on skepticism in auditing: (1) examination of evidence; (2) understanding evidence-providers; and (3) acting on the evidence. These three sets together determine an individual's overall level of professional skepticism.

The characteristics related to the examination of evidence consist of ‘a questioning mind’, ‘suspension of judgment’ and ‘search for knowledge’. A questioning mind is demonstrated by a requirement for reasons, evidence, justification or proof. Suspension of judgment is a characteristic indicating that a skeptic is slow to form judgments, requiring deliberation and additional supporting information to reach that judgment. Search for knowledge is equated with curiosity.

The characteristics related to understanding evidence-providers consist of ‘interpersonal understanding’ of the motivation and integrity of evidence-providers.

The characteristics to act on the evidence comprise ‘self confidence’ and ‘self-determination’. Self confidence means the professional courage to act on the evidence that has been obtained. Self-determination is the individual’s conclusions regarding the sufficiency of evidential matter.

These three sets of characteristics determine the individual’s overall level of professional skepticism, which in turn is posited to drive skeptical behavior (Hurt et al., 2003a). There is some empirical evidence that the scores on the Hurtt Professional Skepticism Scale are related to skeptical behavior (Hurt et al., 2008; Popova, 2006; Fullerton and Durtschi, 2004). Hurtt et al. (2008) find that scores on this scale are significantly related to contradictions detected in the working papers and that auditors with higher levels of professional skepticism generate a moderately higher number of alternatives. However, these auditors detect fewer mechanical errors. Popova (2006) studied the relationship between the scores on the Hurtt Professional Skepticism Scale and the generation of initial hypotheses regarding potential misstatements. The findings show that more skeptical auditors judge fraud evidence to be of greater relevance in generating initial hypotheses. Fullerton and Durtschi (2004) find that internal auditors with a higher score on the Hurtt Professional Skepticism Scale require greater evidence search in the presence of fraud symptoms. Fraud training appears to somewhat reduce the differences between high and low skeptical auditors, indicating that professional skepticism can be influenced by training. To corroborate and extend prior research, we examine whether the Hurtt Professional Skepticism Scale improves upon the individual measures examined in explaining auditors’ skeptical judgments and decisions.

#### *Hypothesis concerning the four skeptical characteristics*

Prior research in psychology has found that dispositional characteristics influence judgments and decisions (cf., Eagly and Chaiken, 1993; 2005; Ajzen, 2005, pp 34-37). In the

setting of professional skepticism, Hurtt *et al.* (2003a; 2008) theorize that an auditor's skeptical characteristics (such as a questioning mind) drive skeptical judgments and decisions. Hence, theory implies that auditors with a more skeptical disposition exhibit more skeptical judgments and decisions (e.g., suspend judgment and engage in more substantive testing) than auditors with a less skeptical disposition. Furthermore, the empirical studies concerning the four characteristics, as described above, suggest that more skeptical characteristics lead to more skeptical judgments and decisions. This discussion leads to our first hypothesis.

H1: Skeptical characteristics are positively associated with auditors' skeptical judgments and decisions.

### **The influence of situational factors: client risk**

Although skeptical judgments and decisions are hypothesized to be related to skeptical characteristics, judgments and decisions are also expected to be related to situational characteristics (see e.g., Eagly and Chaiken, 1993; 2005; Ajzen, 2005; Kee and Knox, 1970; Bhattacharya *et al.*, 1998, p. 461). In particular, greater auditor skeptical judgments and decisions appear necessary in high risk situations. This is important because such situations expose the individual auditor and the firm to increased reputation and other risks (e.g., litigation). Therefore, for instance, professional standards dictate that engagements with a higher risk of material misstatement due to fraud should be audited with increased professional skepticism (IFAC, 2008, ISA 240.63). Furthermore, clients' explanations of unexpected fluctuations should be corroborated by the auditor more fully if the risk related to the areas of explanation is high (cf., Hirst and Koonce, 1996, p. 473).

One of the most pervasive client risks is the client's control environment (e.g., Haskins, 1987; Bernardi, 1994). Financial reporting problems of companies have been found to be more pervasive when there is a weak control environment (see e.g., COSO, 1992). Cohen and Hanno (2000) report that audit planning judgments are responsive to the control environment. Hence, the second hypothesis is stated as follows.

H2: Auditors will show more skeptical judgments and decisions when the control environment is weak than when it is strong.

There is not a strong theory to guide the nature of the potential interaction effect between skeptical disposition, skeptical judgments and decisions, and client risk. ISA 240.63



states that engagements with a higher risk of material misstatement due to fraud should be audited with increased professional skepticism (IFAC, 2008). This directive may result in auditors exhibiting skeptical judgments and decisions in a high risk situation regardless of their skeptical disposition. Skeptical judgments and decisions may then differ according to skeptical characteristics only in the low risk setting.

Alternatively, auditors may show similar levels of low skeptical judgments and decisions in the low risk setting (regardless of their skeptical disposition), since they may judge the situation as having little exposure to users and the firm. However, then skeptical judgments and decisions might be dependent on skeptical characteristics in high risk settings with auditors having a high skeptical position particularly attuned to the situation and thereby taking highly cautious actions.

Previous auditing studies suggest that an interaction effect exists between risk and skeptical characteristics in explaining judgments and decisions (see e.g., Hurtt *et al.*, 2008; Popova, 2006). Hurtt *et al.* (2008) found evidence that auditors with higher scores on the Hurtt Professional Skepticism Scale show mixed evidence for a greater increase in skeptical behaviors when confronted with a skepticism-inducing situation (i.e., a new client). Popova (2006) generally found that the auditors who are less skeptical in terms of the Hurtt scale are guided more by risk (i.e., questionable transactions in the past) when they assess initial hypothesis regarding possible misstatements. These findings imply that the relationship between skeptical characteristics and skeptical judgments and decisions are dependent upon risk setting.

To gain further knowledge on how the relationship between auditors' skeptical characteristics and skeptical judgments and decisions is dependent on control environment strength, this study examines the existence and nature of the interaction effect of client risk. Given the lack of strong theory, this issue is addressed as a research question.

RQ1: Is the relationship between auditors' skeptical characteristics and skeptical judgments and decisions dependent on control environment strength? And if so, what is the nature of this relationship?

### **2.3 Method**

#### **Research setting**

The study utilizes an experimental case, adapted from Peecher (1996), which is embedded in a planning stage analytical procedures setting. This setting is chosen because

analytical procedures affect audit risk assessments and consequentially the audit work conducted which can have important ramifications on audit efficiency and effectiveness (see e.g., Cohen and Kida, 1989; Hirst and Koonce, 1996, p. 461, 464; Peecher, 1996, p. 125-126; Koonce *et al.*, 1995, p. 369). Furthermore, analytical procedures have been identified as an effective means of detecting errors (see e.g., Wright and Ashton, 1989) and financial reporting frauds (cf., Erickson *et al.*, 2000).

***Strong control environment:***

The management of MAEdic can be described as being conservative in business practices and makes decisions only after considering all risks and possibilities. If necessary, external consultants are asked for advice in making important decisions. Top management and lower management meet on a regular basis, formally as well as informally. The IT department consists of experienced people. The information system is viewed as the instrument to control business activities. Management wants the financial reports to be accurate and reliable and avoids focusing on reporting short term results. Apart from occasional disputes between management and the external auditor, in general they cooperate harmoniously in order to come to adequate financial reporting. There is a strict policy for following all established internal control-procedures. Top-management emphasizes several performance measures in evaluating the employees. In addition to short term measures from the financial information system, there is elaborate attention for long term developments and qualitative factors. Ethics and integrity are criteria in performance assessment. Directors receive a fixed salary with a bonus of about 20% of the fixed salary depending on achieving specified personal or activity-targets. Because compensation is only indirectly based on profitability, management has little drive to manipulate short term results.

***Weak control environment:***

The management of MAEdic can be described as being aggressive in business practices and emphasizes speed and efficiency when implementing decisions. Management rarely hires external consultants because they are of the opinion that consultants are expensive and often follow a too conservative approach. Top management and lower management meet during monthly production-meetings. Management views the IT department as a necessary evil and considers the accountants and bookkeepers who work there to be bean counters. Because management has a clear preference for reporting methods that enable earnings management, management has frequent disputes with the external auditor. Although there are a large number of internal control procedures in place, they are sometimes less strictly applied if the progress of the work is suffering from them. Top-management mainly focuses on achieving short-term accounting-based performance measures when determining compensation and making promotion decisions. Productivity is the most important criterion in performance assessment. Directors receive a small base-salary and a bonus that is based on the profitability of the department in question. Management is convinced that this compensation system encourages healthy competition and personal initiatives.

***Exhibit 2.1***      *Scenarios related to strong versus weak control environment*

The case contains an unexpected material increase in gross margin. Since the audit client is the most common source of explanations concerning unexpected fluctuations while conducting analytical procedures (see e.g., Hirst and Koonce, 1996, p. 463; Trompeter and Wright, 2007), a client explanation is provided. The CFO gives a non-error explanation stating that the increase in gross margin is caused by a change in the sales-mix. In view of the fact that management may lack independence, auditors should evaluate client explanations with professional skepticism (cf., Bedard and Biggs, 1991, pp. 77-79; Glover *et al.*, 2000, p. 29; ISA 240, par. 42). In the experiment, strength of the control environment was manipulated as strong or weak by using two vignettes based on Cohen and Hanno (2000). The manipulation of the control environment is shown in Exhibit 2.1.

## **Research variables**

### Dependent variables

Given the broad range of actions an auditor may take to resolve a contentious matter, based on prior research, six proxies for auditors' skeptical judgments and decisions are used as dependent variables. They are discussed below.

An auditor should reflect on the information that is provided by a client. Particularly for a skeptical auditor it is common to ponder over the incentives a client might have in furnishing information (e.g., Hurtt *et al.* 2003a). Auditors concerned about management veracity are assumed to show more skeptical judgments and decisions. The variables studied to address this matter are the likelihood that management's explanation (i.e., a change in sales mix) accounts for substantially all of the increase in gross margin (>85%) (represented by the likelihood attached to the CFO's explanation in Task 1 of the case) as well as the likelihood of fraud (which is requested in the second part of the questionnaire) (cf., Peecher, 1996; Shaub, 1996; Shaub and Lawrence, 1996; Payne and Ramsay, 2005; Choo and Tan, 2000; Knapp and Knapp, 2001).

Furthermore, skeptical auditors are expected to build explanations, hypotheses, or scenarios that can function as alternative interpretations for the information that they examine (e.g., Hurtt *et al.* 2003a). Auditors are assumed to exhibit more skeptical judgments and decisions when they: (1) are able to generate a greater number of plausible alternative explanations; (2) provide more error-explanations (since these are counter-explanations to that provided by the client and entail greater risks to users and the auditor); and (3) assess higher probabilities of the accuracy of error explanations. As a result, the variables studied in this respect are the number of alternative explanations (counted as the number of error and non-

error explanations provided in addition to the CFO's non-error explanation in the case), the number of (intentional and unintentional) error explanations and the likelihood that the error explanations account for substantially all of the increase in gross margin (>85%) (cf., Peecher, 1996; McMillan and White, 1993) (calculated as the sum of the likelihoods attached to the error explanations given and further referred to as the 'weight of the error explanations').

Finally, an indication of skepticism is the extent to which auditors want to perform further testing (e.g., Hurtt *et al.* 2003a). The most common variable of the extent of testing used in prior studies is the number of budgeted hours (cf., Shaub, 1996; Shaub and Lawrence, 1996; Hurtt *et al.*, 2008; Popova, 2006). A reference point of 100 hours for last year is given to minimize variance in responses by providing a benchmark and because it is common in an audit setting to have a reference point (e.g., prior year hours).

#### Independent variables: four skeptical characteristics<sup>24</sup>

Rotter's Interpersonal Trust Scale, the Need for Closure Scale and Rotter's Locus of Control scale are all widely used and are found to have high construct validity and reliability (see e.g., Rotter, 1967; Webster and Kruglanski, 1994; Lefcourt, 1991). The Hurtt Professional Skepticism Scale is relatively new, but analyses employing students and professional subjects indicate that the scale has adequate inter-item consistency and test-retest reliability (Hurtt, 2007). There is also some evidence of the predictive validity of the scale (Hurtt *et al.*, 2008; Popova, 2006). Most importantly, it is the only measure of skepticism developed specifically for the audit environment.

#### *Interpersonal trust*

The first skeptical characteristic, (the antithesis of) interpersonal trust, is measured by (the reverse of) the Interpersonal Trust Scale (Rotter, 1967). Rotter's Interpersonal Trust Scale consists of 25 items that are scored on a five point Likert Scale (varying from strongly disagree to strongly agree). Three typical scale-items are, for example: (1) 'in dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy' (reversely scored); (2) 'it is safe to believe that in spite of what people say most people are primarily interested in their own welfare' (reversely scored); and (3) 'most salesmen are honest in describing their products'.

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<sup>24</sup> The detailed measurement scale items per skeptical characteristic can be found in Appendix A.

### *Suspension of judgment*

Suspension of judgment is the second skeptical characteristic studied and is measured by the 42-item Need for Closure Scale (Webster and Kruglanski, 1994). Responses to the 42 items are obtained on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Webster and Kruglanski (1994) argued that the need for closure will express itself in a variety of ways. Therefore, they viewed it as a latent variable visible through different facets (cf., Carver, 1989).<sup>25</sup> Accordingly, Webster and Kruglanski (1994) identified five major facets that represent the construct: (1) preference for order; (2) preference for predictability; (3) decisiveness<sup>26</sup>; (4) discomfort with ambiguity; and (5) closed-mindedness; Webster and Kruglanski (1994) theorize that a person with a high need for closure possesses ‘an unwillingness to have one's knowledge confronted (hence, rendered insecure) by alternative opinions or inconsistent evidence’ and so would minimize skeptical actions. Three examples of scale items are: (1) ‘when I am confused about an important issue, I feel very upset’; (2) ‘I dislike questions which could be answered in many different ways’; and (3) ‘I feel uncomfortable when I don’t understand the reason why an event occurred in my life’.

### *Locus of control*

The third skeptical characteristic studied is locus of control and is measured by Rotter’s (1966) Locus of Control scale. This scale contains 23 question pairs that are answered in a forced choice format (i.e., one of the two possibilities per question). For example, one of the question pairs was: (a) ‘without the right breaks one cannot be an effective leader’; and (b) ‘capable people who fail to become leaders have not taken advantage of their opportunities’. The participants choose one of the two options. In this case option (a) indicates an external locus of control. In this fashion the number of ‘hits’ on external locus of control statements constitutes the Locus of Control Score.

### *Comprehensive professional skepticism*

The fourth skeptical characteristic is the Hurtt Professional Skepticism Scale (2007), which has only been examined in a few unpublished papers (e.g., Hurtt *et al.* 2008; Popova, 2006; Fullerton and Durtschi, 2004). This scale is examined, since, as discussed previously, it is specially designed for the audit environment. The scale consists of 30 items scored on a 6-

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<sup>25</sup> Webster and Kruglanski (1994) state that ‘[a]s our theoretical interest was in this latent construct as such, its extent was assessed additively across the different item categories’.

<sup>26</sup> Webster and Kruglanski (1994) reasoned that persons with a high need for closure would possess a desire to reach closure, revealed in a decisiveness of their judgments and choices.

point scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The scale is designed to provide a single score of professional skepticism, although the items are organized along six theoretically derived facets: (1) questioning mind; (2) suspension of judgment; (3) search for knowledge; (4) interpersonal understanding; (5) self-confidence and (6) self-determination (see Hurtt, 2007). Three illustrative items are: (1) ‘I often accept other peoples’ explanations without further thought’ (reversely scored); (2) ‘I don’t like to decide until I’ve looked at all of the readily available information’; and (3) ‘It is easy for other people to convince me’ (reversely scored).

### Independent variables: manipulated and control variables

Strength of the control environment is manipulated as strong (coded as 0) or weak (coded as 1) and is used as the Control Environment Strength (CES) variable in the analyses.<sup>27</sup> In the strong control environment setting, management is conservative in doing business, has modest disagreements with the external auditors, has strict guidelines for following internal control procedures, and obtains reward based on several financial and non-financial performance measures. In the weak control environment setting management is aggressive in doing business, has frequent disagreements with the external auditors, has less strictly applied internal control procedures if advancement of work suffers from them, and has compensation plans that are mainly based on reaching short-term accounting-based performance measures. Strength of the control environment is manipulated in a between subjects design. As mentioned, the manipulation of the control environment is shown in Exhibit 2.1.

To examine the effects of skeptical characteristics and strength of the control environment on skeptical judgments and decisions, it is necessary to control for the auditors’ prior task experience. To measure prior task specific experience, the research instrument contained a question that asked for the participants’ years of experience in conducting analytical procedures. Accordingly, task experience is statistically controlled in the analyses.

### **Research instrument validation and manipulation checks**

The experiment was conducted during regular audit firm meetings (e.g., annual summer training courses) and was done in the official language that was used during the firms’ sessions. Since a majority of the sessions were in Dutch, the case-materials were

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<sup>27</sup> The case materials of Cohen and Hanno (2000) are used with permission.

translated into Dutch.<sup>28</sup> Concerning the measurement scales, Dutch translations were readily available for the Need for Closure scale (Cratylus, 1995) and for the Locus of Control Scale (see e.g., Boone and De Brabander, 1993). Translations were developed for the Interpersonal Trust Scale and for the Hurtt Professional Skepticism Scale. For that purpose a combination of the Parallel Blind Technique and Translation/Back-Translation methods was used (Behling and Law, 2000).

Two experienced auditors compared the English and the Dutch versions of the case description and evaluated the contents of the case materials. In addition, four professors provided remarks on the research instrument. Two pilot-tests were conducted with 19 staff level auditors and minor modifications were made to the instrument on the basis of the comments received.

The research instrument contains two parts.<sup>29</sup> The first part includes the case description and the tasks (i.e., the dependent variables).<sup>30</sup> The second part contains the scales to measure the skeptical characteristics, demographic information and debriefing questions about the case.

Two questions were asked as manipulation checks concerning the strength of control environment variable (cf., Cohen and Hanno, 2000): control environment effectiveness (1, very ineffective, to 9, very effective) and overall control risk (1, very low risk, to 9, very high risk). The means score on the control environment effectiveness was 3.49 in the weak control environment setting and 6.21 in the strong control environment setting. The mean score on the overall control risk was 6.63 in the weak control environment setting and 4.76 in the strong control environment setting. The manipulation check results for both variables are in the expected direction and are highly significant (independent samples t-test;  $p < 0.01$ ).<sup>31</sup>

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<sup>28</sup> In total, 86% of the participants completed the experiment in Dutch while the remaining 14% completed the experiment in English.

<sup>29</sup> A version of the research instrument can be found in Appendix B. The version concerns the weak control environment setting and solicited the interpersonal trust and locus of control items.

<sup>30</sup> The only exception is that one of the dependent variables (i.e. the likelihood of fraud) was asked in the second part of the questionnaire to prevent the possibility of revealing the purpose of the study.

<sup>31</sup> In order to assess case realism and understandability two questions were asked using a 9-point scale. The scale for case realism ranged from highly unrealistic to highly realistic and the scale for case understandability ranged from very unclear to very clear. The mean score for case realism was 6.08 and the mean score for case understandability was 6.73. One-sample t-tests show that the mean scores are significantly above the middle points (i.e. a value of 5) of the scales ( $p < 0.01$ ), suggesting participants believed the case information was realistic and clear.

## Sample

All of the Big Four firms participated in the study and are randomly referred to as Firm A, B, C and D.<sup>32</sup> Descriptive information on the sample can be found in Table 2.1.

		<i>Firm A</i>	<i>Firm B</i>	<i>Firm C</i>	<i>Firm D</i>	<i>Total</i>
<i>Number of participants</i>		85	96	140	55	376
<i>Number of sessions</i>		1	3	6	2	12
<i>Staff level</i>	<i>Partners</i>	1	25	0	47	73
	<i>Managers</i>	50	41	19	6	116
	<i>Seniors</i>	32	27	65	0	124
	<i>Staff</i>	2	0	54	0	56
<i>Gender</i>	<i>Male</i>	59	84	92	51	286
	<i>Female</i>	26	11	47	2	86
<i>General experience</i>	<i>Mean years</i>	10.11	15.36	2.99	22.16	10.48
	<i>St.dev.</i>	6.40	8.95	2.00	8.52	9.37
<i>Experience with analytical review</i>	<i>Mean years</i>	9.67	14.75	2.75	20.07	9.85
	<i>St.dev.</i>	6.11	9.36	1.93	6.86	8.86
<i>Strength of the control environment</i>	<i>Weak</i>	42	47	68	27	184
	<i>Strong</i>	43	49	72	28	192
<i>Language</i>	<i>Dutch</i>	85	96	101	41	323
	<i>English</i>	0	0	39	14	53

**Table 2.1** Descriptive sample information

There were 376 participants of which 86 were female (i.e., 23%) and 286 were male (i.e., 77%). Although there are a sufficient number of auditors from each staff level for our statistical analyses, due to data availability the number of partners (73) and staff (56) is less than managers (116) and seniors (124). Further, the distribution of auditors across staff levels varied by firm.<sup>33</sup>

On average the auditors had about 10 years of general experience and 10 years of experience with conducting analytical procedures. Both general experience and task specific experience suggest that the participants possess the requisite task knowledge. As a result of random assignment the number of participants was relatively balanced across the two control

<sup>32</sup> Due to data availability, experience, language and gender are not distributed equally across firms, as can be seen in Table 2.1.

<sup>33</sup> Only three auditors at the staff level indicated that they had no task specific experience. Leaving out the staff auditors in the MANOVA and regression analyses leads to similar findings.



environment experimental conditions: 184 participants in the weak condition and 192 participants in the strong condition.

Due to limited time availability and to avoid information overload and/or fatigue, participants completed two of four skeptical characteristics measurement scales. To mitigate the possibility that the order of the skeptical disposition scales may be a factor, the scales were randomly ordered. One-way ANOVAs show that there are no order effects in the administration of scales for skeptical disposition. Table 2.2 provides information on the sample sizes for the four measures of skeptical disposition across firms.<sup>34</sup>

	<i>Firm A</i>	<i>Firm B</i>	<i>Firm C</i>	<i>Firm D</i>	<i>Total</i>
<i>Interpersonal Trust Scale</i>	0	96	140	55	291
<i>Need for Closure Scale</i>	85	0	0	0	85
<i>Locus of Control Scale</i>	0	0	140	55	195
<i>Hurt Professional Skepticism Scale</i>	85	96	0	0	181

**Table 2.2** *Number of participants responding to measures across firms*

As noted previously, participants completed two of the skeptical disposition scales. As can be seen in Table 2.2 there are three possibilities for comparison of the scales (1) the Hurtt Professional Skepticism Scale versus the Need for Closure Scale; (2) the Hurtt Professional Skepticism Scale versus the Interpersonal Trust Scale; and (3) the Interpersonal Trust Scale versus the Locus of Control Scale. Given limited participant time and the initial desire to mainly focus on the Interpersonal Trust Scale, the Need for Closure Scale and the Hurtt Professional Skepticism Scale, the first data gathering focused on these three scales. As greater data became available also Locus of Control was studied. For purposes of a separate study we decided to collect a representative sample of participants (Firm C and D) completing the Locus of Control in combination with Interpersonal Trust measures (cf., Massari and Rosenblum, 1972; Brenenstuhel and Badgett, 1977; Crutchfield, 1986). This results in an uneven spread of the sample across measures. Although the sample design allows us to provide evidence on the efficacy of each measure, it prevents a direct comparison across all four measures for a given participant.

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<sup>34</sup> As will be seen in the subsequent analyses, the size of N is not always identical to the sample sizes mentioned in Table 2.2. These differences are predominantly caused by missing values.

## **Administration of the experiment**

The experiment was conducted during 12 sessions of which 9 sessions were part of annual summer training courses, two were monthly partner meetings and one was an audit methodology training course for instructors. One of the authors attended all sessions and provided a brief introduction before the start of the experiment. The single remark concerning the topic of the study was that it comprised a case on conducting preliminary analytical procedures. After the introduction the participants received an envelope containing the research materials. A printed instruction regarding completion of the instrument was stuck on the envelope.

Participants were randomly assigned to the two control environment conditions. After a starting-signal from the instructor the participants opened the envelope. The envelope included two smaller envelopes with parts one and two of the research instrument. The two parts of the instruments were identified with identical numbers in order to enable ex post matching. The participants were asked to write down their name on the envelope in order to induce a feeling of accountability (cf., Asare *et al.*, 2000).

Upon completion of part one (risk assessment and audit planning tasks), participants were instructed to put the first part of the questionnaire into the first envelope and seal it. Then they proceeded with part two (skeptical dispositions and debriefing questions) which they were instructed to put in the second envelope and to seal it after completion. Finally, envelopes one and two were placed into the large envelope. At the end of part two, participants were informed that if they would like a summary of the findings they should note their email address (255 out of the 376 or 68% did, indicating a high level of interest).

## **Coding**

As noted, in the case description the CFO provided a non-error explanation for the increase in the gross margin percentage. The participants were requested to think about possible alternative explanations for the increase in the gross margin percentage. These explanations were coded by one of the authors and an experienced audit manager.

