The Languages of Business

Three Essays on Language and Translation in Accounting

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My dissertation shows that there are circumstances that require a careful choice of language. This is one of them.

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Diese Arbeit ist Dir gewidmet.

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List of Abbreviations

10-K	Form 10-K
A&F	Accounting and Finance
AAAJ	Accounting, Auditing & Accountability Journal
ABDC list	Australian Business Deans Council 2022 Journal Quality List
ACC updates	accounting updates publication alert by Jochen Pierk
adj.	adjusted
AF	Accounting Forum
AG	Aktiengesellschaft [stock corporation]
AI	artificial intelligence
AOS	Accounting, Organizations and Society
ASQ	Administrative Science Quarterly
B.C.	before Christ
c.p.	ceteris paribus [all else being equal]
CA	California
CAGR	compound annual growth rate
CEO	Chief Executive Officer
CO	Colorado
CPA	Critical Perspectives on Accounting
CSR	corporate social responsibility
cum.	cumulated
DV	dependent variable
e.g.	exempli gratia [for example]
EAR	European Accounting Review
ed.	edition
ESG	environmental, social and governance
esp.	especially
et al.	et alia [and others]
EUR	Euro [€]
excl.	excluded
fract.	fractionalized
FT50 ranking	2016 Financial Times Research Rank
GDPR	General Data Protection Regulation
H	hypothesis

i.e.	id est [that is]
IFRS	International Financial Reporting Standards
IL	Illinois
IN	Indiana
incl.	included
ISO	International Organization for Standardization
JAE	Journal of Accounting and Economics
JAR	Journal of Accounting Research
JBE	Journal of Business Ethics
JEL	Journal of Economic Literature
JoF	Journal of Finance
KPI	key performance indicator
LLM	large language model
MA	Massachusetts
MD&A	management discussion and analysis
N	number
n.d.	no date
NJ	New Jersey
NLP	natural language processing
NY	New York
OLS	ordinary least squares
pt.	part
R&D	research and development
RAST	Review of Accounting Studies
SEC	United States Securities and Exchange Commission
std.	standard
TAR	The Accounting Review
TX	Texas
UK	United Kingdom
US	United States of America
VHB	Verband der Hochschullehrerinnen und Hochschullehrer für Betriebswirtschaft e.V. [German Academic Association for Business Research]
XBRL	eXtensible Business Reporting Language

A. The Languages of Business: Research Framework

A. The Languages of Business: Research Framework

I. Introduction: A Language of Numbers?

"[...] not everything that can be counted counts,

and not everything that counts can be counted."[1]

In the beginning was, it seems, a unity of words and numbers. This unity took the form of clay tokens, which typically represented commodities, for instance, wine. By using tokens for trading, the quality of the commodities and their respective quantity were inseparably linked via concrete counting, i.e., three jars of wine for three ovoid tokens. Around 3.100 B.C., written inscriptions split the notions of quality and quantity by introducing abstract numbers, i.e., *3 jars of wine* (e.g., Schmandt-Besserat 1984). Archaeological evidence suggests that prehistoric numbers, early writings, counting and accounting as well as rudimentary forms of money emerged all together in the ancient Middle East (Mattessich 2000). This was not because quantification via abstract numbers was more precise than via concrete tokens, but because abstract numerical inscriptions were more mobile, more stable, and more easily combinable than physical tokens (Robson 1992). Moreover, quantification via abstract numbers helped to overcome physical distance and distrust between transaction parties, because it appeared as an impersonal technique of universalization and made accounting a credible system of documentation, that seemed to be free of subjectivity, arbitrariness, and idiosyncrasy (Chua 1996; Porter 1992; Robson 1992). As a result, long before Luca Pacioli's *Summa de Arithmetica, Geometria, Proportioni et Proportionalità*, quantification undeniably was already the prevailing paradigm in accounting (Lee 1977; Nobes 1982). Consequently, this paradigm of quantification turned accounting into a *language of numbers* (Chua 1996; Fauré, Cooren, and Matte 2019), ostensibly unaffected by natural languages.

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[1] Cameron (1963, 13).

However, natural languages have always maintained their economic importance. This is because shared language, both written and spoken, leads to economic advantages for the linguistic in-group as it reduces transaction costs (Muller 2024). Moreover, the division of labor in modern organizations relies on shared information and effective communication not only via accounting numbers, but also via natural languages (Picot, Dietl, Franck, Fiedler and Royer 2020; Picot, Reichwald, and Wiegand 2003). Thus, communication within and between different languages is not simply a feature of contemporary corporate cultures, but rather a prerequisite for mutual understanding and indispensable for the success of global organizations, which has given rise to English as the *lingua franca* of business (Marquardt and Reynolds 1994; Nickerson 2005).

Accordingly, prior research in both financial and management accounting shows that the economic effects of the use of different languages are manyfold: language barriers within multi-national organizations hinder the exchange of knowledge and the exertion of control (e.g., Detzen and Loehlein 2018; Neeley 2013), less future-oriented language lowers corporate future-oriented behavior, like, for instance, CSR efforts and R&D investment (Liang, Marquis, Rennebog, and Sun 2018), as well as individuals' savings rates, health behaviors, and retirement assets (Chen 2013), language induced home bias affects stockholdings and trades (e.g., Grinblatt and Keloharju 2001), and the application of translated IFRS reduces disclosure quality (e.g., Holthoff, Hoos, and Weißenberger 2015; Nobes 2021).

Prior research also provides different explanations for why translation between languages has an effect in accounting contexts. However, virtually all explanations go beyond a simple change in language-induced transaction costs. Therefore, in this dissertation, the basic assumption is that accounting, albeit a language of numbers, is always embedded in environments of natural languages, with which it interrelates and interacts. While accounting is a special-purpose tool for communicating about financial state and performance (e.g., Bloomfield 2008; Holthoff and Weißenberger 2012; Graham 2013), natural languages are

general-purpose tools intended to allow communication about any topic. This is to say that while accounting quantifies, abstracts, and sometimes decontextualizes, language on the other hand can qualify, concretize, and recontextualizes, so that ultimately both contribute to shaping transactions on markets and relationships inside organizations (Chua 1986, 1996; Fauré et al. 2019). Thus, if the overarching goal of accounting is still to overcome distance and distrust through universal techniques, then understanding the effects of language and translation is important for accounting in order to maintain integrity and to assert its role as the *language of business* (e.g., Bloomfield 2008; Lavoie 1987).

Against the background of these considerations, the overall aim of this dissertation is to examine the interaction of accounting with the language environments in which it is embedded into. Specifically, in this dissertation I seek to, firstly, identify and reflect on current structures of research on language and translation in accounting, since a comprehensive cross-sectional mapping of research strands is currently lacking. Based on these reflections, I develop two research questions, which have not yet been subject to empirical investigation. One the one hand, I will explain how changes in disclosure language affect reactions of market participants to sustainability reporting, and on the other, explain how language choices interact with firms' management control systems and thereby influence compliance decisions within organizations. Being aware that "[…] not everything that can be counted counts, and not everything that counts can be counted" (Cameron 1963, 13), in this dissertation I seek to argue that both *numbers* and *words* are powerful carriers of meaning in accounting contexts and that therefore both *numbers* and *words* can rightfully be considered *languages of business*.

II. Outline and Research Background

My dissertation consists of the following three distinct papers:

Paper 1: *Quantifying Language: A Bibliometric Analysis of Research on Language and Translation in Accounting*

Paper 2: *Hidden in Plain Sight? How Readability and Reporting Language Influence the Impact of Sustainability Reporting*

Paper 3: *Gained in Translation? How Corporate Culture and Corporate Language Affect Compliance*

Although they differ in their individual focus, all three papers unite under the overarching aim to provide a better understanding of the role of language and translation for accounting research and practice.

The first paper is a bibliometric review that identifies and reflects on current structures of research on language and translation in accounting. Thereby, the first paper identifies blind spots and research gaps, and provides the context for the following two experimental studies. Specifically, the bibliometric analysis shows that while much of prior research focuses on the market effects of linguistic properties of corporate disclosure, e.g., readability, little is known regarding the robustness of these effects with regard to language nativeness of the market participants. In other words, language features are usually studied in isolation from the greater language environment (e.g., Huang, Teoh, and Zhang 2014; Rennekamp 2012). Thus, Paper 2 seeks to explain how changes in readability and in disclosure language affect reactions of non-professional investors. Moreover, the bibliometric analysis shows that research on language and translation is rather underrepresented in the subdiscipline of management accounting and control. That is remarkable in so far, as, for instance, research on management control systems is well aware of the importance of corporate culture for effective coordination (e.g., Merchant and Van der Stede 2017). Albeit an integral part of corporate cultures (e.g., Fredriksson, Barner-Rasmussen, and Piekkari 2006; Marschan, D. Welch, and L. Welch 1997), effects associated

with corporate language have rarely been addressed by prior research so far. Thus, Paper 3 seeks to explain how the choice of a corporate language interacts with firms' management control systems and thereby influences compliance decisions within organizations.

In summary, the three papers of my dissertation cover both the general localization of research on language and translation within the accounting discipline, as well as applications to extra- and intra-organizational language effects in specific accounting contexts, i.e., financial accounting and reporting as well as management accounting and control, respectively. Moreover, language effects are studied both in relation to one's own judgment and decision-making and with regard to third-party judgment and decision-making. Figure A-1 illustrates the resulting structure of the dissertation.

Language Environment

Paper 1
Structuring the relationship of natural language and accounting

Accounting Context

Financial Accounting and Reporting

Management Accounting and Control

Paper 2
Extra-organizational language effects in CSR reporting (third-party decisions)

