Does Assertion Framing Affect Professional Skepticism?

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Abstract

This experimental study examines the effect of 'assertion framing' on auditors' professional skepticism (PS) for a task involving the auditing of management assertions related to the revenue cycle.

Three measures of audit risk are used to define three interrelated measures of skeptical behavior. Each measure is contingent on the audit evidence available at a particular point in the audit:

1. The auditor's belief that an assertion may be misstated.
2. The auditor's assessment of the plausibility that an assertion may be misstated.
3. The auditor's assessment of the level of ambiguity that remains as to whether an assertion may be misstated or not after considering available audit evidence.

The framework used builds on:

1. Hurtt's Professional Skepticism Framework (Hurtt 2010) to differentiate between trait skepticism, state skepticism and skeptical behavior and to specify the role of a moderating variable (assertion framing) that may affect auditors' PS and,
2. the Theory of Belief Functions (Shafer 1976, Fukuakwa and Mock forthcoming) to specify risk assessment measures that may be used to assess differences in PS.

Importantly, we find that assertion framing does significantly affect PS. This finding implies that PS may be 'enhanced', as Nelson (2009) suggests, by the way assertions being audited are framed.

Keywords: Professional Skepticism, Assertion Framing Effect, Audit Risk Assessment, Presumptive Doubt.

Data Availability: The experimental data are available from the authors.

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I. Introduction, Purpose, and Motivation

Research on auditors' professional skepticism (PS) has mainly addressed skepticism as an issue of an auditors' personal traits (Hurtt 2010). Thus, few studies have focused on the behavioral aspects of skepticism, that is, the relationship between 1) skepticism as a trait, 2) moderating variables that affect 'state skepticism' and 3) auditors' judgments and decision making. To enhance audit quality, it is important to examine this relationship and to determine the factors that influence and ultimately enhance auditors' skeptical behavior (PCAOB 2006, IAASB 2004, and AICPA 1997b).

Most archival studies including Mock and Wright (1999) and Fukukawa, Mock and Wright (2006) find that the relationship between auditors' risk assessments and audit planning is not strong. Enhancing auditors' PS may lead to heightened awareness of client risks and to a stronger relationship between the risk assessments and audit planning decisions.

As Nelson (2009, 2) argues: "Cognitive limitations affect PS in predictable ways. Some of these cognitive limitations may offer opportunities to increase PS, e.g., by reframing hypotheses so that confirmation biases favor PS…" Thus, one promising way to enhance auditors' professional skepticism is to frame an audit assertion in a way so that auditors direct their attention to client features that relate directly to audit risk. Prior research in both psychology and auditing (Tversky and Kahneman 1981, 1986; Kida 1984; Trotman and Sng 1989; Fukukawa and Mock forthcoming) suggest that such framing effects are important determinants of behavior and decision quality.

This experimental study tests the effects of assertion framing, that is framing management assertions being audited in a negative versus positive manner. For example, in investigating fraud risk the auditor may consider a 'positive' state ('*a*') of an assertion '*A*' that fraud does exist or a 'negative'

state ('~*a*') of the assertion[1].

Our study has two main areas of contribution. The first is presenting a series of rigorous alternative measures of PS based on the Theory of Belief Functions. The second is presenting the results of an experiment which tests the effects of 'assertion framing' (Fukukawa and Mock forthcoming) on PS, that is, testing Nelson's hypothesis that framing may affect the level of PS.

Although probability-based assessments of PS could be used in this study, belief-based risk assessments are utilized[2], and auditors' PS is measured in term of belief-based assessments. This approach has a significant advantage when one is researching PS in that the inherent level of uncertainty or ambiguity is explicitly assessed. As we will argue and as prior literature has suggested (e.g., Nelson 2009), there is a direct relationship between the level of PS that an auditor exhibits and the level of uncertainty the auditor believes is inherent in the audit. Thus, assessing this is important to the assessment of and possible enhancement of PS.