The coding encompassed an assessment of the type and plausibility of the explanation (is the explanation logical and in the right direction to explain the fluctuation?).<sup>35</sup> Explanations were classified into the following categories: non-error explanations, unintentional error explanations, intentional error explanations and ambiguous

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<sup>35</sup> There were about 30 non plausible explanations that are excluded from the analyses.

unintentional/intentional explanations.<sup>36</sup> The participants identified a broad range of explanations for the increase in gross margin (for example, exchange rate effects, misallocation of costs and improved efficiency). A more detailed coding of the explanations is outside the scope of this thesis.

Cohen's Kappa Coefficient regarding the coding of the plausibility of the explanation was 0.807 ( $p < 0.01$ ) and Cohen's Kappa Coefficient for coding the type of explanation was 0.874 ( $p < 0.01$ ). These levels of agreement are strong (e.g., Landis and Koch, 1977) and indicate a high inter-rater reliability. Differences were discussed by the two coders and mutually resolved.

## 2.4 Results

Descriptive statistics regarding the measures of the skeptical characteristics are shown in Table 2.3. While the range for Need for Closure Scale and the Hurtt Professional Skepticism Scale is considerably narrower than the theoretical range, mean scores are relatively close to the theoretical mid points of the scale, with the exception of the Hurtt Professional Skepticism Scale. Thus, responses appear to reasonably represent the underlying scales and are appropriate to use in the analyses.

<i>Measurement scale</i>	<i>Mean score</i>	<i>Standard deviation</i>	<i>Theoretical range</i>	<i>Actual range</i>	<i>Theoretical mid point</i>	<i>Cronbach alpha</i>
<i>Interpersonal Trust Scale</i>	72.98	8.76	25-125	45-105	75	0.760
<i>Need for Closure Scale</i>	154.85	15.03	42-252	121-193	147	0.822
<i>Locus of Control scale</i>	10.06	3.76	0-23	0-19	11.5	0.713
<i>Hurtt Professional Skepticism Scale</i>	131.66	10.71	30-180	103-158	105	0.821

**Table 2.3** *Descriptive statistics concerning the measurement scales*

As reported in Table 2.3, the Cronbach alpha values for the scales are acceptable, ranging from 0.713 to 0.822 (see e.g., Nunnally, 1978). One-sample Kolmogorov Smirnov tests and

<sup>36</sup> The classification into intentional and non-intentional errors was done to test the robustness of the regression findings concerning the number of total error explanations (see Footnote 39).

an examination of the histograms indicate that the measurement scales are approximately normally distributed.<sup>37</sup>

In Table 2.4 descriptive statistics concerning the six dependent variables are reported.

<i>Dependent variable</i>	<i>Mean score</i>	<i>Standard deviation</i>	<i>Theoretical range</i>	<i>Actual range</i>
<i>The likelihood that management explanation is right</i>	36.26	21.82	0-100	0-100
<i>The likelihood of fraud</i>	32.03	23.84	0-100	0-100
<i>Number of alternative explanations</i>	3.53	1.79	0-∞	0-11
<i>Number of total error explanations</i>	1.61	1.68	0-∞	0-11
<i>Weight of total error explanations</i>	28.04	29.35	0-100	0-100
<i>Number of budgeted hours</i>	129.76	35.30	0-∞	20-400

**Table 2.4** *Descriptive statistics regarding the dependent variables.*

Regarding three dependent variables (i.e., the likelihood that management explanation is right, the likelihood of fraud and the weight of total error explanations) the table shows that the actual range of scores is equal to the theoretical range of the scores. Although the maximum scores of the number of alternative explanations, the number of total error explanations and the number of budgeted hours are theoretically infinite, the actual maximum scores are not extremely high, which makes sense since extreme scores on these variables are not efficient. Furthermore, the table, for example, shows that the average number of alternative explanations is more than twice as high as the average number of total error explanations. This indicates that on average more non-error explanations than error-explanations are generated by the auditors.

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<sup>37</sup> There is a significant negative correlation between interpersonal trust and locus of control ( $p < 0.01$ ), implying that an auditor who is more trusting (i.e. a higher score on interpersonal trust) has a more internal locus of control (i.e. a lower score on locus of control) and vice versa (the correlations are not tabulated). None of the correlations between the other combinations are significant. This suggests that the four measures largely capture different aspects of skepticism. Alternatively, this may also be an indication that some of the factors studied may not be strong determinants of skeptical disposition. However, it has to be bore in mind, as discussed earlier, that sample limitations do not enable comparison between interpersonal trust and need for closure, need for closure and locus of control, and locus of control and the Hurtt Professional Skepticism Scale.

## Results for Hypothesis 1: Relationship between skeptical characteristics and skeptical judgments and decisions

Linear regressions were conducted in order to understand the nature of the impact of the independent variables on the individual skeptical judgments and decisions.<sup>38</sup> The scores on the skeptical characteristics were mean centered (see e.g., Kromrey and Foster-Johnson, 1998). A summary of the regressions is provided in Table 2.5.<sup>39</sup>

	<i>Interpersonal Trust</i>	<i>Need for Closure</i>	<i>Locus of Control</i>	<i>Hurtt PS Scale</i>
<b>Regression of ‘the likelihood that management explanation is right’</b>				
Constant	39.644***	37.531	38.803	38.838
Control environment strength (CES)	-3.631* [-.084]	-6.656 [-.149]	-2.213 [-.051]	-7.299 [-.165]
Skeptical characteristic (SC)	.359** [.148]	-.051 [-.034]	.262 [.046]	-.031 [-.015]
Task-specific experience (TSE)	-.153 [-.066]	.226 [0.062]	-.144 [-.056]	.066 [.024]
CES*SC	-.045 [-.012]	.391 [.156]	-.279 [-.030]	-.370 [-.110]
Adj. R-square (N)	.015* (N=278)	.001 (N=85)	-.015 (N=188)	.019 (N=175)
<b>Regression of ‘the likelihood of fraud’</b>				
Constant	18.533***	22.577***	18.539***	22.607***
Control environment strength (CES)	22.927*** [.492]	25.451*** [.499]	20.410*** [.512]	23.338*** [.489]
Skeptical characteristic (SC)	-.304** [-.115]	.122 [.071]	-.120 [-.019]	.210 [.095]
Task-specific experience (TSE)	.164 [.066]	-.174 [-.042]	.214 [.078]	-.179 [-.062]
CES*SC	-.666** [-.165]	-.667* [-.224]	1.404* [.137]	-.027 [-.008]
Adj. R-square (N)	.310*** (N=278)	.267*** (N=84)	.277*** (N=186)	.236*** (N=176)
<b>Regression of ‘the number of alternative explanations’</b>				
Constant	3.188***	3.490	3.186***	3.499
Control environment strength (CES)	.142 [.040]	.239 [.067]	.069 [.019]	.323 [.091]
Skeptical characteristic (SC)	.018 [.088]	.037 [.308]	-.049 [-.102]	.018 [.112]
Task-specific experience (TSE)	.023** [.123]	.002 [.006]	.056*** [.267]	-.019 [-.091]
CES*SC	-.056** [-.180]	-.057 [-.284]	-.005 [-.007]	-.031 [-.116]
Adj. R-square (N)	.019* (N=284)	.028 (N=85)	.071*** (N=191)	.005 (N=178)

<sup>38</sup> Given potential relationships between the dependent variables, also four MANOVAs were conducted, one for each skeptical characteristic. All six of the dependent variables discussed previously were included. As independent variables the models included the respective skeptical characteristic, control environment strength, years of experience with conducting analytical procedures (i.e. task specific experience) and an interaction term between the skeptical characteristic and control environment strength. The scores on the continuous independent variables were mean centered. For Interpersonal Trust, the tests show statistical significance for all independent variables in the model. For Need for Closure, the tests show statistical significance for control environment strength and for the interaction of the Need for Closure measure and control environment strength. For Locus of Control, the tests show statistical significance for control environment strength and for task specific experience (and marginal significance for the interaction of the Locus of Control measure and control environment strength). For the Hurtt Professional Skepticism Scale, the tests show statistical significance for professional skepticism and control environment strength.

<sup>39</sup> Further regression analyses were done on the two variables that constitute the variable ‘number of error explanations’: number of non-intentional error explanations and number of intentional error explanations. However, the results remain similar. There were ambiguous error explanations for which it was not certain whether they were unintentional or intentional. In one analysis, these explanations were all considered to be unintentional and one in which they were all considered to be intentional. The results were similar in both cases.

	<i>Interpersonal Trust</i>	<i>Need for Closure</i>	<i>Locus of Control</i>	<i>Hurtt PS Scale</i>
<b>Regression of ‘the number of error explanations’</b>				
Constant	.768***	1.106***	.484***	1.539***
Control environment strength (CES)	.671*** [.199]	1.031*** [.317]	.958*** [.267]	.577*** [.189]
Skeptical characteristic (SC)	.021 [.113]	.044*** [.406]	-.041 [-.087]	.027** [.190]
Task-specific experience (TSE)	.045*** [.256]	.015 [.054]	.078*** [.379]	-.010 [-.057]
CES*SC	-.057*** [-.196]	-.054** [-.296]	-.057 [-.074]	-.021 [-.091]
Adj. R-square (N)	.111*** (N=283)	.163*** (N=85)	.234*** (N=190)	.042** (N=178)
<b>Regression of ‘the weight of the error explanations’</b>				
Constant	12.468***	16.959***	6.830***	26.179***
Control environment strength (CES)	16.947*** [.293]	25.013*** [.413]	22.303*** [.390]	15.560*** [.263]
Skeptical characteristic (SC)	.028 [.009]	.354 [.175]	-.385 [-.051]	.254 [.092]
Task-specific experience (TSE)	.590*** [.194]	.229 [.046]	.903*** [.274]	-.186 [-.052]
CES*SC	-.664** [-.133]	-.765* [-.225]	.461 [.037]	.283 [.063]
Adj. R-square (N)	.124*** (N=280)	.165*** (N=85)	.215*** (N=189)	.071*** (N=176)
<b>Regression of ‘the number of budgeted hours’</b>				
Constant	121.070***	114.107***	120.512	119.700***
Control environment strength (CES)	7.441* [.098]	15.459*** [.366]	7.526 [.102]	11.510*** [.183]
Skeptical characteristic (SC)	-.360 [-.084]	.003 [.002]	-.360 [-.037]	.375* [.129]
Task-specific experience (TSE)	.558** [.136]	.466 [.136]	.068 [.016]	.725** [.186]
CES*SC	-.287 [-.044]	-.025 [-.011]	1.013 [.064]	.691 [.147]
Adj. R-square (N)	.022** (N=273)	.109** (N=82)	-.009 (N=186)	.105*** (N=169)

Significance is indicated by asterisks: \* $<.10$ ; \*\* $<.05$ ; \*\*\* $<.01$ . For the directional hypotheses concerning CES and SC, all significance-levels are one-sided unless the results are in the opposite direction. For the non-significant models no significance is shown for the coefficients. The betas are shown in brackets.

**Table 2.5** *Regression coefficients for the skeptical characteristics and the models’ adjusted R-squares*

Interpersonal trust is significant in two of the six regression models (i.e., the likelihood that management explanation is right<sup>40</sup> and the likelihood of fraud). These effects are in the expected direction. Need for closure is significant in one of the models (i.e., the number of error explanations). However, the effect is opposite to the expected direction, which may be due to the interaction that will be discussed later on.

Locus of control is not significant in any of the models. The Hurtt Professional Skepticism Scale is significant for the model regarding the number of error explanations and marginally significant for the model with the number of budgeted hours as a dependent variable. Both effects are in the expected direction.

In sum, there appears to be support for H1. Three of the four skeptical characteristics are found to be significantly associated with skeptical judgments and decisions that are considered to reflect auditor skepticism (e.g., higher assessments of fraud risk).

<sup>40</sup> Note that this model is marginally significant ( $p<0.10$ ).

## **Results for Hypothesis 2: Relationship between strength of the control environment and skeptical judgments and decisions**

Hypothesis 2 examines the impact of control environment strength on skeptical judgments and decisions. For the interpersonal trust regressions, strength of the control environment is significant in three of the significant models (i.e., the likelihood of fraud, the number of error explanations and the weight of the error explanations) and marginally significant in two of the models (i.e., the likelihood that management explanation is right and the number of budgeted hours). The effects are all in the expected direction. For need for closure, strength of the control environment is significant in all four significant models (i.e., the likelihood of fraud, the number of error explanations, the weight of the error explanations and the number of budgeted hours). All effects are in the expected direction. For locus of control, strength of the control environment is significant in three of the four significant models (i.e., the likelihood of fraud, the number of error explanations and the weight of the error explanations). All effects are in the expected direction. For the Hurtt Professional Skepticism Scale, strength of the control environment is significant in all four significant models (i.e., the likelihood of fraud, the number of error explanations, the weight of the error explanations and the number of budgeted hours). All effects are in the expected direction.

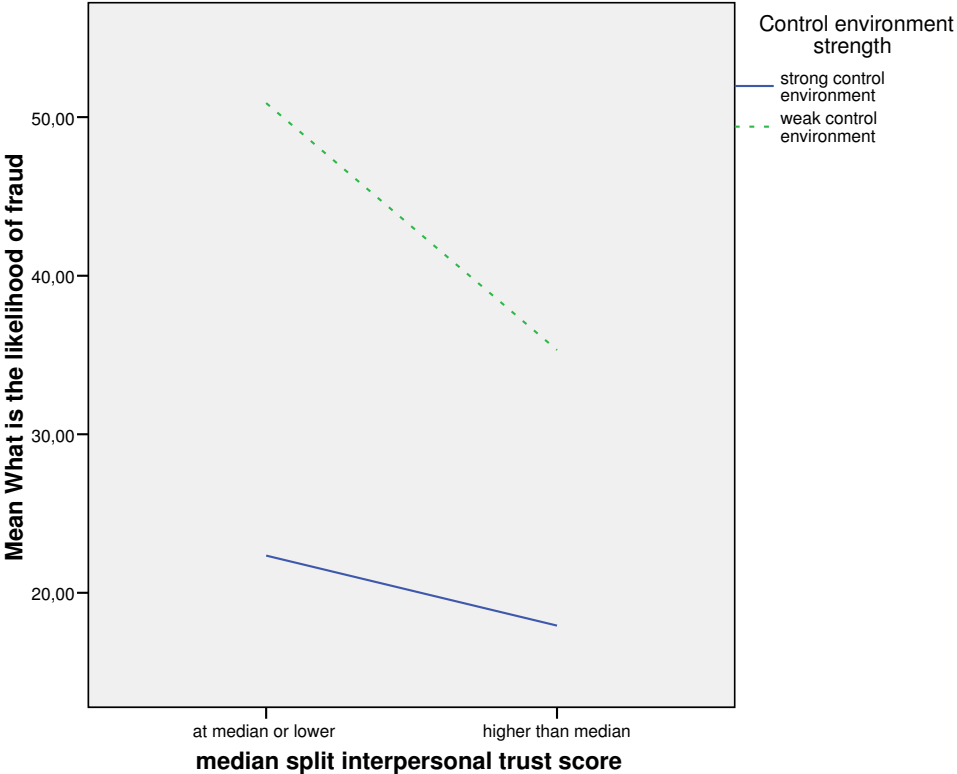
In sum, all significant effects of strength of the control environment are in the expected direction. In the models with the likelihood of fraud, the number of error explanations and the weight of the error explanations as the dependent variable, strength of the control environment has a significant effect for all skeptical characteristics, providing support for H2. However, interpretation of the main effect of strength of the control environment is ambiguous in the presence of significant interaction effects, which are discussed in the next section.

### **Interaction between control environment strength and skeptical characteristics**

The results in Table 2.5 show that there are significant interaction effects between interpersonal trust and the strength of the control environment for four of the models (i.e., the assessment of the likelihood of fraud, the number of alternative explanations, the number of error explanations and the weight of the error explanations). For need for closure, there is a significant interaction between need for closure and the strength of the control environment concerning the number of error explanations and there are two marginally significant interaction effects for the likelihood of fraud and the weight of the error explanations. For locus of control, there is a marginally significant interaction effect between locus of control

and the strength of the control environment regarding the likelihood of fraud. There are no interaction effects for the Hurtt Professional Skepticism Scale. In all, these results suggest that the effect of skeptical characteristics on auditors’ skeptical judgments and decisions depends on the strength of the control environment.

Since several of the interaction effects present are similar, only two interaction effects are depicted. The other interaction effects are referred to when expedient. Figure 2.1 shows the nature of the interaction when using interpersonal trust as the measure for skeptical disposition and the dependent variable ‘assessment of the likelihood of fraud’. For purposes of plotting the interaction-effects and conducting post hoc tests the scores of the skeptical characteristics are split at the median. The figure shows an almost horizontal line for the strong control environment setting. When the control environment is strong all auditors assess a relatively low level of fraud risk regardless of level of interpersonal trust. The weak control environment setting shows a downward sloping line indicating that auditors with a lower level of interpersonal trust (i.e., a greater skeptical disposition) assess a higher likelihood of fraud than auditors with a higher level of personal trust. Post hoc Scheffé tests show that the means at the two anchor points of the weak control environment line are significantly different ( $p < 0.01$ ) and not significant when the control environment is strong.



**Figure 2.1** A plot of the interaction effect between interpersonal trust and control environment strength concerning the likelihood of fraud.



The interaction effect in Figure 2.1 suggests that auditors show more skeptical judgment and decisions when they have a more skeptical disposition *and* when the client has a weak control environment (i.e., auditors' skeptical judgments and decisions are related to interpersonal trust in high risk situations). We also examined whether this interaction is present when considering alternative measures of skeptical disposition. This finding is corroborated by the plot (not shown) of the (marginally significant) interaction effect of need for closure and control environment strength on the likelihood of fraud (i.e., the plot is similar). The plot (not shown) of the (marginally significant) interaction between locus of control and control environment strength regarding the likelihood of fraud reveals that the slope of the line concerning the weak control environment is opposite to the slopes for the interpersonal trust and need for closure constructs.<sup>41</sup> This implies that auditors with more internal locus of control (i.e., a lower score on the locus of control construct), which allegedly means a higher skeptical disposition, assess lower likelihoods of fraud, contrary to expectations. This seems to suggest locus of control is not capturing judgments and decisions that depict the notion of skepticism as outlined in professional standards.

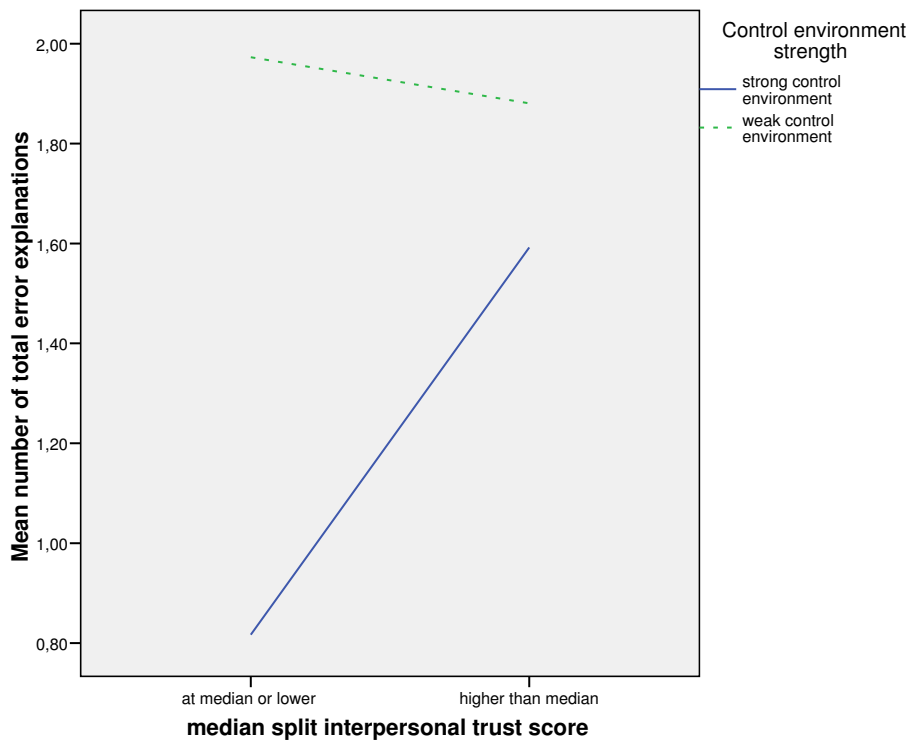
The plot of the interaction effect between interpersonal trust and control environment strength pertaining to the number of error explanations is presented in Figure 2.2.<sup>42</sup> Plotting the interaction effect for need for closure leads to a similar figure and is therefore not shown. Hence the conclusions for interpersonal trust also apply to need for closure when considering number of error explanations. The figure shows that the number of error explanations is about equal for the low and high interpersonal trust groups in the weak control environment setting.<sup>43</sup> Hence, when there is a weak control environment, all auditors seem to adequately respond to the higher level of control environment strength, regardless of their skeptical disposition. However, in the strong control environment setting there is a significant difference (post hoc Scheffé test) between the mean number of total error explanations for the low and high interpersonal trust groups.

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<sup>41</sup> An independent sample t-test shows a marginal significance (two-tailed  $p < 0.10$ ) of the difference between the low and high locus of control groups in the weak control environment setting.

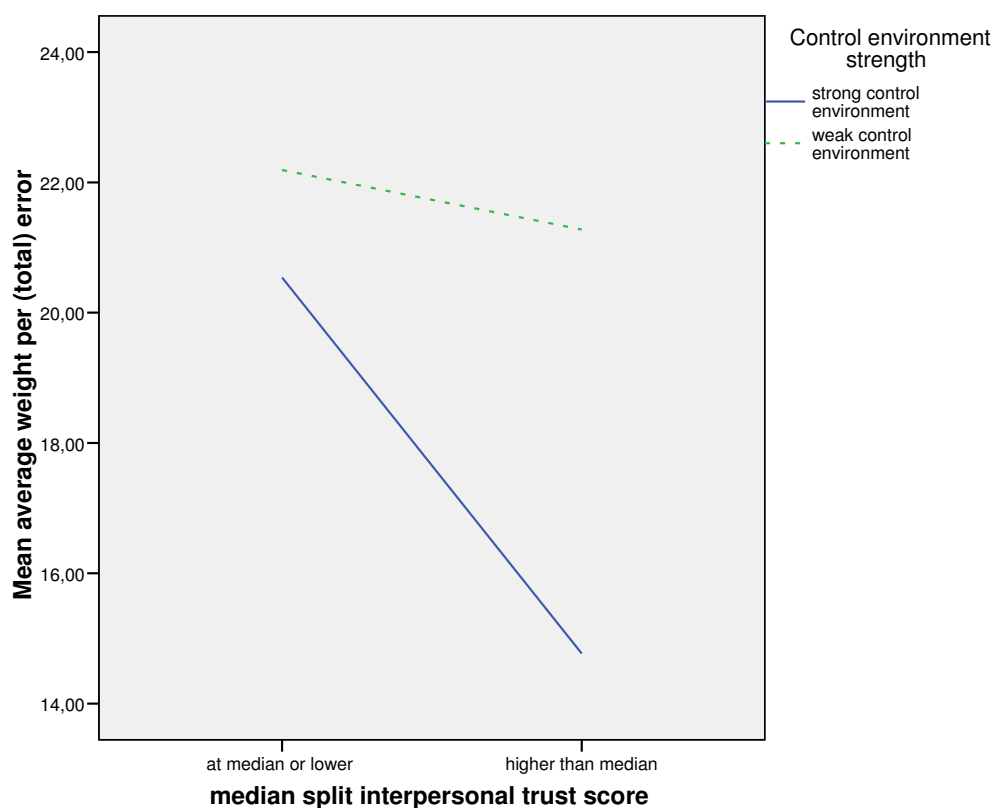
<sup>42</sup> The number of alternative explanations interaction concerning interpersonal trust is similar to the number of error explanations interaction and is therefore not presented.

<sup>43</sup> Post hoc Scheffé tests and independent sample t-tests show no significant difference between the means for the low and high need for closure groups in the weak control environment setting.



**Figure 2.2** *A plot of the interaction effect between interpersonal trust and control environment strength regarding the number of total error explanations*

Contrary to intuition, the line is upward sloping which indicates that auditors with a lower interpersonal trust (i.e., greater skeptical disposition) generate less alternative error explanations than auditors with higher interpersonal trust. This pattern is also suggested by the plot of the interaction effect of the weight of the error explanations (not shown). A potential explanation may be that skeptical auditors focus more on fewer errors. This explanation is examined by calculating the weight of the error explanations divided by the number of error explanations (i.e., the summed likelihoods attached to their error explanations divided by the number of error explanations generated). A plot of this variable is presented in Figure 2.3. As can be seen from Figure 2.3, the slope for the strong control environment setting has reversed, as conjectured. This finding implies that skeptical auditors focus more (i.e., put more weight) on fewer errors which would result in a higher average weight per error. Hence, they put more emphasis on the ‘depth’ rather than the ‘breadth’ of testing (see e.g., Asare *et al.*, 2000). As mentioned, this result applies to both interpersonal trust and need for closure.



**Figure 2.3** *A plot of the interaction effect between interpersonal trust and control environment strength concerning the average weight per error.*

In sum, the findings suggest that the effect of skeptical characteristics on the skeptical judgments and decisions depends on the strength of the control environment. This in particular holds for the interpersonal trust and need for closure measures, which show similar interaction effects. The findings, thus, suggest the affect of auditors' skeptical characteristics on planning judgments and decisions depend upon the level of client risk.<sup>44</sup>

## 2.5 Discussion

The results indicate that the four skeptical measures appear to represent different constructs. A summary of the findings concerning the effects of the skeptical characteristics and control environment strength on skeptical judgments and decisions (as well as their interaction effects) is presented in Table 2.6.

