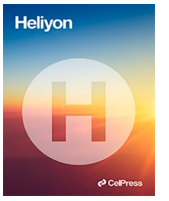
Heliyon 10 (2024) e30971

Contents lists available at ScienceDirect

Heliyon

journal homepage: www.cell.com/heliyon



Research article

Is auditor financial decision-making affected by prior audit report information? A behavioral approach

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ARTICLE INFO

JEL classification:
G4
G40
G41

Keywords:
Auditing
Auditors
Financial information
Behavioral auditing
Audit opinion
Professional experience

ABSTRACT

The role of financial experts is to provide their professional judgments with an opinion included in the financial reports after reviewing an entity's financial information, following a specific audit process. We investigate whether confirmation bias (through prior audit opinions) occurs among auditors during the audit process and decision-making, and whether experience mitigates this effect. A total of 175 non-experienced auditors run a 2x4 between-subjects experiment (experiment 1) studying how financial information (IV with two levels: negative and neutral/positive) and previous audit report (IV with four levels: absence, negative, moderately negative, and positive) might influence the issuance of the subsequent decision-making (DV). In addition, a total of 32 junior level 1 auditors (less than one year of experience), 31 junior level 2 auditors (up to 3 years of experience) and 20 senior auditors (more than 3 years of experience) run a $2 \times 4 \times 3$ between-subjects experiment (experiment 2) analyzing if experience (IV with three levels of experience: less than one-year, between one and three years, more than three years) mitigates this effect (experiment 2). Results confirm that the previous-year audit report affect auditors' current assessment, showing that positive and negative prior opinions persuade auditors when suggesting the next one. This finding is relevant as auditors' opinions could be conditioned by prior opinions instead of their own expertise. Our evidence also suggests that professional experience mitigates this influence on auditors' assessments. Consequently, this study has relevant implications for partners, audit professionals and audit firm recruiters. A general implication is that auditor training courses should reinforce the auditor's own expertise and criteria based on the deep analysis of financial and economic data rather than on the work of previous auditors.

1. Introduction

Most professionals, such as doctors, policemen, bankers, consultants, salesmen, internal or external auditors, need to follow

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https://doi.org/10.1016/j.heliyon.2024.e30971
Received 12 February 2023; Received in revised form 20 April 2024; Accepted 8 May 2024
Available online 11 May 2024

protocols or procedures when making their decisions. In the case of external auditors, they perform an audit procedure in accordance with specific standards, of the financial statements of a client, which can be a company, government entity, other legal entity, or organization. The reports issued by auditors help to ensure that the information contained in the financial statements of companies gives a true and fair view of the financial situation of the company. Consequently, the audit profession provides a high level of assurance on the financial information published by companies in order to provide stability to the markets. It is therefore considered to have a public interest function [1].

The outcome of the audit process is the issue of the audit report. This report is added to the financial statements of large firms to ensure that their stakeholders have confidence in the information they receive. It is made of different sections. For the purpose of this study, there are two main sections in the audit report: first, the auditor's opinion about the financial statements of a client which shall be either positive (unqualified) or negative (qualified). On the one hand, an opinion is unqualified or clean when the auditor determines that the financial statements give a true and fair view in accordance with the financial reporting framework used for the preparation of the financial statements. On the other hand, a qualified opinion is given by the auditor if any significant modification or reservation in respect of matters is found in the financial statements. Second, the auditor might also include in the report an emphasis of matter paragraph. This section is added when auditor needs to draw attention on any matter (without qualifying the opinion) or should provide a statement on uncertainties about the entity's ability to continue as a going concern (qualifying the opinion). Companies that receive a going concern report tend to have a higher probability of experiencing business uncertainty in the future [2,3]. Auditors are responsible of evaluating the going concern uncertainty [4,5] and required to mention any evidence found during the audit process regarding the risk of business failure [6–8].

Auditors are independent of all clients -the entities being audited. Consequently, they are in the proper position to make an impartial opinion about the financial statements prepared by firms' managers. Audit opinions are highly valued by firms' stakeholders, such as investors, government agencies, creditors and other financial statement users. They need trusted information to help them decide properly. Users should rely on the opinion when deciding whether or not to invest in business according to its financial condition [4,9]. However, some financial statement users are dissatisfied with the role of auditors, as there have been some accounting scandals, such as Toshiba [10] or Wirecard [11]. In those real cases, auditors did not warn in their prior reports about imminent corporate failures or cases of corruption using going concern. This unsatisfaction is explicitly salient during the global financial crisis [12,13], so studies on what factors influence auditors when issuing their reports are needed. It seems crucial to determine which factors affect auditors' inefficient judgments.

This paper aims experimentally to investigate what factors affect auditors in the decision-making process studying how financial information and previous audit report might influence the issuance of the subsequent decision-making. Additionally, we want to know whether experience mitigates this effect. To achieve our aims, we conduct two experiments. Experiment 1 analyses whether auditors' decision-making procedure when they issue an opinion is influenced by the prior audit opinion. Experiment 2 investigates the impact of experience on auditor's decision-making. In both experiments, after evaluating financial and non-financial data of a hypothetical company, participants suggest an audit opinion for the fiscal year of which the financial information is presented[1]. Since our main objective of experiment 1 was to find the effect of prior opinions, we decided to use only auditors with little experience to avoid experience biases. Once the effect was clearly found in experiment 1, in experiment 2 we used a sample of auditors with different level of experience to corroborate whether increasing experience flattened the effect of prior opinions.

Results confirm that the previous-year audit report affects auditors' current assessment, showing that positive and negative prior opinions persuade auditors when suggesting the next one. We measure decision-making process by the impact of prior audit opinions on auditors' judgments in relation to their next opinion choice. Thus, we examine if subsequent opinion choices are affected by different types of prior opinions and experience levels. Although there has been prior research on the impact of prior going concern (negative) opinions in auditors' assessments [14,15], this is the first study to provide evidence on auditors' judgments of other prior opinions such as positive (unqualified), moderately negative (unqualified with a matter paragraph) or even the absence of prior audit report.

The topic of this paper is timely, relevant and of interest due to the current international auditing reporting environment. The 2008 global financial crisis and the following recession and accounting scandals raised concerns among policymakers because the image of external auditors had been undermined. In order to increase the confidence and transparency in the profession, regulatory changes focusing on the information value of the audit report are happening worldwide. The expanded auditor report regulation around the world started with the IAS 700 [16,17], and the subsequent changes in legislation to adapt these international regulations to the countries. This regulatory change has spurred much debate about the benefits of greater transparency for users of financial statements, with the aim of ensuring the proper functioning of financial markets worldwide.