Three related measures are used to gauge possible differences in auditors' PS. The notation used to define these are:

$\mathbf{m}_{E}(a)$: a belief that assertion *A* is <u>true (or assertion ~*A* is false)</u>. The subscript *E* identifies the available evidence, '*a*' implies the state that assertion *A* is true (or assertion ~*A* is false), and $m_E(a)$ represents the assessed strength of belief that the assertion *A* is true (or assertion ~*A* is false), based on evidence *E*.

$\mathbf{m}_{E}(\sim a)$: a belief that assertion *A* is <u>false</u> (or assertion ~*A* is true), with '~*a* ' implying the state that assertion *A* is false (or assertion ~*A* is true).

[1] In the notation used in this paper, an assertion is denoted as '*A*' and the 'positive' state of the assertion ('*a*') is that '*A*' is true (or '~*A*' is false). Thus '*a*' may denote the 'positive' state of the assertion that, say, material fraud exits and '~*a*' the 'negative' state of the assertion, that is, that fraud does not exist. The positive and negative modifiers better match the intuitive meaning of the terms when, for example, the assertion '*a*' is that an account balance is fairly stated or is properly valued.

[2] Fukukawa and Mock (forthcoming) show the relationship between probability-based and belief-based risk assessments and how the Cobb-Shenoy (2006) transformation may be used to compare such risk assessments.

$m_E(\{a,\sim a\})$: In the Theory of Belief Functions and in most audit situations, the sum of $m_E(a)$ and $m_E(\sim a)$ may be less than one and any extant ambiguity or uncertainty is explicitly assigned to the entire 'frame' $\{a,\sim a\}$. This level of ambiguity is represented as an unassigned (uncommitted) belief, $m_E(\{a,\sim a\})$.[3]

Based on this notation, three measures which may be used to gauge the level of PS are:

1. The auditor's belief that an assertion may be misstated $m_E(a)$ where an auditor assessing this to be higher is said to exhibit a higher level of PS.
2. The auditor's assessment of the plausibility that an assertion may be misstated: [m(~a) +m(a,~a)] where an auditor assessing this to be higher is said to exhibit a higher level of PS
3. The auditor's assessment of the level of ambiguity $m_E(\{a,\sim a\})$ that remains after considering available audit evidence where an auditor assessing this to be higher is also said to exhibit a higher level of PS.

In our study, these measures are used to address the main research question: *Does Assertion Framing Affect Professional Skepticism?* It is hypothesized that, regardless of the level of trait skepticism, negative assertion framing will result in more skeptical behavior. To discuss these issues, the paper is organized in the traditional order: a discussion of literature and derivation of hypotheses; research method; findings; and a conclusion including limitations and future research.

II. Literature, Definitions, Framework, and Hypotheses

Auditing literature has long held that professional skepticism (PS) is an important tenant of the audit profession beginning as early as with Mautz and Sharif (1961, 101) who identify skepticism as an overarching concept in auditing. Auditing standards have also continued to incorporate PS as an aspect of due professional care and in other aspects of financial statement audits (AICPA SAS No. 1 1997;

[3] The sum of all the m-values assessed based on available evidence should be one: $m_E(a) + m_E(\sim a) + m_E(\{a,\sim a\}) = 1$.

IAASB ISA 200 2004; PCAOB AS No. 5 2007). However, the definition of skepticism in an audit context is undecided and the literature provides several definitions of skepticism (Nelson 2009, 2 - 4) including a presumptive doubt perspective and a Bayesian unbiasedness perspective. In this paper, we operationalize Nelson's presumptive doubt perspective which suggests that PS is:

> *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* (Nelson, 2009, 4, emphasis added).