Overall, interpersonal trust displays the strongest ability to predict skeptical judgments and decisions in terms of the highest number of dependent variables with a significant impact, via the main and the interaction effects. Interpersonal trust and the Hurtt Professional

<sup>44</sup> This study controls for experience. As can be seen in Table 2.5, task specific experience has a significant impact in several of the models.

Skepticism Scale show the most significant main effects on judgments and decisions. However, both constructs have an impact on different judgments and decisions. Surprisingly, locus of control appears to have no main effect on skeptical judgments and decisions. Need for closure also exhibits significance in predicting skeptical judgments and decisions but showed one effect that was opposite to the expected direction.

	<i>Dependent variables</i>	<i>1-tailed sign. SC</i>	<i>sign</i>	<i>1-tailed sign. CES</i>	<i>sign</i>	<i>2-tailed sign. SCxCES</i>
<b><i>Interpersonal trust</i></b>	Likelihood mngt expl. is right	0.032	+	0.081	-	0.013  0.022 0.009 0.074
	Likelihood of fraud	0.042	-	0.000	+	
	Number alternative explanations					
	Number of error explanations			0.000	+	
	Weight of error explanations			0.000	+	
	Number of budgeted hours			0.051	+	
<b><i>Need for closure</i></b>	Likelihood mngt expl. is right			0.000	+	0.059  0.021 0.077
	Likelihood of fraud					
	Number alternative explanations					
	Number of error explanations	0.001	+*	0.002	+	
	Weight of error explanations			0.000	+	
<b><i>Locus of control</i></b>	Likelihood mngt expl. is right					0.092
	Likelihood of fraud			0.000	+	
	Number alternative explanations					
	Number of error explanations			0.000	+	
	Weight of error explanations			0.000	+	
	Number of budgeted hours					
<b><i>Hurt Professional Skepticism Scale</i></b>	Likelihood mngt expl. is right					
	Likelihood of fraud			0.000	+	
	Number alternative explanations					
	Number of error explanations	0.023	+	0.006	+	
	Weight of error explanations			0.000	+	
Number of budgeted hours	0.085	+	0.007	+		

\* This sign is not in the expected direction.

**Table 2.6** Summary of significant and marginally significant effects.

Furthermore, there are significant interaction effects for the models concerning interpersonal trust, need for closure and locus of control. Predominantly, these interaction effects are present for the likelihood of fraud, the number of error explanations and the weight of the error explanations. It is interesting to see that these interaction effects differ depending on the skeptical judgments and decisions studied.

In all, auditors' skeptical judgments and decisions are more significantly associated with interpersonal trust than any of the other characteristics, suggesting it is most closely associated with the skeptical judgments and decisions prescribed in the auditing literature and professional standards. It is interesting to note that the more comprehensive and specific Hurtt Professional Skepticism Scale does not show the strongest results. Furthermore, as noted only one of the correlations that could be calculated between the skeptical characteristics was found significant suggesting that the measures capture different aspects of skepticism. However, keep in mind that not all possible correlations could be tested due to the composition of the sample.

The number of error explanations is explained by three of the four skeptical characteristics (via the main and the interaction effects) and number of alternative explanations is explained only by one characteristic.<sup>45</sup> Apparently skeptical characteristics are more related to a 'presumptive doubt' variable like number of error explanations than to a 'neutral stance' variable like number of alternative explanations. The neutral stance refers to the fact that the auditor neither assumes that management is dishonest nor assumes unquestioned honesty (e.g., Cushing, 2000). Presumptive doubt is a view often used by forensic experts (e.g., Public Oversight Board, 2000, p. 88; Bell *et al.*, 2005). Bell *et al.* (2005) assert that an auditor assumes some level of dishonesty unless evidence indicates otherwise (cf., POB, 2000, p. 76); forensic auditors generally assume dishonesty unless there is evidence to the contrary. Similarly, McMillan and White (1993) state that professional skepticism entails 'conservative bias' and 'conservative behavior' in audit judgments, implicating that skeptical auditors will focus on more error-related evidence (cf., Smith and Kida, 1991).

In addition, strength of the control environment has a significant effect in a majority of the models providing support for H2. Apparently, the majority of the auditors pick up the potential problems in control environment strength.

There are several limitations in the study that should be considered in interpreting the results. First, experience, firm and language effects cannot be disentangled due to the data availability. Second, participants completed only two of the four skeptical measures. Hence, this precludes a complete comparison between all four measures. Third, there exists no normative solution to the case problem used in the research instrument so that it is not

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<sup>45</sup> Additional regression analyses show that non-error explanations are not significantly related to any of the four skeptical characteristics (via the main and/or the interaction effect).

possible to determine which measure is most closely related to optimal judgments and decisions.

### **Implications and suggestions for further research**

The study shows that skeptical characteristics are related to skeptical judgments and decisions. This has not been strongly evidenced by previous studies. In particular, the finding that interpersonal trust is most significantly related to skeptical judgments and decisions warrants a further study of the components of the trust variable in order to find more specific trust facets influencing auditors' skeptical judgments and decisions.<sup>46</sup>

Furthermore, it is unclear whether auditors' personality traits are stable (see e.g., Libby and Luft, 1993; Nelson, 2009; Carpenter, 2004). For instance, do auditors become more or less skeptical as they gain experience? Another suggestion for further research is to develop a realistic complex case setting with a seeded error which enables a test of whether the skeptical judgments and decisions are effective in detecting a material misstatement. Also professional skepticism in team settings is a promising avenue of research. Finally, future research may focus on developing more specific measures of skeptical attitude in particular settings (see e.g., Ajzen, 2005; Lefcourt, 1991, pp. 414), instead of the so-called global measures examined in this and prior studies.

The research model focused on an important and pervasive client risk (as measured by control environment strength) in examining the relationship between skeptical characteristics and skeptical judgments and decisions. Future research could focus on other risks, as for example identified in ISA 315 (IFAC, 2008). Future research could also study other important auditor incentives such as budget pressure, audit quality, litigation and reputation loss (see Nelson, 2009, for an overview).

There are also a number of implications for audit practice. For instance, the findings justify further consideration of the interpersonal trust variable to develop adequate recruitment, and staffing and training guidance. Also a consideration for practice and future research is whether quality control processes (like audit reviews) mitigate auditors' individual skepticism. For example, it is not clear how the review process interacts with skeptical disposition and can compensate for insufficient testing and care.

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<sup>46</sup> See Chapter 3 for an examination of this issue.



### ***Chapter 3 The relationship between auditors' interpersonal trust factors and skeptical judgments and decisions<sup>47</sup>***

#### ***Abstract***

Professional skepticism is a pervasive feature of contemporary audits. While there is no universally accepted definition, prior empirical auditing and non-auditing literature has primarily characterized skepticism as the antithesis of trust. The purpose of this study is to conduct an in depth examination of the association between interpersonal trust factors based on Rotter's Interpersonal Trust Scale (1967) and skeptical judgments and decisions. An important issue is whether the individual trust factors are more strongly associated with skeptical judgments and decisions than the summated interpersonal trust scale. If so, there can be greater focus on these specific trust factors in providing guidance and training for auditors. This study also provides additional findings on the relationship between auditor rank and interpersonal trust and skeptical judgments and decisions.

The sample includes 291 auditors from offices of three of the Big Four auditing firms in The Netherlands, with experience ranging from staff to partner. The results suggest that the general construct measuring interpersonal trust across a set of social objects and situations appears to be a better predictor of skeptical judgments and decisions than the individual factors comprising it.

Furthermore, additional analyses show that rank is positively associated with both interpersonal trust and skeptical judgments and decisions. Despite having higher levels of interpersonal trust (lower skeptical disposition), partners, nonetheless, exhibit the most skeptical judgments and decisions, suggesting they are trained to compensate for lower skeptical disposition.

#### ***3.1 Introduction***

The importance of professional skepticism in auditing is evidenced by the fact that: (1) professional skepticism is prominently noted in professional auditing standards (e.g., IFAC, 2008); (2) international audit firms prescribe the application of professional skepticism in

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<sup>47</sup> I am indebted to the three Big Four auditing firms that participated in this study. I am also grateful to Jeff Cohen, Michael Shaub, the participants of the paper presentation at the Annual Congress of the European Accounting Association (EAA) in Lisbon (April 2007) and the participants of the ARCA lunch seminar at the VU University Amsterdam for providing comments on earlier versions of this paper. Furthermore, I would like to thank individuals who have helped in developing the research materials, coding and analyzing the results. Finally, this paper benefited greatly from a leave of absence from Ernst & Young that was financially supported by the VU University Amsterdam.



their audit methodologies; (3) professional skepticism is part of education and training of auditors; and (4) the academic and professional auditing literatures stress the importance of professional skepticism (see e.g., Hurtt *et al.*, 2003, p.2; Kadous, 2000). The significance of professional skepticism is further illustrated by several studies of fraud related SEC cases which conclude that on many occasions auditors failed to detect material misstatements, particularly those involving fraudulent financial reporting, as a result of a lack of sufficient professional skepticism (e.g., Beasley *et al.*, 2001; POB, 2000; Benston and Hartgraves, 2002, p. 122).

International auditing standards state that auditors should plan and perform an audit with an attitude of professional skepticism (e.g., ISA 200.15, IFAC, 2008). ISA 200.16 (IFAC, 2008) states that this means ‘the auditor makes a critical assessment, with a questioning mind, of the validity of audit evidence obtained and is alert to audit evidence that contradicts or brings into question the reliability of documents and responses to inquiries and other information obtained from management and those charged with governance’. Professional skepticism requires auditors to evaluate the reliability of management assertions and to develop an appropriate audit program (Shaub and Lawrence, 1999, p. 62).

Despite its importance, in the existing auditing literature there is lack of consensus on a definition and measurement of professional skepticism (e.g., Hurtt *et al.*, 2003; Nelson, 2009). However, most definitions contain a trust-related aspect (see e.g., Choo and Tan, 2000; Cushing, 2000; Payne and Ramsay, 2005, p. 324; Shaub, 1996; Shaub and Lawrence, 1996; 1999). The previous empirical auditing studies that use various trust scales to measure professional skepticism show weak and inconclusive results. However, the study presented in Chapter 2 is the first study in auditing to employ Rotter’s Interpersonal Trust Scale (1967). In an experiment concerning an analytical procedures setting they find this scale to be the most significant predictor of skeptical judgments and decisions among four widely recognized measures.<sup>48</sup> Thus, this scale appears to have great promise in measuring auditors’ skeptical disposition. Hence, it warrants further study.

Interestingly, previous analyses of the Interpersonal Trust Scale items show this measure reflects a complex factor structure (see e.g., Chun and Campbell, 1974; Kaplan, 1973; Hunt *et al.*, 1983; Wright and Tedeschi, 1975). However, none of these studies test the

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<sup>48</sup> The four skeptical characteristics studied are: (1) interpersonal trust (as measured by the Interpersonal Trust Scale, Rotter, 1967); (2) suspension of judgment (as measured by the reversal of the Need for Closure Scale, Webster and Kruglanski, 1994); (3) locus of control (as measured by the Locus of Control Scale, Rotter, 1966); and (4) a comprehensive professional skepticism scale (i.e. the Hurtt Professional Skepticism Scale, Hurtt, 2003).

predictive validity of the individual factors in relating factors to judgments and decisions. Therefore, this study presents a factor analysis of Rotter's Interpersonal Trust Scale and examines whether extracted factors are more related to skeptical judgments and decisions than the summated scale. If so, this allows firms to focus more on specific factors when hiring and training employees. It also enables researchers to focus more on what factors are specifically driving skeptical judgments and decisions.

As an additional analysis, the study looks at how auditors' interpersonal trust differs at various organizational levels and how auditors' professional rank is associated with skeptical judgments and decisions. This is important to study since partners have the ultimate authority and responsibility for issuing the audit opinion. Thus, it is very important to know whether their skepticism is higher than that of the other audit team members. Furthermore, it is valuable to know how interpersonal trust and skeptical judgments and decisions develop from staff to partner level, since this may have important implications for training and/or self-selection.

The study provides two important contributions to the literature. First, the research extracts factors from Rotter's Interpersonal Trust Scale, which enables derivation of trust elements that are of particular importance for auditor professional skepticism. This has not been done in auditing contexts before. Furthermore, the study tests the association of the extracted factors with skeptical judgments and decisions. Second, the sample contains auditors with a broad range of experience who are evenly spread across professional ranks (including partners), allowing an additional analysis of professional skepticism between organizational levels.

The study entails an experiment in an analytical procedures setting, since analytical procedures can have a significant impact on audit effectiveness and efficiency (see e.g., Asare and Wright, 1997a, 1997b; Bedard and Biggs, 1991; Wright and Ashton, 1989; Hirst & Koonce, 1996, p. 461, 464; Peecher, 1996, p. 125-126; Koonce *et al.*, 1995, p. 369). The experimental case, adapted from Peecher (1996), contains an unexpected material increase in the gross margin and a related management non-error explanation concerning the fluctuation. Two hundred and ninety-one auditors from three of the Big 4 firms participated in the experiment.<sup>49</sup>

The results suggest that the general construct measuring interpersonal trust appears to be a better predictor of skeptical judgments and decisions than the individual factors

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<sup>49</sup> The dataset used in this study is a subset of that used in Chapter 2.

comprising it. From additional analyses, professional rank appears to be positively related to skeptical judgments and decisions and to interpersonal trust.

The remainder of this paper is organized into four sections. Section 3.2 provides an overview of prior literature, relevant theory, and the research questions. The research design is described in Section 3.3, while Section 3.4 contains a presentation of the results. Finally, Section 3.5 is devoted to a discussion of the major findings and their implications for future research and practice.

### **3.2 Prior literature, theory and research questions**

#### **Interpersonal trust as a measure of skeptical disposition**

Dispositional skeptical characteristics of auditors are expected to be predictive of skeptical judgments and decisions (cf., Ajzen, 2005).<sup>50</sup> A skeptical judgment, for instance, may be an auditor's low likelihood assessment that management's non-error explanation for a material unexpected fluctuation detected during analytical procedures is correct, expressing the need to substantiate that explanation through further testing. This study considers both auditors' skeptical disposition, as measured by auditors' level of interpersonal trust and its underlying factors, and various skeptical judgments and decisions.

There is no universally accepted definition of professional skepticism (see e.g., Hurtt, 2007; Nelson, 2009; Doucet and Doucet, 1996). However, a substantial number of authors view professional skepticism as being the antithesis of trust (see e.g., Choo and Tan, 2000; Cushing, 2000; Payne and Ramsay, 2005, p. 324; Shaub, 1996; Shaub and Lawrence, 1996; 1999). The general idea is that auditors with a skeptical disposition have a lower level of interpersonal trust (e.g., Shaub, 1996; Hurtt, 2007). Interpersonal trust can be defined as '*a generalized expectancy held by an individual or a group that the word, promise, verbal or written statement of another individual or group can be relied upon*' (Rotter, 1967, p. 651; Rotter, 1980, p. 1).

The auditing literature also describes trust as being an *ingredient* of skepticism (see e.g., Hurtt, 1999; Hurtt *et al.*, 2003; 2008). Furthermore, some authors argue that while trust and professional skepticism might be different constructs, they are likely related (e.g., Popova, 2006; Rennie *et al.*, 2007; Kopp *et al.*, 2003; and Doucet and Doucet, 1996). All these views and definitions contain a trust-related aspect.

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<sup>50</sup> A disposition is defined as 'a person's inherent qualities of mind and character; an inclination or tendency' (Concise Oxford Dictionary, tenth edition, 1999).

Also in the non-auditing literature, skepticism has been defined as initial distrust (e.g., Bunge, 1991, p. 131), distrust (e.g., Forehand and Grier, 2003, p. 350), and a subjective feeling of mistrust (e.g., Tsfatı and Cappella, 2003, p. 506; Tsfatı, 2003). Personality researchers and social psychologists view mistrust/distrust and trust as opposite ends of a single continuum (cf., Lewicky *et al.*, 1998, p. 440; Webb and Worchel, 1986, pp. 214-215). Hence, it is argued that skepticism can be measured as the antithesis of trust.

To measure trust, Shaub (1996) used the independence and trustworthiness parts of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974). Furthermore Shaub (1996) used a self-developed Client Trust scale. Rose (2007) also used the trustworthiness part of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974). Choo and Tan (2000) used a modified version of the Rempel *et al.* Trust Scale (1985), originally measuring trust in the relationship with a person's life partner.

Although the Rotter Interpersonal Trust Scale (1967) is widely accepted in other fields to measure interpersonal trust (see e.g., Hoell, 2004; Johnson-George and Swap, 1982; Stack, 1978; Webb and Worchel, 1986), it has been used in only one auditing research study that is presented in Chapter 2. In contrast, in a large number of non-auditing studies Rotter's Interpersonal Trust Scale has been more highly associated with actual behaviors and other validating evidence than other interpersonal trust scales, such as the trustworthiness part of Wrightsman's Philosophies of Human Nature Scale (Stack, 1978, p. 569; Rotter, 1980, p.2).

To a limited extent the scales used in previous auditing studies showed significant main and/or interaction effects in explaining skeptical judgments and decisions. The trustworthiness and independence parts of the Wrightsman Philosophies of Human Nature Scale do not significantly relate to the auditor decision to trust a client in the Shaub (1996) study. However, the trustworthiness part of the Wrightsman Philosophies of Human Nature scale (Wrightsman, 1964, 1974) is significantly related to skeptical judgments in the Rose (2007) study. More particularly, less trusting auditors pay more attention to evidence of aggressive reporting and increase the belief that intentional misstatement has occurred. Hence, the results of using the Wrightsman subscale are inconclusive. Furthermore, Shaub's Client Trust Scale only shows significant results in two of the 18 regressions tested. In those two instances there was an incentive present to overstate sales. The Rempel *et al.* Trust Scale showed some significant results: specifically, class room instruction interacted with skeptical attitude (as measured by the trust scale) in affecting the ability to detect frauds. None of the scales yield strong results.

In contrast, the study in Chapter 2 found Rotter’s Interpersonal Trust Scale (1967) to be the most significant predictor (out of four measures) of skeptical judgments and decisions in an experiment concerning an analytical procedures setting. Thus, it appears fruitful to explore this scale further.

**Multidimensionality of the Interpersonal Trust Scale**

The Interpersonal Trust Scale reflects a wide variety of social objects such as parents, teachers, physicians, politicians, classmates and friends (Rotter, 1967, p. 653). Although Rotter used a rather one-dimensional definition (Hunt *et al.*, 1983), previous analyses of Rotter’s Interpersonal Trust Scale items reveal a complex factor structure (see e.g., Chun and Campbell, 1974; Kaplan, 1973; Hunt *et al.*, 1983; Wright and Tedeschi, 1975). Table 3.1 shows the factors that have been identified in preceding factor-analytic studies (the factors are ordered according to their eigenvalues, highest eigenvalues first).

	<i>Kaplan (1973)</i>	<i>Chun and Campbell (1974)</i>	<i>Wright and Tedeschi (1975)</i>	<i>Hunt et al. (1983)</i>
<b>Factor 1</b>	Institutional trust	Political cynicism	Political trust	Exploitation
<b>Factor 2</b>	Sincerity	Interpersonal exploitation	Paternal trust	Sincerity
<b>Factor 3</b>	Caution	Societal hypocrisy	Trust of strangers	Institutional trust
<b>Factor 4</b>		Reliable role-performance		

**Table 3.1** Summary of Interpersonal Trust Factors in Previous Research

As revealed by the table, the names of the extracted factors differ across studies. However, the factor structures in the studies (see Appendix C for the underlying constructs) show similarities, as is also noted by Hunt *et al.* (1983): (1) institutional trust resembles political cynicism (and societal hypocrisy) and political trust.<sup>51</sup> Hunt *et al.* (1983) describe this set of dimensions as ‘differential trust in the media and the legal system’; (2) sincerity is similar to reliable role performance and paternal trust. Hunt *et al.* (1983) describe this set of dimensions as the ‘differential disposition to accept people’s word’; and (3) exploitation resembles trust of strangers and (interpersonal) exploitation. Hunt *et al.* (1983) describe this set of dimensions as the ‘expectation that people will behave exploitatively and selfishly vs. fairly and altruistically’.

All of the factor-analytic studies of the Interpersonal Trust Scale in Table 3.1 have been conducted in a non-auditing context and three of the four studies use students as

<sup>51</sup> Unfortunately, the detailed factor structure regarding the Kaplan (1973) study was unavailable.

participants (i.e., Chun and Campbell, 1974; Kaplan, 1973; Wright and Tedeschi, 1975). Hunt *et al.* (1983) used a more demographically diverse group of non-college ‘volunteers’. This group consisted of visitors to the Ontario Science Centre.

Furthermore, none of the studies relate extracted interpersonal trust factors to behaviors.<sup>52</sup> Factor-analytic studies can be useful because applying the dimensions in addition to (or instead of) the summated scale could increase the predictability of behaviors (see e.g., Chun and Campbell, 1974, p. 1066; Stack, 1978, p. 568).

### **The relationship between interpersonal trust factors and skeptical judgments and decisions**

Research in psychology has suggested that dispositional characteristics are related to judgments and decisions (cf., Eagly and Chaiken, 1993; 2005; Ajzen, 2005, pp 34-37). For example, as mentioned, auditors are assumed to be more skeptical when they have a lower level of interpersonal trust and if they behave accordingly (cf., Shaub, 1996; Hurtt, 2007). Although previous auditing studies examining the relationships between interpersonal trust and skeptical judgments and decisions show weak and inconclusive results, the study in Chapter 2 used Rotter’s Interpersonal Trust Scale (1967), not examined in prior auditing research, and found this measure to be the most significant predictor (out of four measures; see Footnote 48).

In this study, an exploratory factor analysis will be conducted to examine whether the extracted factors from the Interpersonal Trust Scale outperform the summated scale in their association with skeptical judgments and decisions. Since individual constructs underlying interpersonal trust are more specific and focused than the summated scale, it is likely that they better predict skeptical judgments and decisions (cf., Chun and Campbell, 1974; DeVellis, 2003; Stack, 1978). Furthermore, it has been argued that the summated Interpersonal Trust Scale appears to contain redundant items, items that are not related to trust and items that do

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<sup>52</sup> However, there is anecdotal evidence of the link between interpersonal trust factors and behaviors. Stack (1978, p. 568) mentions a personal communication with Rotter in which the latter states that two replicated factors of interpersonal trust are found to be more closely related to certain behaviors than the total interpersonal trust score is. One factor that Rotter found is trust of peers or other familiar social agents (examples of scale items: ‘Parents usually can be relied upon to keep their promises’ and ‘using the Honor System of not having a teacher present during exams would probably result in increased cheating’). This factor is similar to sincerity, reliable role performance and paternal trust. Students who score low on this dimension appear to cheat fellow students more (the type of cheating is not identified). The second factor is institutional or political trust, or trust in those with whom people of little direct contact (example of a scale item: ‘The judiciary is a place where we can all get unbiased treatment’). This factor is similar to the equivalently named factors in Table 3.1. In an unpublished PhD thesis, Roberts (1971) found Rotter’s political trust factor to be significantly related to high levels of social activism by students.

not refer to interpersonal relationships – like ‘the future seems very promising’ (see Chun and Campbell, 1974). Hence, factor analysis can be used to make the scale more effective and efficient.

Given the exploratory nature of this study, this issue is examined in the following research question:

RQ1: Are individual Interpersonal Trust Scale factors more closely related to skeptical judgments and decisions than the summated Interpersonal Trust Scale?

### **The relationship between situational variables, trust factors, and skeptical judgments and decisions**

Auditor skeptical judgments and decisions are particularly necessary in high risk situations. For instance, professional standards dictate that engagements with a higher risk of material misstatement due to fraud should be audited with increased professional skepticism (IFAC, 2008, ISA 240.63). Furthermore, clients’ explanations of unexpected fluctuations should be corroborated by the auditor more fully if the risk related to the areas of explanation is high (cf., Hirst and Koonce, 1996, p. 473).

Prior empirical auditing research on professional skepticism shows that situational (risk) factors have an influence on skeptical judgments and decisions (e.g., Hurtt *et al.*, 2008; Shaub, 1996; Shaub and Lawrence, 1996; Payne and Ramsay, 2005). In general, these studies suggest that auditors are sensitive to fraud and other risks in the expected direction. To corroborate earlier studies, the main effect of client risk on auditor skeptical behavior (as reflected in audit planning judgments) will be studied.

One of the most pervasive client risks is the client’s control environment (e.g., Haskins, 1987; Bernardi, 1994). Often companies’ financial reporting problems are related to a weak control environment (see e.g., COSO, 1992; Doyle *et al.*, 2007). Furthermore, Cohen and Hanno (2000) found that audit planning judgments are responsive to the control environment. Hence, in this study client risk is manipulated as control environment strength (weak or strong).

In addition, prior auditing research reports significant interactive effects between situational factors and skeptical disposition in explaining skeptical judgments and decisions (e.g., Hurtt *et al.*, 2008; Popova, 2006; Chapter 2 of this dissertation). These studies suggest that the relationship between skeptical characteristics and skeptical judgments and decisions are dependent upon the risk setting. Since extracted factors of interpersonal trust scale are

expected to be focused and efficient, as discussed (e.g., Chun and Campbell, 1974; Stack, 1978), this may lead to interaction effects which are different from prior studies employing the summated scale (e.g., patterns may become clearer). Therefore, the interaction effect will be studied in research question 2.