Paper 3
Intra-organizational language effects in compliance (own decision)
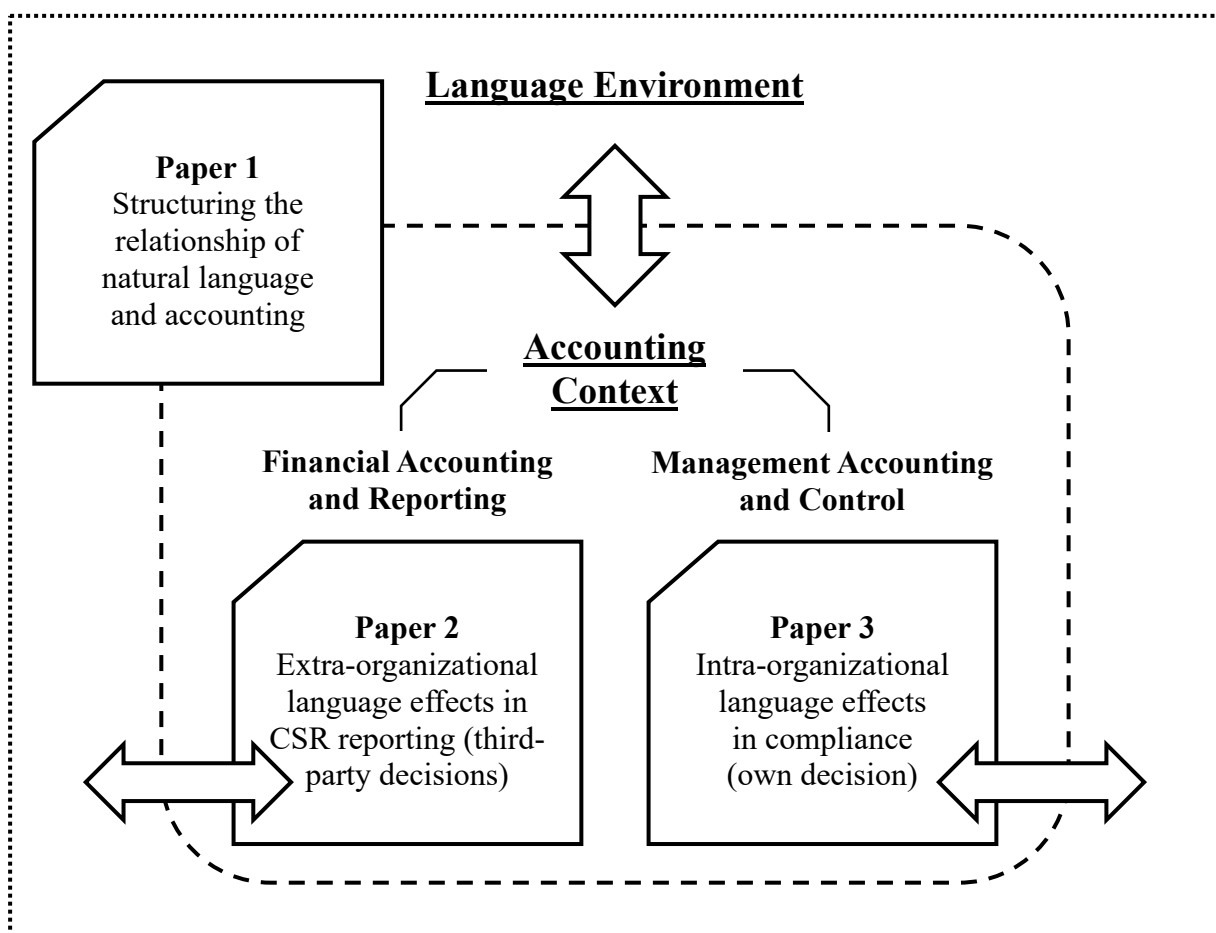
Figure A-1: Structure of the Dissertation

While Paper 1 reflects on findings rooted in diverse research paradigms, the two experimental studies in Paper 2 and Paper 3 mainly rely on behavioral approaches to describe and analyze the respective accounting phenomena in question. Setting aside normative approaches, accounting phenomena have traditionally been described using economic theory. In this paradigm, on the one hand, accounting phenomena can be described as the sum of individual optimization decisions, which are analyzed as rational choices producing efficient market equilibria, i.e., Neoclassical economics. On the other hand, accounting phenomena can be described as a set of institutions, which are analyzed as rational responses to incentives, i.e., New Institutional economics (Rogowski and Elsner 2021). However, in the case of language and especially translation, economic theories tend to have limited explanatory power. This is because translation between languages is effectively reduced to a technical process of exchanging terms in a given text, rendering language choices effectively arbitrary (e.g., Evans 2018; Lavoie 1987). Thus, differences in behavior due to differences in language become inefficient translation errors. For the two experimental studies, we therefore refer to behavioral accounting theories rooted in, among others, cognitive psychology. Behavioral approaches also describe accounting phenomena as the sum of individual optimization decisions, but analyze them as deviations from rational choice (Rogowski and Elsner 2021). Additionally, we explicitly extend the third paper's theoretical framework for systems theory-sensitive arguments, acknowledging that accounting phenomena can also be described as a complex system with economically relevant structures and dynamics (Rogowski and Elsner 2021).

To summarize, Table A-1 provides an overview of all three papers.

	Paper 1	Paper 2	Paper 3
Title	Quantifying Language: A Bibliometric Analysis of Research on Language and Translation in Accounting	Hidden in Plain Sight? How Readability and Reporting Language Influence the Impact of Sustainability Reporting	Gained in Translation? How Corporate Culture and Corporate Language Affect Compliance
Authors	Matthias B. Wesser (90 %)	Matthias B. Wesser (90 %)	Matthias B. Wesser (90 %)
	Barbara E. Weißenberger (10 %)	Barbara E. Weißenberger (10 %)	Barbara E. Weißenberger (10 %)
Focus	Relationship of natural language and translation with accounting	Extra-organizational language effects in CSR reporting	Intra-organizational language effects in compliance
Research Question	What are the structures of existing research on language and translation in accounting?	How do readability and reporting language affect the assessment of CSR performance?	How do corporate culture and corporate language affect compliance?
Method	Bibliometric review	Online experiment	Online experiment
Results	Research on language and translation in accounting – is closely linked to technological advances, as well as to regulatory, and societal developments. – is divided between positivist and constructivist/critical paradigms. – focuses mainly on properties of disclosure language, like readability or tone. – features niche topics like foreign language effects, but misses out on management control or auditing.	– Low readability reduces CSR evaluations in native-language settings, but not in foreign-language settings. – In native-language settings, reduced processing fluency from less readable information acts as a metacognitive cue, lowering reliance on the information itself and promoting affective responses instead.	– Values-based cultures increase beneficial non-compliance in foreign-language settings, but not in native-language settings. – Native language, compared to foreign language, triggers emotional responses to violations of ethical norms. – We find no effect of corporate culture and corporate language on detrimental non-compliance.

Contribution	– Mapping the shift from qualitative to quantitative approaches – Discussion of the current research momentum on NLP – Deeper understanding of the epistemological tensions in the field	– Contribution of high readability to the obfuscation of negative information – Potential bias for non-professional investors due to highly readable disclosures consumed in the first language	– Disentangling productive non-compliance from harmful behaviors – Emphasizing the importance of language in innovation and compliance
Presentations	./.	– 20th Annual Conference for Management Accounting Research (2023) – 45th European Accounting Association Annual Conference (2023) – Workshop at the Hamburg University of Technology (2023)	– European Accounting Association 40th Doctoral Colloquium (2024)
Publication Status	In preparation for submission to the *Accounting, Auditing & Accountability Journal*	Submitted to *Critical Perspectives on Accounting*	Submitted to the *Journal of Business Ethics*

Table A-1: Overview of the Dissertation Papers

III. Research Methods

Choosing a research method to answer a specific research question is one of the most important steps in the research process. Just as one scientific theory is not per se superior or inferior to another, one research method is not per se superior or inferior to another (Bloomfield, Nelson, and Soltes 2016). The key question is whether the specific research question, theory and research method fit together. Thus, researchers are required to carefully consider the research methods' respective trade-offs (Hoque 2018).

In the case of this dissertation, methodological considerations seem to be particularly profound, because I study language-related issues. Here, language is both the epistemological object and subject (see, Chalmers 1999). This is to say, that thinking about language is dependent on language itself, i.e., *linguistic relativity*, since it is language that makes cognition possible in the first place and it is language that is used to express the resulting conception of the world (Barz, Grundmann, Newen, and Nimtz 2016; Belkaoui 1978; Frege 2008/1892). Accordingly, the choice of method should be made in awareness of the basic conception of the world associated with it (Rosenberg 1988), because seemingly, the method might otherwise limit the researcher's capability of expressing her findings. This is because all methods, for their part, carry historical and scientific legacy and must themselves be understood in this context, so that certain determinations are made when choosing a method (Breuer 2010), for instance: Do the people focused on in the research process have a cognitive and emotional inner life? Do they have free will or do they merely exhibit behavior? At the same time, a quantitatively oriented research program does not necessarily have to be nomothetic, since general knowledge as a research goal does not oblige a researcher to believe in universal laws. Alternatively, quantitative methods can also be reconciled with anti-realist positions within epistemology, namely when regularities are identified without claiming that they are true patterns of a mind-independent, objective reality (Haase 2010; Kelle 2007). Thus, accounting research does not presuppose any ontological assumptions or beliefs on linguistic relativity (Hayoun 2018). The

key to good research is therefore to ask the right question and to select the most powerful method to answer that particular question (Bouchard 1976).

For the first paper, our considerations led us to a bibliometric approach. The aim of the paper is to structure existing streams of research in the field of language and translation in accounting and to provide an overview of the most relevant topics. The basic question is: What do we really know about language and translation in accounting? This question fits the basic principle of literature reviews, that usually divide into systematic or structured literature reviews, meta analyses, and bibliographic or bibliometric analyses (Kraus, Bouncken, and Aránega 2024). Bibliometric studies structure a field of research and identify links between disciplines by mapping thematic clusters, literature gaps, and academic silos. Accordingly, they are especially insightful if they achieve to overcome the boundaries of narrowly defined subdisciplines (Block and Fisch 2020). In contrast to narrative literature reviews, bibliometric literature reviews rely on quantitative methods (Block and Fisch 2020), while providing researchers with many degrees of freedom in terms of design choices (Donthu, Kumar, Mukherjee, Pandey, and Lim 2021). Therefore, ensuring a transparent and replicable scientific process is nonetheless relevant for bibliometric reviews (Tranfield, Denyer, and Smart 2003). The key factors for high quality bibliometric reviews are the high accessibility of data, i.e., research articles in databases providing bibliometric data, and the availability of software that specializes in bibliometric analyses (Block and Fisch 2020), which in the present case are both ensured. Therefore, given the broad scope and large dataset of the first paper, a bibliometric approach seems most appropriate (Donthu et al. 2021).

The research questions of the two following papers address individual's judgment and decision-making based on narrative non-financial accounting information (Paper 2) or within a management control context (Paper 3). The basic question in both papers is: Why do people, be it recipients of accounting information or members of an organization, behave the way they do and can we influence that behavior? For the second and third paper, we therefore chose an

experimental approach for reasons of data availability and non-confounded theory testing, which will be further outlined in the following.

The basic principle of conducting experiments is to manipulate one or more independent variables in the first place and to then observe the effects of these manipulations on a dependent variable, while controlling the research environment by holding constant all other potential influences, randomization or measuring them (Libby, Bloomfield, and Nelson 2002; Pearl and Mackenzie 2018). Moreover, an experiment is suitable for our research questions as we examine individual behavior and therefore need to collect data on the individual level of participants. Additionally, as we are examining effects of language and culture under morally sensitive circumstances, we need to strongly control for context and thus reduce noise to a minimum, in order to be able to draw causal inference. While archival studies and surveys do not provide individual data that is relevant to our research question, field research in natural settings or high researcher involvement in interviews or other qualitative methods does not allow for sufficient control over the numerous potential confounds (Sprinkle 2003), making it impossible to determine under what circumstances and through which processes specific phenomena arise (Libby et al. 2002). Thus, laboratory experiments seem to be most suitable for investigating our research questions.

The experiments that we have conducted fall into the category of judgment and decision-making-based experiments. In contrast to economics-based experiments, judgment and decision-making-based experiments often lack performance-contingent incentives and typically provide participants with more contextually rich settings (Church and Ackert 2018; Kadous and Zhou 2018). We chose not to provide performance-contingent incentives, because under the morally sensitive circumstances in the experiments, there were no right or wrong answers to incentivize. Additionally, we opted for more contextually rich settings because language effects naturally require a certain degree of exposure to the respective linguistic context in order to occur. Particularly because the level of context and mundane realism is

subject to the researcher's discretion in judgment and decision-making-based experiments and therefore might raise concerns, we carefully based our experimental design choices on theoretical considerations, make them transparent in the papers and devote a detailed discussion to each of them.