Additionally, academics and practitioners could benefit from the evidence found in this paper. In the literature, there are concerns related to how auditors evaluate the information received from clients when making their assessments, concretely on substantial doubts and going concern modifications [18], and how searching and evaluating that information may affect their final judgments. With our experiment design, financial statements reviewed, and time spent on each document by auditors is analyzed, so that our results can provide useful insight regarding the information reviewed by auditors before issuing a new audit report.

Finally, this paper may contribute to earlier experiments on going concern qualified (negative) opinions, by extending the conclusions to other types of auditor's opinions, such as moderately negative or positive. For instance, different authors [19,20] express

[1] The materials for the experiments are disclosed in the Annex. Materials are available on the website (www.behavioralexperiments.com) both in English and in Spanish. Annex only contains materials in English.

the need for experimental studies on opinion qualification to offer converging evidence to the numerous archival studies addressing audit opinions, Messier [21] points out the importance of audit tasks within the audit process and the need for a further investigation at this level. In this line, Backof [22] stress the auditors' responsibility to clarify the language used in audit reports.

The remainder of this paper is structured as follows: Section 2 presents a review of the relevant prior literature and the hypotheses; Section 3 exhibits the experiment 1; Section 4 shows the experiment 2 and Section 5 draws general discussion and key conclusions.

2. Theoretical framework and hypotheses

Ideally, when professionals follow standardized processes to make their assessments, results should be similar for all individuals. However, it seems reasonable to expect that this is not always the case as processes could be affected by exogenous factors that may condition individuals' assessments. For example, auditors' professional judgments could be affected by individual factors -related to unique auditor characteristics' that vary among auditors- [23]. It is essential to study those factors in order to understand professionals' behavior and their consequences.

In the case of external auditors, their behavior and judgments are extremely relevant because their role is fundamental in advanced economy, as they guarantee the reliability of firms' financial information as 'a cornerstone of confidence in the world's financial systems' [24]. As mentioned before, during the 2008 global financial crisis, their reputation has been damaged as there have been some accounting scandals in which companies have failed or behaved corruptibly, and their auditors had not warned in their prior reports about the imminent events of bankruptcy or corruption [13,25]. Thus, the behavior of external auditors is in the spotlight due to the fact that they have being undesirable protagonists of multionational firms'crises such as Toshiba, Wirecard, Abengoa, World Com, Enron, Grifols ….

According to the literature, there are individual factors that could impact external auditors' behavior, such as confirmation bias and auditors' professional experience. However, the results of those studies are inconclusive, with some of them showing a link and others not [15,26–29]. As far as we know, our paper is the first to investigate the effects of confirmation bias measured by the impact of different types of prior opinions (negative, moderately negative, positive and absence of prior opinion) on auditors' assessments, and not just the impact of the going concern qualification, which is the most negative prior opinion that the next auditor can find. In addition, there are no previous evidence on the mitigating effect of experience on auditors' next reporting opinion giving auditors all these diversity of prior audit opinions.

Confirmation bias is a judgment bias defined as a tendency to search for information that confirms the favored or initial hypothesis generated by an auditor [30,31]. The effect of confirmation bias implies that auditors may seek to verify their beliefs and so may favor information that corroborates rather than refutes their initial thoughts [28]. These initial thoughts could be self-inferred by prior year information.

In the auditing literature, while some works verify a confirmation bias proneness of auditors in fraud and non-fraud tasks [27,32], others do not find evidence about the existence of this bias [26,33]. It seems that when confirmation bias and experience have been studied together, experience appears to mitigate the proneness towards this bias in explaining ratio fluctuations [34], meaning that an auditor with few years of experience is likely to be more confirmation bias-prone.

Previous researchers have studied the relationship between the auditors' behavior and the issuance of a going concern (negative) opinion [35–39]. The focus on going concern is due to the issuance of standards related to this decision and its complexity, as it implies that the firm may not continue in business for the foreseeable future (ISA 570; SAS 59). For instance, Kida [40] has revealed that accounting ratios can provide useful information for the auditor when judging continuity problems. Mutchler [41], who expands Kida's investigation, designs an interview and a questionnaire to capture auditors' perceptions in going concern decisions. She presents a set of fourteen accounting and auditing related variables perceived by auditors as useful in identifying a company with a potential financial distress situation, being "enter receivership", "enter reorganization" and "inability to meet interest due" the top three variables on the list. Nevertheless, the variable "going concern audit report in the previous year" presents large variances on the responses. The lack of consensus on this variable may represent an issue of misinterpretation because if a firm receives a going concern opinion in the previous period, the auditor would consider this firm as one to be scrutinized to determine its survival the upcoming year [41]. Later on, some experimental studies confirm the impact of prior going concern opinions on auditors' judgments [19,21,42,43]. For example, Messier [21] is really interested in how specialists impact audit planning judgments. Moreover, Hoffman [42] argue that experienced auditors make more optimistic survival judgments of going concern firms when the auditing process has no constraints.

Other prior audit opinions different from going concern (negative), such as unqualified (positive) or emphasis of matter paragraphs (moderately negative), might also affect subsequent auditors' judgments [19,44]. There are a few studies about the effects of qualifications (other negative opinions) other than going concern on auditors' assessments finding significant results [39,45–49]. However, we contribute to this line of research, testing the impact of not only negative opinions, but also moderately negative, positive and absence of opinion on auditors' judgments. In the studies of Nelson and Tan [19] or Carson [18], they encourage future empirical evidence on how auditors' decisions are influenced by prior opinions. Nelson and Tan [19] state that "given that much archival research addresses audit opinions, additional judgment and decision-making research on opinion modification can offer converging evidence and potentially explain puzzling archival results by capitalizing on the comparative advantages of the experimental approach, such as the use of controlled setting, manipulation of key constructs and randomization". According to Carson [18] and Alexeyeva & Sundgren [50], studies that investigate what auditors are evaluating to determine the likelihood of a client failure represent a need for the existing literature.

Consistent with the idea that different prior audit opinions (negative, moderately negative, positive and no opinion) might condition the auditors' assessments for the forthcoming period and, thus, that confirmation bias occurs among auditors, we hypothesize

the following.