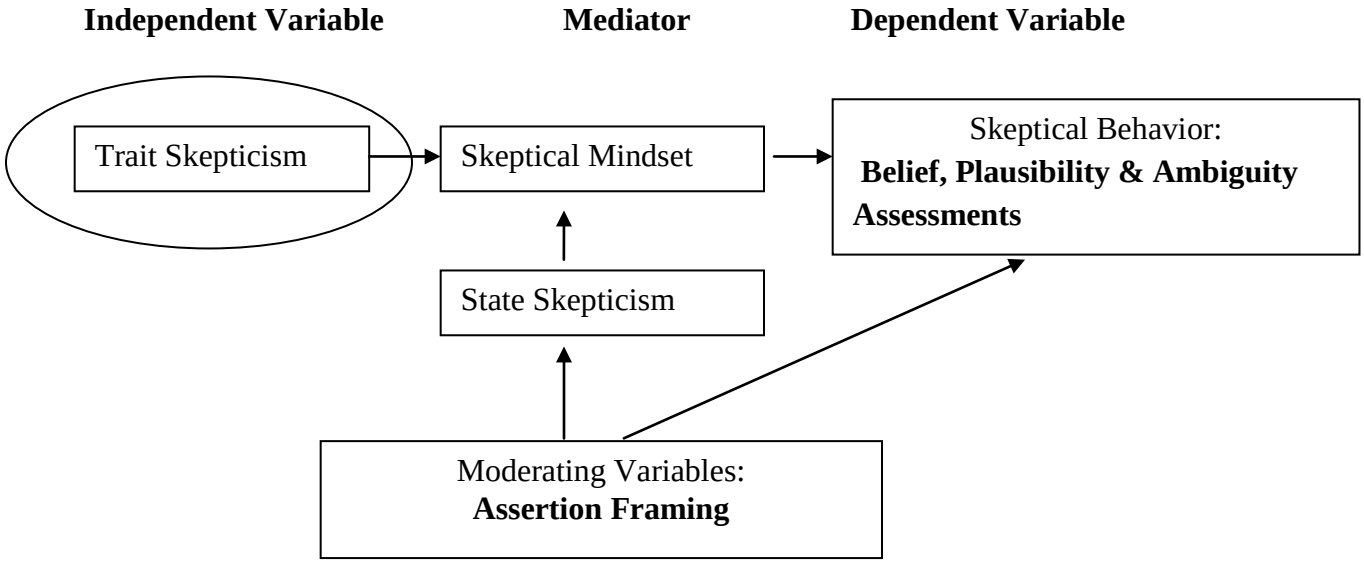
The key issue in operationalizing this definition is deciding what is meant by 'risk.' As suggested above, Fukukawa and Mock (forthcoming) argue that three measures of risk are relevant to the auditor – belief, plausibility and ambiguity. These form the operational measures of PS used in this study.

The basic framework used in this study (see Figure 1) is based on Hurtt (2010) and suggests that skeptical behavior is affected by an auditor's 'skeptical mindset,' which in turn is affected by 'trait skepticism' and 'state skepticism.' Hurtt (2010, 150) describes both of these as individual characteristics of an auditor as follows:

> *As an individual characteristic, professional skepticism can be both a trait (a relatively stable, enduring aspect of an individual) and also a state (a temporary condition aroused by situational variables).*

To the extent that the audit profession would like to influence skeptical behavior, variables that affect state skepticism, such as training or aspects of the firm's audit process, must be controlled. In this study, we test the effects of 'assertion framing' on the level of PS in a controlled, experimental setting. As indicated, the level of PS is measured as differences in belief, plausibility and ambiguity assessments.

Figure 1
The Research Framework based on Hurtt's (2010)Professional Skepticism Framework (slightly modified)



Assertion Framing

Framing has been found to be a significant determinant of behavior in many studies in psychology and in auditing. In general, 'framing' effect refers to the effect that various descriptions of elements of a decision task have on judgments and decisions (Tversky and Kahneman 1981; Levin et al. 1998; Levin et al. 2002). We examine the effects on PS of a specific type of framing, 'assertion framing', defined as indicating "whether the audit assertions to be verified are stated in a positive form (e.g., an account balance is fairly stated) or a negative form (e.g., an account balance is *not* fairly stated)" (Fukukawa and Mock forthcoming). The general expectation is that negative assertion framing will enhance the level of observed PS.