IV. Overview of Papers

Quantifying Language: A Bibliometric Analysis of Research on Language and Translation in Accounting

The first paper of my dissertation sets the stage by drawing the entire picture of research on language and translation in accounting. It thus establishes the cornerstones of the range of research subjects in the sub-discipline, some of which are addressed in greater depth in the following two papers. The paper is co-authored with my supervisor Barbara E. Weißenberger (see Table A-1).

Accounting is often called the *language of business* (e.g., Bloomfield 2008). As such, it traditionally relies more on numbers than on natural language (e.g., Chua 1996). In 2018, the Accounting, Auditing & Accountability Journal's special issue on Language and Translation in Accounting challenged scholars to find appropriate ways of dealing with the complexity of language and translation in accounting research and practice (Evans and Kamla 2018). Since, language and translation have become increasingly important for both researchers and practitioners in accounting for multiple reasons. Thanks to the recent advances of the digital industries, the ability to analyze large volumes of qualitative data has grown rapidly. Natural language processing and textual analysis are central to this digital transformation, which has unlocked both new sources of research data as well as new research questions (Bochkay, Brown, Leone, and Tucker 2023). Simultaneously, the complexity of the contemporary business environment has increased. For instance, extensive disclosure requirements aim to enhance transparency via narrative reporting (e.g., Dyer, Lang, and Stice-Lawrence 2017), while a

diverse workforce poses challenges for communication within organizations (Detzen and Loehlein 2018; Neeley 2013). Growing complexity nurtures the need for compelling storytelling, that conveys "the story behind the numbers" (Andre, Filip, and Mora 2024, 239).

In the light of new prospects and challenges, our paper aims to structure existing streams of research in this area and provide an overview of the most relevant topics through bibliometric analysis. We identify key thematic clusters, the most influential journals, authors, and articles, and outline emerging trends to better understand the field's development over time and to inspire future research.

To explore the role of language and translation in this dynamic setting, we analyzed 701 articles published in 76 leading journals in accounting, economics, finance, and management between 1972–2024. Using Scopus, the bibliometrix R package (Aria and Cuccurullo 2017), and VOSviewer, a free software tool for constructing and visualizing bibliometric networks (van Eck and Waltman 2010), our bibliometric analyses include journal and author rankings as well as keyword co-occurrence analysis and citation analysis to map influential contributions and contributors. Our results show that research on language and translation in accounting used to tend towards qualitative studies on, e.g., accounting narratives, that understand language and translation within structures of power and hierarchy, but has recently shifted towards quantitative approaches focused especially on corporate disclosure. This shift is driven by the rise of NLP, which enables efficient analysis of large-scale textual data. We show that most studies in this cluster are grounded in a positivist paradigm, aiming to show how firm outcomes affect disclosure practices and in turn information asymmetries. Thus, the view of language here is largely instrumental and focuses on disclosure features like length, readability or tone. We discuss to what extent these new methods take into account the complex nature of language and translation and what kinds of problems may arise from the current research momentum.

In doing so, we contribute to understanding the epistemological tensions in the field, most prominently between critical, context-focused research and data-driven approaches that

emphasize pattern recognition. Our study like most research on language and translation in accounting is especially limited by its exclusive focus on English-language publications. Future research could broaden this linguistic scope and could further explore the notion of accounting as a language itself.

Hidden in Plain Sight? How Readability and Reporting Language Influence the Impact of Sustainability Reporting

The second paper of my dissertation concerns one of the central areas that we identified in the first paper, where language and translation particularly shape judgment and decision-making in accounting: narrative sustainability reporting. The paper is co-authored with my supervisor Barbara E. Weißenberger (see Table A-1).

It is well established that the way in which a decision problem is formulated can significantly influence the responses to it (Tversky and Kahneman 1981; Sunstein 2019). Building on the idea of such framing effects, a growing body of research explores how the language in which a decision is presented affects judgment as well. Keysar, Hayakawa, and An (2012) found that biases like framing effects and loss aversion disappear when decisions are made in a second language. Research following these findings shows that second-language processing not only reduces decision-making biases but also influences ethical decisions, likely because emotional responses are dampened in a second language (Costa et al. 2014; Sunstein 2019). Thus, given the role of English as the lingua franca of business, many users of English as a second language might systematically decide differently on ethical issues every day.

Ethical dilemmas, where decision makers face tension often between economic objectives and a variety of relevant ethical norms, are ever-present in- and outside of organizations (Bartels, Bauman, Cushman, Pizarro, and McGraw 2015). As a result, public expectations around Corporate Social Responsibility (CSR) have risen, and CSR reporting is becoming more widespread (Cote 2021). However, prior research shows that managers may reduce the

readability of disclosures to obscure poor performance (Bloomfield 2002; Li 2008). For instance, while general news has become more readable, corporate reports have grown longer and more complex (Dyer et al. 2017), counteracting efforts to improve communication.

Our study examines how readability and reporting language jointly affect CSR assessments. We theorize that low readability triggers stronger negative reactions to poor CSR performance, but only in the reader's first language, where emotional responses are activated. In contrast, second-language processing increases psychological distance, muting emotional reactions and reducing readability effects (Costa et al. 2014; Sunstein 2019).

To test our hypotheses, we conduct an online experiment using a 2 × 2 between-subjects design, manipulating both language (first/second) and readability (high/low). Participants read about 'SmartPower,' a fictional German battery manufacturer that is facing ethical challenges around cobalt sourcing. Participants then rate the company's CSR performance. Our results are in line with our predictions. Specifically, we find that when information is presented in the first language, low readability, compared to high readability, reduces the assessment of CSR performance. However, when information is presented in the second language, readability has no effect on the assessment of CSR performance. This suggests that high readability may, c. p., suppress ethical concerns in the first language. For non-professional investors, our results might therefore highlight a potential risk of highly readable disclosures consumed in the first language. Our findings also might raise awareness of unintended consequences from promoting English as a corporate language. This is to say that, beyond financial reporting, our study contributes to management accounting, too, as informal management control instruments like language policies could distort the perception of the appropriateness of employee's ethical decision-making by influencing how they interpret values and norms.

Gained in Translation? How Corporate Culture and Corporate Language Affect Compliance

The third paper of my dissertation takes up the idea of language policies shaping the perception of organizational values and norms. The paper is co-authored with my supervisor Barbara E. Weißenberger (see Table A-1).

Cooperation within firms requires adherence to rules (Weber 1921/1980). However, strict adherence to rules is often viewed as counterproductive in the corporate context (Zenger and Folkman 2022). While compliance is generally valued, excessive rule-compliance can conflict with a firm's goals (Alter 2015), whereas limited, functional rule-bending—if non-abusive and tacit—can be beneficial (Anteby 2008; Yang, Algesheimer, and Dholakia 2017). Our study explores how management control systems can be designed to account for these grey areas of beneficial non-compliance. Specifically, we investigate how corporate culture (values-based versus compliance-based) and language (native versus foreign) influence compliance. We develop and test theory suggesting that foreign-language use affects cognitive processing that determines how corporate culture is understood and acted upon.

Understanding the interaction of language and culture in the context of compliance is increasingly relevant as globalization requires millions of people to make workplace decisions in foreign languages. By the 1990s, 85% of international organizations used English professionally (Crystal 2003); by the mid-2010s, 70% of employers in non-English-speaking countries considered English critical for business (Cambridge English 2016). At the same time, management control research highlights the need to balance formal rules with informal norms (Chenhall and Morris 1995), aiming for "disciplined flexibility" (Davila, Epstein, and Shelton 2006) in dynamic business environments. It seems that efficient problem-solving and innovation are possible at all if a certain degree of non-compliance is accepted in the first place (Luhmann 1964). Corporate culture plays a key role here. Compliance-based cultures stress formal adherence—e.g., following all policies—while values-based cultures promote socio-

moral alignment—e.g., ethical integrity (O. Ferrell, Fraedrich, and L. Ferrell 2017). Moral psychology and psycholinguistics show that using a foreign language can dampen access to socio-moral norms (Hadjichristidis, Geipel, and Keysar 2019), potentially increasing tolerance for rule-bending in values-based cultures, but less so in compliance-based ones. We hypothesize that the positive effect of values-based (versus compliance-based) corporate cultures on the inclination towards beneficial non-compliance is stronger in foreign (versus native) corporate language environments.

We test our hypothesis using a 2 × 2 between-subjects online vignette experiment with 401 native German speakers proficient in English. Participants imagined working for an international firm and faced scenarios involving rule-bending. We manipulate (1) the information on the company's culture (compliance-based versus values-based) and the language in which the information on the company's culture is presented (native/German versus foreign/English). Our results are in line with our predictions: values-based cultures increase beneficial non-compliance only in foreign-language settings, with no such effect for detrimental non-compliance. In this regard, our findings add nuance to the understanding how language and culture shape adaptive structures in organizations (see, e.g., Chenhall 2011), and help differentiate productive non-compliance from harmful behavior (see, e.g., Guggenmoos and Van der Stede 2020). Moreover, our findings offer practical insight for business professionals, emphasizing the importance of language in fostering innovation and managing compliance risks—especially in global, multilingual environments.

V. Conclusion: The Languages of Business

The overall aim of my dissertation was to examine the interaction of accounting with the language environments in which it is embedded into. Based on the findings presented in the first paper, I can show how research on language and translation in accounting is closely linked to technological advances, like generative artificial intelligence, as well as to regulatory and societal developments, like sustainability reporting. I outline how the research field is divided between rather positivist and rather constructivist and critical paradigms. The dominant, positivist publications focus mainly on empirical evidence on the market effects of the properties of disclosure language, like readability or tone, independently of the respective language environment. While recently niche topics like foreign language effects are featured more often, the overall research field still largely misses out on issues in management accounting and control.

Therefore, in the following parts of my dissertation, I aim at shedding light on these blind spots in research by conducting two online experiments. Specifically, in the second paper, I explain why low readability reduces CSR evaluations in native-language settings, but not in foreign-language settings. This is because in native-language settings, reduced processing fluency from less readable information acts as a metacognitive cue, lowering reliance on the disclosed information itself and promoting affective responses instead. Moreover, in the third paper, I explain why values-based cultures increase beneficial non-compliance in foreign-language settings, but not in native-language settings. The analyses show that native language, compared to foreign language, triggers emotional responses to violations of ethical norms. Interestingly, there is no effect of corporate culture and corporate language on detrimental non-compliance.

Summarizing these findings, this dissertation adds to existing research on the role of language in judgment and decision making, supporting the evidence that language is a carrier of meaning as well as a carrier of emotions and socio-moral norms (e.g., Hadjichristidis, Geipel,

and Keysar 2019). This dissertation shows that this holds true for issues in both financial accounting and reporting as well as in management accounting and control. Therefore, it highlights the importance of natural language in a world of quantification.