H1. Auditors are influenced by the previous year's audit report when issuing a report for a new period.

H1a. Auditors are influenced by the previous year's audit report when issuing a negative financial information report for a new period.

H1b. Auditors are influenced by the previous year's audit report when issuing a positive financial information report for a new period.

An auditor's professional experience, or the number of years that an auditor has been working in the auditing profession, is present on studies about auditors' judgments [42,51]. Prior literature has argued that professional auditors might be less biased due to their specialized training and knowledge [52,53]. In this line, experienced auditors make better decisions, because of a more developed knowledge of the content and structure of the auditing process [54]. In general, the overall findings of this research indicate that experienced auditors are more effective and efficient in the acquisition and usage of information.

Experimental research has documented the impact of auditor experience on complex decision processes. For instance, the association between experience and the assessment of management fraud risk is a complicated decision with which few auditors have had experience [55]. Earley [56] examines whether the lack of problem recognition is primarily due to lack of experience in a real estate valuation task. Later on, some studies find that auditor negotiation experience may cause an impact on the client-auditor negotiation context in the presence of engagement risk [57] and the interaction with different client negotiation styles regarding an asset impairment write-down task [58].

An increase in auditor experience appears also to reduce auditors' individual biases leading to more balanced and efficient audit procedures and strategies [34]. Using a going concern task, there are some studies that suggest that experienced auditors perform more accurate than less experienced auditors when identifying information that might decrease the threat of continued existence [39,51]. However, as per our knowledge, despite the vast literature on auditor's experience, the present work contributes disclosing, for the first time, evidence on the mitigating effect of auditors' experience on auditing evaluations when moderately negative, positive and no prior opinions are presented, instead of only when a prior year going concern condition or very negative condition happens. Bearing all this in mind, we generate our Hypothesis 2.

H2. The influence of the prior year audit opinion on the new reporting choices decreases as auditor experience increases.

One explanation to hypothesize this could be the bounded rationality theory in which rationality is limited when individuals make decisions, and under limitations such as the cognitive capability of the mind or the time available to make the decision, rational individuals will select a decision that is satisfactory rather than optimal. It implies that if we analyze separately auditors with little experience and auditors with expertise and compare them, we could talk about two sub-hypotheses.

H2a. If we analyze the decision-making of auditors with little experience, the influence of the previous report should increase (experiment1).

H2b. If we compare the decision-making of auditors with different experiences, as experience increases, the influence of the previous report should decrease (experiment 2).

3. Experiment 1

3.1. Participants

A total of 175 non-experienced auditors (auditors with less than one year of experience) participated in this experiment. Auditors were contacted through their auditing firm requesting voluntary participation. Despite their low expertise judging the ability of a firm to survive, they are familiar with the accounting concepts in the experimental materials, as they have already taken courses about Advanced Financial Accounting, Financial Statement Analysis, Accounting regulation, and Managerial Accounting in their training sessions. This task, although complex, is not unreasonable for non-experienced auditors given their business interests and educations [59,60]. By extension, we consider auditors in training with low experience as an appropriate sample for our study.

3.2. Design and procedure

We conduct a survey questionnaire using a website (www.behavioralexperiments.com), adapting materials from Blay [46] and Bauer [61]. Both the prior year audit opinion (PYAO) and the financial information provided (FI) are experimentally manipulated in a between-subjects design. Thus, participants receive different information regarding the previous audit opinion and the financial statements, generating eight conditions (4×2) to which subjects are randomly assigned.

We manipulate the prior year audit opinion in four types: no prior audit opinion (NAO), unqualified (positive) audit opinion (UAO), an unqualified opinion with an emphasis of matter paragraph (moderately negative) opinion (UEAO), and a going concern qualified (negative) opinion (GCAO).

Regarding financial information, we manipulate the seriousness of the firm's financial condition according to two levels: poor and neutral. We include this manipulation as a control. As audit judgments are going to be based on accounting records underlying the financial statements prepared by firms [62], we control for the impact of the firm's financial condition on auditors' judgments. In the

poor condition, financial data used is the same as in Blay [46], showing a firm with negative retained earnings, negative working capital, poor liquidity and high financial leverage. As these materials might influence participants to provide very low viability assessments, we develop the neutral condition extending his materials. This condition still provides a company with financial difficulties, but losses are less dramatic, and the financially distress situation is not obvious, so that it is an ambiguous case for the auditor. Questions are equivalent across the treatment conditions. Thus, giving the same amount of information and equally reinforcing the manipulation in all conditions, we expect similar decision-making processes, but different audit judgments between conditions.

The task requires participants to evaluate the financial and non-financial data of a hypothetical medium-sized manufacturing firm (see Annex for details). Subjects are asked to assume that they represent the in-charge auditor of the firm, and they must judge the viability of the firm in the subsequent year. They have to recommend an audit opinion for the current period, based on the data provided: firm's background information, including a business description, comparative financial information for consecutive years (a two-year balance sheet, a three-year income statement and cash flow statement), the prior year audit opinion, and a set of significant events of the year. At the beginning of the case, participants are guaranteed that all answers are anonymous. After completing a survey of background questions (i.e. gender, Big 4 or non-Big 4 auditors, years of experience, and title), participants proceed to the task. At the end of the experiment, subjects complete a brief post-experimental questionnaire containing manipulation checks to verify that they have understood the task.

The dependent variable of the experiment contains the report choices. The subsequent audit report choices offered to participants to issue their new opinion are four: unqualified (U), unqualified with emphasis of matter paragraph (UE), qualified opinion due to other reasons but going concern (OQ) and going concern qualified opinion (GCQ).

3.3. Results and discussion

We predict that the prior year audit opinion will influence an auditor's subsequent opinion choice. Summary statistics for the dependent variable are shown in Table 1.

Table 1 (own elaboration) presents the descriptive statistics of Experiment 1. The variables are noted as: FI = financial information PYAO = the prior year audit opinion (PYAO). NAO = No prior year audit opinion; UAO = Unqualified (positive) audit opinion; UEAO = Unqualified with matter section audit (moderately negative) opinion; GCAO = Going concern (negative) audit opinion; U = unqualified subsequent audit opinion, U = unqualified subsequent audit opinion with matter paragraph, OQ = other qualifications but going concern in subsequent audit opinion and GCQ = going concern qualification in subsequent audit opinion.