RQ2: Will the relationship between interpersonal trust, situational risk and skeptical judgments and decisions differ for some of the extracted Interpersonal Trust Scale factors as compared to the summated scale?

### **3.3 Research design**

#### **Task setting**

The current study is placed in a planning-stage analytical procedures setting. Analytical procedures are an important part of financial statement auditing and are required by auditing standards during the planning and review stages (see e.g., ISA 520, IFAC, 2008; Hirst and Koonce, 1996, p. 458). Analytical procedures in the planning phase may reveal unexpected fluctuations that have been found to influence audit risk assessments and consequentially the audit work conducted, which subsequently impacts audit effectiveness and efficiency (see e.g., Cohen and Kida, 1989; Hirst and Koonce, 1996, p. 461, 464; Peecher, 1996, p. 125-126; Koonce *et al.*, 1995, p. 369). The audit client is the most common source of explanations concerning unexpected fluctuations in planning-stage analytical procedures (see e.g., Hirst and Koonce, 1996, p. 463; Trompeter and Wright, 2009). However, client explanations should be viewed with professional skepticism because management may lack independence (cf., Bedard and Biggs, 1991, pp. 77-79; Glover *et al.*, 2000, p. 29; ISA 240, par. 42).

The case used in this study was adapted from that developed by Peecher (1996; 1994). The case contains an unexpected, material increase in the gross margin and a related management non-error explanation concerning the fluctuation. Peecher studied how auditors' justification processes influence two dimensions of planning-stage analytical procedures performance: assessments of client-provided explanations; and the extent of the search for competing explanations.

The experimental case does not have a normative answer as to the actual cause of the fluctuation. It is a hypothetical but realistic case, without a seeded error. The case-materials (Peecher, 1994) were used with permission to develop the 'MAEdic case'. Two versions of the case were developed by manipulating control environment strength. Using the



manipulation employed by Cohen and Hanno (2000), control environment strength was reflected as strong or weak, as will be described more fully in the next section.

The research instrument consists of two parts. The first part contains the case description and the tasks.<sup>53</sup> The second part includes the Interpersonal Trust Scale, demographic information and debriefing questions.

### **Description of the task**

The dependent variables in this study consist of auditors' skeptical planning judgments and decisions in conducting analytical procedures. Specifically, this study examines three types of 'skeptical behavior':

- *Increased scrutiny of source reliability*, which means that an auditor not only considers the information that is provided by a client, but also the motivations that the client might have in providing that information (e.g., Hurtt *et al.* 2003). The assumption is that auditors who assess a lower probability of accepting management's explanation show more skeptical judgments and decisions. The main variables studied are the likelihood that management's explanation (a change in sales mix) accounts for substantially all of the increase in gross margin (>85%)<sup>54</sup> (represented by the likelihood attached to the CFO's explanation in Task 1 of the case) and the likelihood of fraud (which is requested in the second part of the questionnaire) (cf., Peecher, 1996; Shaub, 1996; Shaub and Lawrence, 1996; Payne and Ramsay, 2005; Choo and Tan, 2000; Knapp and Knapp, 2001).
- *Increased alternative hypothesis generation* requires auditors to construct explanations, hypotheses, or scenarios as alternative interpretations for the information that they observe (e.g., Hurtt *et al.* 2003). Furthermore, auditors are also required to understand and explain any significant differences, and the ability to generate potential alternatives is a crucial step in developing that understanding. The assumptions are that auditors show more skeptical judgments and decisions when they: (1) are able to generate a greater number of plausible alternative explanations; (2) provide more error explanations; and (3) assess higher probabilities of the truth of error explanations (see e.g., Peecher, 1996). Error explanations are of particular concern for the auditor since they may lead to the

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<sup>53</sup> However, the question concerning the dependent variable 'likelihood of fraud' was asked in the second part of the questionnaire since that otherwise might have had a demand effect on the responses of the other dependent variables.

<sup>54</sup> Mentioning a percentage expresses the precise meaning of 'substantially all' (cf., Koonce, 1992; Peecher, 1996).

identification of a material misstatement that could cause inappropriate decisions by users who rely on the financial statements. As a result, the variables studied are the number of alternative explanations provided (calculated as the number of error and non-error explanations provided in addition to the CFO's non-error explanation in the case), the number of (intentional and unintentional) error explanations provided and the likelihood that the error explanations account for substantially all of the increase in gross margin (>85%) (cf., Peecher, 1996; McMillan and White, 1993) (calculated as the sum of the likelihoods attached to the error explanations given and further referred to as the 'weight of the error explanations').

- *Expanded evidence gathering.* The assumptions are that auditors who want to conduct further testing are more skeptical (e.g., Hurtt *et al.* 2003), as measured by the number of budgeted hours (cf., Shaub, 1996; Shaub and Lawrence, 1996; Hurtt *et al.*, 2008; Popova, 2006). Last year's budgeted time for substantive testing of the sales account were presented as 100 hours. It was mentioned that last year there were no specific matters meriting attention. Based on the case description participants had to then plan this year's substantive testing budget.

### **Description of the independent variables**

In the psychology literature, two scales are often used to measure interpersonal trust: Rotter's Interpersonal Trust Scale (1967) and the Trustworthiness part of Wrightsman's Philosophies of Human Nature Scale (1964, 1974) (see e.g., Johnson-George and Swap, 1982; Stack, 1978; Webb and Worchel, 1986). Rotter's Interpersonal Trust Scale (Rotter, 1967) is examined in the current study for 5 reasons: (1) the study presented in Chapter 2 of this dissertation found Rotter's Interpersonal Trust Scale (1967) to be the best predictor (out of four measures) of skeptical judgments and decisions; (2) Rotter's Interpersonal Trust Scale is widely used and accepted in non-auditing research (see e.g., Hoell, 2004; Johnson-George and Swap, 1982; Stack, 1978; Webb and Worchel, 1986); (3) the stability of Rotter's Interpersonal Trust Scale is strong (Rotter, 1967); (4) in non-auditing studies, Rotter's Interpersonal Trust Scale has been associated more strongly with actual behaviors and other validating evidence than Wrightsman's Philosophies of Human Nature Scale (Stack, 1978, p. 569; Rotter, 1980, p.2); and (5) the trustworthiness part of Wrightsman's Philosophies of Human Nature Scale has not shown unequivocal results in two previous auditing studies (Rose, 2007; Shaub, 1996).

Rotter's Interpersonal Trust Scale consists of 25 items that are scored on a five point Likert Scale (varying from strongly disagree to strongly agree). The scale items deal with interpersonal trust in a range of situations, involving a number of different social agents including parents, salespeople, the judiciary, people in general, political figures, as well as news media. The scale items are shown in Appendix C.

As mentioned, factor analysis techniques are used to identify dimensions within the Interpersonal Trust Scale. These dimensions are used as independent variables in subsequent analyses.

The second independent variable is control environment strength, manipulated as strong (coded as 0) and weak (coded as 1) and is used as the Control Environment Strength (CES) variable in the analyses. For this purpose the Cohen and Hanno (2000) case materials were used with permission. In the weak control environment setting, management is described as being aggressive in business practices, having frequent disputes with the external auditors, applying internal control procedures less strictly if work progress suffered, and utilizing compensation plans based primarily on achieving short-term accounting-based performance measures. In the strong control environment setting, management is described as conservative in business practices, having few disputes with external auditors, following a strict policy for following all established internal control procedures, and employing compensation based on several financial and non-financial performance measures. See Exhibit 2.1 in Chapter 2 for the manipulation employed.

To examine the effects of skeptical characteristics and strength of the control environment on skeptical judgments and decisions, it is necessary to control for the auditors' prior task specific experience. In order to measure prior task experience the research instrument contained a question that asked for the participants' years of experience in conducting analytical procedures. Accordingly, task specific experience is statistically controlled in the analyses (cf., Chapter 2).

### **Validation of the research instrument and manipulation checks**

Two experienced auditors judged the case description and compared the English and the Dutch versions of the case description.<sup>55</sup> Furthermore, four academics provided comments

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<sup>55</sup> Since most of the participants in the experiment were living in the Netherlands and their mother tongue is Dutch, the Interpersonal Trust Scale was translated into Dutch. In order to do so, a combination of the Parallel Blind Technique and Translation/Back-Translation methods was used (Behling and Law, 2000).

on the research instrument. Two pilot-tests were conducted with 19 staff level auditors. Based on their remarks adjustments were made to the instrument.

Two manipulation check questions were asked to examine the effectiveness of the control environment strength manipulation. These questions were similar to the ones used by Cohen and Hanno (2000) and required an assessment of the level of overall control risk (1, very low risk, to 9, very high risk) and the effectiveness of the control environment on a 9 point scale (1, very ineffective, to 9, very effective). These questions were preceded by the IFAC (2006) definitions of control risk (ISA 200.20) and the control environment (ISA 315.67). The mean value of the level of overall control risk was 6.50 in the weak control environment setting versus 4.91 in the strong control environment setting. The mean value of the effectiveness of the control environment was 3.50 in the weak control environment setting versus 6.06 in the strong control environment setting. The results of an independent samples t-test show highly significantly different scores in the expected direction for both questions ( $p < 0.01$ ) which indicates that the manipulation was effective.<sup>56</sup>

### **Conduct of the experiment**

The experiment was administered during 11 sessions of three of the Big Four auditing firms. Nine sessions were part of the yearly summer courses and two of the sessions were during monthly partner meetings.<sup>57</sup>

The author was present during all sessions and provided short instructions before the start of the experiment. The only statement about the purpose of the research was that it contained a case on conducting preliminary analytical procedures. At the end of the research instrument, participants could leave their email address to indicate that they would like to receive a summary of the findings; seventy-one percent (207 out of 291 participants) did so,

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<sup>56</sup> The participants in the experiment were asked two questions on case realism and understandability. The first question was 'how realistic do you think the case was?' The response scale was a 9 point scale with the anchors 'highly unrealistic' (value 1) and 'highly realistic' (value 9). The mean score was 6.03 and the standard deviation was 1.50. The mean is significantly above the middle point (5) of the scale ( $p < 0.01$ , one-sample t-test) which suggests that on average the case was viewed as realistic. The second question was 'how understandable do you consider the case to be?' The response scale was a 9 point scale with the anchors 'very unclear' (value 1) and 'very clear' (value 9). The mean score was 6.68 and the standard deviation was 1.42. The mean score was significantly above the middle point (5) of the scale ( $p < 0.01$ , one-sample t-test) which suggests that the case was understandable.

<sup>57</sup> The audit firms decided on the sessions in which the researchers were to collect the data. This resulted in the fact that the average experience of participants differed by firm which led to significant correlation between firm and auditing experience (cf., Table 3.2). Furthermore, the firms allowed us to collect data during several international sessions in which the official language was English. Therefore, language was also significantly correlated with auditing experience since most auditors completing the English version of the research instrument (the Firm B auditors) had little experience (see Table 3.2). Hence, the effects of experience, firm and language effects cannot be disentangled. However, the careful procedures used for translation, as described previously, provide comfort that the meaning of the questions was conveyed in an accurate, clear manner.

suggesting a high level of interest in the study. In addition, the participants received a printed list with instructions for completing the instrument that was glued on a large sealed envelope with the research materials. All participants then opened the envelope which contained two smaller envelopes with parts one and two of the research instrument.

There were two versions of the first part of the research instrument as a result of the manipulation of the strength of the control environment. Furthermore, four versions of the second part of the research instrument were used, alternating the order of the questions of the Interpersonal Trust Scale. Hence, in total there were eight different versions of the research instrument that were randomly distributed to participants. A One-Way ANOVA testing for differences in mean scores on the interpersonal trust score between the four versions showed no significant order effects. Therefore, order is not considered as a covariate in the subsequent analyses.

The two envelopes containing the parts of the instruments were identified with identical numbers in order to enable ex post matching. To enhance accuracy in completing the instrument, participants were asked to write down their name on the envelope in order to induce a feeling of accountability (cf., Asare *et al.*, 2000). After completion of the first part of the research instrument participants were asked to put it back into the first envelope and seal it. This was done to prevent them from changing answers in part one while working on part two. Then they continued with part two. After they had finished part two they put that in the second envelope, sealed it and put the two smaller envelopes into a large envelope.

## **Sample**

Three of the Big Four auditing firms participated in the study (referred to as Firm A, Firm B and Firm C). Descriptive information about the sample can be found in Table 3.2. In total, 291 auditors participated in the study.<sup>58</sup> The dispersion of participants across staff levels was relatively uniform but differed by firm due to data availability. On average the auditors had about 10 years of general auditing experience and 10 years of task specific experience with conducting analytical procedures. Both general experience and task specific experience suggest that all participants possessed the requisite task knowledge to perform the analytical procedures task examined.

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<sup>58</sup> In the subsequent analyses, the size of N is not always identical to the sample size mentioned here. These differences are predominantly caused by missing values.

		<i>Firm A</i>	<i>Firm B</i>	<i>Firm C</i>	<i>Total</i>
<i>Number of participants</i>		96	140	55	291
<i>Number of sessions</i>		3	6	2	11
<i>Staff level</i>	<i>Partners</i>	25	0	47	72
	<i>Managers</i>	41	19	6	66
	<i>Seniors</i>	27	65	0	92
	<i>Staff</i>	0	54	0	54
<i>Gender</i>	<i>Male</i>	84	92	51	227
	<i>Female</i>	11	47	2	60
<i>General experience</i>	<i>Mean years</i>	15.36	2.99	22.16	10.48
	<i>St.dev.</i>	8.95	2.00	8.52	9.37
<i>Experience with analytical review</i>	<i>Mean years</i>	14.75	2.75	20.07	9.85
	<i>St.dev.</i>	9.36	1.93	6.86	8.86
<i>Control Environment strength</i>	<i>Weak</i>	47	68	27	142
	<i>Strong</i>	49	72	28	149
<i>Language</i>	<i>Dutch</i>	96	101	41	238
	<i>English</i>	0	39	14	53

**Table 3.2** *Descriptive information about the study*

### **Coding of qualitative responses**

Participants were asked to think about possible explanations for the increase in the gross margin percentage in the case-description other than the explanation provided by the client. Explanations were coded by an experienced audit manager and by the author. The coding comprised an assessment of the plausibility of the explanation (i.e., is the explanation logical and in the right direction?)<sup>59</sup> and an assessment of type of explanation (non-error, unintentional error, intentional error and ambiguous unintentional/intentional explanations).<sup>60</sup> As mentioned in Chapter 2, the participants identified a broad range of explanations for the increase in gross margin (for example, exchange rate effects, misallocation of costs and improved efficiency). A more detailed coding of the explanations is outside the scope of this thesis.

Cohen's Kappa Coefficient for coding the plausibility of the explanation was 0.805 ( $p < 0.01$ ) and Cohen's Kappa Coefficient for coding the type of explanation was 0.864

<sup>59</sup> There were about 30 non plausible explanations that were excluded from the analyses.

<sup>60</sup> The classification into intentional and non-intentional errors was used in testing the robustness of the regression findings concerning the number of total error explanations. The results of the regressions were found to be robust.

( $p < 0.01$ ), which reflect a high level of agreement (e.g., Landis and Koch, 1977). Differences were discussed by the two coders and mutually resolved. The findings presented in the next section use the reconciled data.

### **3.4 Results**

#### **Factor analysis of the interpersonal trust scale**

A descriptive analysis of the interpersonal trust score reveals a mean of 72.98, a standard deviation of 8.76, and a range of 45-105. The score has a theoretical range of 25-125, and a theoretical midpoint of 75. An inspection of the histogram, as well as a Kolmogorov Smirnov test (both not shown), suggest that the interpersonal trust score is normally distributed. The Cronbach alpha is 0.760, which is considered to be adequate (see e.g., Nunnally, 1978).

Before conducting factor analysis, the testing assumptions are considered (see e.g., Hair *et al.*, 2006). Bartlett's test of sphericity is highly significant ( $p < 0.01$ ), which indicates a relationship between the items. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.734 which is considered to be 'middling' but far above the cut-off point of 0.50 needed for proceeding with a factor-analysis. Also the variable specific Measures of Sampling Adequacy are all above 0.50, ranging from 0.547 to 0.837, suggesting sufficient intra-correlation between the items.<sup>61</sup> In sum, factor analysis appears to be an appropriate technique to identify underlying constructs contained within the summated score.

In order to test for dimensionality of the Interpersonal Trust Scale, common factor analysis was conducted (Hair *et al.*, 2006, p. 118). The specific method used is a Principal Axis Factoring with Direct Oblimin Rotation.<sup>62</sup> Based on conservative guidelines (Hair *et al.*, 2006, p. 128), factor loadings of 0.35 and higher are considered to be significant in the analysis.

As mentioned, most of the previous research concerning the Interpersonal Trust Scale has shown three dimensions (see e.g., Hunt *et al.*, 1983). Given this a priori expectation and an inspection of the scree plot (not shown), the factor analysis is set to extract three factors

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<sup>61</sup> Furthermore, among the interpersonal trust scale items there are 176 significant (one-tailed test,  $p < 0.05$ ) Pearson correlations out of 300 correlations, ranging from about 0.10 to about 0.40, indicating significant correlation. However, the correlations are somewhat low. Partial correlations from the anti-image correlation matrix are all far below the cut-off point of 0.7 (i.e., they are all below 0.2), and are hence acceptable (Hair *et al.*, 2006, p. 114).

<sup>62</sup> Other methods and rotations show similar solutions.

(cf., Kaplan, 1973; Hunt *et al.*, 1983).<sup>63</sup> Based on the results of the factor analysis the model was re-specified by leaving out the 11 non-significant items. Before rotation, the percentage of variance explained is 15.869% for factor 1, 5.558% for factor 2, and 4.569% for factor 3.<sup>64</sup>

<b>Factor 1</b>				
<b><i>Honesty and Integrity</i></b>				
<i>Item nr.</i>	<i>Description</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Factor Loading</i>
18	Most people can be counted on to do what they say they will do.	3.2955	0.7714	0.565
14	Most elected officials are really sincere in their campaign promises.	2.4742	0.9551	0.537
21	Most salesmen are honest in describing their products.	2.6357	0.8933	0.460
23	Most repairmen will not overcharge even if they think you are ignorant of their speciality.	2.7595	0.8851	0.450
20	Most idealists are sincere and usually practice what they preach.	3.0928	0.9294	0.396
22	Most students in school would not cheat even if they are sure of getting away with it.	2.2371	0.9625	0.358
<b>Factor 2</b>				
<b><i>Institutional Trust</i></b>				
<i>Item nr.</i>	<i>Description</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Factor Loading</i>
9 (r)	Most people would be horrified if they knew how much news that the public hears and sees is distorted.	2.6942	0.9573	-0.691
13 (r)	If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be.	2.8007	0.9938	-0.562
24 (r)	A large share of accident claims filed against insurance companies are phony.	3.3471	0.8943	-0.430
<b>Factor 3</b>				
<b><i>Exploitation</i></b>				
<i>Item nr.</i>	<i>Description</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Factor Loading</i>
2 (r)	In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.	2.7801	0.9467	0.506
19 (r)	In these competitive times one has to be alert or someone is likely to take advantage of you.	2.7079	0.9251	0.482

**Table 3.3** *Descriptive statistics by extracted factor*

The main descriptive statistics for the three factors from the re-specified factor model are presented in Table 3.3.<sup>65</sup> The three extracted factors contain similar items as in the dimensions

<sup>63</sup> When a latent root criterion (eigenvalues>1) is used, the factor analysis results in 8 factors (1 with 5 variables; 3 with 2 variables and 4 with 1 variable). This is similar to earlier studies (e.g., Chun and Campbell, 1974). However, the total variance explained by the 8 factors is 34.173% of which 22.444% is explained by the first three factors and the fourth to the eighth factor explain only 2.3458% on average per factor. Hence, the later factors on average do not explain significantly greater variance per factor than when utilizing the three factors identified.

<sup>64</sup> Given the non-orthogonal rotation used it is not possible to partition variance uniquely among the factors after rotation since the rotated factors share common variance.

<sup>65</sup> Of the 14 items that were entered into the respecified factor analysis, three items were not significant in the solution: item 6, 15 and 17 (i.e., their factor loading was smaller than 0.35). They are not shown in the table.



found in the previous factor-analytic studies (see Appendix C). The first extracted factor contains similar items to the ones that have been described by Hunt *et al.* (1983) to comprise a ‘differential disposition to accept people’s word’. In an auditing setting, this factor will be of particular importance concerning the honesty and integrity of management (see e.g., ISA 240). For example, ISA 240.97 states: ‘If the integrity or honesty of management or those charged with governance is doubted, the auditor considers seeking legal advice to assist in the determination of the appropriate course of action.’ Therefore, the first factor is labeled ‘Honesty and Integrity’.

The second factor partly contains items similar to the ones in the factor that has been described by Hunt *et al.* (1983) as ‘differential trust in the media and the legal system’. Interesting in this respect is the trust typology presented by McKnight and Chervany (2001, p. 33) which consists of three types of trust: (1) trust in general others; (2) trust in the situation or structure; and (3) trust in specific others. They term the second type of trust ‘institutional trust’ and distinguish this type of trust from trust in other people (either in general or specifically). Institutional trust stems from the sociology tradition which posits that ‘people can rely on others because of structures, situations, or roles that provide assurances that things will go well’ (McKnight and Chervany, 2001, p. 37). Although institutional trust is discerned from interpersonal trust by McKnight and Charvany (2001), it does affect interpersonal trust by making the trustor feel more comfortable about trusting others in the situation (McKnight and Chervany, 2001, p. 37). Both item 9 and 13 (fear for distortion of news and fear for the reality behind international politics) appear to be more related to underlying structures and situations than to interpersonal factors. However, the third item (phoniness of accident claims filed against insurance companies) does not seem to seamlessly fit with the other two items. Yet, also across other factor extraction and rotation methods this item appears to be related to items 9 and 13. A reason may be that the filing of phony accident claims is interpreted more like a structural issue than it is being viewed as trust in other people.<sup>66</sup> This could be caused by the fact that the potential victim of the phony claims mentioned in the item is the insurance company while the claims do not negatively affect the ‘general public’ (i.e., ‘you and me’) immediately. Hence, it is in that sense more institutional (the functioning of an arrangement between the insurance company and individual policy holders), and like the other two institutional trust items affects interpersonal trust by making the trustor feel more (or less) comfortable about trusting others. In the auditing standards there seems to be no specific

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<sup>66</sup> Note that item 24 is not a (significant) part of any of the factors in previous studies.

treatment of the concept of institutional trust. Therefore, this second factor will be labeled 'Institutional Trust' based on McKnight and Chervany (2001) and similar factor labeling in Kaplan (1973) and Hunt *et al.* (1983).<sup>67</sup>

The third factor encompasses the items that are also part of the factor that has been described by Hunt *et al.* (1983) as 'expectation that people will behave exploitatively and selfishly vs. fairly and altruistically'. Based on the fraud triangle, auditors have to assess whether management has incentives or pressures to engage in fraudulent financial reporting (cf., ISA 240:10). Although the two items in this factor may be related to this phenomenon, the term 'exploitation' appears to better describe the underlying factor. This identification also relates to the already existing factor labels concerning these items (Chun and Campbell, 1974; Hunt *et al.*, 1983). Therefore this factor is labeled 'Exploitation'.

A reliability analysis of the three factors shows Cronbach alphas of 0.646, 0.553 and 0.525 respectively. Nunnally and Bernstein (1994, pp. 264-265) state that 'in the early stages of predictive or construct validation research, time and energy can be saved by using instruments that only have modest reliability. An often mentioned necessary level of alpha is 0.70 (Nunnally, 1978). However, the lower value of 0.60 is also used (cf. DeVellis, 1991). DeVellis (1991) considers values below 0.60 to be unacceptable. Based on this norm the internal consistency reliability of Institutional Trust and Exploitation is low. Hence, the following analyses for these two factors should be interpreted with care. In further analyses the factor scores (regression method) are used in the analyses to study whether the factors are more related to skeptical judgments and decisions than the summated Interpersonal Trust Scale.

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<sup>67</sup> All the three significant items constituting 'Institutional Trust' have negative factor loadings. The sign has no intrinsic meaning and should not be used to assess the extent of the relationship between the variable and the factor (Kim and Mueller, 1978). However, as a consequence of the negative sign the saved factor scores, which are used in the further analyses, were reversed to enable appropriate interpretation.

## Regression analyses

To interpret the nature of the influence of the independent variables, in Table 3.4 linear regressions for each of the six dependent variables<sup>68</sup> on all independent variables are presented for the summated Interpersonal Trust Scale and for the three respective interpersonal trust factors.<sup>69</sup> The scores on Interpersonal Trust were mean centered (see e.g., Kromrey and Foster-Johnson, 1998). Given the fact that the factor scores were used for the three respective interpersonal trust factors, the mean of these factors is zero and hence mean centering is redundant.