However, these findings are limited by the fact that accounting remains a language of numbers, as effective communication of useful information requires some dimensionality reduction, i.e., for instance, like few KPIs that are better to process than a nuanced report (e.g., Ringel, Espeland, Sauder, and Werron 2021). Still, while this dissertation examines contexts in which language and translation play essential roles, it is not about words *or* numbers, but rather about words *and* numbers. Therefore, the basic assumption made upfront holds: accounting, albeit a language of numbers, is always embedded in environments of natural languages, with which it interrelates and interacts, and both *numbers* and *words* are powerful carriers of meaning in accounting contexts. They serve different purposes and entail different shortcomings, but can rightfully both be considered *languages of business*.

At this point, I would like to emphasize that I am convinced that the recent advances in technology can resolve some issues related to language and translation in accounting, but also can create new imbalances (see, e.g., Ghio 2024). The very fact that this text is written in English demonstrates a linguistic hegemony that is not easily disrupted. Beyond that, it is possible that the importance of texts will continue to decrease in the future anyway, insofar as technology enables mere production of paraphrase. Here lie fruitful avenues for future research. In any case, several grand challenges lie ahead for the accounting community and for society as a whole. Some argue that accountants will save the world (e.g., Bakker 2013). Based on this dissertation, I would argue that accountants might be able to help make the world a better place—but only if they take heed of this dissertation's leitmotif, because: "*not everything that can be counted counts, and not everything that counts can be counted.*"[2]

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[2] Cameron (1963, 13).

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B. Quantifying Language: A Bibliometric Analysis of Research on Language and Translation in Accounting

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Quantifying Language: A Bibliometric Analysis of Research on Language and Translation in Accounting

Abstract

Accounting traditionally relies on quantitative data. However, recent technological advances have made the quantification of qualitative data, especially language, easier than ever before. We aim to determine the relationship of accounting and natural languages by structuring the existing research on language and translation in accounting. Using bibliometric analyses and visualizations to map our sample of 701 research articles on language and translation in accounting, published in 76 leading journals in accounting, economics, finance, and management between 1972 and 2024, our study reveals the shifts and developments that determine the use of natural language in accounting. We find that the evolution of research on language and translation in accounting is indeed closely linked to technological advances, as well as to regulatory, and societal developments. Moreover, we find that research on language and translation in accounting is divided between positivist and constructivist paradigms. Additionally, we provide detailed insights into the sub-clusters we identify and rank the associated journals and authors by their contributions. Based on methodological and epistemological considerations, we outline potential risks and benefits of the current research trends. In suggesting fruitful avenues for future research, we conclude that excellent accounting scholars and practitioners should strive to continue being the ones *telling the stories behind the numbers*.

I. Introduction

Accounting is often called the *language of business* (e.g., Bloomfield 2008; Lavoie 1987). As such, it traditionally relies more on numbers than on natural language (Chua 1996; Fauré, Cooren, and Matte 2019). In 2018, the Accounting, Auditing & Accountability Journals special issue on *Language and Translation in Accounting* was aimed to "challenge the interdisciplinary accounting community to be bold enough to consider the complexity of language and translation embedded in our research" (Evans and Kamla 2018, 1840). Since then, the role of language and translation in accounting has become even more complex, due to the advent of large language models and generative artificial intelligence, that echo strongly with accounting research, practice, and education (e.g., Bochkay, Brown, Leone, and Tucker 2023; Ghio 2024; Wood et al. 2023). The aim of this study is to determine the relationship of accounting and natural languages. Therefore, we structure the existing research on language and translation in accounting and give an overview that maps its complex interrelations and that suggests potential pathways of development through bibliometric analyses. Specifically, we map the thematic research clusters and their development over time, identify the most impactful journals, authors, and articles, and outline current research trends to outline the structure of research on language and translation in accounting and to inform the accounting community as a whole.

Recognizing the impact that language and translation have on accounting is of crucial importance for researchers and practitioners alike. Firstly, with the availability of vast computing capacities and the agglomeration of human capital in the Silicon Valley, the potential for analyzing large volumes of qualitative and unstructured data has increased exponentially in recent years. Natural language processing and textual analysis are at the heart of this fourth industrial revolution that enables the efficient exploitation of previously unused data sources for research and practice (Bochkay et al. 2023). Secondly, as a result of greater connectivity and faster acceleration associated with the digital age, the complexity of the corporate world is increasing significantly. This is reflected in two developments that are of particular importance

for accounting: from a firms outward perspective, the regulatory trend towards more disclosure and standardization is intended to address the growing need for information, leading to higher accountability and an increase in narrative and non-financial reporting (e.g., Dyer, Lang, and Stice-Lawrence 2017). From a firms inward perspective, growing complexity is, for instance, reflected in developments towards more diversity that creates new challenges with regard to intra- and inter-organizational relationships, e.g., in terms of cultural identity and cross-lingual communication (e.g., Detzen and Loehlein 2018; Neeley 2013). Lastly, this growing complexity almost inevitably leads to a higher demand for clarity and structure. Following the rules of the attention economy, higher ambiguity calls for improved storytelling if companies want to get their messages across to internal and external stakeholders. This demand for clarity and structure has paved the way for 'narrative economics' (Shiller 2017) and 'accounting narratives' (e.g., Beattie 2014; Beattie and Davison 2015), that tell "the story behind the numbers" (Andre, Filip, and Mora 2024, 239). Taken together, language and translation are key features of the most important developments in accounting today.

Given the broad scope of the research question and the large body of literature on language and translation in accounting, we use bibliometric analyses and visualizations to map 701 articles on language and translation in accounting, published in 76 leading journals in accounting, economics, finance, and management between 1972 and 2024 that we retrieved from Scopus to structure the current state of research and to identify emerging trends. In addition to a general ranking of journals and authors that contributed the most, we conduct co-occurrence analyses based on keywords to create an overview of the research clusters. We then use citation analysis to identify the networks of related articles, as well as the most impactful articles within the sample.

We show that research on language and translation in accounting originally emerged from qualitative research on accounting narratives and accounting discourse, but has been significantly reshaped by rather quantitative research in financial accounting, geared towards

corporate disclosure and features of narrative reporting, mostly in recent years. We show that this development especially gained momentum with the advent of natural language processing in accounting, which has opened up efficient ways to analyze large volumes of textual and verbal data.

In summarizing our findings, we contribute to a deeper understanding of the epistemological considerations underlying the sub-disciplines and research clusters in our sample. Specifically, we point at the tensions and frictions between critical and interpretive research that emphasizes the importance of context on the one hand, and research focusing on the identification of patterns and structures in large volumes of textual data that favors dimensionality reduction, on the other hand. Against this background, the title we chose is to be understood in several dimensions: in our study, we quantify research on language through bibliometrics and we show how accounting is a technique that relies on quantification, but also tends to reduce language to quantified input data in the research process.

Our study is subject to limitations that may propose fruitful avenues for future research. Firstly, due to the journals we selected based on our screening criteria, we only refer to articles published in English. Future research could provide more in-depth analyses of related research in local languages. Secondly, the notion of 'accounting as a language' is out of scope of our research question. Future research could explore the extent to which technological advances shape accounting as a language itself.

II. Method

Step 1: Selection of Research Frameworks

This study applies bibliometric methods to analyze and visualize research on language and translation in accounting. To ensure a transparent and replicable scientific process (Tranfield, Denyer, and Smart 2003), the following protocol reflects conceptual and operational decisions and design choices as summarized in Appendix B-1. In designing the research process, we relied in particular on various guides for bibliometric analyses and systematic literature reviews (Block and Fisch 2020; Donthu, Kumar, Mukherjee, Pandey, and Lim 2021; Hardies, Ohlrogge, Mentens, and Vandennieuwenhuysen 2024) as well as recently published best practice examples of bibliometric analyses and systematic literature reviews (Ghio, Occhipinti, and Verona 2024; Nerantzidis and Vatis 2024a, 2024b; Ratzinger-Sakel and Tiedemann 2022). Drawing on the recommendations derived from these examples, the research process is divided into the following steps.

Step 2: Selection of Database and Screening Criteria

Database and Screening Criteria

We search for published journal articles in English on Scopus, which is one of the most established abstract and citation databases of peer-reviewed scientific journals (Falagas, Pitsouni, Malietzis, and Pappas 2008). Scopus provides a comprehensive coverage of published journal articles as well as a flexible and fine-grained set of applicable filters (Visser, van Eck, and Waltman 2021). We apply no limitations regarding study design and methods as well as publication date, so that all available journal articles up to and including December 2024 are considered for further analysis. Appendix B-1 summarizes the details of the screening criteria.

Journals

We identify the accounting journals relevant for the analysis based on their inclusion into journal rankings and publication updates. Specifically, we first compile a comprehensive list of all journals included in the 2016 Financial Times Research Rank (FT50 ranking, n = 50)[3], journals rated A*, A, or B in the Australian Business Deans Council 2022 Journal Quality List (ABDC list, n = 1,707)[4], journals rated A+, A, or B in the VHB Publication Media Rating 2024 of Scientific Journals in Accounting (VHB ranking in accounting, n = 97)[5], as well as the accounting updates publication alert by Jochen Pierk (ACC Updates, n = 19)[6], resulting in a list of 1,716 unique journals. Especially the ABDC list is increasingly used to set the parameters for literature reviews (e.g., Ghio et al. 2024; Hardies et al. 2024), while at the same time numerous universities worldwide refer to at least one of the three journal lists to assess the quality of research output. Additionally, the weekly ACC Updates are an independent publication alert for the accounting research community, that has 1,530 subscribers as of November 2024. To limit the selection of journals to the field of accounting, we use only those journals that appear on at least two of the above-mentioned four lists, resulting in a refined selection of 120 journals. Three journals (*Journal of Business Economics*; *Journal of International Accounting, Auditing and Taxation*; *Meditari Accountancy Research*) were added back to the list by hand as we were explicitly aware ex ante of relevant articles that were published in those journals. Thus, the final selection contains 123 journals. Appendix B-1 and Appendix B-2 summarize the details of the journal selection.

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[3] Further information available at: https://rankings.ft.com/methodology.
[4] Further information available at: https://abdc.edu.au/abdc-journal-quality-list/.
[5] Further information available at: https://www.vhbonline.org/en/services/vhb-rating-2024.
[6] Further information available at: https://jochenpierk.github.io/home/service2/.

Keywords

The process of identifying relevant title keywords starts from the main terms, language and translation, supplemented by renowned articles revolving around topics like readability, tone or sentiment as well as discourse and narratives. Building on the terms cited in the core articles and the related literature, we continue to iteratively collect more keywords until the incremental results per iteration show an almost complete saturation. Applying the same keywords to the abstracts yielded no relevant additional results. We exclude similar but irrelevant keywords such as 'tone at the top', 'word of mouth', or 'currency translation'. Appendix B-1 summarizes the set of included and excluded keywords.

Query String

The eligible screening criteria, keywords, and journals are combined to form query strings for the advanced search in Scopus. Appendix B-1 summarizes the details of the query string.