First, differences appear between the frequencies of reporting types depending on the financial statements' data (poor and neutral). As predicted, the frequency of the new audit opinion in absolute figures shows that auditors' opinion tends to be more negative when the financial condition of the company is in danger (a total of 56 % of OQ and 9 % of GCQ in the poor condition compared to 27 % of OQ and 18 % of GCQ in the neutral condition), whereas more positive opinions appear when financial statements present a neutral situation (2 % of U and 33 % of UE in the poor condition compared to 19 % of U and 36 % of UE in the neutral condition).

As per prior literature, negative prior opinions inform and condition auditors' current assessments [14,15,19,21,43]. For example, in a firm suffering a poor financial health, auditors that receive a prior year negative opinion (GCAO) tend to issue more negative judgments (60 % OQ and 15 % GCQ), followed by the ones getting a moderately negative (UEAO) opinion (55 % OQ and 15 % GCQ) and auditors obtaining a positive (UAO) opinion (50 % OQ and 0 % GCQ). Additionally, in consistency with Hypothesis 1, in the neutral condition, this effect is also present (for GCAO, responses are responses are 41 % OQ and 29 % GCQ; for UEAO, responses are 24 % OQ and 20 % GCQ; for UAO, responses are responses are 16 % OQ and 12 % GCQ).

We also run a 4 × 2 analysis of variance (ANOVA) of Experiment 1 and results are illustrated in Table 2.

We find effects on the next opinion of both independent variables (see Table 2 Panel A). Using Snedecor F test and chi squared test

Table 1
Experiment 1.
Descriptive statistics of the new audit opinion issued (dependent variable):
Frequency by condition.

		Prior year audit opinion (PYAO)				
Subsequent audit opinion	Financial information (FI)	NAO	UAO	UEAO	GCAO	Overall
U	Poor	0 (0 %)	1(5 %)	0(0 %)	1(5 %)	2(2 %)
UE		8 (36 %)	9(45 %)	6(30 %)	4(20 %)	27(33 %)
OQ		13(59 %)	10(50 %)	11(55 %)	12(60 %)	46(56 %)
GCQ		1(5 %)	0(0 %)	3(15 %)	3(15 %)	7(9 %)
Overall		22	20	20	20	82
U	Neutral	5(26 %)	7(28 %)	3(12 %)	3(13 %)	18(19 %)
UE		7(37 %)	11(44 %)	11(44 %)	4(17 %)	33(36 %)
OQ		5(26 %)	4(16 %)	6(24 %)	10(41 %)	25(27 %)
GCQ		2(11 %)	3(12 %)	5(20 %)	7(29 %)	17(18 %)
Overall		19	25	25	24	93
Overall		41	45	45	44	175

for proportions, our evidence shows a main effect on financial information [F = 4.705; p = 0.031] and prior opinion [F = 4.054; p = 0.008]. However, the interaction is not statistically significant [F = 0.683; p = 0.696], probably due to the size of the sample.

We also run a priori contrasts for differences between negative and positive prior opinions (Table 2 Panel B). A priori contrasts confirm that the new opinion assessment is undoubtedly affected by the prior opinions when going concern (negative) opinions are presented [$\chi^2 = 9.021$; p = 0.029] and accounting data is neutral.

To increase the validity of our evidence, we also aggregate the four types of subsequent audit opinions (dependent variable) into only two: a positive versus a negative opinion, the most common types. On the one hand, a positive opinion contains both an unqualified opinion and an unqualified with a matter section (U + UE). On the other hand, a negative opinion combines going concern and any other types of qualifications (OQ + GCQ). Applying this combination, similar results are obtained, detailed in Table 3.

Descriptive statistics show clear differences among groups with different prior audit opinions (see Table 3 Panel A). For example, when the financial data seems to provide a financially distressed company, negative opinions are 50 % with a positive prior opinion (UAO) and raise to 75 % when the previous opinion is negative (GCAO). When the financial information is neutral, positive opinions move from 72 % with positive prior opinion (UAO) to only 29 % when a negative opinion (GCAO) is provided.

Statistically speaking, in Table 3 Panel B, our evidence shows a main effect on financial information [F = 7.291; p = 0.008] and prior audit opinion [F = 3.817; p = 0.011], whereas the interaction is not significant from a statistical point of view [F = 0.525; p = 0.665]. However, we believe that the insignificance of the interaction is due to the size of the sample because the tendency of the effect of the prior opinion on the new auditors' decision is clearly present in the descriptive statistics.

In Table 3 Panel C, we test the a priori contrasts for comparing new negative opinions and the other choices. Results indicate that the next opinion is basically affected by the prior reports when it presents a going concern qualification [$\chi^2 = 8.608$; p = 0.003] and the accounting data does not a negative financially distressed case. This evidence corroborates that the auditors' reliance on prior year's working papers informing about current negative assessments [15].

Based on the results of Experiment 1, we confirm that confirmation bias occurs among external auditors. Consistent with our Hypothesis 1, the prior year audit opinion persuades auditors when determining their next opinion judgment and this effect is more salient when the prior report is negative, that is, when it includes a going concern opinion.

3.4. Additional analyses

Once our results have suggested the influence of the previous audit report on the auditor's next opinion, it is important to explain the causes of the discrepancies found between the audit opinion issued and the financial data provided to the auditors. If the audit report does not warn financial statements' users, such as investors, creditors, employees or any other stakeholder, that the entity is suffering financial distress or that a sudden bankruptcy might occur, consequences could be dramatic from an economic and social point of view.

In theory, it is assumed that the audit opinion is based on the review and analysis of an entity's financial statements [62], and the previous year audit opinion should be irrelevant and not the base for the next opinion. Thus, a discrepancy or incongruity exists under two situations. First, when the financial statements show a poor condition and the auditor issues a positive report (pUiP, poor and unqualified: incongruent positive). Even though last year's audit opinion is positive, the next opinion should be negative. Second, there is an incongruity when the financial statements represent a healthy firm and the opinion is negative (nGCiN, neutral and going concern: incongruent negative). This incongruence might have devastating consequences on the stock markets, possible debt problems or the loss of talent to other companies, as stakeholders might consider the company to be under financial distress when it is not the case.

Theoretically, the rest of circumstances would not imply a discrepancy between the accounting data and the audit opinion. That is, congruencies appear with financial difficulties and next negative opinion, no matter the previous audit opinion (pGCcN, poor and

Table 2
Experiment 1: Analysis of variance (ANOVA).