	<i>Interpersonal Trust (summated)</i>	<i>Extracted interpersonal trust factors</i>		
		<i>Honesty and Integrity</i>	<i>Institutional Trust</i>	<i>Exploitation</i>
<b>Regression of ‘the likelihood that management explanation is right’</b>				
Constant	39.644***	39.820	39.116	39.325
Control environment strength (CES)	-3.631* [-.084]	-3.983 [-.092]	-3.636 [-.084]	-3.938 [-.091]
IPT factor (IPTF)	.359** [.148]	2.459 [.095]	3.373 [.129]	2.563 [.085]
Task-specific experience	-.153 [-.066]	-.151 [-.065]	-.111 [-.047]	-.107 [-.046]
CES*IPTF	-.045 [-.012]	1.082 [.028]	-2.474 [-.063]	-2.599 [-.061]
Adj. R-square (N)	.015* (N=278)	.009 (N=278)	.005 (N=278)	-.001 (N=278)
<b>Regression of ‘the likelihood of fraud’</b>				
Constant	18.533***	18.586***	18.954***	19.249***
Control environment strength (CES)	22.927*** [.492]	23.610*** [.507]	22.817*** [.490]	23.689*** [.508]
IPT factor (IPTF)	-.304** [-.115]	-2.405 [-.086]	-2.399 [-.084]	-4.395** [-.133]
Task-specific experience	.164 [.066]	.143 [.058]	.126 [.051]	.076 [.031]
CES*IPTF	-.666** [-.165]	-5.252** [-.129]	-7.236** [-.169]	1.085 [.024]
Adj. R-square (N)	.310*** (N=278)	.284*** (N=278)	.300*** (N=278)	.260*** (N=278)
<b>Regression of ‘the number of alternative explanations’</b>				
Constant	3.188***	3.202	3.205	3.238***
Control environment strength (CES)	.142 [.040]	.152 [.042]	.143 [.040]	.159 [.044]
IPT factor (IPTF)	.018 [.088]	.162 [.075]	.016 [.007]	.611*** [.242]
Task-specific experience	.023** [.123]	.023 [.121]	.022 [.117]	.018 [.098]
CES*IPTF	-.056** [-.180]	-.422 [-.133]	-.243 [-.074]	-.690** [-.193]
Adj. R-square (N)	.019* (N=284)	.009 (N=284)	.004 (N=284)	.029** (N=284)

<sup>68</sup> Descriptive statistics concerning the six dependent variables for the dataset used in Chapter 2 can be found in Table 2.4. The descriptives in Table 2.4 are similar to the descriptives regarding the IPT sample.

<sup>69</sup> Given the potential relationships between the dependent variables, four MANOVAs were performed for interpersonal trust and the three respective interpersonal trust factors. The dependent variables discussed previously were included. As independent variables, the models include interpersonal trust (factor), control environment strength, task specific experience and an interaction term between interpersonal trust (factor) and control environment strength. The findings for the summated Interpersonal Trust Scale model show statistical significance for all independent variables. Hence, all independent variables appear to have a significant influence on the collective set of dependent variables. For the Honesty and Integrity model, the tests show statistical significance for Honesty and Integrity, control environment strength and task specific experience. This indicates that Honesty and Integrity, control environment strength and task specific experience have a significant influence on the collective set of dependent variables. For the Institutional Trust model, the tests show statistical significance for all independent variables. Finally, for the Exploitation model, the tests show statistical significance for all independent variables, except for the interaction of Exploitation with control environment strength.

	<i>Interpersonal Trust (summed)</i>	<i>Extracted interpersonal trust factors</i>		
		<i>Honesty and Integrity</i>	<i>Institutional Trust</i>	<i>Exploitation</i>
<b>Regression of ‘the number of error explanations’</b>				
Constant	.768***	.789***	.768***	.817***
Control environment strength (CES)	.671*** [.199]	.677*** [.201]	.673*** [.200]	.684*** [.203]
IPT factor (IPTF)	.021 [.113]	.233* [.116]	.165 [.081]	.479*** [.202]
Task-specific experience	.045*** [.256]	.045*** [.252]	.045*** [.254]	.041*** [.232]
CES*IPTF	-.057*** [-.196]	-.457** [-.154]	-.498** [-.162]	-.497* [-.149]
Adj. R-square (N)	.111*** (N=283)	.102*** (N=283)	.104*** (N=283)	.109*** (N=283)
<b>Regression of ‘the weight of the error explanations’</b>				
Constant	12.468***	12.082***	12.746***	13.265***
Control environment strength (CES)	16.947*** [.293]	17.266*** [.299]	17.161*** [.297]	17.324*** [.300]
IPT factor (IPTF)	.028 [.009]	.110 [.003]	1.188 [.034]	1.558 [.038]
Task-specific experience	.590*** [.194]	.631*** [.208]	.554*** [.182]	.509*** [.167]
CES*IPTF	-.664** [-.133]	-8.629** [-.170]	-5.120 [-.097]	-.021 [.000]
Adj. R-square (N)	.124*** (N=280)	.136*** (N=280)	.115*** (N=280)	.110*** (N=280)
<b>Regression of ‘the number of budgeted hours’</b>				
Constant	121.070***	121.483	121.784	119.370***
Control environment strength (CES)	7.441* [.098]	7.906 [.105]	7.461 [.099]	7.847** [-.104]
IPT factor (IPTF)	-.360 [-.084]	-2.148 [-.047]	-3.439 [-.075]	-9.410** [-.176]
Task-specific experience	.558** [.136]	.500 [.122]	.498 [.121]	.715*** [.174]
CES*IPTF	-.287 [-.044]	-.111 [-.002]	.357 [.005]	-12.241** [-.161]
Adj. R-square (N)	.022** (N=273)	.011 (N=273)	.014 (N=273)	.103*** (N=273)

Significance is indicated by asterisks: \*<.10; \*\*<.05; \*\*\*<.01. For the directional hypotheses concerning CES and SPC, all significance-levels are one-sided unless the results are in the opposite direction. For the non-significant models no significance is shown for the coefficients. The betas are shown in brackets.

**Table 3.4** *Regression coefficients for interpersonal trust and interpersonal trust factor scores and the models’ adjusted R-squares*

**Results for RQ 1: Are individual Interpersonal Trust Scale factors more closely related to skeptical judgments and decisions than the summed Interpersonal Trust Scale?**

In testing RQ1 it is noteworthy that in terms of highest adjusted R-squares, overall the regression models with the summed Interpersonal Trust Scale performs the best. In two of the six models the summed interpersonal trust measure is significant as an independent variable.

When looking at the findings for the individual factors, Honesty and Integrity is marginally significant concerning the number of error explanations, although the sign in the model is not in the expected direction, perhaps due to the interaction effects present. Institutional Trust is not significant in any of the models. In four of the six models the Exploitation factor is significant, although the sign in the models concerning the number of alternative explanations and the number of error explanations is not in the expected direction,

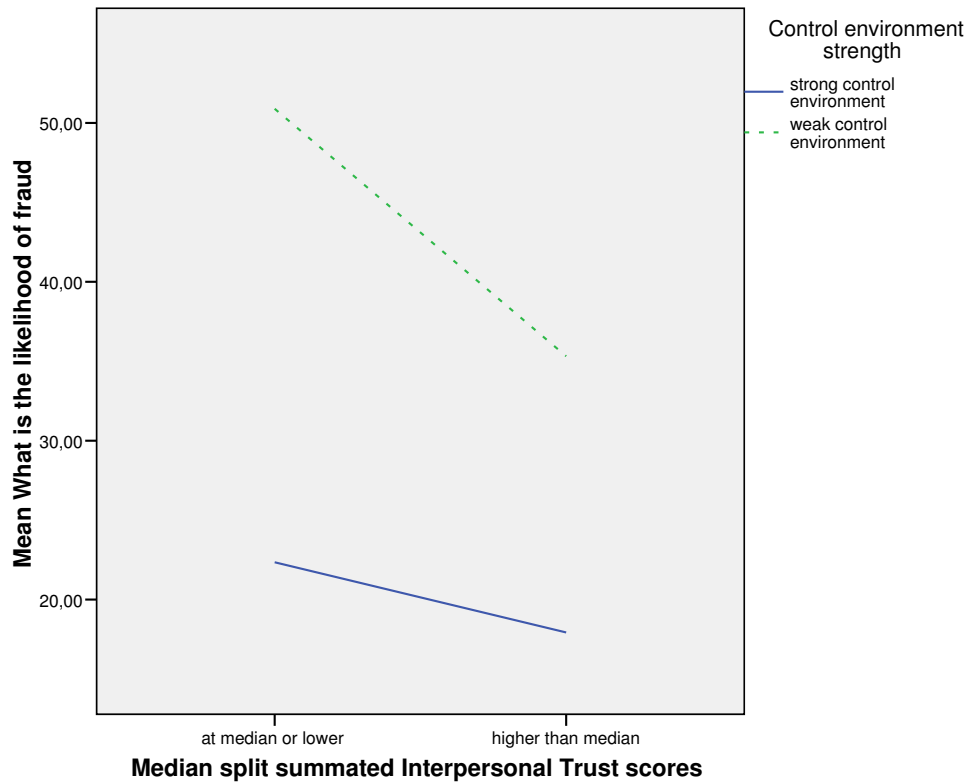
perhaps due to the interaction effects present. The interactions will be discussed in the next section.

In sum, four of the six models with the summated Interpersonal Trust Scale have a higher explanatory power than with the individual factors. Interestingly, the main effect of Exploitation appears to be significant twice as many times as the summated scale (four times versus two times). This means that, although the summated Interpersonal Trust Scale results in better explanatory models overall, the main effect of Exploitation appears to be of interest.

### ***Results for RQ2: Influence of control environment strength***

As can be seen in Table 3.4, control environment strength is significant in three of the six models (i.e., the likelihood of fraud, the number of error explanations and the weight of the error explanations) for summated interpersonal trust as well as for the three interpersonal trust factors. In addition, for the summated scale control environment strength is marginally significant for the models explaining the likelihood that management explanation is right and the number of budgeted hours. Furthermore, for Exploitation, control environment strength is significant for the number of budgeted hours. All effects are all in the expected direction. This indicates substantial influence of control environment strength on skeptical judgments and decisions.

Furthermore, there are significant interaction effects, as can be seen in Table 3.4. There were two basic interaction patterns identified for the summated Interpersonal Trust Scale in Chapter 2. The first pattern pertained to the dependent variable ‘assessment of the likelihood of fraud’ and is depicted in Figure 3.1.

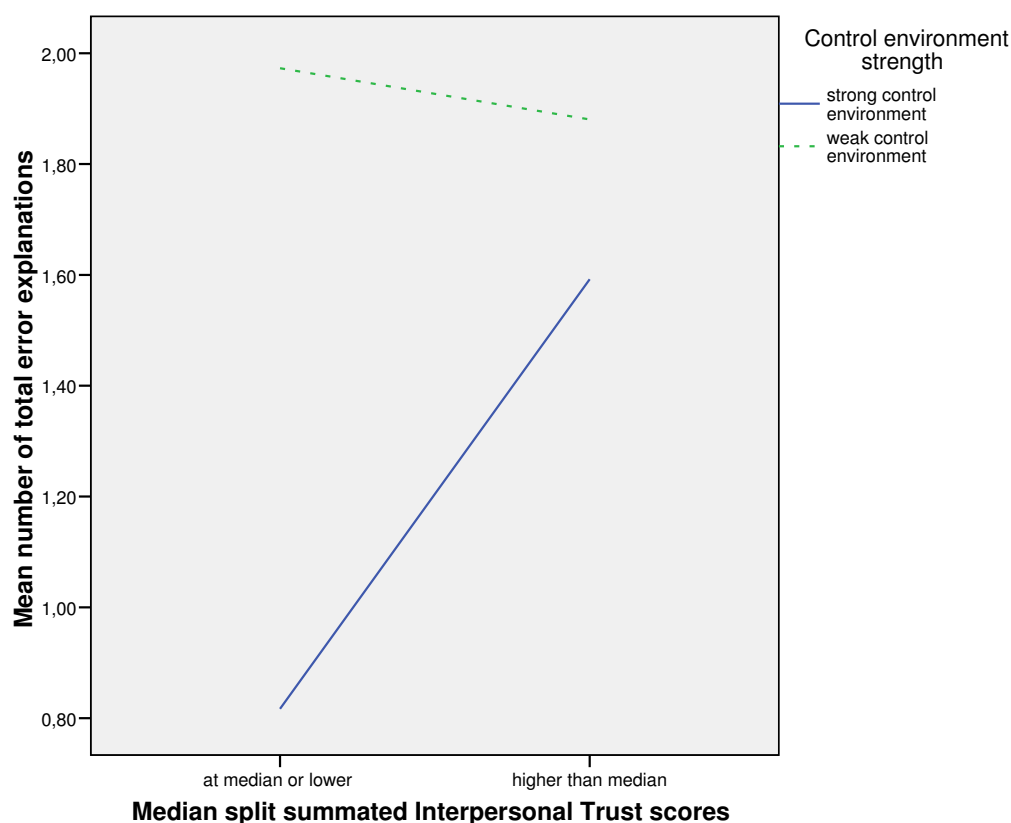


**Figure 3.1** *A plot of the interaction between summated Interpersonal Trust and control environment strength for the likelihood of fraud variable*

Figure 3.1 indicates an almost horizontal line for the strong control environment setting. When the control environment is strong all auditors assess a similar level of fraud risk regardless of their level of interpersonal trust. The weak control environment setting shows a downward sloping line indicating that auditors with a lower level of interpersonal trust (i.e., more skepticism) assess a higher likelihood of fraud than auditors with a higher level of personal trust.

The second pattern in Chapter 2 concerned the interaction effect for the variable ‘total error explanations’, which is depicted in Figure 3.2.<sup>70</sup>

<sup>70</sup> The pattern for the interaction effects regarding the ‘number of alternative explanations’ and the ‘weight of the error explanations’ were similar to the effect in Figure 3.2.



**Figure 3.2** A plot of the interaction between summated Interpersonal Trust and control environment strength for the variable ‘number of total error explanations’

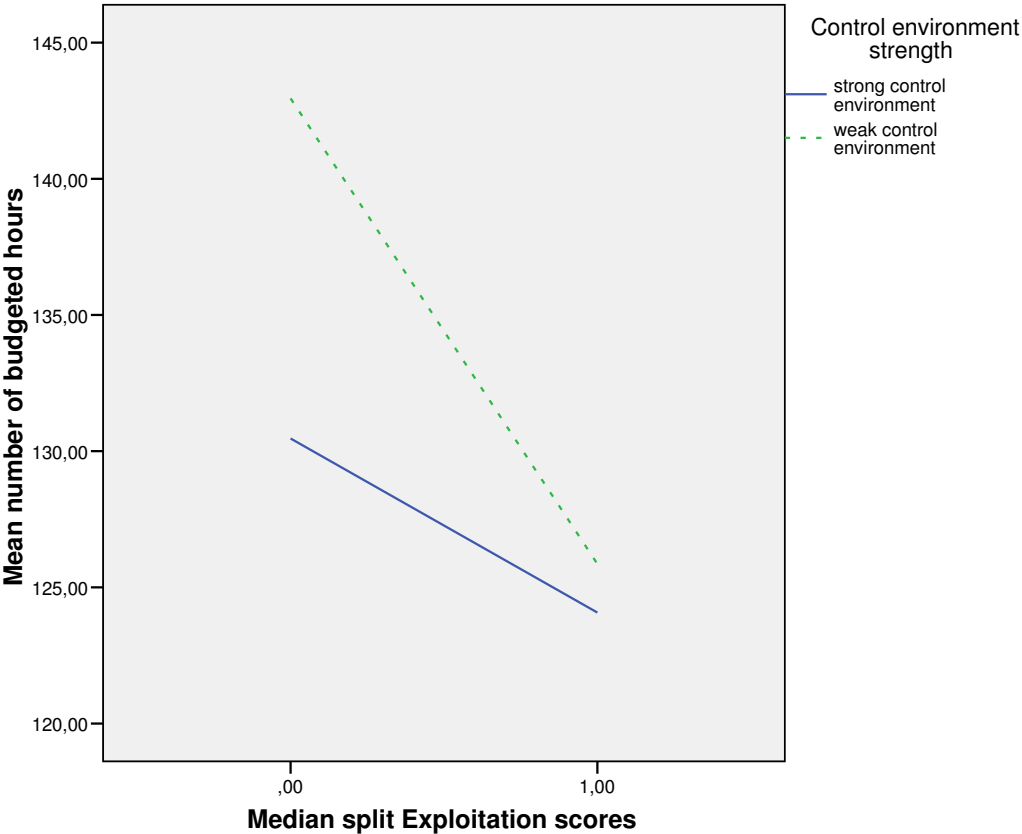
This figure shows an almost horizontal line for the weak control environment setting, suggesting that auditors generate a similar number of error explanations regardless of their level of interpersonal trust in the weak control environment setting. In the strong control environment setting the line is upward sloping which suggests that auditors with a lower level of interpersonal trust generate less error alternatives than auditors with a higher level of interpersonal trust.<sup>71</sup>

These two interaction patterns are similar to the patterns found for the derived Interpersonal Trust factors. The likelihood of fraud variable is significantly influenced by the interaction regarding the Institutional Trust factor and marginally significantly influenced by the Honesty and Integrity factor. The pattern concerning the number of error explanations

<sup>71</sup> The examination of the interaction effect in Figure 3.2 suggests that auditors show more skeptical behavior when the client has a weak control environment, regardless of skeptical disposition. However, it was not expected that in the strong control environment setting auditors with a lower level of interpersonal trust would generate less error explanations than auditors with a higher level of trust. This appears to be caused by the fact that, in the strong control environment setting, less trusting auditors seem to generate less error explanations than their more trusting colleagues but allocate more weight per error explanation. Hence, the less trusting auditors seem to focus more intensively on fewer errors in the strong control environment setting. This effect is discussed in more detail in Chapter 2.

variable is similar for the interaction regarding Honesty and Integrity and Institutional Trust and for the marginal significant interaction concerning Exploitation.<sup>72</sup>

In addition, there is a significant interaction effect of the Exploitation factor and control environment strength in explaining the number of budgeted hours. This effect is plotted in Figure 3.3.<sup>73</sup>



**Figure 3.3** A plot of the interaction between the Exploitation factor and control environment strength for the variable ‘number of budgeted hours’

The plot shows that, particularly in the weak control environment setting, auditors showing less trust (as a result of the assessment of the pressures and incentives management may have) assess a higher number of budgeted hours. This resembles the pattern in Figure 3.1.

Since extracted factors of interpersonal trust scale are expected to be focused and efficient (e.g., Chun and Campbell, 1974; Stack, 1978), RQ 2 studied whether interaction effects concerning the extracted factors are different from prior studies employing the

<sup>72</sup> Furthermore, the plot is also similar to the plots concerning the weight of the error explanations in which the interaction of the Honesty and Integrity factor and control environment strength is significant. This also holds for the plot concerning the number of alternative explanations in which the interaction between Exploitation and control environment strength is significant.

<sup>73</sup> The difference between high and low exploitation scores regarding the mean number of budgeted hours is significant for the weak control environment (independent samples t-test;  $p < 0.05$ ).



summated scale. The findings show that the patterns did not become clearer across the different skeptical judgments and decisions. In general, it can be concluded that the interaction effects of the derived interpersonal trust factors are similar to the interaction effects of the summated scale reported in Chapter 2. Hence, no different patterns of interaction effects were found concerning the derived factors. However, the summated interpersonal trust factor shows the most significant interaction effects, directly followed by the Honesty and Integrity factor and the Exploitation factor.

### ***Additional analyses: differences across ranks in interpersonal trust and in skeptical judgments and decisions***

In addition to the previous results, this study provides evidence of the relationship between auditor rank and auditor interpersonal trust and skeptical judgments and decisions.

The previous analyses in this study show that task specific experience (measured as years of experience in conducting analytical reviews), which was included as a control variable in the models, has a significance influence. Task specific experience was significantly positively associated with number of alternative explanations generated, number of error explanations generated, the weights attached to the error explanations and the number of budgeted hours. This indicates that in this study the more experienced the auditor is, the more skeptical judgments and decisions are exhibited.<sup>74</sup> In addition, it is important to know whether auditors differ across ranks in terms of skeptical disposition and skeptical judgments.<sup>75</sup> Significant differences exist in the importance of auditor attributes between auditor ranks (see e.g., Tan, 1999; Tan and Libby, 1997; Dillard and Ferris, 1979). For example, Tan and Libby (1997) find that outstanding auditors at the assistant and senior levels are distinguished on the basis of technical knowledge, while outstanding managers are distinguished based on their tacit managerial knowledge. Differences in auditor attributes influence auditor judgment and decision making (e.g., Bonner, 2008; Nelson and Tan, 2005). Since auditors' tasks as well as their training, responsibilities, and authority are closely associated with professional rank (cf. Abdolmohammadi, 1999; Abdolmohammadi and Wright, 1987; Tan, 1999), it is important to know whether auditors differ across ranks in

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<sup>74</sup> Task specific experience was also significantly positively correlated with interpersonal trust (Pearson correlation=0.174; p<0.01). Hence, the auditors with more task specific experience possess a higher level of interpersonal trust. This finding is similar to the finding for rank which is considered in the remainder of this section.

<sup>75</sup> According to ISA 330.4, the assignment of engagement personnel to particular engagements should reflect the auditor's risk assessment, which is based on the auditor's understanding of the entity. For example, one of the responses to address the risks of material misstatement at the financial statement level is assigning more experienced staff or those with special skills or using experts, who are often higher ranked auditors.

terms of skeptical disposition and skeptical judgments. For example, partners have the responsibility and authority for determining whether the audit evidence is sufficient. Furthermore, it is very important to know whether partner's skepticism is higher than that of the audit team members since partners have the definite say in signing off the audit opinions. Thus, there is great reliance on the judgments and decisions of partners and their professional skepticism.

There is no unequivocal theory on the relationship between auditor rank and auditor professional skepticism. On the one hand, with increasing rank auditors may become less skeptical due to their need to work with and develop a strong relationship with clients (see e.g., Bazerman *et al.*, 1997; 2002; Emby and Etherington, 1996) and due to the fact that encountering fraud in practice is rare (see e.g., Kaplan *et al.*, 1992; Nelson, 2009; Solomon *et al.*, 1999; Taylor, 2000). There is some support for this notion in previous studies. For example, Shaub and Lawrence (1999) find that auditors at the staff level show higher levels of skeptical thoughts and behavior than seniors, managers and partners. Also Payne and Ramsay (2005) report that staff auditors assess a client explanation as less truthful than senior auditors and thus are more skeptical than senior auditors. On the other hand, auditors may become more skeptical with increasing rank due to increased litigation risk, the need for greater conservatism and greater responsibilities to the firm and society (see e.g., Trompeter, 1994; Salterio, 1996; Moreno and Bhattacharjee, 2001).

		<i>N</i>	<i>Mean</i>	<i>St. dev.</i>	<i>Differs sign. from</i>
<i>Interpersonal Trust Score</i>	<i>Staff</i>	54	71.5000	7.97815	Partner*
	<i>Senior</i>	92	71.4674	8.72089	Partner**
	<i>Manager</i>	66	73.5000	8.60277	-
	<i>Partner</i>	72	75.5278	9.22332	Staff* Senior**
	<i>Total</i>	284	72.9754	8.76374	

Significance is indicated by asterisks: \* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$

**Table 3.5** Results of post hoc Scheffé tests for Interpersonal Trust Score by rank

A Spearman's rho correlation shows a positive significant relationship between position within the firm and the interpersonal trust score (the correlation is 0.194 with a two-tailed significance of 0.001). Although the correlation is relatively low, this result implies that on average the interpersonal trust score is higher at higher organizational level. A one-way

ANOVA reveals that there exist significant differences between organizational ranks for the summated Interpersonal Trust Scale ( $p < 0.05$ ). Results of post hoc Scheffé tests are presented in Table 3.5. The results for the summated Interpersonal Trust Scale show a statistically significant difference between the partner and senior level ( $p < 0.05$ ), and a marginally significant difference between the partner and staff level ( $p < 0.1$ ). These findings suggest that auditors' skeptical disposition decreases with rank (i.e., higher ranked auditors show a significantly higher level of interpersonal trust). However, of equal importance is whether the lower level of skeptical disposition exhibited by higher ranking auditors such as partners also ultimately results in less skeptical judgments and decisions.

Concerning the skeptical judgments and decisions, one-way ANOVAs show statistically significant differences (two-tailed,  $p < 0.01$ ) across ranks within the firm for 3 of the 6 dependent variables (i.e., the number of alternative explanations, the number of error explanations and the weight of the error explanations). The results of post hoc Scheffé tests are presented in Table 3.6.<sup>76</sup>

		<i>N</i>	<i>Mean</i>	<i>St. dev.</i>	<i>Differs sign. from</i>
<b>Likelihood that management explanation is right</b>	<b>Staff</b>	53	39.6743	21.46789	-
	<b>Senior</b>	91	34.6803	20.77748	-
	<b>Manager</b>	64	39.5781	22.91873	-
	<b>Partner</b>	68	32.9437	21.63127	-
	<b>Total</b>	276	36.3472	21.70512	
<b>Likelihood of fraud</b>	<b>Staff</b>	51	29.2941	22.06381	-
	<b>Senior</b>	91	32.3407	24.81945	-
	<b>Manager</b>	65	32.4615	23.34863	-
	<b>Partner</b>	69	30.8696	21.65431	-
	<b>Total</b>	276	31.4384	23.11677	
<b>Number of alternative explanations</b>	<b>Staff</b>	53	2.9057	1.47106	Partner***
	<b>Senior</b>	92	3.4022	1.68418	-
	<b>Manager</b>	66	3.4697	1.57108	-
	<b>Partner</b>	71	4.0704	2.17993	Staff***
	<b>Total</b>	282	3.4929	1.79609	

<sup>76</sup> The results are similar when the analyses are separately done for the strong and weak control environment settings.