Step 3: Screening and Selecting the Results

The Scopus query yields a total of 2,331 articles across 116 journals, while two journals are not indexed in Scopus (*Journal of Financial Reporting* and *Journal of Governmental and Nonprofit Accounting*). We manually analyze the abstracts to assess whether the articles were in or out of scope. Firstly, articles are included if they applied sentiment analysis via content or textual analysis, and excluded if not. Secondly, articles were excluded if they referred to translation solely figuratively, e.g., 'translation from strategy into performance', or in the context of currency translation. Thirdly, articles were excluded if they used keywords solely idiomatically, e.g., 'actions speak louder than words' or 'word of caution'. Lastly, articles are excluded if they do not touch any research question that falls within the scope of accounting research in a broad sense. 1,630 articles were excluded based on these criteria. As a result, 45, mostly non-accounting journals dropped out of the analysis. The final dataset contains a total

of 701 articles, published in 76 journals. Appendix B-2 summarizes the details of the screening and selection process.

Step 4: Analysis of the Results

The final dataset meets all requirements for the planned analyses in terms of data completeness. Scopus' built-in bibliometric tools were used to gain an initial understanding of the dataset. In-depth data analyses were performed using *R Statistical Software*, version 4.4.2 (R Core Team 2024), in combination with *RStudio*, build 2024.09.1+394, and the *bibliometrix* R package, version 0.6.2 (Aria and Cuccurullo 2017), including the *biblioshiny* web-interface. Text mining and network visualizations were created using *VOSviewer*, version 1.6.20, a free software tool for constructing and visualizing bibliometric networks developed by Nees Jan van Eck and Ludo Waltman, Centre for Science and Technology Studies, Leiden University, The Netherlands (van Eck and Waltman 2010). VOSviewer is used in systematic literature revies and bibliometric analyses across leading accounting journals (Caputo, Pizzi, Pellegrini, and Dabić 2021; Ghio et al. 2024; Hardies et al. 2024; Lardo, Corsi, Varma, and Mancini 2022; Nerantzidis and Vatis 2024a, 2024b; Nicolò, Santis, Incollingo, and Tartaglia Polcini 2023). We used synonym and thesaurus files for both bibliometrix and VOSviewer to consolidate journal titles, author names, and keyword lists. Details are provided in the respective following sections.

III. Analysis

General Overview

The Scopus query yielded 701 articles, published across 76 journals between 1972 and 2024. The number of publications in the sample increases with a compound annual growth rate (CAGR) of 13.4 %, resulting in an average document age of about 9 years. Regarding the temporal distribution of publications, around 10 % of the articles were published before 2005, and around 50 % after 2018. Given the broad temporal coverage of all journals on Scopus, an effect of missing data is assumed to be marginal at most. Detailed information on the individual periods for each journal covered by Scopus is provided in Appendix B-2. On average, each article is cited around 54 times. The list of author-provided keywords contains 1.819 unique items.

Journals and Temporal Distribution

To identify the distribution of the overall research output across the 76 journals in the dataset, we apply Bradford's Law, which describes a common pattern in bibliometrics, i.e., the exponentially diminishing contributions of incremental data sources (Bradford 1934). Firstly, all journals are ranked based on the total number of articles. The ranking is then divided into three zones, i.e., core, middle, and peripheral, each containing about one-third of the total number of articles. Accordingly, we find that five core journals, 13 journals in the middle zone, and the remaining 58 journals in the peripheral zones have published together each around one third of all articles in the dataset. Table B-1 displays the ranking based on the total number of articles and the respective Bradford zones.

Appendix B-2 contains detailed information on the number of included articles for all journals.

Zone	Rank	Journal	Articles		
			N	%	Cum.
	1	Accounting, Auditing & Accountability Journal	81	11.6	11.6
	2	Critical Perspectives on Accounting	55	7.8	19.4
1	3	Accounting and Finance	36	5.1	24.5
	4	Accounting, Organizations and Society	31	4.4	29.0
	5	European Accounting Review	29	4.1	33.1
	6	Accounting and Business Research	28	4.0	37.1
	7	Contemporary Accounting Research	26	3.7	40.8
	8	Journal of Emerging Technologies in Accounting	24	3.4	44.2
	9	Journal of Business Ethics	22	3.1	47.4
	10	British Accounting Review	21	3.0	50.4
	11	Accounting Education	19	2.7	53.1
2	12	Accounting Review	16	2.3	55.3
		International Journal of Accounting Information Systems	16	2.3	57.6
	14	Accounting Forum	15	2.1	59.8
		Managerial Auditing Journal	15	2.1	61.9
	16	Meditari Accountancy Research	14	2.0	63.9
	17	Accounting History	13	1.9	65.8
		Review of Accounting Studies	13	1.9	67.6
3	19	Journal of Business Finance and Accounting (…)	12	1.7	69.3
	76	Strategic Management Journal	1	0.1	100.0

Table B-1: Ranking Based on the Total Number of Articles and the Respective Bradford Zones

As for the five core journals, the *Accounting, Auditing & Accountability Journal* (AAAJ) has published by far the most articles on language and translation in accounting, followed by *Critical Perspectives on Accounting* (CPA), while *Accounting and Finance* (A&F), *Accounting, Organizations and Society* (AOS), and the *European Accounting Review* (EAR) all have published only around five or less percent of the total number of articles. This result is representative for the whole time range from 1972 to 2024. Interestingly, the five core journals are rather interdisciplinary accounting journals that are open to interpretive and critical research (Ghio et al. 2024) or journals published outside of North America. All of the core journals enjoy a very high international reputation with AAAJ, AOS, and EAR being rated A*, and CPA and A&F being rated A in the ABDC list.

To illustrate their temporal distribution, Figure B-1 shows the cumulated number of articles, subdivided into the five core journals, Bradford zones 2 and 3, as well as the number of articles published per year between 2000 and 2024. Graphs for the full period from 1972 to 2024 are provided in Appendix B-3.
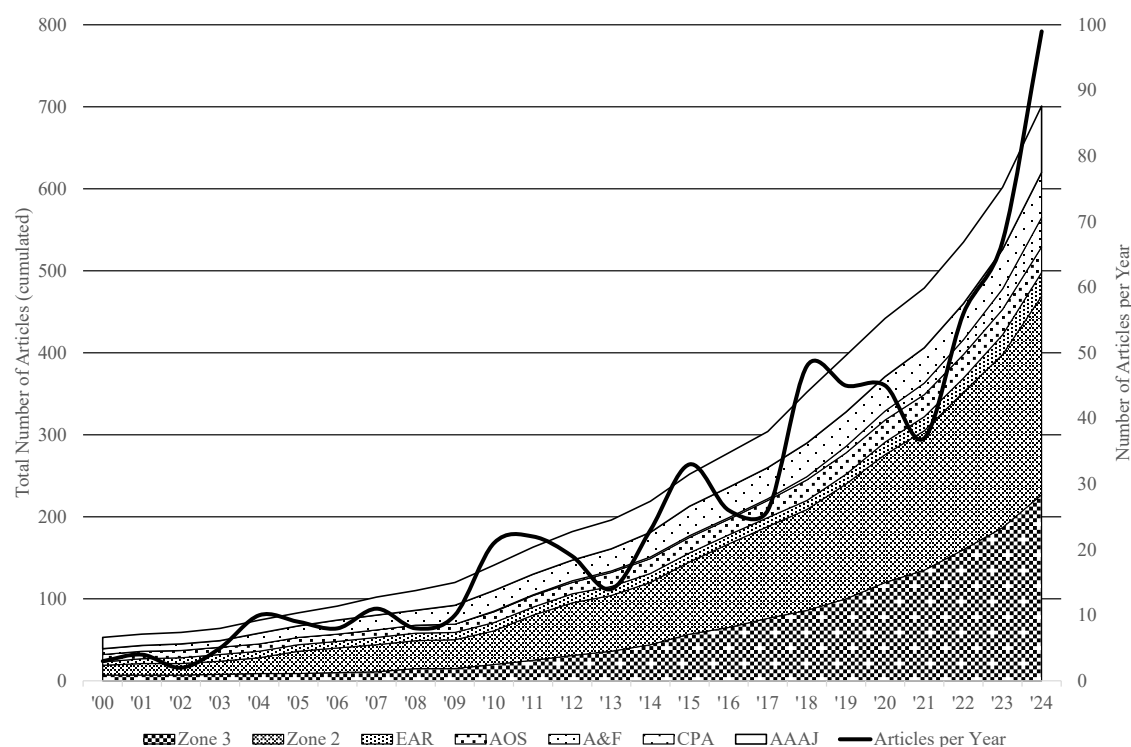
Notes: Graphs for the full period from 1972 to 2024 are provided in Appendix B-3.

Figure B-1: Development of the Total Number of Articles (Cumulated) and the Number of Articles Published per Year Between 2000 and 2024

The cumulated number of articles ranges from 53 in 2000 to 701 in 2024. The number of articles published per year ranges from 3 in 2000 to 99 in 2024. The total number of articles is increasing with a CAGR of 11.4 % between 2000 and 2024. However, this growth in the dataset is not driven by publications in the core journals, for which the number of articles is growing at only 8.3 % in the same period, but by the journals in the middle and peripheral zone, for which the number of articles is growing at 13.3 % and 15.6 %, respectively. This effect is even more pronounced as of 2010, when the total number of articles is beginning to grow exponentially. An exception to this general trend is *Accounting and Finance*, the only journal

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from the core zone for which the total number of articles is growing at above average rates, with a CAGR of 29.2 % between 2010 and 2024, compared to an average CAGR of 12.1 % across all journals for the same period. Additionally, the *Journal of Business Ethics* (JBE) shows a CAGR of 24.7 % for articles on language and translation in accounting between 2010 and 2024, which is more than double the average growth rate across all journals.

To better understand if the growth in research output on language and translation is reflective of a general trend in accounting research, we compare the growth rates of the total number of articles across all topics published in the 18 journals from Bradford zones 1 and 2 included in the sample to the growth rates of the number of articles on language and translation in the dataset for the same journals. The results show that between 1972 and 2000, the 18 journals from Bradford zones 1 and 2 have published around 5,770 articles in total, thereof 46 (0.8 %) on language and translation. For the full time period between 1972 and 2024, the total number of articles across all topics increases to around 27,250, which roughly represents a fivefold increase in published articles, thereof 474 (1.7 %) on language and translation in accounting, which represents more than a tenfold increase. In other words, while between 1972 and 2000 around 0.8 % of published articles touched upon language and translation in accounting, this share has since more than doubled to 2.0 % of published articles between 2001 and 2024, at least for the journals in the core and middle zones. Journals in the peripheral zone are excluded from this analysis, because nearly half of those journals are rooted in accounting-related disciplines like finance, economics, management, psychology, and others, that may be subject to different overall developments.

Authorship and Geographical Distribution

Authorship analyses show that 1,648 unique authors have contributed 0.43 articles on average to research on language and translation in accounting between 1972 and 2024. 139 (8.4 %) researchers contributed a total of 159 (22.7 %) single-authored articles. 542 (77.3 %)

articles are co-authored. The appearances of all authors in the dataset add up to 2,058, resulting in 2.9 co-authors per article on average across all articles, and 3.5 co-authors per article on average if single-authored documents are excluded. The share of international co-authorships is close to one third. To assess the frequency of publication by authors, we refer to Lotka's law (Lotka 1926), which states that a minority of authors produces the majority of research output, and vice versa, as shown in Table B-2.