Panel A: Analysis of Variance (Between-Subjects Effect)						
Source of variance	Sums of squares	Degrees of freedom	Mean Square	F-statistic	*p*-value	η^2
FI	3.310	1	3.310	4.705	0.031	0.027
PYAO	8.556	3	2.9852	4.054	0.008	0.068
FI x PYAO	1.442	3	0.481	0.683	0.696	0.012
Total between-cells variance	13.509	7	1.930	2.743	0.564	0.103
Error	117.486	167				
Total	1283.000	175				

Panel B: A priori Contrast [Cell 1, Cell 2, Cell 3, Cell 4]			
Source of variance	χ^2-statistic	Degrees of freedom	*p*-value
Poor [0, −2, 0, 2]	5.105	3	0.164
Neutral [0, −2, 0, 2]	9.021	3	0.029

Own elaboration. The independent variables are the financial information (FI) and the prior year audit opinion (PYAO), where FI has two levels (poor and neutral) and PYAO consists of four categories. The interaction between independent variables is shown as FI x PYAO. A priori contrasts are coded across the four cells where: Cell 1 = NAO; Cell 2 = UAO; Cell 3 = UEAO; Cell 4 = GCAO.

Table 3
Experiment 1: Descriptive and statistical analysis.

Panel A: Descriptive statistics: Frequency by condition

Subsequent audit opinion	Financial information (FI)	Prior year audit opinion (PYAO)				
		NAO	UAO	UEAO	GCAO	Overall
U + UE	Poor	8 (36 %)	10(50 %)	6(30 %)	5(25 %)	29(35 %)
OQ + GCQ		14(64 %)	10(50 %)	14(70 %)	15(75 %)	53(65 %)
Overall		22	20	20	20	82
U + UE	Neutral	12(63 %)	18(72 %)	14(56 %)	7(29 %)	51(55 %)
OQ + GCQ		7(37 %)	7(28 %)	11(44 %)	17(71 %)	42(45 %)
Overall		19	25	25	24	93
Overall		41	45	45	44	175

Panel B: Analysis of Variance (Between-Subjects Effect)

Source of variance	Sums of squares	Degrees of freedom (Df)	Mean Square	F-stat.	p-value	η^2
FI	1.686	1	1.686	7.291	0.008	0.042
PYAO	2.648	3	0.883	3.817	0.011	0.064
FI x PYAO	0.365	3	0.122	0.525	0.665	0.009
Total between-cells variance	4.808	7	0.687	2.970	0.006	0.111
Error	38.620	167				
Total	460.000	175				

Panel C: A priori Contrast [Cell 1, Cell 2, Cell 3, Cell 4]

Source of variance	χ^2-statistic	Df	p-value
Poor [1, 1, 1, −3]	1.243	1	0.200
Neutral [1, 1, 1, −3]	8.608	1	0.003

Panel D: A priori Contrast [Cell 1, Cell 2, Cell 3, Cell 4]

Source of variance	χ^2-statistic	Df	p-value
Poor [-3, 0, 0, 3]	0.633	1	0.323
Neutral [-3, 0, 0, 3]	4.968	1	0.027

Panel E: A priori Contrast [Cell 1, Cell 2, Cell 3, Cell 4]

Source of variance	χ^2-statistic	Df	p-value
Poor [0, 3, 0, −3]	2.667	1	0.095
Neutral [0, 3, 0, −3]	8.990	1	0.003

Panel F: A priori Contrast [Cell 1, Cell 2, Cell 3, Cell 4]

Source of variance	χ^2-statistic	Df	p-value
Poor [0, 0, 3, −3]	0.125	1	0.500
Neutral [0, 0, 3, −3]	3.600	1	0.053

Own elaboration. The independent variables are the financial information (FI) and the prior year audit opinion (PYAO), where FI has two levels (poor and neutral) and PYAO consists of four categories. The interaction between independent variables is shown as FI x PYAO. A priori contrasts are coded across the four cells where: Cell 1 = NAO; Cell 2 = UAO; Cell 3 = UEAO; Cell 4 = GCAO.

going concern: congruent negative; and pUcN, poor and unqualified: congruent negative). Also, there are congruencies with healthy firms and next positive opinion without focusing on the prior opinion (nUcP, neutral and unqualified: congruent positive; and nGCcP, neutral and going concern: congruent positive). We summarize these situations in Table 4.

To explain the reasons why discrepancies might occur in Experiment 1, we have analyzed three different variables and results appear in Table 5: the confidence of auditors on their current assessment measured by the new opinion issued (Panel A), the rank or importance to the different pieces of financial information given to them in the experiment materials (Panel B), and the time spent by participants looking at each financial document during the experiment (Panel C)

Regarding the two situations in which the inefficiencies could be more salient (positive new opinion with poor financial condition and previous positive opinion, and negative new opinion with healthy financial condition and previous negative opinion), our results are interesting. The evidence may indicate the existence of some inefficient participants, as they do not spend enough time looking at the financial information (Panel C). Due to the sample size, there is no statistical significance in some cases. However, the tendency is clear.

When comparing the answers of participants that receive the firm with poor financial condition and an unqualified (positive) prior year opinion (pUiP vs pUcN), 100 % of auditors that issue a negative report (pUcN) are confident with their responses, whereas the ones reporting a positive opinion (pUiP) are only 80 % confident. However, results are not statistically significant [$F = 16.000$; $p = 0.151$]. This evidence is probably driven by the overconfidence of participants who report a positive opinion. It is unusual to observe that auditors are sure about providing a positive report to an entity so financially distressed. It seems that they are over-reporting their

Table 4
Experiment 1: Congruent and incongruent decisions.

Panel A: FI = Poor				
Next audit opinion	PYAO	Type of Decision	Condition	Explanation of the condition
OQ + GCQ (negative)	GCAO (negative)	Congruent	pGCcN	Poor and going concern: congruent
OQ + GCQ (negative)	UAO (positive)	Congruent	pUcN	Poor and unqualified: congruent
U + UE (positive)	UAO (positive)	Incongruent	pUiP	Poor and unqualified: in congruent
Panel B: FI = Neutral				
Next audit opinion	PYAO	Type of Decision	Condition	Explanation of the condition
U + UE (positive)	UAO (positive)	Congruent	nUcP	Neutral and unqualified: congruent
U + UE (positive)	GCAO (negative)	Congruent	nGCcP	Neutral and going concern: congruent
OQ + GCQ (negative)	GCAO (negative)	Incongruent	nGCiN	Neutral and going concern: incongruent

Table 4 (own elaboration).[2].

