

Data Description Sheet for:

Inheriting versus Developing Data Analytic Tests and Auditors' Professional Skepticism

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August 2025

Item 1 – With the assistance of the Foundation for Auditing Research (FAR), we obtained access to Dutch audit practitioners who participated in our experiment. Data was collected electronically and stored with a third-party data center, CentERdata, and they maintained custody of the data throughout the project. All authors had access to the data. Xiaoxing Li conducted data analyses for this study by accessing the data and analysis tools in a secure environment through a remote VPN connection.

Item 2 – The raw data for this study were collected from four public accounting firms in the Netherlands. CentERdata programmed our instrument into an online version using its proprietary software. These firms, in coordination with the research team and the FAR, provided in total 173 audit practitioners who completed our experimental instrument. Audit practitioners from two of the audit firms completed our online instrument at a predetermined time during their firms' in-person training sessions. For another audit firm, liaisons organized online masterclasses and invited eligible candidates to complete the experiment at a predetermined time as part of these masterclasses. Contacts at the fourth audit firm allowed us to introduce our study and call for participants during their training sessions, enabling participants to complete our instrument at a time of their convenience during work hours. The table below lists the dates of firms' training sessions or masterclasses and the number of responses from each firm.

| Response collection method | Dates | Number of responses |
|--|-------------------|---------------------|
| Firms 1 and 2: We collected responses during the two firms' in-person training sessions | 12 September 2022 | 123 |
| | 10 November 2022 | |
| | 28 November 2022 | |
| Firm 3: We collected responses during online masterclasses at one firm | 14 September 2022 | 27 |
| | 22 September 2022 | |
| | 27 September 2022 | |
| Firm 4: We called for participation during one firm's training sessions. Participants subsequently completed the instrument at a time of their convenience | 23 June 2022 | 23 |
| | 12 July 2022 | |
| | 25 August 2022 | |
| | 1 September 2022 | |
| | 6 September 2022 | |
| | 12 September 2022 | |
| | 21 September 2022 | |
| | 27 September 2022 | |
| | 12 October 2022 | |

Item 3 – As the data is proprietary and obtained by the FAR, you may contact Professor Jan Bouwens, Managing Director and Academic Board Member for the FAR. His email address is jan.bouwens@foundationforauditingresearch.org. We have shared the NDA agreement with the editors per JAR policy.

Item 4 – We provide the full set of our experimental instrument in a separate document accompanying our submission. The experiment employed a between-participants design. Participants were randomly assigned to one of five conditions: *Develop ADA*, *Inherit ADA*, *Inform ADA without a Prime*, *Inform ADA with a Prime*, or *No ADA*. Our experiment comprised four stages, which are described in detail in the manuscript and instrument. We requested access to audit seniors with 3-5 years of audit experience to participate in our experiment. Liaisons within the four firms helped recruit these participants. We included all participants who completed our study in our analysis.

Item 5

No data manipulation occurred outside the CentERdata research environment.

Item 6

Inheriting versus Developing Data Analytic Tests and Auditors' Professional Skepticism

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Compliance with Data and Code Sharing Policy for the Journal of Accounting Research (Item 6)

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Overview

Experimental participants ($n = 173$) performed a substantive analytical procedure related to the sales account of a hypothetical audit client. They were provided with a comprehensive set of information to develop an expectation for the sales account balance. Within this information set, we embedded a significant non-financial measure (NFM) red flag for fraud. After forming their expectation, participants decided whether to conduct additional testing related to the analytical procedure. They also indicated whether they would communicate the NFM red flag to client management or their audit manager.

We provide SPSS syntaxes or steps below in **bold Calibri**.

Measurement of Dependent Variables

Additional_Testing: We coded Additional_Testing as “1” if participants selected option 2 as their conclusion to the substantive analytical procedure, and “0” if they selected option 1.

(1) The balance appears reasonable. No additional work would be required related to this analytical procedure.

(2) Additional work would be required related to this analytical procedure before concluding the balance appears reasonable.

COMMUNICATE_RED_FLAG: This measure is based on two open-ended.