Number of articles by an author	Authors		
	N	%	Sum
7	3	0.2	0.2
6	6	0.4	0.6
5	7	0.4	1.0
4	18	1.1	2.1
3	50	3.0	5.1
2	180	10.9	16.0
1	1,384	84.0	100.0

Table B-2: Frequency of Publications by Author

Table B-3 displays the most productive authors by absolute number of articles (Panel A) and fractionalized number of articles (Panel B). The fractionalized number of articles is used to account for co-authored publications with many authors, which have become more common over time. Here, the contribution per publication is divided equally among all contributing authors, resulting in, e.g., a share of 1/3 per author for a publication with three co-authors. Panel A displays all authors with an absolute total of 4 or more articles, while Panel B displays all authors with a sum of fractionalized shares of 2.0 or more as well as an absolute total of 2 or more articles. Tentatively, around one fourth of the authors displayed in Table B-3 is non-male or non-white, thereof less than 10 % both non-male and non-white. Detailed information on the first and second languages of the most productive authors was not publicly available to the extent necessary to obtain a representative picture. A more diverse community of accounting scholars could benefit the research process by reflecting more heterogeneous perspectives in

the field of language and translation (see, e.g., Alawattage et al. 2021). At the same time, the journal rankings we use and the selection criteria we apply may contribute to a selection bias in our sample, that we carefully tried to reduce to a minimum. However, it would not be feasible for us to integrate publications other than those published in English.

Panel A: Most Productive Authors by Absolute Number of Articles

Author	Articles N	Fract.
Craig, Russell J.	7	3.2
Gendron, Yves	7	2.4
Rennekamp, Kristina M.	7	3.1
Brennan, Niamh M.	6	2.3
Evans, Lisa	6	4.3
Ferguson, John	6	2.3
Robson, Keith	6	3.3
Walker, Martin	6	1.8
Zhang, Yuqian (Michael)	6	1.9
Aerts, Walter	5	3.6
Amernic, Joel H.	5	3.0
Hussainey, Khaled	5	1.8
Jones, Michael J.	5	3.3
Stone, Dan N.	5	2.5
Tan, Hun-Tong	5	1.8
Xu, Hongkang	5	1.5
Collison, David J.	4	1.0
Courtis, John K.	4	3.3
Elshandidy, Tamer	4	1.8
Henry, Elaine	4	1.7
Kamla, Rania	4	2.0
Lehman, Glen	4	4.0
Li, Heather	4	1.4
Loughran, Tim	4	1.8
McDonald, Bill D.	4	1.8
Neu, Dean	4	2.1
Parker, Lee D.	4	2.3
Power, David M.	4	1.0
Stevenson, Lorna A.	4	1.0
Stolowy, Hervé	4	1.2
Tam, Kinsun	4	1.1
Zhang, Jiarui (Iris)	4	1.3

Panel B: Most Productive Authors by Fractionalized Number of Articles

Author	Articles Fract.	N
Evans, Lisa	4.3	6
Lehman, Glen	4.0	4
Aerts, Walter	3.6	5
Robson, Keith	3.3	6
Jones, Michael J.	3.3	5
Courtis, John K.	3.3	4
Craig, Russell J.	3.2	7
Rennekamp, Kristina M.	3.1	7
Amernic, Joel H.	3.0	5
Rutherford, Brian A.	3.0	3
Stone, Dan N.	2.5	5
Nobes, Christopher	2.5	3
Gendron, Yves	2.4	7
Brennan, Niamh M.	2.3	6
Ferguson, John	2.3	6
Parker, Lee D.	2.3	4
Neu, Dean	2.1	4
Kamla, Rania	2,0	4
Peytcheva, Marietta	2.0	3
Seal, Will	2.0	3
Smith, Malcolm	2.0	3
Stone, Gerard W.	2.0	3
Bloomfield, Robert J.	2.0	2
Evans, Steve	2.0	2
Gong, Rong	2.0	2
Laaksonen, Jenni	2.0	2
McKinstry, Sam	2.0	2
Roberts, Diane H.	2.0	2

Table B-3: List of Most Productive Authors by Number of Articles

Regarding the geographical distribution of authors, the United States of America clearly dominates the worldwide comparison in terms of frequency, being followed by a mix of English-speaking and Central European Countries as well as China, as shown in detail in Table B-4.

Country	Frequency
United States of America	768
United Kingdom	289
Australia	190
China	182
Canada	109
Germany	53
Italy	37
New Zealand	36
France	34
Netherlands	30

Table B-4: Research Output by Countries (Non-Fractionalized)

The prominent position of the United States of America and the other English-speaking countries is also reflected in the countries' collaboration world map, as shown in Figure B-2. Figure B-3 illustrates the frequency of author appearances by country and year. Regarding the temporal development of the geographical distribution of authors, three particular developments stand out. Firstly, between 2000 and 2016, the United Kingdom ranks highest in terms of the frequency of author appearances. It is as of 2017 that the United States of America steadily extends its lead. Secondly, and in contrast to the overall development until then, the frequency of US-author appearances doubles in just two year from around 375 in 2022 to more than 750 in 2024. Thirdly, the recent US-development is being accompanied by an increasing rise of Chinese author appearances since the beginning of the 2020's, albeit starting from much lower levels.
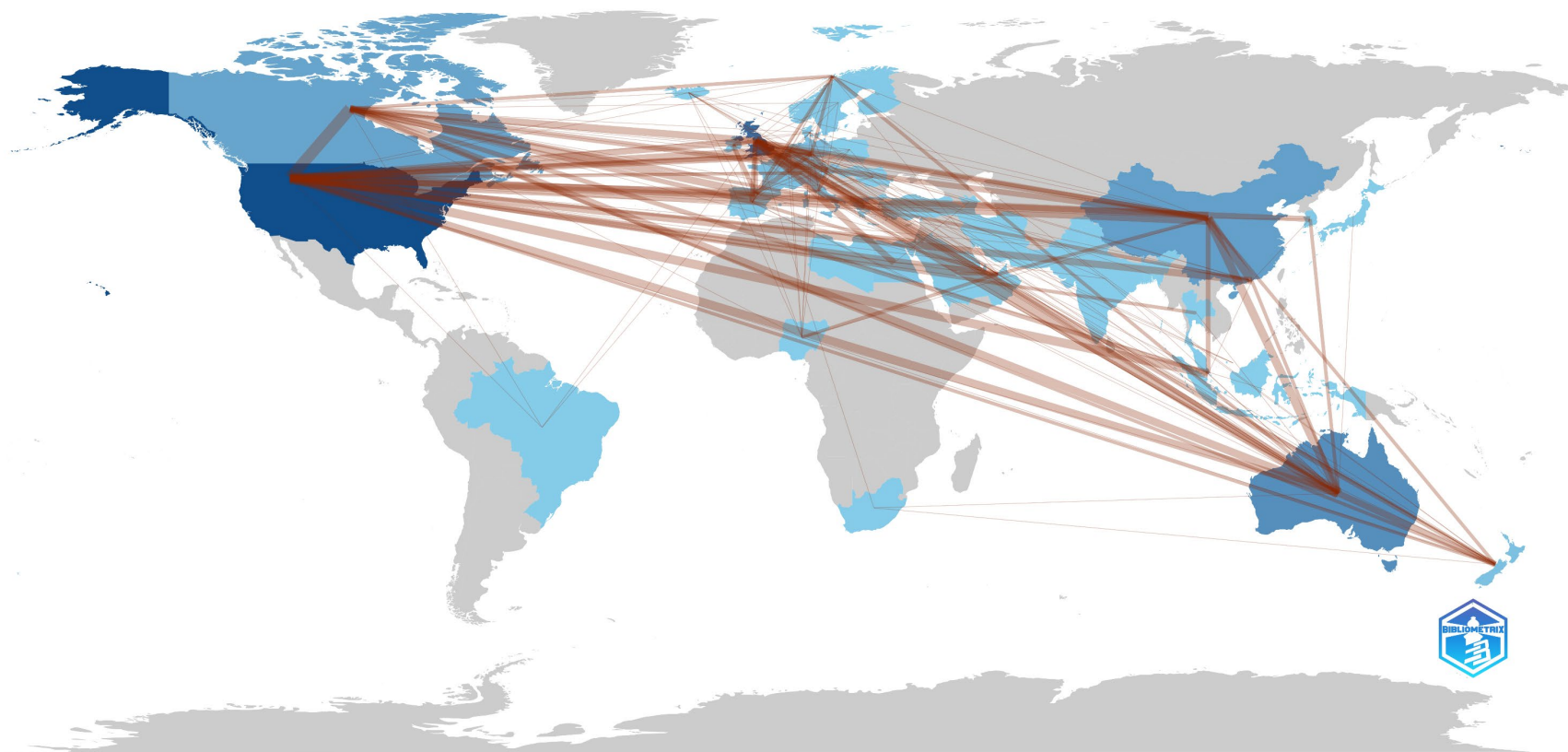
Figure B-2: Countries' Collaboration World Map
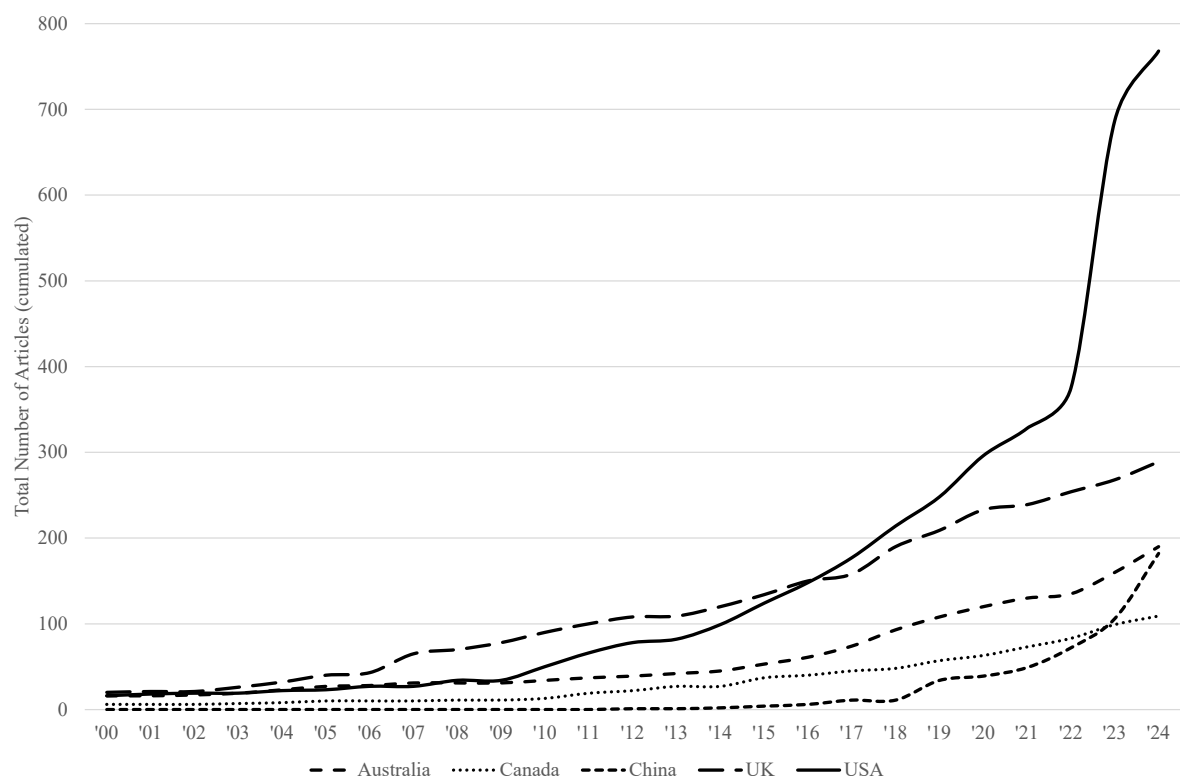
Figure B-3: Frequency of Author Appearances by Country and Year