[2] Table 4 (own elaboration) reports the dependent variable (subsequent audit opinion) of Experiment 1 in accordance to the type of decision that participants make: congruent or incongruent decisions. The dependent variable is coded as positive or unqualified (U + UE) and negative or qualified (OQ + GCQ). The independent variables are the financial information (FI) and the prior year audit opinion (PYAO). Financial information is represented in two levels, poor and neutral, and the prior year audit opinion is coded in two categories: unqualified audit opinion (UAO) and going concern audit opinion (GCAO). The congruent and incongruent situations that might occur are coded as follows: pGCcN (poor financial information and going concern opinion: congruent decision when the next audit opinion is negative), pUcN (poor financial information and unqualified opinion: congruent decision when the next audit opinion is negative), pUiP (poor financial information and unqualified opinion: incongruent decision when the next audit opinion is positive), nUcP (neutral financial information and unqualified opinion: congruent decision when the next audit opinion is positive), nGCcP (neutral financial information and going concern opinion: congruent decision when the next audit opinion is positive) and nGCiN (neutral financial information and going concern opinion: incongruent decision when the next audit opinion is negative).

Table 5
Statistical analysis of Experiment 1:
confidence, financial information ranking and time.

Panel A: Confidence on the opinion issued			
Audit Opinion	% High Confidence	% Neutral Confidence	% Low Confidence
pUiP	80 %	20 %	–
pUcN	100 %	–	–
nGCiN	82 %	6 %	12 %
nGCcP	57 %	29 %	14 %
pGCcN	80 %	13 %	7 %
nUcP	50 %	33 %	17 %
Other auditors	66 %	18 %	16 %

Panel B: Ranking of financial information sources				
Audit Opinion	Balance Sheet	Income Statement	Cash Flow Statement	Audit report
pUiP	45 %	20 %	10 %	25 %
pUcN	40 %	30 %	20 %	10 %
nGCiN	26 %	38 %	18 %	18 %
nGCcP	35 %	44 %	7 %	14 %
pGCcN	33 %	33 %	14 %	20 %
nUcP	33 %	33 %	20 %	14 %
Other auditors	36 %	34 %	20 %	10 %

Panel C: Time reading the financial information sources - Av (Sd)				
Audit Opinion	Balance sheet	Income statement	Cash flow statement	Audit report
pUiP	49″(62″)	57″(104″)	6″(6″)	10″(8″)
pUcN	31″(34″)	23″(39″)	2″(4″)	4″(5″)
nGCiN	35″(50″)	28″(51″)	18″(38″)	19″(22″)
nGCcP	28″(29″)	8″(14″)	3″(4″)	6″(15″)
pGCcN	41″(45″)	28″(38″)	10″(13″)	26″(31″)
nUcP	20″(34″)	36″(68″)	8″(12″)	10″(12″)
Other auditors	36″(50″)	28″(47″)	11″(28″)	14″(37″)

confidence because their opinion agrees with the one from the previous auditor, according to the confirmation bias. They are considering the prior opinion more relevant than the financial information provided and it should be the opposite. In fact, in the incongruent condition (pUiP), participants give a much higher relevance to the prior opinion (25 %) than in the congruent condition (pUcN), where they rank the prior opinion with a 10 %, the lowest of all pieces of financial information received.

Table 6
Experiment 2.
Descriptive statistics of the new audit opinion (dependent variable):
Frequency by condition.

		Prior year audit opinion (PYAO)				
Subsequent audit opinion	Experience (EXP)	NAO	UAO	UEAO	GCAO	Overall
U	Juniors level 1 (<1 year)	1	2	1	1	5(17 %)
UE		3	5	5	0	13(40 %)
OQ		1	0	0	0	1(3 %)
GCQ		2	2	3	6	13(40 %)
Overall		7 (41 %)	9 (45 %)	9 (34 %)	7 (22 %)	32
U	Juniors	2	3	1	0	6(19 %)
UE	Level 2 (1–3 years)	3	0	3	1	7(23 %)
OQ		1	1	2	3	7(23 %)
GCQ		1	1	3	6	11(35 %)
Overall		7 (41 %)	5 (25 %)	9 (33 %)	10 (32 %)	31
U	Seniors	1	3	2	1	7(35 %)
UE		1	2	5	1	9(45 %)
OQ		1	1	1	0	3(15 %)
GCQ		0	0	1	0	1(5 %)
Overall		3 (18 %)	6 (30 %)	9 (33 %)	2 (10 %)	20
Overall		17	20	27	19	83

Table 6 (own elaboration).[3].

[3] Table 6 (own elaboration) presents the descriptive statistics of Experiment 2. The independent variables are experience (EXP) and prior year audit opinion (PYAO). Experience is represented in three levels: juniors with less than one year of experience (Junior's level 1), juniors up to 3 years of experience (Juniors level 2) and senior auditors (more than 3 years of experience). 83 auditors participated in the experiment: 32 Juniors level 1, 31 Juniors level 2 and 20 Seniors. Prior year audit opinion is coded as follows: NAO = No audit opinion; UAO = Unqualified (positive) audit opinion; UEAO = Unqualified with matter section (moderately negative) audit opinion; GCAO = Going concern (negative) audit opinion. The dependent variable or subsequent audit opinion is categorized as unqualified (U), unqualified with matter paragraph (UE), other qualifications but going concern (OQ) and going concern qualification (GCQ). For the new audit opinion, the frequency is reported by condition.

In line with the above, incongruent auditors that issue a positive opinion when receiving the firm with poor financial condition and an unqualified (positive) prior opinion (pUiP) spend more time reading the more relevant financial information than congruent auditors (pUcN) probably because they are not completely sure about their assessment. Those incongruent auditors (pUiP) spend 49 s in the balance sheet compared to the 31 s (58 % more) used by the comparable congruent participants (pUcN). Similarly, the time spent in the income statement is also 147 % higher (57 s by pUiP versus 23 s by pUcN). This evidence indicates that they may need more time because they are probably not so confident with their decision in line with [63].