- The first question asked, “What *additional work* would you perform and/or *questions* would you ask of Rutter management?” Based on participants’ open-ended responses, we coded Inquire_MGMT as “1” if they indicated they would test/inquire of client management about the NFM red flag, and “0” otherwise.
- The second question asked, “Please list any unusual or unexpected relationships involving the sales account that you would communicate to your audit manager. If there is nothing that you would convey to your audit manager, choose ‘Nothing’ below.” Based on participants’ open-ended responses, we coded Inform_Manager as “1” if they indicated they would inform their audit manager about the NFM red flag, and “0” otherwise.

We coded COMMUNICATE_RED_FLAG as “1” if participants received a score of “1” for either Inquire_MGMT or Inform_Manager, and “0” if they received a “0” on both measures.

Manipulation of Independent Variables

Our experiment employed a 1×5 between-participants design. Participants were randomly assigned to one of five conditions: *Develop ADA*, *Inherit ADA*, *Inform ADA without a Prime*, *Inform ADA with a Prime*, or *No ADA*.

***Develop ADA*:** Participants in the *Develop ADA* condition were asked to personally engage in the development of the audit data analytic (ADA) visualizations introduced for the current year's audit.

- First, they were prompted to contemplate and document how they would develop the ADA visualizations, focusing on (1) the data they would utilize, (2) the number of years of data they would collect, and (3) the source from which they would obtain the data.
- Next, we informed participants about the effort they had (hypothetically) exerted to determine the data sources, collect the data, verify data reliability, and assess the calibration of the data.
- Finally, participants created one of the five visualizations they would subsequently consider as part of the evidence during the analytical procedure task.

***Inherit ADA*:** Participants in the *Inherit ADA* condition learned that another audit team member, Sam, developed the ADA visualizations that participants would use in the task.

***Inform ADA*:** We collapsed *Inform ADA without a Prime* and *Inform ADA with a Prime* conditions into a single condition, labeled as *Inform ADA*.

- ***Inform ADA without a Prime*:** Participants in this condition also learned that Sam developed the ADA visualizations. In addition, they learned about the ADA development process in an “Audit Data Analytic Visualizations Development Memorandum” prepared by Sam. The ADA memo informed participants about Sam's effort in determining the data sources, collecting the data, verifying data reliability, evaluating the calibration of the data, and creating the visualizations.
- ***Inform ADA with a Prime*:** To strengthen our inferences, participants in this condition—compared to those in the *Inform ADA without a Prime* condition—were additionally primed to imagine themselves as the developers of the ADA visualizations.

We observe no differences in our dependent variables between the *Inform ADA without a Prime* and *Inform ADA with a Prime* conditions. For reasons of parsimony, we collapsed the two conditions for our analyses.

***No ADA*:** A *No ADA* condition was included as a baseline condition. Participants in this condition did not receive any ADA visualizations.

Measurement of Process Variables

Mediator—**PSYCHOLOGICAL_OWNERSHIP**—is calculated as the average of the following six questions from the post-experimental questionnaire, measured on 11-point Likert scales:

- 1) To what extent did you feel **control** over the data analytic visualizations related to Ruiter's *Sporting Goods Sales account*?
- 2) To what extent did you feel **associated** with (i.e., have intimate **knowledge** about) the data analytic visualizations related to Ruiter's *Sporting Goods Sales account*?
- 3) To what extent did you feel **invested** in (i.e., energy, time, effort, and attention) the data analytic visualizations related to Ruiter's *Sporting Goods Sales account*?
- 4) To what extent did you feel that the data analytic visualizations related to Ruiter's *Sporting Goods Sales account* were **YOURS** (or at least in some part YOURS)?
- 5) To what extent did you feel that you "**owned**" the data analytic visualizations related to Ruiter's *Sporting Goods Sales account* (or at least some part thereof)?
- 6) To what extent did you feel **responsible** for the data analytic visualizations related to Ruiter's *Sporting Goods Sales account*?

Computation of PSYCHOLOGICAL_OWNERSHIP:

COMPUTE

PSYCHOLOGICAL_OWNERSHIP=MEAN(CONTROL,ASSOCIATE,INVEST,YOURS,OWN,RESPONSIBLE).