Thematic Clusters and Research Trends

To get an overview of the research topics, we perform a co-occurrence analysis based on author-supplied keywords and index keywords provided by Scopus with fractional counting (Perianes-Rodriguez, Waltman, and van Eck 2016). From 1,930 identified keywords, we exclude nine JEL classifications, the two basic search terms *language* and *translation* and the generic keywords *accounting* and *accounting research* due to lack of specificity. We then iteratively create a thesaurus to consolidate the list of keywords by controlling for synonyms, abbreviations, plural forms, and spelling differences (van Eck and Waltman 2021). 153 of the remaining 1,815 keywords meet our defined threshold of a minimum of three occurrences. For the keyword map, we use the largest set of connected keywords, resulting in a total of 153 keywords used for further analysis. The keyword map shows these 153 keywords, weighted based on occurrences, and grouped in 8 clusters. The minimum cluster size is set to 12, small clusters are merged into larger clusters, and the resolution is set to 0.95. The visualization parameters remain unchanged. Figure B-4 visualizes the resulting keyword map.

Additionally, we use the average year of publication as an overlay for the keyword map which helps to visualize these results, with red indicating more recent 'hot' topics, compared to topics colored in blue. Based on this coding, the three research clusters with the most popular keywords since 2018 are the *earnings call* (originally: turquoise), *readability* (originally: blue), and *textual analysis* (originally: brown) clusters, supplemented by some popular topics from the originally violet, green, and red clusters like, e.g., *foreign language effect*, *future time reference*, or *integrated reporting*. Keywords in the *annual report* (originally: yellow), and *narrative* (originally: orange) clusters received comparably less attention since 2018. Figure B-5 shows the keyword map with overlay based on the average year of publication.

To gain a more detailed understanding of the topics covered in each of the eight clusters, Table B-5 summarizes the keywords per cluster by descending occurrence.
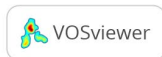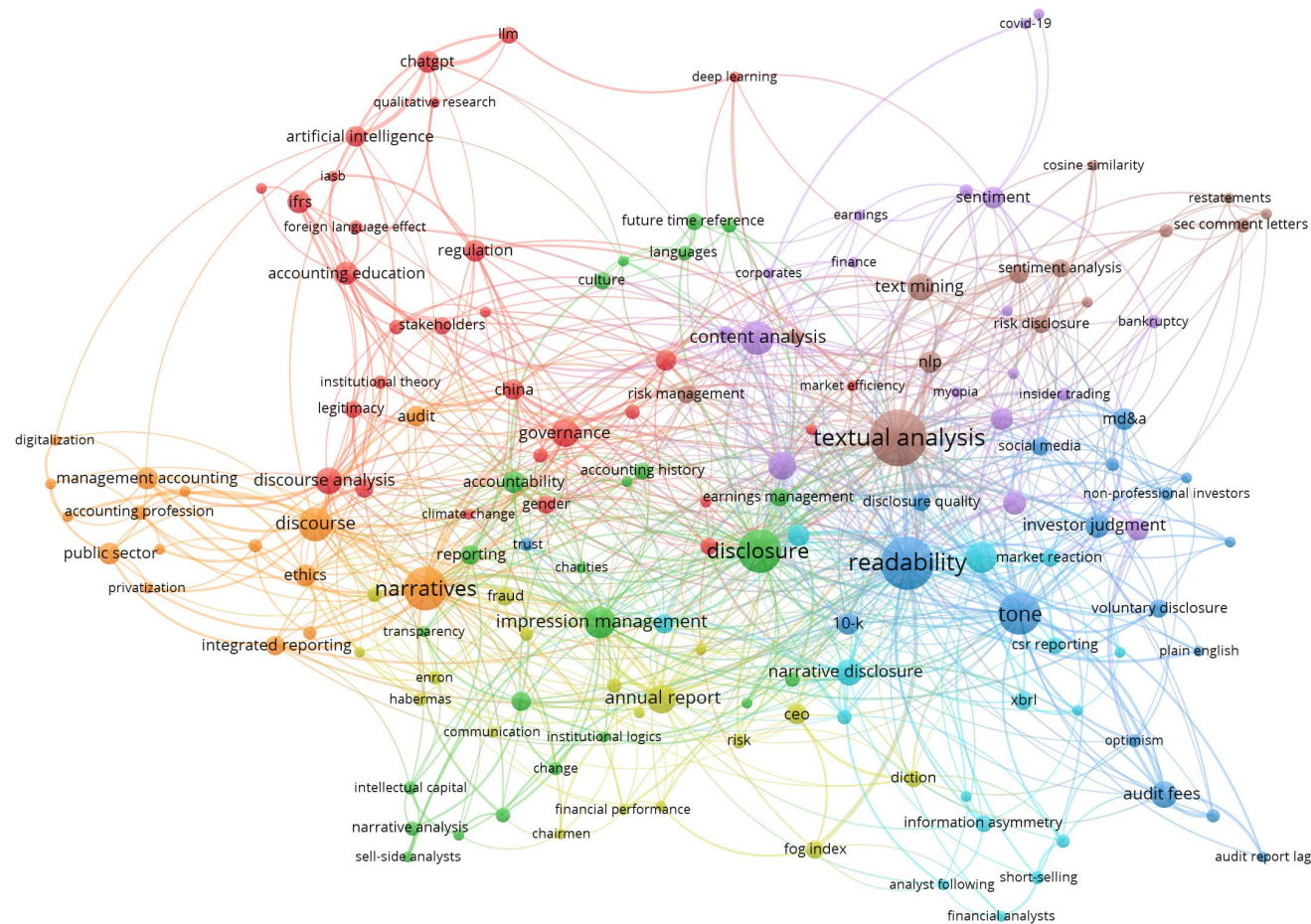
Notes: Using VOSviewer (van Eck and Waltman 2010), the figure shows eight color-coded clusters of author-supplied and index keyword co-occurrence in our sample with nodes depicting keywords, node size indicating occurrences, and thickness of links indicating the frequency of co-occurrence. Colors do not match Figure B-6.

Figure B-4: Keyword Map Based on Co-Occurrence Analysis
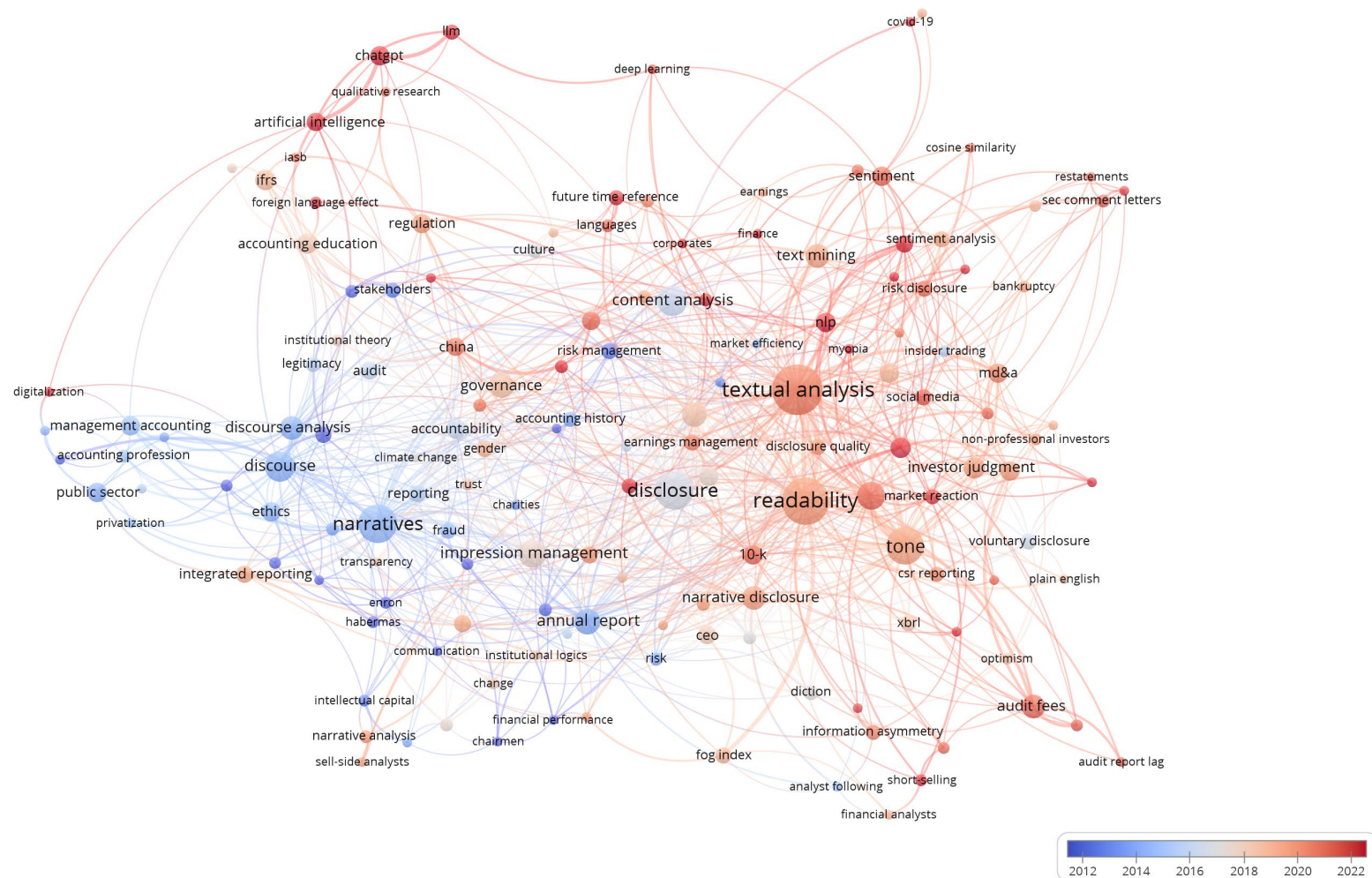
Notes: Using VOSviewer (van Eck and Waltman 2010), the figure shows the color-coded development of author-supplied and index keyword co-occurrence over time in our sample with nodes depicting keywords, node size indicating occurrences, thickness of links indicating the frequency of co-occurrence, and color indicating recency.