In parallel, when a company has a neutral financial situation and a going concern (negative) prior opinion, we find the same effect between incongruent and congruent participants (nGCiN versus nGCcP). In these scenarios, according to our expectations, confidence should be lower than when a clear financial distress is embedded in the financial statements. In the congruent condition (nGCcP), as expected, confidence is lower than when participants received a poor financial condition (57 % versus 80 %) with statistically significant differences [$F = 36.141$; $p = 0.034$]. However, in the incongruent situation (nGCiN), the confidence is similar when the assessment is affected by the prior opinion (pUiP), no matter the financial situation of the firm (82 % versus 80 %). Thus, in this case, it seems that there is again an example of over-reporting confidence by auditors.

Although it is not possible to know what auditors are thinking and how auditors issue their final opinion, our results show that in incongruent situations -when the auditors decide to issue an opinion that goes in the opposite direction as what the financial information suggests-, auditors over-report their confidence even when they need more time to make a decision. In our opinion, this overconfidence seems real, unconscious and challenging. Consequently, they apparently report more confidence than what they have in reality.

Table 5 (own elaboration) presents the descriptives of Experiment 1 regarding confidence of participants on the task, ranking of the financial data sources provided and time spent in those sources, divided by the type of decision that participants make: congruent or incongruent decisions. Data in Panels A and B is collected from a self-reported questionnaire. Panel C data is calculated by the website. The decisions that participants make depending on their choices and conditions are coded as follows: pGCcN = Poor and going concern opinion, congruent negative; pUcN = Poor and unqualified opinion, congruent ngeative; pUiP = Poor and unqualified opinion, incongruent positive; nUcP = Neutral and unqualified opinion, congruent positive; nGCcP = Neutral and going concern opinion, congruent positive; nGCiN = Neutral and going concern, incongruent negative.

4. Experiment 2

4.1. Participants

A total of 32 junior level 1 auditors (less than one year of experience), 31 junior level 2 auditors (up to 3 years of experience) and 20 senior auditors (more than 3 years of experience) participate in Experiment 2.

4.2. Design and procedure

To test our Hypothesis 2, we use the same survey questionnaire as in Experiment 1 (see Annex for experiment materials). In Experiment 2, the prior year audit opinion is experimentally manipulated, and the financial information provided to participants is neutral (characteristics of the neutral condition explained in Experiment 1). We manipulate the prior opinion in four types (NAO or no audit opinion, UAO or positive, UEAO or moderately negative and GCAO or negative) and subjects have three levels of experience: juniors with less than one year of experience, juniors with experience between one to three years, and seniors. Then, in a between-subjects design, participants randomly receive different prior year audit opinions and questions are equivalent across the treatment conditions. Procedures and the dependent variable (new audit opinion choice) tested is similar to Experiment 1.

4.3. Results and discussion

We predict that the influence of the prior year audit opinion on auditors' opinion choice will be mitigated with the years of experience in the auditing profession. Statistics are presented in Table 6. In line with Hypothesis 2, senior auditors provide next opinions more consistent with the financial information received. For example, senior auditor issues no qualifications (0 %) even when the prior opinion is negative, while junior auditors (level 1) choose a negative report in 86 % of the cases (6 out of 7 cases). Thus, we conclude that professional experience mitigates the effect of confirmation bias in the auditing profession, as senior auditors seem to rely more on the financial data than on the prior audit opinion, considering the prior report as a secondary piece of information.

We also include a 4×3 analysis of variance (ANOVA) with the new audit opinion issued as the dependent variable, and results are shown in Table 7. An effect on experience (EXP) is found [$F = 3.998$; $p = 0.023$], as noted in Panel A. This is particularly due to the differences in the GCAO (negative) condition [$F = 3.415$; $p = 0.038$] (see post hoc contrast of Table 7 Panel B). These results are driven by the low experienced auditors, who are influenced by the prior year negative opinion. In contrast, auditors with high experience analyze the financial and non-financial information of the client more thoroughly and suggest a new opinion based on the situation of the firm, focusing less on the prior auditors' reporting choice.

Table 7 (own elaboration) reports the analysis of variance (ANOVA) and post hoc contrast of Experiment 2. The independent variables are experience (EXP) and prior year audit opinion (PYAO). Prior year audit opinion is coded as follows: NAO = No audit opinion; UAO = Unqualified (positive) audit opinion; UEAO = Unqualified with matter section (moderately negative) audit opinion; GCAO = Going concern (negative) audit opinion. The interaction between the independent variables is shown as EXP x PYAO.

5. General discussion and conclusions

This study attempts to test whether confirmation bias occurs among auditors, and whether professional experience mitigates this effect. More specifically, we aim to experimentally examine whether the audit opinion of the year before conducting the audit influences the auditors' judgments on the opinion choice of the subsequent period. We predict that the auditor will frequently be in favor of the prior opinion, favoring that opinion over others. This prediction is motivated by the concept of confirmation bias, which is defined as a tendency to search for information that confirms the favored or initial hypothesis generated by an auditor [30,31]. Also, according to the literature, confirmation bias is diminished by the auditors' professional experience, and we also test this moderating effect on our study. Less experienced auditors rate preceding opinions too high, such as going concern opinions, ignoring signals that mitigate the threat to continued existence [51]. We expect that the reliance on the prior opinion will decrease as experience raises because experienced auditors have been involved in more audit engagements and their knowledge and understanding of the auditing process is enhanced.

Prior literature suggests that the audit report by itself is relevant to analysts in that it signals a level of reliability in the financial statements [48]. However, the additional content of the longer form audit report generally is not attended to by the analysts. These studies have found no evidence that investors consider the additional disclosures to be incrementally informative [64–66]. For instance, Lennox et al. [66] attribute their finding to the possibility that investors may already know in advance about the firm's risks which are then described in the expanded report. Also, Sirois et al. [67] find that users are exposed to an audit report with several additional critical audit matters, participants devote less attention to the remaining parts of the financial statements. Thus, the audit opinion seems to still be the key piece of information in the audit report that investors pay attention to, and it has been restructured in the expanded audit report, being presented early in the text [68].

In summary (Table 8), in line with our expectations, our evidence states that a negative opinion (more specifically, a going concern opinion) can sway the following reporting choice. Similarly, our results suggest that positive (unqualified) opinions affect the auditor when issuing a new opinion in the next period, and moderately negative opinions (unqualified with a matter paragraph) also have a moderating effect on the next opinion choice. These results are partly diminished by an increase in auditors' experience. It can be interpreted by saying that when an auditor sees that a prior report is positive or contains a going concern qualification, it is tough to

Table 7
Experiment 2: Statistical analysis of new audit opinion.