EXECUTE.

Moderator—**TRAIT_EMPATHY**—is calculated as the sum of the following 21 items from post-experimental questionnaire, measured on 5-point Likert scales. Items denoted by (–) are reverse-coded.

Item 1: I daydream and fantasize, with some regularity, about things that might happen to me.

Item 2: I often have tender, concerned feelings for people less fortunate than me.

Item 3: I sometimes find it difficult to see things from the "other guy's" point of view.(–)

Item 4: Sometimes I don't feel very sorry for other people when they are having problems.(–)

Item 5: I really get involved with the feelings of the characters in a novel.

Item 6: I am usually objective when I watch a movie or play, and I don't often get completely caught up in it.(–)

Item 7: I try to look at everybody's side of a disagreement before I make a decision.

Item 8: When I see someone being taken advantage of, I feel kind of protective towards them.

Item 9: I sometimes try to understand my friends better by imagining how things look from their perspective.

Item 10: Becoming extremely involved in a good book or movie is somewhat rare for me.(–)

Item 11: Other people's misfortunes do not usually disturb me a great deal.(–)

Item 12: If I'm sure I'm right about something, I don't waste much time listening to other people's arguments.(–)

Item 13: After seeing a play or movie, I have felt as though I were one of the characters.

Item 14: When I see someone being treated unfairly, I sometimes don't feel very much pity for them.(–)

Item 15: I am often quite touched by things that I see happen.

Item 16: I believe that there are two sides to every question and try to look at them both.

Item 17: I would describe myself as a pretty soft-hearted person.

Item 18: When I watch a good movie, I can very easily put myself in the place of a leading character.

Item 19: When I'm upset at someone, I usually try to "put myself in his shoes" for a while.

Item 20: When I am reading an interesting story or novel, I imagine how I would feel if the events in the story were happening to me.

Item 21: Before criticizing somebody, I try to imagine how I would feel if I were in their place.

Reverse code items 3, 4, 6, 10, 11, 12, and 14:

```
RECODE Item3 Item4 Item6 Item10 Item11 Item12 Item14 (0=4) (1=3) (2=2) (3=1) (4=0) INTO
Item3_Reverse Item4_Reverse Item6_Reverse Item10_Reverse Item11_Reverse Item12_Reverse
Item14_Reverse.
EXECUTE.
```

Computation of TRAIT_EMPATHY:

COMPUTE

```
TRAIT_EMPATHY=Item1+Item2+Item3_Reverse+Item4_Reverse+Item5+Item6_Reverse+Item7+Item8+
Item9+Item10_Reverse+Item11_Reverse+Item12_Reverse+Item13+Item14_Reverse+Item15+
Item16+Item17+Item18+Item19+Item20+Item21.
EXECUTE.
```

Descriptive Statistics

Table 1:

MEANS TABLE=ADDITIONAL_TESTING COMMUNICATE_RED_FLAG INQUIRE_MGMT
INFORM_MANAGER BY CONDITION
/CELLS=MEAN COUNT STDDEV.

Note: CONDITION is coded as follows: “1” = *Inherit ADA* condition, “2” = *Develop ADA* condition, “3” = *Inform ADA* condition, and “4” = *No ADA* condition.

Figure 1:

We used the means from Table 1 to create Figure 1 in Excel.

Tests of Hypotheses

We run logistic regressions in SPSS to test our two hypotheses.

Test of H1:

To test H1, we created a dummy independent variable, INHERIT_DEVELOP (“1” = *Inherit ADA* condition, “0” = *Develop ADA* condition). We first run a logistic regression with ADDITIONAL_TESTING as the dependent measure. Second, we run the same logistic regression with COMMUNICATE_RED_FLAG as the dependent measure. We calculated one-tailed p-values.