		<i>N</i>	<i>Mean</i>	<i>St. dev.</i>	<i>Differs sign. from</i>
<b>Number of error explanations</b>	<b>Staff</b>	53	0.7547	1.19141	Manager*** Partner***
	<b>Senior</b>	92	1.2283	1.29329	Partner***
	<b>Manager</b>	66	1.8485	1.53164	Staff***
	<b>Partner</b>	70	2.3286	2.17843	Staff*** Senior***
	<b>Total</b>	281	1.5587	1.68743	
<b>Weight of error explanations</b>	<b>Staff</b>	53	16.0881	25.60725	Manager** Partner**
	<b>Senior</b>	91	23.5698	27.44637	-
	<b>Manager</b>	65	33.1248	29.90897	Staff**
	<b>Partner</b>	69	32.9591	29.70014	Staff**
	<b>Total</b>	278	26.7079	28.90138	
<b>Number of budgeted hours</b>	<b>Staff</b>	53	127.6038	46.92684	-
	<b>Senior</b>	87	125.7529	26.96831	-
	<b>Manager</b>	63	132.3810	37.40037	-
	<b>Partner</b>	67	134.4179	42.71794	-
	<b>Total</b>	270	129.8130	37.96622	

Significance is indicated by asterisks: \*p<.10; \*\*p<.05; \*\*\*p<.01

**Table 3.6** Results of post hoc Scheffé tests for skeptical judgments and decisions

Post hoc Scheffé tests show that the differences in skeptical judgments and decisions are mainly present between partner-staff and manager-staff (and to a lesser extent between partner-senior) and that auditors at higher ranks show more skeptical judgments and decisions.<sup>77</sup> This is opposite to the findings of Shaub and Lawrence (1999) and Payne and Ramsey (2005). Shaub and Lawrence (1999) find that auditors at the staff level show higher levels of skeptical thoughts and behavior than seniors, managers and partners. Also Payne and Ramsay (2005) report that staff auditors assess a client explanation as less truthful than senior auditors and thus are more skeptical than senior auditors. Part of the variation in the findings may be caused by the fact that the skeptical judgments and decisions where rank differences exist in this study are particularly related to generated explanations and the weights attached

<sup>77</sup> The direction of the differences is similar when the analyses are done separately for the weak and strong control environment settings.

to the explanations. These variables are not considered by Shaub and Lawrence (1999) and Payne and Ramsey (2005).

### **3.5 Discussion**

Auditor skepticism is identified in auditing standards and prior research as vital to ensuring audit effectiveness. This study finds that interpersonal trust factors are significantly related to skeptical judgments and decisions (either as main effects and/or an interaction effect with control environment strength). This result corroborates the expectation that interpersonal trust as a proxy for skeptical disposition is an important explanatory variable for skeptical judgments and decisions. The study shows that all three extracted interpersonal trust factors show predictive validity in the sense that the factors are significantly related to skeptical judgments and decisions.

Furthermore, this study adds to existing research by examining the relationship of the extracted factors to skeptical judgments and decisions vis-à-vis the summated Interpersonal Trust Scale. On average it was found that the explanatory power of the models with the summated Interpersonal Trust Scale is the highest (i.e., higher R-squares) for four of the six models. Furthermore, five skeptical judgments and decisions are significantly related to the main and/or interaction effect concerning the summated Interpersonal Trust Scale, while four skeptical judgments and decisions are significantly related to the main and/or interaction effect concerning Exploitation. However, the main effect of Exploitation appears to be significant twice as many times as the summated scale (four times versus two times). This means that, although the summated Interpersonal Trust Scale results in better explanatory models overall, the main effect of Exploitation appears to be of interest. However, it should be noted that two of the main effects of Exploitation are in a direction that is contrary to expectations (which can be explained by the interaction effects present). In addition, given the fact that the internal reliability of the Exploitation factor is low, this finding should be interpreted with care. Furthermore, the patterns of the interaction effects concerning the derived factors do not appear to differ significantly from the patterns already found in Chapter 2.

As was shown, on average the interpersonal trust score is highest at the partner level. This may seem counterintuitive since a higher interpersonal trust score is found to be related to lower skeptical judgments and decisions. Apparently auditors at higher organizational ranks appear to compensate for higher interpersonal trust levels by utilizing greater skeptical judgments and decisions in three of the six models. This may be a result of increased

experience since the more novel the situation is the more people depend on their general disposition to trust (see e.g., Johnson-George and Swap, 1982; Webb and Worchel, 1986, p. 224; Phares, 1978, p. 267). Because partners have been exposed to many client situations, it may be that their judgments do not depend on their general disposition to trust. Furthermore, in general, persons with a high level of interpersonal trust are liked more than persons with lower levels of interpersonal trust (see e.g., Rotter, 1980, p. 3; Wright and Tedeschi, 1975, p. 470). Since partners are responsible for contracting new clients and for managing a part of the firm, 'being liked' may be a very productive asset for partners of audit firms. This is in line with the so-called 'trusting stance'. That is, a person assumes that he will achieve better outcomes by 'dealing with people as they are well-meaning and reliable' (McKnight and Chervany, 2001, p. 39). A trusting stance should, however, be distinguished from 'faith in humanity', indicating that one assumes that people are usually honest, benevolent, competent and predictable (see e.g., McKnight and Chervany, 2001).

Another potential explanation for the finding is the argument of some authors that trust and distrust are two different phenomena, i.e., one can be trusting and distrusting at the same time (see e.g., McKnight and Chervany, 2001; Webb and Worchel, 1986). This could imply that partners can still be distrusting and show skeptical behavior, while also having a high level of trust.

The results of this study have several practical implications. Given the wide range of responses in the summated Interpersonal Trust Scale and the derived factors, auditors differ in their levels of interpersonal trust which can result in different levels of skeptical judgments and decisions. This might be an issue audit firms want to take into consideration. For example, ideally it would appear that audit teams should have some members with lower levels of interpersonal trust. However, experience is also found to be important in explaining skeptical judgments and decisions which may compensate for higher levels of interpersonal trust. Hence, sharing experiences concerning client situations in which professional skepticism is imperative could be important. Furthermore, situational factors like control environment strength appear to be of importance. An important issue for further research is whether training auditors in judging situational factors can improve skeptical planning judgments.

The study has some limitations that should be considered when interpreting the results. First of all, based on a review of the literature, a selection was made as to what dependent variables depict skeptical judgments and decisions. Other variables can be identified. Furthermore, not all firms had a representative sample in terms of experience causing

difficulties in disentangling potential experience, language, and firm effects. Moreover, the interpretation of the results regarding the Institutional Trust and Exploitation factors should be done with care, since the reliability of these scales is relatively low.

There are several suggestions for further research. The Interpersonal Trust Scale appears to be multidimensional and in some settings the extracted factors outperform the summated scale. A further study of trust constructs may advance the explanatory value of trust on skeptical judgments and decisions. Particularly the Exploitation factor seems to be an important factor. However, more reliable measures for Exploitation need to be developed. For example, more items need to be evaluated for inclusion. Future research may also focus more on both trust and distrust and not trust alone.

Furthermore, some of the models' R-squares were quite low. There has been a long lasting discussion in personality and social psychology about the explanatory power of attitudes in predicting specific behavior, since explanatory power of general attitudes in predicting specific behavior is sometimes low (e.g., Ajzen, 1991, p. 180; Ajzen and Fishbein, 1977; Ajzen and Fishbein, 2005, p. 5). A suggested way to avoid the problem of using general attitudes is aggregation of specific behaviors (into a 'behavioral index') across occasions, situations, and forms of action (Ajzen, 2005). Studies have shown that general attitudes (and personality traits) predict behavioral aggregates better than they predict specific behaviors (Ajzen, 1991, p. 181; see Ajzen, 2005, for a review of empirical research on the aggregation principle). However, the main disadvantage of the aggregation approach is that it is unable to explain behavioral variability across situations and that it does not permit prediction of a specific behavior in a given situation (Ajzen, 1991, p. 181). Another alternative would be to use more situation specific measures of attitude. For interpersonal trust, for example, one could use the Specific Interpersonal Trust Scale (Johnson-George and Swap, 1982) or a model based on the Theory of Planned Behavior (e.g., Ajzen, 1991).

## ***Chapter 4 A summary and synthesis of the two studies***

### ***4.1 Introduction***

The purpose of this chapter is to summarize the major findings and implications of the two studies that are the focus of the dissertation. In Section 4.2, the purpose of the two studies is reiterated. In Section 4.3, a summary of the findings is presented, following the research model that was presented in Chapter 1. The limitations are presented in Section 4.4. Finally, the studies' combined contributions and suggestions for further research are assessed in Section 4.5.

### ***4.2 The purpose of the studies***

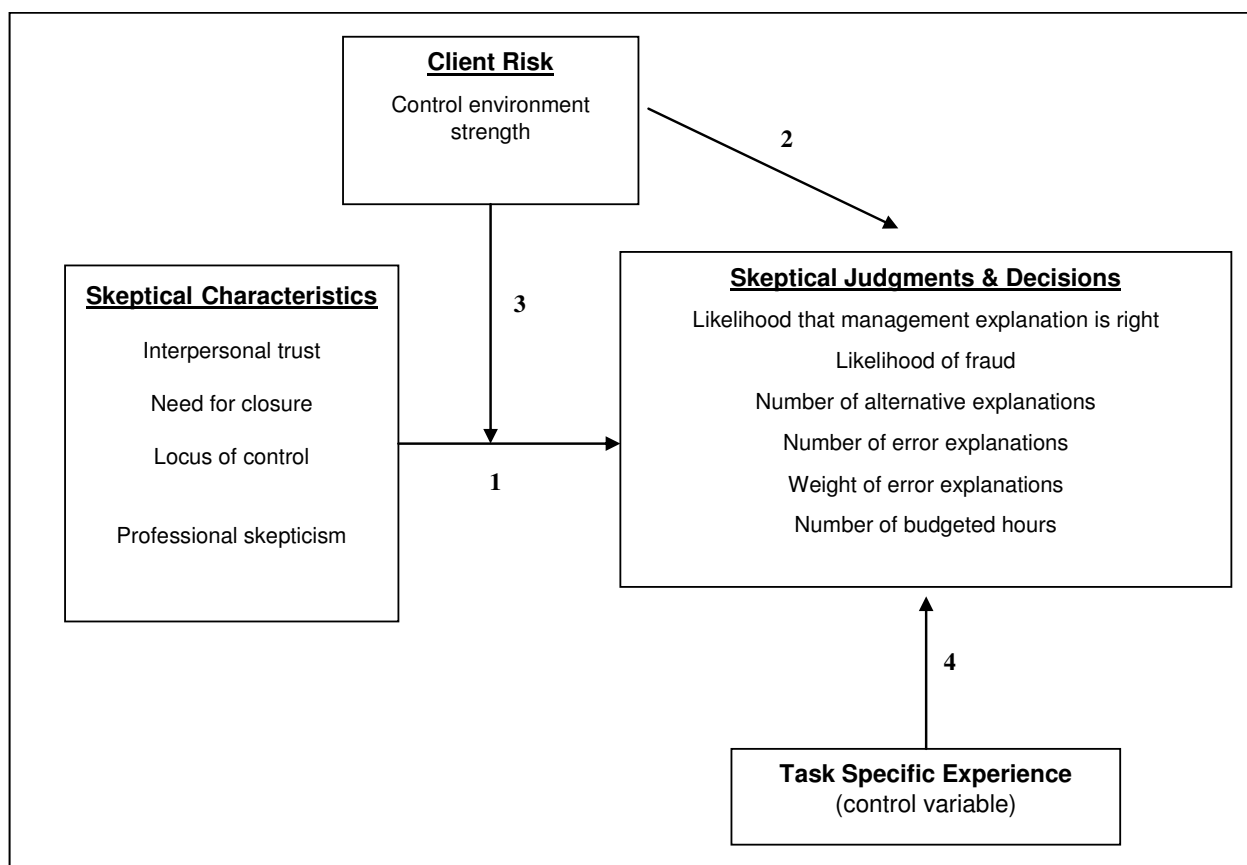
The objective of both empirical studies in this dissertation was to examine the association between auditors' skeptical characteristics and auditors' skeptical judgments and decisions. The main purpose of the first exploratory study in Chapter 2 was to examine how auditors' skeptical characteristics are related to auditors' skeptical judgments and decisions. Three skeptical characteristics (i.e., interpersonal trust, suspension of judgment, and locus of control) and a comprehensive professional skepticism scale developed for the field of auditing were related to six skeptical judgments and decisions. In order to examine the effect of client risks, the influence of control environment strength on the relationship between skeptical characteristics and auditors' judgments and decisions was also studied.

The purpose of the second study in Chapter 3 was to examine Rotter's Interpersonal Trust Scale (1967) in more depth by exploring the association between individual interpersonal trust factors (determined with factor analysis) and skeptical judgments and decisions, also considering interactive effects between control environment strength and skeptical characteristics. In particular, the relationship of the extracted factors to skeptical judgments and decisions was compared with the summated Interpersonal Trust Scale. Since individual constructs underlying interpersonal trust are more specific and focused than the summated scale, the expectation was that they better predict skeptical judgments and decisions. As an additional analysis, this study also looked at the relationship between auditor rank and interpersonal trust and skeptical judgments and decisions. The underlying reason was that it is very important to know whether, for example, partner's skepticism is higher than that of the audit team members since partners have the responsibility and authority for determining whether the audit evidence is sufficient and what type of audit opinion to issue.



### 4.3 A summary of the findings

In order to assess the combined contribution of the two empirical studies in this dissertation, the research model from Chapter 1 is repeated in Figure 4.1. The results of the studies will be discussed following the links (i.e., relationships) in the model.



**Figure 4.1** Research model of the determinants of skeptical judgments and decisions.

#### **Link 1: skeptical characteristics and skeptical judgments and decisions**

In Chapter 2, interpersonal trust shows the most significant main effects on judgments and decisions. In Chapter 3, the summated interpersonal trust scale and the derived factor Exploitation are the measures most significantly related to skeptical judgments and decisions as a main effect.<sup>78</sup> Although the main effect of Exploitation appears to be significant twice as many times as the summated scale (four times versus two times), it should be noted that two of the main effects of Exploitation are in a direction that is contrary to expectations. In addition, given the fact that the internal reliability of the Exploitation factor is low, this finding should be interpreted with care.

<sup>78</sup> Given the presence of interaction effects, the main effects should be interpreted with care.

### **Links 2 and 3: the influence of client risk**

Control environment strength (used as a proxy for client risk) has a significant main effect in a majority of the models. For example, control environment strength has a significant main effect for all the regression models in Chapters 2 and 3 for the dependent variables likelihood of fraud, number of error explanations and weight of error explanations.

In Chapter 2 there are significant interaction effects found for the models concerning interpersonal trust, need for closure and locus of control. In Chapter 3 interaction effects with similar patterns are found for the derived interpersonal trust factors. As mentioned, the interaction effects are predominantly present for the likelihood of fraud, the number of error explanations and the weight of the error explanations. Although the interaction patterns are similar across most skeptical characteristics, the patterns of the interactions differ across skeptical judgments and decisions. For example, concerning ‘assessment of the likelihood of fraud’, the pattern was an almost horizontal line for the strong control environment setting and a downward sloping line for the weak control environment setting. Pertaining to ‘the number of error explanations’, the explanations generated are about equal for the low and high skepticism groups in the weak control environment setting, while in the strong control environment setting there is a difference between the mean number of total error explanations for the low and high skepticism groups. As discussed previously, contrary to expectations, the line is upward sloping which indicates that auditors with a greater skeptical disposition generate fewer alternative error explanations than auditors with a lower skeptical disposition. A potential explanation may be that skeptical auditors focus more on fewer errors.

For the derived interpersonal trust factor Exploitation in Chapter 3, there is an additional significant interactive effect with the number of budgeted hours. This effect is similar to the effect concerning the likelihood of fraud. Overall, the patterns of the interaction effects concerning the derived factors do not appear to differ significantly from the patterns already found in Chapter 2.

### **Link 4 and additional findings: the influence of task specific experience and rank**

Link 4 was added to the model in order to control for task specific experience, as measured by years of experience with conducting analytical reviews. Task specific experience shows a significance positive association with number of alternative explanations generated, number of error explanations generated, the weight attached to the error explanations, and the number of budgeted hours.

Additional analyses in Chapter 3 show a positive significant relationship between position within the firm and the interpersonal trust score (i.e., the higher the rank the higher the interpersonal trust score). This finding suggests that skeptical disposition (as measured by the antithesis of trust) declines as an auditor moves up in the organization. In particular, there is a statistically significant difference between the partner and senior level and a marginally significant difference between the partner and staff level. Concerning the skeptical judgments and decisions, there are statistically significant differences across ranks within the firm for the number of alternative explanations, the number of error explanations and the weight of the error explanations). The differences in skeptical judgments and decisions are mainly present between partner-staff and manager-staff (and to a lesser extent between partner-senior). Overall, the findings suggest that auditors at higher ranks show more skeptical judgments and decisions.

#### **4.4 Limitations**

The study has limitations that should be considered when interpreting the results. First of all, not all firms had a representative sample in terms of experience and language, causing difficulties in disentangling potential experience, language, and firm effects. Further, due to limitations of time availability, participants completed only two of the four skeptical measures. Hence, this precludes a complete comparison between all four measures. Additionally, based on a review of the literature, a selection was made as to the dependent variables that depict skeptical judgments and decisions. While the sources consulted identify these as important skeptical behaviors, there is no normative source as to the most important variable(s) in impacting auditing performance. Also, the interpretation of the results in Chapter 3 regarding the Institutional Trust and Exploitation factors should be done with care, since the reliability of these scales is relatively low. Finally, there exists no normative solution to the case problem used in the research instrument so that it is not possible to determine which measure is most closely related to optimal judgments and decisions.

#### **4.5 An appraisal of the combined findings, implications and suggestions for further research**

Both studies in this dissertation show that skeptical characteristics (and factor-analyzed interpersonal trust dimensions) are related to skeptical judgments and decisions. This has not been strongly evidenced by previous studies.

Overall, auditors' skeptical judgments and decisions are more significantly associated with interpersonal trust, via the main and interaction effects, than any of the other three characteristics examined in Chapter 2. This suggests interpersonal trust is most closely associated with the skeptical judgments and decisions prescribed in the auditing literature and professional standards. The analyses in Chapter 3 showed that most significant main effects and interaction effects are present for the summated interpersonal trust scale as well as for the Exploitation factor. However, given the fact that the reliability of the Exploitation factor is rather low and the fact that the R-squares of the models with the summated interpersonal trust scale are higher, the summated interpersonal trust scale appears to be the best predictor of skeptical judgments and decisions from the second study in Chapter 3.

Hence, although there exists discussion on the use of trust as a proxy for skeptical disposition (see e.g., Hurtt, 2007), the studies in this dissertation show that interpersonal trust (factors) is (are) significantly associated with skeptical judgments and decisions. Given the wide range of responses in the summated Interpersonal Trust Scale and the derived factors, auditors differ in their levels of interpersonal trust which can result in different levels of skeptical judgments and decisions. This might be an issue audit firms want to take into consideration (see e.g., Rose, 2007). For example, firms may administer trust related tests to their personnel in order to assess their level of interpersonal trust (cf., Nelson, 2009) and to adjust team planning (e.g., audit teams should have some members with lower levels of interpersonal trust).

Control environment strength shows a significant main effect for all the regressions models concerning the dependent variables likelihood of fraud, number of error explanations and weight of error explanations in Chapters 2 and 3, indicating that auditors, as expected, are attuned to potential problems and risks associated with control environment strength. Also across interaction effects, although the slopes vary, the skeptical judgments and decisions are higher in the weak control environment setting. Apparently situational factors like control environment strength are related to skeptical judgments and decisions. Therefore, training auditors in judging situational factors can improve skeptical planning judgments. This is of particular importance since auditing firms use decision aids (e.g., checklists) to assess, for example, control environment risks. The contents and wording of these checklists influences auditor behaviors and may lead to omission of important situational variables (cf. Bedard and Graham, 2002). Therefore, auditors should never fully trust on these decision aids and need to be alert on client specific circumstances not captured by the decision aids.

It is interesting to note that the more comprehensive and specific Hurtt Professional Skepticism Scale does not show the strongest association with skeptical judgments and decisions. When the Hurtt Professional Skepticism Scale in this study is factor analyzed, the results (not tabulated) show almost identical factors as those identified by Hurtt (2007), indicating that the measure is quite stable in terms of its item structure. However, none of the derived factors significantly predicts skeptical judgments and decisions better than the summated Hurtt Professional Skepticism Scale. One possible explanation might be that only a limited number of proxies for skeptical judgments and decisions were examined. However, also in other settings the scale has not provided unequivocal results. For example, Hurtt *et al.* (2008) found mixed evidence of the Hurtt Professional Skepticism Scale predicting skeptical behaviors. They used a computer simulated review task in which participants were able to actually consult the audit working papers. A follow up study could test whether the Interpersonal Trust Scale also shows higher significance than the Hurtt Professional Skepticism Scale in predicting skeptical behavior in a computer simulated task where, for example, actual searching behavior can be traced. Another explanation for the low associations between the Hurtt Professional Skepticism Scale and the skeptical judgments and decisions found in this dissertation may be that the scale is not focused on the most significant skeptical constructs like interpersonal trust.

The findings of the studies in the dissertation warrant further research concerning the interpersonal trust construct. The interpersonal trust measure may be extended by adding relevant skepticism constructs. It is unclear, however, what constructs are the most appropriate candidates for inclusion. The study presented in Chapter 2 showed no strong evidence for other characteristics that strongly influence skeptical judgments and decisions.<sup>79</sup> Yet, as mentioned Chapter 3 showed that the Exploitation factor, in particular, seems to be an important factor. However, more reliable measures for Exploitation need to be developed. For example, more items need to be evaluated for inclusion.

The research model only focused on client risk (as measured by control environment strength) as an incentive influencing the relationship between skeptical characteristics and skeptical judgments and decisions. Future research could focus on other risks, as for example identified in ISA 315 (IFAC, 2008). Future research could also study other important auditor

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<sup>79</sup> The number of observations for the Need for Closure Scale is too limited to conduct an appropriate factor analyses. However, if a factor analysis is conducted these factors do not show significantly better relationships to skeptical judgments and decisions than the summated Need for Closure Scale does (results are not tabulated).

incentives like budget pressure, audit quality, litigation and reputation loss (see Nelson, 2009, for an overview).

The two studies considered six skeptical judgments and decisions by auditors. It is not straightforward whether these judgments and decisions should be identified as a judgment or a decision. Some view the distinction between judgments and decisions as artificial since they both represent a process of making a choice among alternatives (cf. Mitchell, 2002, p.15). However, others find the division useful because it focuses on different facets of the decision making process (see e.g., Einhorn and Hogarth, 1981). Judgments are often related to likelihoods, probability assessments and risks, while decisions are more related to actions. Hence, the likelihood that the management explanation is right and the likelihood of fraud are of a more judgmental character and may be considered to be judgments. Number of budgeted hours is obviously a decision to allocate resources to the audit. The number of alternative explanations, the number of error explanations and the weight of the error explanations are somewhere in between. Concerning the summated interpersonal trust scale, all regressions except for the one predicting budgeted hours contain a significant main and/or interaction effect pertaining to interpersonal trust. If number of budgeted hours would be viewed as the only decision variable, apparently interpersonal trust (nor its interaction with control environment strength) has no effect on the budgeting decision. However, it should be noted that the Exploitation factor is significant in the regression with number of budgeted hours as a dependent variable. Across all skeptical characteristics studied there is no clear pattern of what skeptical judgments and decisions are most associated with skeptical characteristics. Future research can focus on the relationship between judgments and decisions, for example on the relationship between likelihood of fraud and substantive tests planned, by using mediation analysis (see e.g., Baron and Kenny, 1986).

Number of error explanations is explained by three of the four skeptical characteristics (via the main and the interaction effects) studied in Chapter 2 and number of alternative explanations is explained only by one characteristic. This finding is corroborated by the analyses in Chapter 3. Apparently skeptical characteristics are more related to a 'presumptive doubt' variable like number of error explanations than to a 'neutral stance' variable like number of alternative explanations. Interestingly, Boritz *et al.* (2008) find that fraud specialists, who allegedly have a more presumptive doubt perspective, appear to be more responsive to fraud risk and increase the time budget for useful standard procedures than the auditors involved in the Asare and Wright (2004) study. Future research can focus on the influence of presumptive doubt on successfully exhibiting skeptical behaviors.

Also task specific experience and rank are found to be important in explaining skeptical judgments and decisions: the more experienced the auditor is, the more skeptical judgments and decisions are exhibited. Hence, sharing experiences concerning client situations in which professional skepticism is imperative could be important. The additional finding that partners score the highest on interpersonal trust and its derived factors but show the most skeptical judgments and decisions deserves further study. This finding contradicts the findings of Shaub and Lawrence (1999) and Payne and Ramsey (2005). One explanation may be that auditors at higher ranks possess more experience and knowledge. However, it may also be a result of the difference between a ‘trusting stance’ and ‘faith in humanity’ as is suggested in the literature (see e.g., McKnight and Chervany, 2001).<sup>80</sup>

Another possible explanation for this paradoxical finding is the argument of some authors that trust and distrust are two different phenomena, i.e., one can be trusting and distrusting at the same time (see e.g., McKnight and Chervany, 2001; Webb and Worchel, 1986). This would imply that partners can still be distrusting and show skeptical behavior, while also having a high level of trust. Future research may also focus on the different effects of trusting stance versus faith in humanity and trust versus distrust.