Hypotheses

If, as Nelson (2009) and prior work in the Theory of Belief Functions suggests, skepticism is

conditional on the information available to the auditor, then specific hypotheses concerning the effects of assertion framing on PS should take into account the nature of audit evidence available and how difference in audit evidence interact with assertion framing. In general, there are three evidence situations that need to be considered – evidence which confirms the assertion '*A*' being considered, that is evidence *E* such that $m_E(a) > m(a)$; evidence which negates that assertion, that is $m_E(\sim a) > m(\sim a)$; and mixed evidence where both the belief that the assertion may be true and false increase. In this paper, we provide hypotheses for the first and second cases and leave hypothesis development of the more complex mixed evidence case to future research.

Note that, because evidence which confirms an assertion '*A*' is equivalent to evidence which negates that assertion stated in the negative form as '~*A*', the cases we consider apply to both of the cases considered as they are logically equivalent. Because PS is usually thought of as relating to the risk that an assertion is incorrect (Nelson 2009), we present our hypotheses in terms of '~*a*'. However, in stating our hypotheses, we assume the audit evidence is primarily 'confirming' of the assertion '*A*', that is, it supports '*a*' and says little or nothing about '~*a*'. This is the actual situation in the case used in our experiment and in practice in general.

Because audit risk can be conceptualized in different ways (Fukuakwa and Mock forthcoming), we consider hypotheses concerning assertion framing effects on the three measures of audit risk defined above: belief that an assertion '*A*' is false m(~*a*); plausibility that an assertion '*A*' is false m(~*a*) + m({*a*,~*a*}); and the level of ambiguity or uncertainly that auditor is facing m({*a*,~*a*}). Fukukawa and Mock (forthcoming) argue that which of these three measures is most pertinent in an audit depend on the risk preference of the audit team and the audit stage (whether the audit is at the planning stage, in process or at the opinion stage). Srivastava and Shafer (1992) suggest that the plausibility definition of risk is generally the most appropriate.

H1: **Belief assessment effects [$\mathbf{m_E(\sim a)}$]**: Given evidence *E* which is generally confirming of '*A*', the level of PS measured as the belief that the assertion being considered is false is expected to be significantly greater for assertions stated in the negative form than in the positive form.

This and the following hypotheses build on Nelson (2009)'s suggestion that one promising way to enhance auditors' PS is to frame an audit assertion in a way so that auditors direct their attention to client features that relate directly to audit risk. In considering the belief that a particular management assertion may be false, this may result in making risk features related to the client, to its environment and/or to the nature of the account more salient, particularly to the possibility that an assertion may be misstated. Framing an assertion in terms of an account balance not being properly valued or not being fairly stated can be expected to have that effect.

H2: Ambiguity assessment effects [$\mathbf{m_E(\{a, \sim a\})}$]: Given evidence *E* which is generally confirming of '*A*', the level of PS measured as the level of ambiguity or uncertainty that the assertion being considered is false is expected to be significantly greater for assertions stated in the negative form than in the positive form.

A more skeptical auditor is thought to require more and better audit evidence in order to reach the conclusion that an assertion is fairly stated (Nelson 2009). Thus, given a specific set of audit results *E*, the resultant assessment of ambiguity can be expected to be greater. This expectation forms the basis of the third hypothesis:

H3: Plausibility assessment effects [$\mathbf{m_E(\sim a) + m_E(\{a, \sim a\})}$]: Given evidence *E* which is generally confirming of '*A*', the level of PS measured as the plausibility that the assertion being considered is false is expected to be significantly greater for assertions stated in the negative form than in the positive form.

As indicated earlier, the risk measures we test are interrelated. For example, Hypothesis 3 is an aggregate of H1 and H2. However, whereas assertion framing may not have a significant effect on belief

and ambiguity assessments individually, it may have a significant effect on plausibility. Note that for binary states, which is the case here, the plausibility of '~*a*' is equivalent to the belief in '*a*.' Thus if cognitively it is easier for the auditor to think of likelihood related to '*a*' rather than to '~*a*', then the skeptical auditor would be expected, given audit evidence '*E*', to have a significantly lower assessment that '*A*' is true, that is have a lower assessment of m(*a*). This shows that H3 could be stated in terms of a larger expected plausibility of '~*a*' or equivalently of a significantly smaller belief in '*a*'.