Panel A: Analysis of Variance (Between-Subjects Effect)					
Source of variance	Sums of squares	Degrees of freedom	Mean Square	F-statistic	*p*-value
EXP	8.654	2	4.327	3.998	0.023 (0.101)
PYAO	6.578	3	2.193	2.026	0.118 (0.079)
EXP x PYAO	4.739	6	0.790	0.730	0.627 (0.058)
Panel B: Post hoc Contrast					
Source of variance	Sums of squares	Degrees of freedom	Mean Square	F-statistic	*p*-value
NAO	0.958	2	0.479	0.443	0.644(0.012)
UAO	1.1111	2	0.556	0.513	0.601(0.014)
UEAO	2.074	2	1.037	0.958	0.388(0.026)
GCAO	7.391	2	3.695	3.415	0.038(0.088)

Table 8
Hypotheses and conclusions.

HYPOTHESES	SUPPORT
H1: Auditors are influenced by the previous year's audit report when issuing a report for a new period.	yes
F-statistic = 3.817; p-value = 0.011; η2 = 0.064	
H1a: Auditors are influenced by the previous year's audit report when issuing a negative financial information report for a new period.	no
F-statistic = 7.291; p-value = 0.008; η2 = 0.042 & χ2-statistic = 1.243; p-value = 0.200	
H1b: Auditors are influenced by the previous year's audit report when issuing a positive financial information report for a new period.	yes
F-statistic = 7.291; p-value = 0.008; η2 = 0.042 & χ2-statistic = 8.608; p-value = 0.003	
CONCLUSIONS: The prior audit report clearly affects the auditors' decision making in the new fiscal year. This effect is very clear when the company's financial information in the current fiscal year is positive, and the more negative the audit report for the previous fiscal year, the more the company's valuation is impaired. The same effect occurs when the current year's financial information is negative, although from a statistical point of view, the effect is only marginally significant, so although there is a clear trend, we cannot support our hypothesis.	
H2: The influence of the prior year audit opinion on the new reporting choices decreases as auditor experience increases.	yes
F-statistic = 4.054; p-value = 0.008; η2 = 0.068	
H2a: If we analyze the decision-making of auditors with little experience, the influence of the previous report should be high.	yes
F-statistic = 3.817; p-value = 0.011; η2 = 0.064	
H2b: If we compare the decision-making of auditors with different experiences, as experience increases, the influence of the previous report should decrease.	yes
F-statistic = 3.998; p-value = 0.023; η2 = 0.101	
CONCLUSIONS: A clear example of the effect that the previous audit report has on future decisions in junior auditors can be seen in Experiment 1. In experiment 2 we can see that although the effect is maintained, as auditors gain more experience, the influence of the previous audit report is much less in their decision making with respect to the new report.	

change the direction of the next audit report so that the following opinion will be in line with the prior one. This indicates that auditors favor their assessments to more positive judgments when there is a prior positive opinion than when they receive previous negative reports, given the same company's financial statements. This result is interesting and significant and should be taken into consideration by policymakers, as the role of external auditors is a fundamental pillar of every economy to assure the reliability of the financial information that firms provide to the market.

Our findings have several important implications. First, we confirm the existence of confirmation bias in the auditing process. More precisely, when prior reports show clear opinions (positive or negative), they influence the next auditor's judgments to perform the audits in favor of one initial hypothesis, ignoring other relevant information that may not be correlated with their selected hypothesis. Second, we have examined the effects of confirmation bias and experience on auditors' judgments, contributing to the debate about the existence of these exogenous factors in the auditing profession. Our study is the first one to use an experimental setting with all different prior opinions provided to participants to measure confirmation bias, so we add to the experimental evidence that has focused on the impact of prior going concern opinions on auditors' judgments [19,21,43]. Moreover, academics have raised concerns about the need for studies that investigate the pieces of evidence that auditors evaluate during audit engagements where substantial doubt exists about the client's going concern assumption [18]. Our paper is informative to the current needs, as we provide evidence on the time that auditors spend checking the financial statements as well their raking of the importance of these pieces of information. The current auditing regulation requires auditors to disclose statements on material uncertainties and significant risk areas found during the audit process. We believe that our study could be timely and relevant for policymakers, as they could benefit from our findings related to the audit process (ranking of financial statements and time spent) or to the effect of prior opinions when implementing the expanded audit report. More training courses are needed for auditors with less experience, reinforcing their expertise and avoiding confirmation bias. Finally, emerging FinTech technologies and generative artificial intelligence could also improve financial reporting transparency, help audit processes and risk assessment and decrease the confirmation bias [69–71]. More studies are needed in this line.

This research is not free of limitations. The main weakness is this work the size of the sample, due to the difficulty of finding subjects

willing to participate in the experiments. As a follow up study, it would be interesting to compare the results with those obtained with a bigger sample of experienced auditors. In addition, although we can observe and detail the decision-making process and the effect that occurs during this process, the reasons why auditors act in this way could be very varied, including legislative, operational, judicial, human or strategic factors. This leads us to need much more research to be able to reach more conclusive conclusions regarding the reason for the phenomenon found.

Data availability statement

The database is available at Behavioralexperiments.com. However, it is not available in any public repository because we are still working with the data.

Ethics declaration

We, the authors, have followed and complied with the journal's Ethics and Editorial Policies. All authors have participated equally in all phases of the preparation of this article.

CRediT authorship contribution statement

Nora Muñoz-Izquierdo: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **María-del-Mar Camacho-Miñano:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **María-del-Pilar Sánchez-Martín:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **David Pascual-Ezama:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests. Mara del Mar Camacho-Miñano reports financial support was provided by Spanish Ministry of Science and Innovation (PID 2020-115700RB-I00). David Pascual-Ezama reports financial support was provided by Real Colegio Complutense at Harvard University. David Pascual-Ezama reports financial support was provided by Fulbright program at MIT. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We gratefully acknowledge the financial support provided by the Spanish Ministry of Science and Innovation (PID 2020-115700RB-I00), Real Colegio Complutense at Harvard University and Fulbright program at MIT for the support for the visiting period of David Pascual-Ezama.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.heliyon.2024.e30971.

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