Some authors assume auditors’ personality traits to be stable when they start audit training and practice (see e.g., Libby and Luft, 1993; Nelson, 2009). However, others have found auditor traits to be alterable (e.g., Carpenter, 2004). For example, disposition to trust may develop as people mature and is altered by experiences later in life (see e.g., McKnight and Chervany, 2001, p. 38; Kee and Knox, 1970). Future research could focus on whether and to what degree professional skepticism can be trained (cf. Fullerton and Durtschi, 2004) or may be induced by superiors (cf. Peecher, 1996). If so, audit firms can enhance the focus on professional skepticism, for example during team planning events.

The studies in this dissertation focused on the individual auditor’s professional skepticism. Hence, another promising avenue of research is professional skepticism in team settings. For instance, does the review process serve to enhance or diminish skeptical judgments? Do team members with varying levels of skeptical characteristics lead to a holistic desired level of skeptical judgments or does this vary by the hierarchical level of the various members?

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<sup>80</sup> Recall that a trusting stance means that a person assumes that he will achieve better outcomes by ‘dealing with people as they are well-meaning and reliable’ (McKnight and Chervany, 2001, p. 39), while ‘faith in humanity’ indicates that one assumes that people are usually honest, benevolent, competent and predictable (see e.g., McKnight and Chervany, 2001).

Another area of research that may be fruitful concerns critical thinking. There appears to be little debate on the value of critical thinking for auditors. Future research could focus on the influence of critical thinking on skeptical behaviors. Several measurement scales have been developed to assess a person's level of critical thinking. Three examples are the Watson Glaser Critical Thinking Appraisal (Watson and Glaser, 1964), the California Critical Thinking Disposition Inventory (Facione and Facione, 1992) and the Ennis-Weir Critical Thinking Essay Test (Ennis and Weir, 1985). Future studies could focus on the relationship between auditors' critical thinking, as measured by these scales and skeptical judgments and decisions. In all, the findings of this dissertation corroborate the idea that further study of the concept of professional skepticism is fruitful.





## *Appendices*



## *Appendix A: Overview of the measurement scales*

### *Interpersonal Trust Scale*

Rotter's Interpersonal Trust Scale consists of 25 items that are scored on a five point Likert Scale (varying from strongly disagree to strongly agree). Scale items of Rotter's Interpersonal Trust Scale were taken from Wrightsman (1991). The items of which the scores should be reversed are indicated by (r). Adding up the points for each item provides the interpersonal trust score. Higher scores indicate higher interpersonal trust.

1. Hypocrisy is on the increase in our society. (r)
2. In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy. (r)
3. This country has a dark future unless we can attract better people into politics. (r)
4. Fear and social disgrace or punishment rather than conscience prevents most people from breaking the law. (r)
5. Using the honor system of not having a teacher present during exams would probably result in increased cheating. (r)
6. Parents usually can be relied on to keep their promises.
7. The United Nations will never be an effective force in keeping world peace. (r)
8. The judiciary is a place where we can all get unbiased treatment.
9. Most people would be horrified if they knew how much news that the public hears and sees is distorted. (r)
10. It is safe to believe that in spite of what people say most people are primarily interested in their own welfare. (r)
11. Even though we have reports in newspapers, radio, and TV, it is hard to get objective accounts of public events. (r)
12. The future seems very promising.
13. If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be. (r)
14. Most elected officials are really sincere in their campaign promises.
15. Many major national sports contests are fixed in one way or another. (r)
16. Most experts can be relied upon to tell the truth about the limits of their knowledge.
17. Most parents can be relied upon to carry out their threats or punishments.
18. Most people can be counted on to do what they say they will do.
19. In these competitive times one has to be alert or someone is likely to take advantage of you. (r)
20. Most idealists are sincere and usually practice what they preach.
21. Most salesmen are honest in describing their products.
22. Most students in school would not cheat even if they sure of getting away with it.
23. Most repairmen will not overcharge even if they think you are ignorant of their speciality.
24. A large share of accident claims filed against insurance companies are phony. (r)
25. Most people answer public opinion polls honestly.

### *Need for Closure*

Suspension of judgment is measured by the 42-item Need for Closure Scale (Webster and Kruglanski, 1994). Responses to the 42 items are obtained on a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). The items of which the scores should be reversed are indicated by (r). The summed item scores form the need for closure score. Higher scores indicate a higher need for closure.

1. I think that having clear rules and order at work is essential for success.
2. Even after I've made up my mind about something, I am always eager to consider a different opinion. (r)
3. I don't like situations that are uncertain.
4. I dislike questions which could be answered in many different ways.
5. I like to have friends who are unpredictable. (r)
6. I find that a well ordered life with regular hours suits my temperament.
7. I enjoy the uncertainty of going into a new situation without knowing what might happen. (r)
8. When dining out, I like to go to places where I have been before so that I know what to expect.
9. I feel uncomfortable when I don't understand the reason why an event occurred in my life.
10. I feel irritated when one person disagrees with what everyone else in a group believes.
11. I hate to change my plans at the last minute.
12. I would describe myself as indecisive. (r)
13. When I go shopping, I have difficulty deciding exactly what it is I want. (r)
14. When faced with a problem I usually see the one best solution very quickly.
15. When I am confused about an important issue, I feel very upset.
16. I tend to put off making important decisions until the last possible moment. (r)
17. I usually make important decisions quickly and confidently.
18. I think it is fun to change my plans at the last moment. (r)
19. My personal space is usually messy and disorganized. (r)
20. In most social conflicts, I can easily see which side is right and which is wrong.
21. I tend to struggle with most decisions. (r)
22. I believe orderliness and organization are among the most important characteristics of a good student.
23. When considering most conflict situations, I can usually see how both sides could be right. (r)
24. I don't like to be with people who are capable of unexpected actions.
25. I prefer to socialize with familiar friends because I know what to expect from them.
26. I think that I would learn best in a class that lacks clearly stated objectives and requirements. (r)
27. When thinking about a problem, I consider as many different opinions on the issue as possible. (r)
28. I don't like to go into a situation without knowing what I can expect from it.
29. I like to know what people are thinking all the time.
30. I dislike it when a person's statement could mean many different things.
31. It's annoying to listen to someone who cannot seem to make up his or her mind.
32. I find that establishing a consistent routine enables me to enjoy life more.

33. I enjoy having a clear and structured mode of life.
34. I prefer interacting with people whose opinions are very different from my own. (r)
35. I like to have a plan for everything and a place for everything.
36. I feel uncomfortable when someone's meaning or intention is unclear to me.
37. When trying to solve a problem I often see so many possible options that it's confusing. (r)
38. I always see many possible solutions to problems I face. (r)
39. I'd rather know bad news than stay in a state of uncertainty.
40. I do not usually consult many different options before forming my own view.
41. I dislike unpredictable situations.
42. I dislike the routine aspects of my work (studies). (r)

### *Locus of Control*

Rotter's (1966) Locus of Control scale contains 23 question pairs that are answered in a forced choice format (i.e., one of the two possibilities should be indicated per question). The total locus of control score is obtained by adding the total number of external alternatives chosen. The external alternatives are indicated by (e).

1. a. Many of the unhappy things in people's lives are partly due to bad luck. (e)  
b. People's misfortunes result from the mistakes they make.
2. a. One of the major reasons why we have wars is because people don't take enough interest in politics.  
b. There will always be wars, no matter how hard people try to prevent them. (e)
3. a. In the long run people get the respect they deserve in this world.  
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries. (e)
4. a. The idea that superiors are unfair in assessing young managers is nonsense.  
b. Most young managers don't realize the extent to which their assessment is influenced by accidental happenings. (e)
5. a. Without the right breaks one cannot be an effective leader. (e)  
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
6. a. No matter how hard you try some people just don't like you. (e)  
b. People who can't get others to like them don't understand how to get along with others.
7. a. I have often found that what is going to happen will happen. (e)  
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
8. a. A hard working young manager can hardly ever receive an unsatisfactory assessment.  
b. Most of the time there is hardly any connection between a young manager's performance and his assessment, which implies that working hard is relatively useless. (e)
9. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.  
b. Getting a good job depends mainly on being in the right place at the right time. (e)
10. a. The average citizen can have influence in government decisions.  
b. This world is run by the few people in power, and there is not much the little guy can do about it. (e)
11. a. When I make plans, I am almost certain that I can make them work.  
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune any how. (e)
12. a. In my case getting what I want has little or nothing to do with luck.  
b. Many times we might as well decide what to do by flipping a coin. (e)
13. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first. (e)  
b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.

14. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control. (e)  
b. By taking an active part in political and social affairs the people can control world events.
15. a. Most people don't realize the extent to which their lives are controlled by accidental happenings. (e)  
b. There really is no such thing as "luck".
16. a. It is hard to know whether or not a person really likes you. (e)  
b. How many friends you have depends upon how nice a person you are.
17. a. In the long run the bad things that happen to us are balanced by the good ones. (e)  
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
18. a. With enough effort we can wipe out political corruption.  
b. It is difficult for people to have much control over things politicians do in office. (e)
19. a. Sometimes I can't understand how my superiors arrive at their assessments of my work performance. (e)  
b. There is a direct connection between how hard I work and how well I am assessed by my superiors.
20. a. Many times I feel that I have little influence over the things that happen to me. (e)  
b. It is impossible for me to believe that chance or luck plays an important role in my life.
21. a. People are lonely because they don't try to be friendly.  
b. There's not much use in trying too hard to please people, if they like you, they like you. (e)
22. a. What happens to me is my own doing.  
b. Sometimes I feel that I don't have enough control over the direction my life is taking. (e)
23. a. Most of the time I can't understand why politicians behave the way they do. (e)  
b. In the long run the people are responsible for bad government on a national as well as on a local level.



### ***Hurtt Professional Skepticism Scale***

The Hurtt Professional Skepticism Scale (2007) consists of 30 items scored on a 6-point scale, ranging from 1 (strongly disagree) to 6 (strongly agree). The items of which the scores should be reversed are indicated by (r). Adding up the scores results in the degree of professional skepticism with higher scores indicating higher skepticism.

1. I often accept other peoples' explanations without further thought. (r)
2. I feel good about myself.
3. I wait to decide on issues until I can get more information.
4. The prospect of learning excites me.
5. I am interested in what causes people to behave the way that they do.
6. I am confident of my abilities.
7. I often reject statements unless I have proof that they are true.
8. Discovering new information is fun.
9. I take my time when making decisions.
10. I tend to immediately accept what other people tell me. (r)
11. Other peoples' behavior doesn't interest me. (r)
12. I am self-assured.
13. My friends tell me that I usually question things that I see or hear.
14. I like to understand the reason for other peoples' behavior.
15. I think that learning is exciting.
16. I usually accept things I see, read or hear at face value. (r)
17. I don't feel sure of myself. (r)
18. I usually notice inconsistencies in explanations.
19. Most often I agree with what the others in my group think. (r)
20. I dislike having to make decisions quickly.
21. I have confidence in myself.
22. I don't like to decide until I've looked at all of the readily available information.
23. I like searching for knowledge.
24. I frequently question things that I see or hear.
25. It is easy for other people to convince me. (r)
26. I seldom consider why people behave in a certain way. (r)
27. I like to ensure that I've considered most available information before making a decision.
28. I enjoy trying to determine if what I read or hear is true.
29. I relish learning.
30. The actions people take and the reasons for those actions are fascinating.

*Appendix B: Version of the questionnaire concerning weak control environment and soliciting interpersonal trust and locus of control items*

*A Study on the Application of Analytical Procedures*  
Vrije Universiteit Amsterdam

This is a study on the application of analytical procedures. On the basis of a case-description you will be asked to complete a number of tasks and to answer several questions.

Given the importance of this study your firm is providing time to conduct this study. Please complete the questionnaire carefully.

Completion of the questionnaire will take about 30 minutes.

I kindly ask you to write down your name.

Name: \_\_\_\_\_

Some remarks in advance:

- Please answer all questions (the pages are printed on both sides)!
- Please start answering the questions from the beginning.
- You are kindly asked to **not speak to each other** during the study.
- You will find a handwritten number on the questionnaires. The sole purpose of the number is to match the first with the second questionnaire.

Thank you very much for you participation!

Luc Quadackers

**In the envelope you will find two smaller envelopes numbered 1 and 2. Please open envelope 1 and start answering the questionnaire.**

## ***Part 1 of the study***

### ***Introduction***

MAEdic N.V. is a fifty-year old public company that develops, manufactures and markets pharmaceuticals and medical instrumentation. The firm consists of three divisions. Your firm has audited MAEdic N.V.'s financial statements for the last three calendar years.

### ***Management control philosophy***

The management of MAEdic N.V. can be described as being aggressive in business practices and emphasizes speed and efficiency when implementing decisions. Management rarely hires external consultants because they are of the opinion that consultants are expensive and often follow a too conservative approach. Top management and lower management meet during monthly production-meetings. Management views the IT department as a necessary evil and considers the accountants and bookkeepers who work there to be 'beancounters'. Because management has a clear preference for reporting methods that enable earnings management, management has frequent disputes with the external auditor. Although there are a large number of internal control procedures in place, they are sometimes less strictly applied if the progress of the work is suffering from them.

Top-management mainly focuses on achieving short-term accounting-based performance measures when determining compensation and making promotion decisions. Productivity is the most important criterion in performance assessment. Directors receive a small base-salary and a bonus that is based on the profitability of the department in question. Management is convinced that this compensation system encourages healthy competition and personal initiatives.

### ***Results of preliminary analytical review***

It is November 2005, and you have just begun conducting a preliminary analytical review of MAEdic N.V.'s third quarter financial statements. Oddly, the gross margin percentage is on pace to increase by roughly 10% over last year's 32.73% to 36.04%. The change is well above the five-year range of 32.1% to 32.8% and mean of 32.5% as well. Notably, without the change, this year's total gross margin would be roughly €15.5 million lower than currently recorded. While MAEdic N.V.'s gross margin percentage has always been slightly better than industry averages, this year's mark is well above the predicted industry-average of 33.0%. The tables below highlight the increase:

Third Quarter Data (in millions of euro's)	2004 and 2005 3 <sup>rd</sup> Quarter Total Performance		2005 3 <sup>rd</sup> Quarter Divisional Performance		
	2004 3 <sup>rd</sup> Quarter Totals	2005 3 <sup>rd</sup> Quarter Totals	2005 3 <sup>rd</sup> Quarter Prescription Drugs	2005 3 <sup>rd</sup> Quarter Household Products	2005 3 <sup>rd</sup> Quarter Medical Instrumentation
Net Sales	€315.0	€471.7	€245.3	€99.1	€127.3
Cost of Goods sold	€211.9	€301.7	€161.6	€69.3	€70.8
Gross Margin	€103.1	€170.0	€83.7	€29.8	€56.5
Gross Margin %	32.73%	36.04%	34.12%	30.07%	44.38%

Sales mix of the divisions in 2004 en 2005				
	Prescription Drugs	Household Products	Medical Instrumentation	Total
% of sales 2005	52%	21%	27%	100%
% of sales 2004	55%	32%	13%	100%

### ***Explanation of the CFO for the findings***

When you ask management about the increase, the CFO Gerald Smit explains: ‘Our margin is up, way up. But, our sales mix changed this year. In 2005, our medical instrumentation products have done better than ever before. Naturally, our margins will improve when we sell relatively more of our instrumentation products, and they have boomed this year. Fortunately, we are currently the most qualified firm to meet high-end users’ demands, and our clients are quite appreciative of our products. Prices on instrumentation sales range all over the place, from just over ten thousand dollars to over a million in some cases. But for the record, we average €53,000 per sale and can gross over 45% per sale, depending on how negotiations go with the client. Take that, and compare the percentage of revenue accounted for by instrumentation sales this year (27%) to last year’s figure (13%) and you will understand what caused our gross margin percentage to go up.’

**Task 1**

Take a moment to focus on the increase in the gross margin percentage and the explanation of the CFO that the increase is caused by the sales mix.

Then take a few minutes to think about other possible explanations for the increase in the gross margin percentage in the case-description above.

Write down the other possible explanations that you think of in the table below. Also briefly describe how it could have caused part or all the fluctuation. Be as brief and specific as possible.

The explanation of the CFO is the first explanation in the table. If you want to add explanations please put them in the table and number them.

After you have written down and numbered all the explanations in the table, please allocate 100 percent to the explanations (in terms of likelihood of occurrence). You have to allocate the highest percentage to the explanation with the highest likelihood to cause substantially all (i.e.,  $\geq 85\%$ ) of the gross margin percentage increase. Allocate lower percentages to the explanations with lower likelihoods. Do not forget to allocate a percentage to the explanation of the CFO!

<i>Nr.</i>	<i>Explanations for the increase in the gross margin percentage in the case-description above</i>	<i>Percentage in terms of likelihood (total = 100 percent)</i>
1.	The composition of the sales mix has led to the increase in the gross margin percentage (see explanation CFO). <b>[ALSO ALLOCATE A PERCENTAGE TO THIS EXPLANATION! IF THIS EXPLANATION DOES NOT DESERVE A PERCENTAGE PLEASE WRITE DOWN A '0'.]</b>	

<i>Nr.</i>	<i>Explanations for the increase in the gross margin percentage in the case-description above</i>	<i>Percentage in terms of likelihood (total = 100 percent)</i>
		<b>Total = 100 percent</b>

**ATTENTION: DID YOU ALLOCATE A TOTAL OF 100 PERCENT?**

**Task 2**

Last year's (2004) budget for substantive testing regarding the sales-account was 100 hours. Last year, there were no specific points meriting attention. Assume that the increase in the gross margin is the only specific issue concerning the sales-account as opposed to last year. Indicate how many hours you want to budget this year for substantive testing the sales-account.

Budgeted hours in 2004:            100    hours  
Budgeted hours in 2005:            \_\_\_     hours

**After you finished all tasks, please put this questionnaire in envelope number 1, seal it and put it into the large envelope. Then open envelope number 2 and proceed with answering the questionnaire from envelope number 2.**

## ***Part 2 of the study***

### ***Questions on personality characteristics***

Below you will find a number of statements. We would like to know to what extent you agree on these statements. Therefore, we would like you to circle one of the numbers next to the statements.

The numbers have the following meaning:

- 1 = strongly disagree
- 2 = disagree
- 3 = neither agree nor disagree
- 4 = agree
- 5 = strongly agree

Example:

	Strongly disagree				Strongly Agree
I like to watch soccer.	1	2	3	4	5

If you like to watch soccer very much, then circle number 5. If you like to watch soccer circle number 4. If you are indifferent circle number 3 et cetera.

There are no right or wrong answers, as long as your answers reflect your own opinion. By giving your opinion on the statements below we can assess some of your personality characteristics. Sometimes the questions appear to be similar. However, these subtle distinctions are necessary to make a thorough assessment of your personality characteristics. So please stay alert and answer the questions as good and honest as possible.

	Strongly disagree				Strongly Agree
If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be.	1	2	3	4	5
Most elected officials are really sincere in their campaign promises.	1	2	3	4	5
Hypocrisy is on the increase in our society.	1	2	3	4	5
Most salesmen are honest in describing their products.	1	2	3	4	5
Most parents can be relied upon to carry out their threats or punishments.	1	2	3	4	5
Most people would be horrified if they knew how much news that the public hears and sees is distorted.	1	2	3	4	5



	Strongly disagree					Strongly Agree				
In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy.	1	2	3	4	5	1	2	3	4	5
Most people answer public opinion polls honestly.	1	2	3	4	5	1	2	3	4	5
The United Nations will never be an effective force in keeping world peace.	1	2	3	4	5	1	2	3	4	5
Most idealists are sincere and usually practice what they preach.	1	2	3	4	5	1	2	3	4	5
Parents usually can be relied on to keep their promises.	1	2	3	4	5	1	2	3	4	5
This country has a dark future unless we can attract better people into politics.	1	2	3	4	5	1	2	3	4	5
In these competitive times one has to be alert or someone is likely to take advantage of you.	1	2	3	4	5	1	2	3	4	5
The future seems very promising.	1	2	3	4	5	1	2	3	4	5
Most people can be counted on to do what they say they will do.	1	2	3	4	5	1	2	3	4	5
Most experts can be relied upon to tell the truth about the limits of their knowledge.	1	2	3	4	5	1	2	3	4	5
Using the honor system of not having a teacher present during exams would probably result in increased cheating.	1	2	3	4	5	1	2	3	4	5
It is safe to believe that in spite of what people say most people are primarily interested in their own welfare.	1	2	3	4	5	1	2	3	4	5
A large share of accident claims filed against insurance companies are phony.	1	2	3	4	5	1	2	3	4	5
Many major national sports contests are fixed in one way or another.	1	2	3	4	5	1	2	3	4	5
Even though we have reports in newspapers, radio, and TV, it is hard to get objective accounts of public events.	1	2	3	4	5	1	2	3	4	5
Most repairmen will not overcharge even if they think you are ignorant of their speciality.	1	2	3	4	5	1	2	3	4	5
The judiciary is a place where we can all get unbiased treatment.	1	2	3	4	5	1	2	3	4	5
Fear and social disgrace or punishment rather than conscience prevents most people from breaking the law.	1	2	3	4	5	1	2	3	4	5
Most students in school would not cheat even if they sure of getting away with it.	1	2	3	4	5	1	2	3	4	5

Below you find 23 sets of 2 statements (indicated by a and b). Please choose one alternative by circling either a or b. In some cases you may find that both or neither of the statements reflect your opinion. Please make a choice anyway. Choose the statement that fits in with your opinion most, no matter how little.

- a. What happens to me is my own doing.
- b. Sometimes I feel that I don't have enough control over the direction my life is taking.
  
- a. When I make plans, I am almost certain that I can make them work.
- b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
  
- a. In the long run people get the respect they deserve in this world.
- b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
  
- a. One of the major reasons why we have wars is because people don't take enough interest in politics.
- b. There will always be wars, no matter how hard people try to prevent them.
  
- a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
  
- a. In my case getting what I want has little or nothing to do with luck.
- b. Many times we might as well decide what to do by flipping a coin.
  
- a. I have often found that what is going to happen will happen.
- b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
  
- a. With enough effort we can wipe out political corruption.
- b. It is difficult for people to have much control over things politicians do in office.
  
- a. Many times I feel that I have little influence over the things that happen to me.
- b. It is impossible for me to believe that chance or luck plays an important role in my life.
- a. It is hard to know whether or not a person really likes you.
- b. How many friends you have depends upon how nice a person you are.
  
- a. A hard working young manager can hardly ever receive an unsatisfactory assessment.
- b. Most of the time there is hardly any connection between a young manager's performance and his assessment, which implies that working hard is relatively useless.
  
- a. The average citizen can have influence in government decisions.
- b. This world is run by the few people in power, and there is not much the little guy can do about it.
  
- a. The idea that superiors are unfair in assessing young managers is nonsense.
- b. Most young managers don't realize the extent to which their assessment is influenced by accidental happenings.
  
- a. Many of the unhappy things in people's lives are partly due to bad luck.
- b. People's misfortunes result from the mistakes they make.

- a. Without the right breaks one cannot be an effective leader.
- b. Capable people who fail to become leaders have not taken advantage of their opportunities.
  
- a. No matter how hard you try some people just don't like you.
- b. People who can't get others to like them don't understand how to get along with others.
  
- a. Sometimes I can't understand how my superiors arrive at their assessments of my work performance.
- b. There is a direct connection between how hard I work and how well I am assessed by my superiors.
  
- a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
- b. By taking an active part in political and social affairs the people can control world events.
  
- a. Most of the time I can't understand why politicians behave the way they do.
- b. In the long run the people are responsible for bad government on a national as well as on a local level.
  
- a. People are lonely because they don't try to be friendly.
- b. There's not much use in trying too hard to please people, if they like you, they like you.
  
- a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
- b. Getting a good job depends mainly on being in the right place at the right time.
  
- a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
- b. There really is no such thing as "luck".
  
- a. In the long run the bad things that happen to us are balanced by the good ones.
- b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

***Demographic questions***

What is your gender? (tick appropriate box):

- male
- female

What 'titles' do you have? (tick appropriate box, more than one if appropriate):

- drs
- RA
- RE
- other, please specify:

What is your position within the firm? (tick appropriate box):

- partner
- manager
- senior
- staff
- otherwise, please specify: \_\_\_\_\_

How many years of audit experience do you have?

\_\_\_\_\_ years

How many years of experience do you have with conducting analytical reviews?