III. Research Method

Overview of the Experiment and Sample

To address the hypotheses stated above, we conducted an experiment completed by sixty-one auditors from one US Big 4 firm. The participants were randomly assigned to either treatment with thirty-one and thirty auditors being assigned to the positive assertion treatment and the negative assertion treatment, respectively. All the participants were seniors and their average audit experience was 4.0 years.

The case materials used in the experiments were developed by the researchers and validated by practitioners and by pilot testing. The experiment was administered by the researchers during a training session of the participating firm.

Manipulations and Tasks

In the experiments, the assertion framing ('positive' vs. 'negative') was manipulated to assess its effect on the auditors' risk assessments on various assertions. Following the instruction section which provided the participants with instructions with six examples about how to express their assessments using beliefs, background information on a hypothetical client was provided. The client was described as

a manufacturer of tools for cutting materials and parts. The client's business had been steadily expanding over the past several years. The company had gone public one year ago, and their control environment was described as not being strong. Also, the information regarding the audit engagement, the results of the prior years' audit, a materiality threshold, and the summarized financial statements was included.

Then the participants were asked to assume that they were working on the audit of accounts receivable. They were provided with three assertions to be verified: the existence of accounts receivable, the valuation of accounts receivable, the accuracy of sales transaction records, and were asked to make assessments of these assertions based on the background information using belief function assessments.

More specifically, in the positive assertion treatment, the auditors were asked to express the belief assessment that each of the positively stated assertions concerning existence, accuracy, and valuation was true (m(a)), the belief assessment that the assertion was false (m($\sim a$)), and the uncommitted belief or level of ambiguity (m($\{a,\sim a\}$)) so that the sum of these three assessments equals to one, that is they were 'additive.' Similarly, in the negative assertion treatment, the auditors were asked to express the belief assessments that the negatively stated assertion was true (m($\sim a$)), the belief assessment that the assertion was false (m(a)), and the uncommitted belief (m($\{a,\sim a\}$)). The auditors were then asked to make assessments of an overall assertion regarding the accounts receivable ('The balance of the accounts receivable is fairly presented.' or 'The balance of the accounts receivable is not fairly presented.') based on the background information.

After the assessments based on the background information were made, audit evidence was provided for each assertion, and the auditors were asked to update the assessments, that is provide 'posteriors', based on the evidence. The provided items of audit evidence for the existence assertion, the valuation assertion and the accuracy assertion were the results of confirmations of the accounts

receivable; the results of enquiries to the company's credit department concerning the estimate of the allowance for bad debts (and other information obtained to support their responses); and the results of the statistical sampling of the sales transactions and related documents, respectively. When updating the assessments of each assertion, the auditors were asked to take only the item for a particular sub-assertion into account and not to consider the evidence for other assertions.

Then the auditors made final assessments of the overall assertion regarding the fair presentation of the accounts receivable based on all the information provided in the case materials including the background information and the audit evidence provided for each assertion. The final assessments require the auditors to aggregate the prior risk assessments and the strength of evidence assessments. Given that the evidence considered was mixed, that the overall assessment requires aggregation across mixed evidence and across assertions, and that prior research has shown that auditors have difficulty in the aggregation, we do not state or test assertion framing effects on PS at this level.

IV. Results

In general, the hypotheses predict that the risk assessments made for assertions stated in the negative form will be significantly greater than those made for assertions stated in the positive form, thus indicating a higher level of PS. The basic results are presented in Table 1.

If we consider the results across assertions, the most comparable results are the 'priors', that is, the assessments made before the audit test results are presented. For this situation, the evidence available is the same across assertions and only includes the general case information provided to the auditors. Thus this case presents a 'repeated measures' test where the treatment effect is observed over three assertions. The assessments for the 'overall assertion' that the accounts receivable represents a forth replication, but it differs somewhat because of the need to aggregate across assertions.

For the 'prior' assessments, the basic descriptives support the general hypothesis as in every case except one (the valuation sub assertion assessment of the ambiguity level) as the risk assessments made when the auditor assesses a negative assertion exceed those made when a positive assertion is being assessed.