Table 2, Panel A:

```
LOGISTIC REGRESSION VARIABLES ADDITIONAL_TESTING  
  /METHOD=ENTER INHERIT_DEVELOP  
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

Table 2, Panel B:

```
LOGISTIC REGRESSION VARIABLES COMMUNICATE_RED_FLAG  
  /METHOD=ENTER INHERIT_DEVELOP  
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

Test of H2:

To test H2, we created another dummy independent variable, INFORM_INHERIT (“1” = *Inform ADA* condition, “0” = *Inherit ADA* condition). We first run a logistic regression with ADDITIONAL_TESTING as the dependent measure. Second, we run the same logistic regression with COMMUNICATE_RED_FLAG as the dependent measure. We calculated one-tailed p-values.

Table 3, Panel A:

```
LOGISTIC REGRESSION VARIABLES ADDITIONAL_TESTING  
  /METHOD=ENTER INFORM_INHERIT  
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

Table 3, Panel B:

```
LOGISTIC REGRESSION VARIABLES COMMUNICATE_RED_FLAG  
  /METHOD=ENTER INFORM_INHERIT  
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
```

Process Analyses

We conducted the process analyses using PROCESS v4.1 in SPSS. A multi-categorical independent variable, IV, was constructed. *Inherit ADA* condition was set as the baseline condition (i.e., “0” = *Inherit ADA* condition, “1” = *Develop ADA* condition, “2” = *Inform ADA* condition). We provide the SPSS steps below.

Mediation of Psychological Ownership:

We first run PROCESS Model 4 with ADDITIONAL_TESTING as the dependent measure. Second, we run the same model with COMMUNICATE_RED_FLAG as the dependent measure.

Figure 2, Panel A:

Analyze>>Regression>>PROCESS v4.1 by Andrew F. Hayes

Model number: 4

Confidence intervals: 90

Number of bootstrap samples: 5000

Y variable: ADDITIONAL_TESTING

X variable: IV

Mediator(s) M: PSYCHOLOGICAL_OWNERSHIP

Under the “Multicategorical” button:

Variable X>>Select “Multicategorical”, then choose “Effect” as the coding system

Click the “Long variable names” button and tick the checkbox

Click “OK”

Figure 2, Panel B:

Analyze>>Regression>>PROCESS v4.1 by Andrew F. Hayes

Model number: 4

Confidence intervals: 90

Number of bootstrap samples: 5000

Y variable: COMMUNICATE_RED_FLAG

X variable: IV

Mediator(s) M: PSYCHOLOGICAL_OWNERSHIP

Under the “Multicategorical” button:

Variable X>>Select “Multicategorical”, then choose “Effect” as the coding system

Click the “Long variable names” button and tick the checkbox

Click “OK”

Moderation of Trait Empathy:

We first run PROCESS Model 8 with ADDITIONAL_TESTING as the dependent measure. Second, we run the same model with COMMUNICATE_RED_FLAG as the dependent measure.

Figure 3, Panel A:

Analyze>>Regression>>PROCESS v4.1 by Andrew F. Hayes

Model number: 8

Confidence intervals: 90

Number of bootstrap samples: 5000

Y variable: ADDITIONAL_TESTING

X variable: IV

Mediator(s) M: PSYCHOLOGICAL_OWNERSHIP

Moderator variable W: TRAIT_EMPATHY

Under the "Multicategorical" button:

Variable X>>Select "Multicategorical", then choose "Effect" as the coding system

Click the "Long variable names" button and tick the checkbox

Click "OK"

Figure 3, Panel B:

Analyze>>Regression>>PROCESS v4.1 by Andrew F. Hayes

Model number: 8

Confidence intervals: 90

Number of bootstrap samples: 5000

Y variable: COMMUNICATE_RED_FLAG

X variable: IV

Mediator(s) M: PSYCHOLOGICAL_OWNERSHIP

Moderator variable W: TRAIT_EMPATHY

Under the "Multicategorical" button:

Variable X>>Select "Multicategorical", then choose "Effect" as the coding system

Click the "Long variable names" button and tick the checkbox

Click "OK"

Item 7

The authors' nondisclosure agreement with the Foundation for Audit Research (FAR) does not permit the export of any materials from the CentERdata research environment. Thus, we cannot share the log file.

Item 8

All data and programs will be maintained by CentERdata for at least six years.