\_\_\_\_\_ years

In what industry are you specialized? (and how many years?):

\_\_\_\_\_

What set of auditing standards do you work with mostly? (tick appropriate box, more than one if appropriate)

- Dutch GAAS
- US GAAS
- ISAs
- other:



Remarks/suggestions

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At what time did you finish this study?: \_\_\_\_\_

When you are interested in receiving a summary of the results of this study, please leave your email address below

email-address: \_\_\_\_\_

**Please check whether you have answered all questions. Then put this questionnaire in envelope 2 and seal it.**

**Put envelope 2 (and 1) into the large envelope and seal it.**

**If you are ready please quietly leave the room.**

**Thank you very much for your cooperation!**



**Appendix C Interpersonal Trust Scale factor structures in factor-analytic studies**

<i>Item nr.</i>	<i>Item</i>	<i>Chun and Campbell</i>	<i>Wright and Tedeschi</i>	<i>Hunt et al.</i>	<i>Chapter 3 of this dissertation</i>
1.	Hypocrisy is on the increase in our society. (r)	Societal hypocrisy			
2.	In dealing with strangers one is better off to be cautious until they have provided evidence that they are trustworthy. (r)	Interpersonal exploitation	Trust of strangers	Exploitation	Exploitation
3.	This country has a dark future unless we can attract better people into politics. (r)	Political cynicism	Political trust		
4.	Fear and social disgrace or punishment rather than conscience prevents most people from breaking the law. (r)			Institutional trust	
5.	Using the honor system of not having a teacher present during exams would probably result in increased cheating. (r)		Trust of strangers	Exploitation	
6.	Parents usually can be relied on to keep their promises.	Reliable role-performance	Paternal trust		
7.	The United Nations will never be an effective force in keeping world peace. (r)				
8.	The judiciary is a place where we can all get unbiased treatment.	Political cynicism		Institutional trust	
9.	Most people would be horrified if they knew how much news that the public hears and sees is distorted. (r)		Political trust	Institutional trust	Institutional trust
10.	It is safe to believe that in spite of what people say most people are primarily interested in their own welfare. (r)	Interpersonal exploitation	Trust of strangers	Exploitation	
11.	Even though we have reports in newspapers, radio, and TV, it is hard to get objective accounts of public events. (r)	Societal hypocrisy	Political trust	Institutional trust	
12.	The future seems very promising.				
13.	If we really knew what was going on in international politics, the public would have reason to be more frightened than they now seem to be. (r)	Political cynicism	Political trust	Sincerity, Institutional trust	Institutional trust
14.	Most elected officials are really sincere in their campaign promises.			Sincerity	Honesty and Integrity
15.	Many major national sports contests are fixed in one way or another. (r)	Societal hypocrisy	Political trust		
16.	Most experts can be relied upon to tell the truth about the limits of their knowledge.		Paternal trust		
17.	Most parents can be relied upon to carry out their threats or punishments.		Paternal trust		
18.	Most people can be counted on to do what they say they will do.			Sincerity	Honesty and integrity
19.	In these competitive times one has to be alert or someone is likely to take advantage of you. (r)	Interpersonal exploitation	Trust of strangers	Exploitation	Exploitation
20.	Most idealists are sincere and usually practice what they preach.		Paternal trust	Sincerity	Honesty and Integrity
21.	Most salesmen are honest in describing their products.	Reliable role-performance	Paternal trust	Exploitation, Sincerity	Honesty and Integrity
22.	Most students in school would not cheat even if they are sure of getting away with it.				Honesty and Integrity
23.	Most repairmen will not overcharge even if they think you are ignorant of their speciality.	Reliable role-performance			Honesty and Integrity
24.	A large share of accident claims filed against insurance companies are phony. (r)				Institutional trust
25.	Most people answer public opinion polls honestly.		Paternal trust	Sincerity	

Scale items of Rotter's Interpersonal Trust Scale (taken from Wrightsman, 1991). The items of which the scores should be reversed are indicated by (r).





## *Nederlandse samenvatting (summary in Dutch)*

Dit proefschrift is gebaseerd op twee exploratieve empirische studies naar ‘professional skepticism’.<sup>81</sup> Onder professional skepticism wordt de beroepsmatige attitude verstaan die een ‘vragende geest’ (‘questioning mind’) en een ‘kritische beoordeling van bewijsmateriaal’ (‘critical assessment of evidence’) omvat.

Het belangrijkste doel van de twee studies is het onderzoeken van het verband tussen skeptische karakteristieken van accountants enerzijds en skeptische inschattingen en beslissingen van accountants anderzijds.<sup>82</sup> De titel van dit proefschrift luidt dan ook in het Nederlands: ‘een studie naar de relatie tussen skeptische karakteristieken van accountants en hun skeptische inschattingen en beslissingen’. Beide studies in dit proefschrift maken gebruik van een dataset die is verzameld door het uitvoeren van een wetenschappelijk experiment bij 376 accountants (werkzaam in het openbaar accountantsberoep).

Het onderzoeken van professional skepticism is belangrijk. Als accountants meer professional skepticism hadden gebruikt dan waren de effecten van recente bedrijfsschandalen mogelijk minder geweest. Zo wordt bijvoorbeeld het Enron schandaal mede toegeschreven aan het falen van de accountant omdat deze een onvoldoende niveau van professional skepticism zou hebben getoond. Verder laten diverse studies van fraudegerelateerde SEC-zaken zien dat gebreken in de accountantscontrole bij die zaken voor een belangrijk gedeelte liggen op het gebied van professional skepticism.<sup>83</sup> Deze manco’s kunnen schadelijk zijn voor de kwaliteit van accountantscontroles en de reputatie van accountants. Inzicht in professional skepticism is daarom van groot belang.

Het belang van professional skepticism in de accountantscontrolepraktijk wordt algemeen onderkend. Dat blijkt onder andere uit de volgende feiten: (1) de term professional skepticism is een prominent onderdeel van de standaarden op het gebied van de accountantscontrole; (2) veel accountantskantoren schrijven het toepassen van professional skepticism voor in hun controlemethodologie; (3) professional skepticism is onderdeel van het onderwijs aan en de training van accountants; en (4) de academische en professionele literatuur op het gebied van de accountantscontrole benadrukt het belang van professional

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<sup>81</sup> In de Nederlandse versie van de International Standards on Auditing is ‘an attitude of professional skepticism’ vertaald met ‘professioneel-kritische instelling’. Omdat de Engelse term ‘professional skepticism’ ook in Nederland meestal wordt gebruikt wordt de Nederlandse vertaling in deze samenvatting niet gehanteerd.

<sup>82</sup> Indien in deze samenvatting over accountants wordt gesproken gaat het met name over accountants van financiële verantwoordingen.

<sup>83</sup> De Securities and Exchange Commission, ofwel SEC, is de Amerikaanse ‘beurswaakhond’.

skepticism. Professional skepticism is dus een essentieel onderdeel van hedendaagse accountantscontroles.

Ondanks het belang van professional skepticism bestaat geen overeenstemming over de definitie van professional skepticism en over hoe het concept te meten is. Ook is er kritiek over het feit dat de standaarden op het gebied van de accountantscontrole te weinig concrete aanknopingspunten bieden voor de implementatie van professional skepticism. Het onderkende belang van professional skepticism, het gebrek aan helderheid omtrent de definitie en meting en de wens tot meer sturing over implementatie, rechtvaardigen onderzoek naar professional skepticism. Tot op heden heeft slechts beperkt onderzoek plaatsgevonden naar dit begrip. Dit proefschrift tracht bij te dragen aan het invullen van deze leemte.

Het proefschrift bestaat uit vier hoofdstukken. Hoofdstuk 1 is een overzichtshoofdstuk waarin verschillende perspectieven op (professional) skepticism worden geschetst en waarin het onderzoeksmodel van professional skepticism bij accountants wordt beschreven. Hoofdstuk 1 geeft tevens een overzicht van de structuur van het proefschrift. De twee empirische hoofdstukken zijn respectievelijk opgenomen in Hoofdstuk 2 en 3. In Hoofdstuk 4 worden de twee studies samengevat, gevolgd door een uiteenzetting van de implicaties van de bevindingen voor toekomstig onderzoek en voor de accountantspraktijk. De beperkingen van het onderzoek worden ook in dit hoofdstuk geïdentificeerd.

De bedoeling van de eerste studie (opgenomen in Hoofdstuk 2) is het onderzoeken van de samenhang van vier skeptische karakteristieken met zes skeptische inschattingen en beslissingen. De vier onderzochte skeptische karakteristieken zijn ‘intermenselijk vertrouwen’ (‘interpersonal trust’), ‘uitstel van oordelen’ (‘suspension of judgment’), ‘plaats van beheersing’ (‘locus of control’)<sup>84</sup> en een overkoepelende professional skepticism meetschaal, speciaal ontwikkeld voor accountants. De eerste hypothese in deze studie is dat skeptische karakteristieken van accountants samenhangen met skeptische inschattingen en beslissingen. De specifieke verwachting is dat meer skeptische inschattingen en beslissingen samenhangen met een lagere mate van interpersonal trust, meer suspension of judgment, een meer interne locus of control en een hogere score op de overkoepelende professional skepticism meetschaal. Om deze samenhang te kunnen onderzoeken is een experiment uitgevoerd bij 376 accountants werkzaam bij de vier grootste accountantskantoren (de ‘Big Four’). Aan deze accountants werd een korte casus voorgelegd. De casus gaat over het uitvoeren van een cijferbeoordeling (‘analytical procedures’) in de planningsfase van de jaarrekeningcontrole

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<sup>84</sup> Een persoon met een zogenaamde externe locus of control gelooft dat dingen die hem overkomen niet kunnen worden beïnvloed door hemzelf, terwijl een persoon met een interne locus of control dat wel gelooft.

van een beursgenoteerde onderneming. In de casus word beschreven dat sprake is van een onverwachte materiële stijging in de behaalde brutomarge. In dit soort situaties vraagt de accountant meestal eerst informatie aan de cliënt zelf. De ‘Chief Financial Officer’ (CFO) geeft een verklaring waarin hij zegt dat de fluctuatie logisch verklaarbaar is (en dus niet op een fout berust). Hij zegt dat de fluctuatie in de brutomarge is ontstaan door een wijziging in de zogenaamde ‘sales-mix’ (de samenstelling van de verkopen). Het bedrijf heeft veel meer medische instrumenten verkocht dan de jaren daarvoor en die hebben een grotere brutomarge dan de overige producten in het assortiment.

Aangezien het management mogelijk niet onafhankelijk is, moeten accountants professional skepticism gebruiken in het evalueren van verklaringen die door het management worden gegeven voor onverwachte fluctuaties. Dit is in de ene situatie meer van belang dan in de andere. Daarom is in het experiment tevens de kwaliteit van de beheersingsomgeving gemanipuleerd door gebruik te maken van twee verschillende beschrijvingen van de beheersingsomgeving. In de sterke variant van de beheersingsomgeving is het management conservatief, bestaan geen ernstige conflicten tussen management en accountant, heeft het bedrijf strikte richtlijnen voor het volgen van interne beheersingsmaatregelen, en is de bezoldiging van het management gebaseerd op een evenwichtige set van financiële en niet-financiële beoordelingscriteria. In de zwakke variant is het management agressief in het zakendoen, komen veelvuldig onenigheden voor tussen management en accountant, worden interne beheersingsmaatregelen minder strikt gehanteerd indien de voortgang van het werk erdoor wordt belemmerd, en is de bezoldiging van het management vooral gebaseerd op het behalen van korte termijn beoordelingscriteria die voornamelijk zijn gekoppeld aan financiële resultaten. De achterliggende gedachte is dat in de zwakke variant van de beheersingsomgeving meer vraagtekens kunnen worden gezet bij de verklaring van de CFO dan in de sterke variant. De tweede hypothese in de studie luidt dan ook dat accountants meer skeptische inschattingen en beslissingen laten zien als de beheersingsomgeving zwak is.

Naast deze twee hypothesen is tevens gekeken naar de invloed van de kwaliteit van de beheersingsomgeving op de relatie tussen de skeptische karakteristieken van accountants en de skeptische inschattingen en beslissingen van accountants (een zogenaamd ‘interactie-effect’). Voor de aard en richting van de interactie-effecten was vooraf geen duidelijke verwachting te formuleren.

De resultaten van de eerste studie worden zo meteen besproken tezamen met de resultaten van de tweede studie. Nu volgt allereerst het doel van de tweede studie. Het doel van de tweede studie (opgenomen in Hoofdstuk 3) is om de Interpersonal Trust meetschaal

meer diepgaand te onderzoeken.<sup>85</sup> Door middel van een factoranalyse worden factoren afgeleid die ten grondslag liggen aan de Interpersonal Trust meetschaal. Op deze manier wordt onderzocht of aspecten van interpersonal trust zijn te onderscheiden die mogelijk beter in staat zijn om skeptische inschattingen en beslissingen te verklaren. Daartoe wordt onderzocht welke samenhang de afgeleide interpersonal trust factoren vertonen met skeptische inschattingen en beslissingen, waarbij ook de interactie tussen de kwaliteit van de beheersingsomgeving en de skeptische karakteristieken in ogenschouw wordt genomen. De samenhang tussen de afgeleide factoren en de skeptische inschattingen en beslissingen wordt vergeleken met de samenhang tussen de Interpersonal Trust schaal als geheel en de skeptische inschattingen en beslissingen. Omdat individuele constructen die ten grondslag liggen aan interpersonal trust meer specifiek en toegespitst zijn dan de gehele meetschaal is de verwachting dat de individuele factoren de skeptische inschattingen en beslissingen beter kunnen voorspellen. In een aanvullende analyse wordt in de tweede studie ook de relatie tussen functieniveau van de accountant en interpersonal trust en skeptische inschattingen en beslissingen geanalyseerd. De reden hiervoor is dat het belangrijk is om te weten of bijvoorbeeld het professional skepticism van een accountant op partner niveau hoger is dan het professional skepticism van de rest van het teamleden op de lagere functieniveaus. Dit is van belang omdat partners de verantwoordelijkheid en bevoegdheid hebben om te bepalen of voldoende bewijs is verzameld om een accountantsverklaring te kunnen verstrekken. Bovendien bepaalt de partner, na overweging van al het relevante bewijsmateriaal, uiteindelijk welke strekking de accountantsverklaring zal hebben.

Beide studies in dit proefschrift laten zien dat skeptische karakteristieken samenhangen met skeptische inschattingen en beslissingen.<sup>86</sup> Dit is slechts in beperkte mate aangetoond in eerdere studies. Van de vier onderzochte karakteristieken in Hoofdstuk 2 zijn de skeptische inschattingen en beslissingen van accountants het meest gerelateerd aan interpersonal trust, hetzij via de directe effecten van interpersonal trust, hetzij via de interactie-effecten van interpersonal trust met de kwaliteit van de beheersingsomgeving. Deze bevinding suggereert dat van de vier onderzochte karakteristieken interpersonal trust het nauwst samenhangt met skeptische inschattingen en beslissingen die worden genoemd in de

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<sup>85</sup> De studie in Hoofdstuk 3 maakt gebruik van een gedeelte van de gegevens die zijn verzameld voor de studie in Hoofdstuk 2 en omvat 291 accountants.

<sup>86</sup> De onderzochte skeptische inschattingen en beslissingen zijn: (1) de waarschijnlijkheid dat de verklaring die door de CFO is gegeven juist is; (2) de waarschijnlijkheid dat sprake is van fraude; (3) het aantal alternatieve verklaringen voor de onverwachte fluctuatie in de brutomarge; (4) het aantal verklaringen dat aangeeft dat de fluctuatie van de brutomarge op een al dan niet bewuste fout berust; (5) de kans die wordt toegekend aan de verklaringen die aangeven dat de fluctuatie van de brutomarge op een fout berust; (6) het aantal gebudgetteerde uren voor gegevensgerichte controles met betrekking tot de post omzet.

literatuur over accountantscontrole en in de professionele standaarden. De analyses in Hoofdstuk 3 laten de meeste significante directe en interactie-effecten zien voor de interpersonal trust schaal als geheel en voor de factor Exploitation.<sup>87</sup> Het feit dat de betrouwbaarheid van de factor Exploitation nogal laag is, opgeteld bij het feit dat de verklarende waarde van de modellen met de gehele interpersonal trust schaal hoger is, leidt tot de conclusie dat de interpersonal trust schaal als geheel de beste voorspeller van skeptische inschattingen en beslissingen vormt.

De variabele ‘kwaliteit van beheersingsomgeving’ laat in Hoofdstuk 2 en 3 een significant direct effect zien voor alle regressiemodellen met betrekking tot de volgende afhankelijke variabelen: de waarschijnlijkheid van fraude; het aantal foutverklaringen; en het gewicht van de foutverklaringen. Dit geeft aan dat accountants, zoals verwacht, hun oordelen afstemmen op potentiële problemen en risico’s die samenhangen met de kwaliteit van de beheersingsomgeving. Ook de interactie-effecten van de skeptische karakteristieken met de kwaliteit van de beheersingsomgeving laten zien dat de inschattingen en beslissingen skeptischer zijn bij de zwakke beheersingsomgeving. Dit suggereert dat situationele factoren, zoals kwaliteit van de beheersingsomgeving, samenhangen met skeptische inschattingen en beslissingen.

De studies in dit proefschrift hebben beperkingen die in aanmerking moeten worden genomen bij het interpreteren van de resultaten. Ten eerste is niet voor alle deelnemende accountantkantoren een representatieve steekproef beschikbaar in termen van ervaring en taal, hetgeen problemen veroorzaakt bij het ontwarren van potentiële invloeden van ervaring, taal en kantooreffecten. Een tweede beperking betreft de beperkt beschikbare tijd voor het experiment. Als gevolg hiervan hebben deelnemers aan het experiment slechts twee van de vier meetschalen voor skeptische karakteristieken ingevuld. Dit verhindert een gelijktijdige vergelijking van alle vier de maatstaven. Ten derde is op basis van de bestaande relevante literatuur een keuze gemaakt van de afhankelijke variabelen die skeptische inschattingen en beslissingen weergeven. Hoewel de geraadpleegde bronnen deze variabelen als belangrijke skeptische gedragingen definiëren bestaat geen normatieve bron die aangeeft welke variabele het meest belangrijk is in het verbeteren van de kwaliteit van de accountantscontrole. Verder dient de interpretatie van de resultaten in Hoofdstuk 3 met betrekking tot de Institutional Trust en Exploitation factoren zorgvuldig te gebeuren omdat de betrouwbaarheid van deze schalen

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<sup>87</sup> Uit de factoranalyse van interpersonal trust in Hoofdstuk 3 komen in totaal drie factoren naar voren. Deze zijn gelabeld als ‘eerlijkheid en integriteit’ (‘Honesty and Integrity’), ‘institutioneel vertrouwen’ (‘Institutional Trust’) en ‘uitbuiting’ (‘Exploitation’).

betrekkelijk laag is. Ten slotte bestaat geen normatieve oplossing voor de casus die is gebruikt in het experiment. Daardoor is het niet mogelijk om vast te stellen welke maatstaf het nauwst samenhangt met optimale inschattingen en beslissingen.

De bevindingen in dit proefschrift leiden tot aanbevelingen voor theorie en praktijk. Die worden hierna uiteen gezet. Alhoewel in de literatuur discussie bestaat over het gebruik van (interpersonal) trust als benadering voor skeptische houding, laten de studies in dit proefschrift zien dat interpersonal trust (factoren) significant samenhangen met skeptische inschattingen en beslissingen. Deze bevinding kan van belang zijn voor accountantskantoren. Kantoren kunnen bijvoorbeeld tests uitvoeren die de mate van interpersonal trust van accountants meten. Deze informatie kan worden gebruikt bij het samenstellen van controleteams. Zo kan bijvoorbeeld worden besloten dat ieder controleteam enkele mensen met lagere niveaus van interpersonal trust moet bevatten.

De bevindingen suggereren verder dat situationele factoren, zoals kwaliteit van de beheersingsomgeving, samenhangen met skeptische inschattingen en beslissingen. Daarom kan het trainen van accountants in het beoordelen van situationele factoren skeptische inschattingen en beslissingen verbeteren. Dit is van belang omdat accountantskantoren beslissingshulpmiddelen (zoals checklists) gebruiken bij het inschatten van bijvoorbeeld risico's die samenhangen met de beheersingsomgeving. De inhoud en formulering van deze checklists beïnvloedt sterk de gedragingen van de accountant en kan dus in potentie leiden tot het over het hoofd zien van belangrijke situationele variabelen. Daarom moeten accountants nooit volledig vertrouwen op beslissingshulpmiddelen en moeten ze alert blijven op cliëntspecifieke omstandigheden die niet worden afgedekt door bijvoorbeeld de gebruikte checklists.

Het is interessant dat de speciaal voor accountants ontwikkelde professional skepticism meetschaal niet de sterkste relatie vertoont met de skeptische inschattingen en beslissingen. Ook in andere studies heeft de overkoepelende schaal geen sterke resultaten opgeleverd. Een mogelijke verklaring hiervoor is dat de schaal niet genoeg focust op de meest significante skeptische constructen zoals interpersonal trust.

Toekomstig onderzoek kan zich richten op het verder onderzoeken van de interpersonal trust maatstaf en interpersonal trust factoren. Een kandidaat die voor nader onderzoek in aanmerking komt is de Exploitation factor, waarvoor meer betrouwbare maatstaven moeten worden ontwikkeld. Het toevoegen van meer relevante items aan het instrument, bijvoorbeeld, kan de betrouwbaarheid in belangrijke mate vergroten.

Het onderzoek heeft zich met name gericht op cliëntrisico (benaderd door kwaliteit van de beheersingsomgeving) als prikkel die de relatie tussen skeptische karakteristieken en skeptische inschattingen en beslissingen beïnvloedt. Toekomstige studies kunnen andere belangrijke prikkels onderzoeken zoals budgetdruk, kwaliteit van de accountantscontrole, rechtszaken en verlies van reputatie.

Het aantal foutverklaringen wordt verklaard door drie van de vier onderzochte skeptische karakteristieken in Hoofdstuk 2 (via de directe en de interactie-effecten) en het aantal alternatieve verklaringen wordt slechts door één karakteristiek verklaard. Deze bevindingen worden bevestigd in Hoofdstuk 3. Dit suggereert dat gedrag dat is gericht op het genereren van verklaringen die veronderstellen dat zich een fout in de financiële verantwoording bevindt (het zogenaamde ‘presumptive doubt’ perspectief) beter wordt verklaard dan gedrag dat is gericht op het genereren van verklaringen die veronderstellen dat fluctuaties kunnen worden verklaard door zowel fouten als ‘natuurlijke’ oorzaken (de zogenaamde ‘neutral stance’). Toekomstige studies kunnen het effect van presumptive doubt op het succesvol tonen van skeptisch gedrag onderzoeken.

Taakspecifieke ervaring en functieniveau binnen het accountantskantoor blijken belangrijk te zijn in het verklaren van skeptische inschattingen en beslissingen: hoe meer ervaren de accountant is in het uitvoeren van cijferbeoordelingen, hoe meer skeptische inschattingen en beslissingen hij laat zien. Daarom is het belangrijk dat ervaringen op het gebied van professional skepticism binnen de accountantskantoren worden gedeeld. De aanvullende bevinding dat partners het hoogste scoren op de interpersonal trust meetschaal en de afgeleide factoren en tevens de meest skeptische inschattingen en beslissingen laten zien verdient verder onderzoek. Het is immers op het eerste gezicht onverwacht dat personen die meer skeptische inschattingen en beslissingen laten zien tevens de grootste mate van interpersonal trust bezitten, aangezien interpersonal trust als tegenhanger van professional skepticism wordt gezien. Een verklaring voor deze bevinding is dat accountants in hogere rangen meer ervaring en kennis hebben en op basis daarvan meer skeptisch handelen, ook al hebben ze een hoog niveau van interpersonal trust. Mogelijk leidt de vertrouwende houding aan de zijde van de accountant ook tot betere (financiële) resultaten omdat cliënten die houding op prijs stellen. Bovendien wordt in de meer recente literatuur gesuggereerd dat ‘trust’ en ‘distrust’ misschien twee verschillende fenomenen zijn en naast elkaar kunnen bestaan. Dan kunnen partners dus nog steeds ‘distrusting’ zijn als ze tevens een grote mate van interpersonal trust bezitten. Toekomstig onderzoek kan zich richten op deze aspecten.



Het is nog onduidelijk in hoeverre professional skepticism kan worden getraind of kan worden geëffectueerd door superieuren. Indien dit mogelijk is kunnen accountantskantoren de aandacht voor professional skepticism uitbreiden tijdens de planningsbijeenkomsten van de controleopdrachten.

Een laatste suggestie voor toekomstig onderzoek ligt op het gebied van kritisch denken ('critical thinking'). Het mag duidelijk zijn dat kritisch denken waardevol is voor accountants. Toekomstige studies kunnen zich richten op de invloed van kritisch denken op skeptische gedragingen. Hierbij kan gebruik worden gemaakt van reeds bestaande meetschalen op het gebied van kritisch denken.

Samenvattend versterken de resultaten van dit proefschrift het idee dat verder onderzoek naar het concept van professional skepticism vruchtbaar is.

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## *Curriculum vitae*

Luc Quadackers holds a masters degree in Business Economics from Maastricht University (1992). From 1992 to 2000, Luc has worked in several research and educational capacities at the Maastricht Accounting and Auditing Research Center (MARC)<sup>88</sup> with a particular research interest in audit risk modeling and auditor judgment and decision making. Since 2001, Luc is working as a (senior) research manager at the Professional Practice Department of Ernst & Young in Rotterdam. Since April 1, 2004, Luc is also affiliated as a researcher with the VU University Amsterdam. Luc's main research focus is on auditors' professional skepticism and auditors' judgment and decision making. Luc has published articles in national and international refereed and non-refereed journals as well as in newspapers.

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<sup>88</sup> Currently MARC stands for Maastricht Accounting, Auditing & Information Management Research Center.