For the 'posteriors', that is, the assessments made following consideration of the audit test results, the assessments are possible affected by audit test result differences in both the 'direction' of the evidence, that is whether it is confirmatory or not, and the strength of the evidence. Prior evaluation of the strength and nature of the evidence by experienced partners and via a prior similar experiment (see Fukukawa and Mock forthcoming) imply that the audit test related to 'existence' is mixed and of moderate strength; the audit test related to 'valuation ' is confirmatory and of low strength; and the audit test related to 'accuracy' is confirmatory and of moderate strength.

Two observations are noteworthy when looking at the 'posterior' assessments. First, the evidence in all cases was diagnostic and in the expected directions in that all of the assessments of ambiguity decreased. This result is a manipulation check of sorts of the strength and direction of evidence expectations. Second, in ten of the 12 cases, the differences support the general hypothesis, that is that negative assertion framing will lead to a higher level of PS.

Statistical tests

In testing H1, H2 and H3 statistically, we ran ANOVA on the risk assessments on the three assertions to discern if the differences in the overall means are significant. The results are documented in Tables 2 through 7.

The explanatory (source) variables in these tables are *ASSERTION*, the three sub assertions, and assertion *FRAMING*. As indicated, *ASSERTION* is a within-subjects variable and *FRAMING* a between-

subjects variable. The dependent (explained) variable is the various risk assessments. This test allows us to ascertain whether there are significant differences across assertions (there are not in any case) and whether there are significant interactions (again there are not in any case). Also, this allows us to interpret the effects of the assertion framing independently. These results are reported in the lower section of Tables 2 through 7.

Tables 2 and 3 show the results for H1 for the assessments of the 'prior' risk (m(~*a*)) that the positive assertion is false or the negative assertion is true. If assertion framing has a significant effect on these assessments as hypothesized, the ANOVA will show a significant effect as it does at a significance level of 0.003 for the 'prior' assessments (Table 2). A similar result is shown in Table 3 for the 'posterior' assessments made after audit test results were presented. In this case the difference is significant at the 0.000 level. Thus assertion framing is confirmed to enhance PS for the auditor's assessment of the likelihood (measured as belief) that a particular management assertion may be misstated.

Exactly the same results are observed in tables 6 and 7 for the assessments of the plausibility that the management assertions may be misstated. In this case the differences are significant at the 0.003 and 0.001 levels. This confirms H3 again showing the significant effect of assertion framing on PS both before the audit test results and afterwards.

For the auditor's assessment of the inherent ambiguity level in this client setting, although four of the six differences are as hypothesized in H2, the between-subjects effects of assertion framing are not significant. Thus H2 is not confirmed by the ANOVA results.

V. Discussion, Conclusions, Limitations, and Future Research

This experimental study builds on Hurtt's Professional Skepticism Framework (Hurtt 2010) and

the Theory of Belief Functions to investigate the effects of 'assertion framing' on auditors' risk assessments for a task involving the auditing of four management assertions (three assertions and an overall assertion) related to the revenue cycle. The study has two main areas of contribution. First, it presents a series of rigorous alternative measures of risk based on the Theory of Belief Functions which may be used to operationalize the level of PS in auditors' risk assessments, in audit planning decisions and in audit opinion formation. Second, as noted, it presents the results of an experiment which tests the effects of 'assertion framing' on PS, and thus tests Nelson (2009)'s hypothesis that psychological factors such as framing may affect the level of PS.

Three measures of audit risk derived from Fukukawa and Mock (forthcoming) are used to define three interrelated measures of skeptical behavior. One is based on the auditor's belief that an management assertion may be misstated; the second on their assessment of the plausibility of misstatement; and the third on assessed level of ambiguity at a particular point in the audit. As noted, each measure is contingent on the audit evidence available at that particular point in the audit.

Three hypotheses were presented which hypothesized that the experimentally manipulated variable, assertion framing, would significantly enhance PS. Basic descriptive results in table 1 show that the differences in the level of PS are greater for the negative assertion framing in 21 of the 24 comparisons. ANOVA results show the these differences were not significant across assertions nor were any of the interactions significant. However, the differences were highly significant for both the 'prior' assessments and 'posterior' assessments for the auditor's beliefs that the management assertions may be misstated and that the plausibility that the management assertions may be misstated. These results support H1 and H3. For the assessments of level of ambiguity, the differences were not significant, thus H2 is not supported by significant differences.

Thus importantly, we find that assertion framing does significantly affect professional skepticism for most of the assessments investigated and that these findings persist even after the results of audit tests differing in strength and whether they present mixed or confirming evidence are considered.. These findings imply that PS may be ‘enhanced’, as Nelson (2009) suggests, by the way assertions being audited are framed and the effect may be generalized over different assertions, audit evidence and risk measures.

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TABLE 1

Descriptive PS statistics [N = 61 (31 for PA treatment, 30 for NA treatment)]

		Before audit evidence is provided (Priors)			After audit evidence is provided (Posteriors)		
		Belief in ~*a* = m(~*a*)	Ambiguity level = m({*a*,~*a*})	Plausibility of ~*a* = m(~*a*) + m({*a*,~*a*})	Belief in ~*a* = m(~*a*)	Ambiguity level = m({*a*,~*a*})	Plausibility of ~*a* = m(~*a*) + m({*a*,~*a*})
Existence	Positive	.082 (.141)	.577 (.375)	.660 (.315)	.071 (.104)	.252 (.242)	.323 (.231)
	Negative	.270 (.274)	.611 (.326)	.883 (.178)	.321 (.301)	.212 (.197)	.533 (.357)
Valuation	Positive	.136 (.239)	.597 (.359)	.732 (.298)	.126* (.197)	.479* (.316)	.605* (.244)
	Negative	.290 (.312)	.590 (.347)	.880 (.185)	.280 (.262)	.477 (.338)	.757 (.297)
Accuracy	Positive	.126 (.227)	.584 (.387)	.710 (.311)	.288** (.340)	.238** (.254)	.527** (.354)
	Negative	.267 (.256)	.616 (.315)	.883 (.190)	.392 (.295)	.298 (.245)	.691 (.345)
Overall	Positive	.126 (.210)	.584 (.393)	.710 (.328)	.187** (.216)	.298** (.257)	.485** (.259)
	Negative	.277 (.273)	.597 (.329)	.873 (.205)	.320 (.251)	.370 (.243)	.690 (.276)

* Data are missing for two participants.

** Data are missing for one participants.

TABLE 2

Two-way ANOVA Results: Prior Risk Level (m(~*a*)) [N = 61]

Within-Subjects Effect of *Assertion*

(As Mauchly's W is 0.600 (p = 0.000) for the effect of *Assertion*, sphericity is not assumed and the Greenhouse-Geisser correction is used.)

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	.041	1.429	.029	.752	.433
Assertion * *Framing*	.018	1.429	.012	.325	.649
Error (*Assertion*)	3.216	84.313	.038		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	6.959	1	6.959	54.426	.000
Framing	1.186	1	1.186	9.276	.003
Error	7.544	59	.128		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 3

Two-way ANOVA Results: Posterior Risk Level (m(~*a*)) [N = 59]

Within-Subjects Effect of *Assertion*

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	.844	2	.422	6.662	.002
Assertion * *Framing*	.188	2	.094	1.480	.232
Error (*Assertion*)	7.222	114	.063		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	10.860	1	10.860	135.384	.000
Framing	1.230	1	1.230	15.333	.000
Error	4.572	57	.080		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 4

Two-way ANOVA Results: Prior Ambiguity Level (m({*a*,~*a*}) [N = 61]

Within-Subjects Effect of *Assertion*

(As Mauchly's W is 0.496 (p = 0.000) for the effect of *Assertion*, sphericity is not assumed and the Greenhouse-Geisser correction is used.)

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	.002	1.330	.001	.025	.928
Assertion * *Framing*	.017	1.330	.013	.285	.661
Error (*Assertion*)	3.575	78.468	.046		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	65.062	1	65.062	208.233	.000
Framing	.019	1	.019	.062	.804
Error	18.434	59	.312		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 5

Two-way ANOVA Results: Posterior Ambiguity Level (m({*a*,~*a*}) [N = 59]

Within-Subjects Effect of *Assertion*

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	2.007	2	1.003	17.034	.000
Assertion * *Framing*	.082	2	.041	.692	.503
Error (*Assertion*)	6.715	114	.059		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	19.111	1	19.111	188.201	.000
Framing	.000	1	.000	.000	.984
Error	5.788	57	.102		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 6

Two-way ANOVA Results: Prior Plausibility Risk Level (Pl(~*a*)) [N = 61]

Within-Subjects Effect of *Assertion*

(As Mauchly's W is 0.836 (p = 0.005) for the effect of *Assertion*, sphericity is not assumed and the Greenhouse-Geisser correction is used.)

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	.039	1.717	.023	.941	.381
Assertion * *Framing*	.045	1.717	.026	1.097	.330
Error (*Assertion*)	2.443	101.332	.024		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	114.579	1	114.579	746.508	.000
Framing	1.510	1	1.510	9.837	.003
Error	9.056	59	.153		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 7

Two-way ANOVA Results: Posterior Plausibility Risk Level (Pl(~*a*)) [N = 59]

Within-Subjects Effect of *Assertion*

Source	Sum of Squares	df	Mean Square	F	Sig.
Assertion	1.964	2	1.964	11.010	.000
Assertion * *Framing*	.027	2	.013	.149	.862
Error (*Assertion*)	10.167	114	.089		

Between-Subjects Effect of *Framing*

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	58.784	1	58.784	541.508	.000
Framing	1.244	1	1.244	11.460	.001
Error	6.188	57	.109		

Descriptions of variables:

Assertion: Three audit assertions are adopted in this study (i.e., the existence assertion, the valuation assertion and the accuracy assertion).

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 8

ANCOVA Results: Posterior Ambiguity Level (m({*a*,~*a*}) [N = 59]

Existence Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	.307	1	.307	6.575	.013
Prior	.169	1	.169	3.611	.062
Framing	.030	1	.030	.651	.423
Error	2.711	58	.047		

Valuation Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	.688	1	.688	8.228	.006
Prior	1.422	1	1.422	17.020	.000
Framing	.000	1	.000	.000	.987
Error	4.679	56	.084		

Accuracy Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	.741	1	.741	11.817	.001
Prior	.035	1	.035	.561	.457
Framing	.052	1	.052	.827	.367
Error	3.576	57	.063		

Descriptions of variables:

Prior: A prior assessment of ambiguity.

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 9

ANCOVA Results: Posterior Risk Level (m(~*a*)) [N = 59]

Existence Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	1.683	1	1.683	33.495	.000
Prior	.034	1	.034	.672	.416
Framing	.936	1	.936	18.636	.000
Error	2.914	58	.050		

Valuation Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	.757	1	.757	15.587	.000
Prior	.352	1	.352	7.247	.009
Framing	.171	1	.171	3.522	.066
Error	4.679	56	.084		

Accuracy Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	3.997	1	3.997	38.893	.000
Prior	.006	1	.006	.063	.803
Framing	.129	1	.129	1.260	.266
Error	5.857	57	.103		

Descriptions of variables:

Prior: A prior assessment of ambiguity.

Framing: A positively stated assertion or a negatively stated assertion is provided.

TABLE 10

ANCOVA Results: Posterior Risk Level (Pl(~*a*)) [N = 59]

Existence Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	1.358	1	1.358	14.968	.000
Prior	.017	1	.017	.191	.663
Framing	.649	1	.649	7.156	.010
Error	5.263	58	.091		

Valuation Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	1.001	1	1.001	14.298	.000
Prior	.294	1	.294	4.204	.045
Framing	.159	1	.159	2.268	.138
Error	3.921	56	.070		

Accuracy Assertion

Source	Sum of Squares	df	Mean Square	F	Sig.
Intercept	1.368	1	1.368	11.107	.002
Prior	.076	1	.076	.615	.436
Framing	.269	1	.269	2.180	.145
Error	7.023	57	.123		

Descriptions of variables:

Prior: A prior assessment of ambiguity.

Framing: A positively stated assertion or a negatively stated assertion is provided.