Figure B-5: Keyword Map with Overlay Based on Average Year of Publication

Main Keyword	Keywords	Color
annual report	ceo, fog index, fraud, diction, critical, risk, united kingdom, enron, habermas, linguistics, chairmen, communication, computational linguistics, financial performance, leadership, narcissism, rhetoric	**yellow**
content analysis	financial reporting, tone management, earnings announcement, qualitative disclosure, sentiment, non-financial information, bankruptcy, insider trading, stock returns, corporates, covid-19, earnings, finance, media coverage, myopia, stock market, tone analysis	**violet**
disclosure	impression management, accountability, reporting, sustainability reporting, earnings management, accounting history, culture, future time reference, audit report, languages, narrative analysis, obfuscation, tax avoidance, change, intellectual capital, australia, charities, corporate finance, institutional logics, performance, religion, sell-side analysts, transparency	**green**
earnings call	narrative disclosure, csr, narrative reporting, xbrl, csr reporting, information asymmetry, market reaction, forward-looking information, credibility, short-selling, analyst following, analyst forecasts, financial analysts, linguistic analysis, linguistic complexity	**turquoise**
governance	discourse analysis, accounting education, ifrs, chatgpt, regulation, artificial intelligence, china, sustainability, gender, ideology, legitimacy, llm, stakeholders, strategy, board, innovation, textbooks, foreign language effect, institutional theory, climate change, cognitive load, deep learning, diversity, earnings persistence, iasb, market efficiency, profitability, qualitative research	**red**
narratives	discourse, management accounting, ethics, public sector, audit, integrated reporting, accounting profession, canada, professionalism, bourdieu, digitalization, foucault, identity, methodology, privatization	**orange**
readability	tone, audit fees, investor judgment, md&a, 10-k, disclosure quality, social media, voluntary disclosure, audit risk, credit risk, non-professional investors, optimism, trust, analysts, audit report lag, plain english, stock price crash risk	**blue**
textual analysis	text mining, nlp, machine learning, risk disclosure, risk management, sentiment analysis, disclosure tone, sec comment letters, latent dirichlet allocation, cosine similarity, cybersecurity, enforcement, restatements	**brown**

Table B-5: Keywords per Cluster by Descending Occurrence

Recall that the graph depicting the development of the number of articles published per year between 2000 and 2024 showed at least four distinct developments or 'waves' around the years of 2011, 2015, 2019, and most recently in 2024. More detailed analyses of the keyword maps and trend topics based on authors' keywords between 2000 and 2024 provide insights into the topics underlying those developments.

The first wave is attributable to *narratives* and *discourse* (orange cluster) as well as *annual reports* (yellow cluster), that were prevalent throughout the decade between 2008 and 2018. In the years following the financial crisis, studies grounded in interpretivist and constructivist paradigms analyzed how accounting narratives are not merely reflections of financial data but are constructed texts that shape and are shaped by social, cultural, and institutional contexts. Overall, this stream of research illustrates how corporate narratives can be used for impression management and rationalization of organizational and professional identity (e.g., Gendron and Spira 2010; Merkl-Davies, Brennan, and McLeay 2011). Additionally, capital market-oriented research relied on textual analysis to examine language features of corporate disclosure like vividness, tone, or readability with regard to their information content in relation to, for instance, investor judgment (Hales, Kuang, and Venkataraman 2011), analysts' earnings forecasts (Lehavy, Li, and Merkley 2011), or litigation risk (Rogers, Van Buskirk, and Zechman 2011).

The second wave of publications is attributable to *disclosure* and *impression management* (green cluster) as well as *content analysis* (violet cluster), which were dominant topics between 2015 and 2018. Research in these years focuses on language as a potential tool for strategic disclosure and challenges the 'obfuscation hypothesis', i.e., that firms deliberately make disclosures harder to interpret under bad news. It is argued, for instance, that negative information can be concealed via omission instead of obfuscation (Leung, Parker, and Courtis 2015), that differences in disclosure clarity can be attributed to the attempt to provide more readable disclosure under good performance as opposed to intentionally providing obfuscated

disclosure under poor performance (Asay, Libby, and Rennekamp 2018), and that complex disclosure language can adequately reflect the provision of complex information (Bushee, Gow, and Taylor 2018).

The third wave of publications is attributable to *readability* (blue cluster), and *sustainability reporting* (green cluster), peaking briefly around 2020. While various facets of both topics are continuously reflected in the research within our sample, it is remarkable that a relatively small number of studies shed light on the intersection of both topics, given that sustainability reporting involves large quantities of narrative disclosure. Studies show, for instance, that more readable CSR reports are indicative of better future CSR performance (Caglio, Melloni, and Perego 2019), and that readability of integrated reports is positively associated with market valuation (Du and Yu 2020).

The fourth wave of publications can be split into distinct subclusters, the first of which is attributable to *textual analysis* (brown cluster), *earnings calls* (turquoise cluster), and *tone* (blue cluster), rapidly gaining momentum and peaking in 2022. Overall, these studies conclude that textual analysis has grown an important research method, because state-of-the-art large language models and machine-learning methods offer an easily implementable, more powerful, and reliable measure of disclosure attributes than dictionary-based methods (Bochkay et al. 2023; Frankel, Jennings, and Lee 2022; Huang, Wang, and Yang 2023). However, this discussion was quickly surpassed in terms of publication frequency by *ChatGPT*, *LLMs*, and *AI* (red cluster), which were the most prevalent keywords in 2024 in our sample. While the efficiency that generative artificial intelligence promises has the potential to disrupt both accounting research and practice as well as education, the concerns associated with its implementation open important avenues for future research (see, e.g., Eulerich, Sanatizadeh, Vakilzadeh, and Wood 2024; Ghio 2024; Wood et al. 2023).

Seminal Articles and Citation Analysis

The articles in our sample are cited 53.9 times on average and 4.6 times on average per year. Naturally, these results very significantly across the articles in our sample, requiring more detailed citation analyses. Therefore, we create a network of related articles using bibliographic coupling, following the idea that two documents are linked if they cite the same third document in their references (Kessler 1963). We apply no threshold regarding a minimum number of citations in order not to bias the results against recent publications. We use fractional counting and weight based on citations. The largest connected cluster consists of 663 articles, grouped in six clusters. The resolution is set to 0.95, and the minimum cluster size to 30. All visualization parameters remain unchanged. Figure B-6 shows the resulting network of related articles based on bibliographic coupling. The findings from the prior analysis of thematic clusters and current research trends are reflected in the network of related articles as well as their most cited articles. Note that the colors of the keyword map in Figure B-4 do not match the network of related articles in Figure B-6.

The **red cluster** broadly refers to research on textual analysis, e.g., the seminal article by Loughran and McDonald (2011), who linked novel word lists for financial texts to 10-K filing returns, trading volume, and more, and thereby made textual analysis more accessible as a method for accounting research.

The **green cluster** broadly refers to research on ESG reporting, e.g., Gray (2010) who very early inspired the debate over a more nuanced understanding of sustainability, and how it affects organizations.

The **blue cluster** broadly refers to research on narrative disclosure and accounting narratives, e.g., Li (2008), who was among the first to discover a relationship between disclosure language and firm performance, or Beattie, McInnes, and Fearnley (2004), who introduce a methodology for analyzing and evaluating narratives in annual reports.
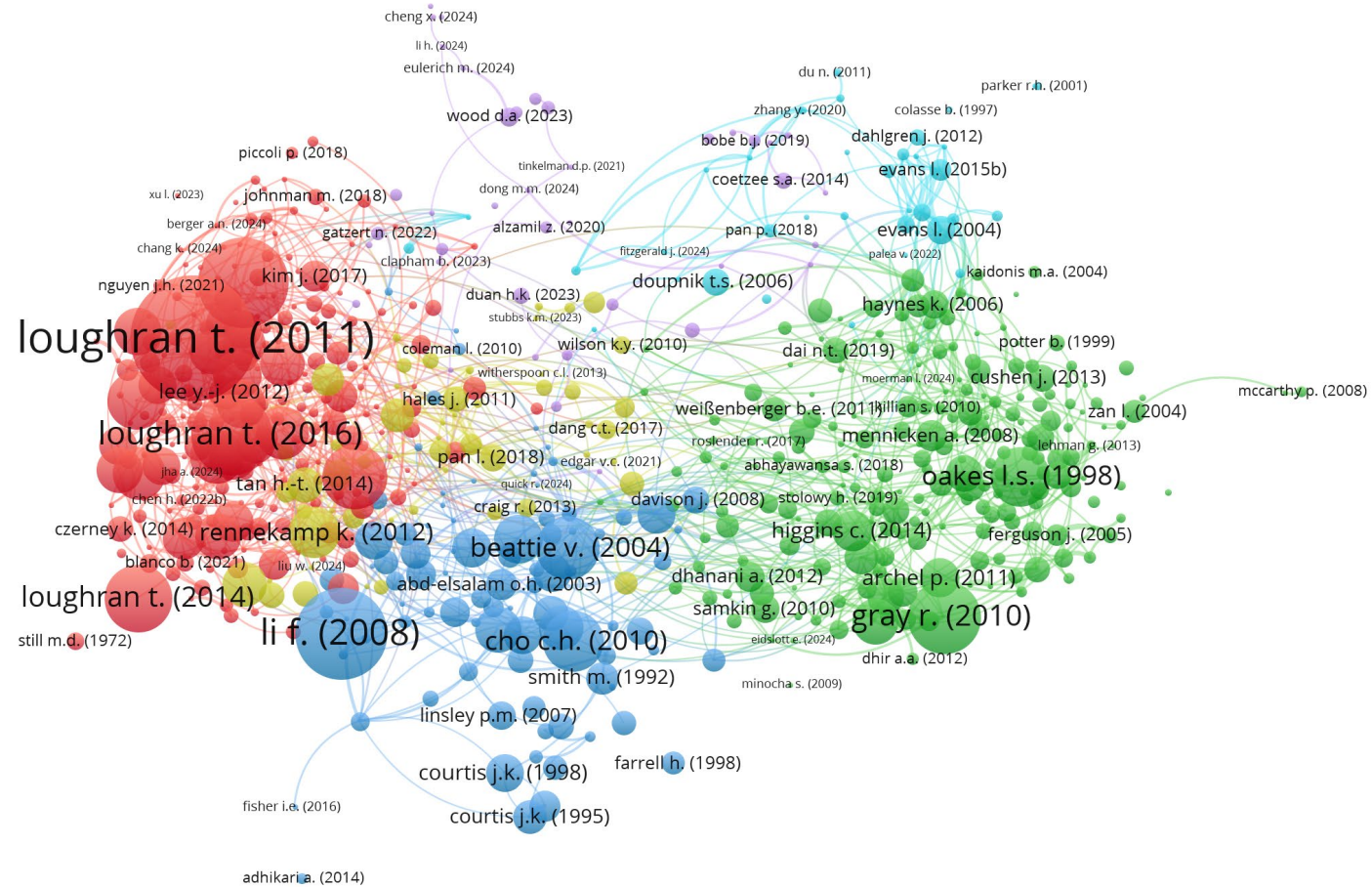
Notes: Using VOSviewer (van Eck and Waltman 2010), the figure shows six color-coded clusters of related articles in our sample with nodes depicting articles, node size indicating citations, and thickness of links indicating the degree of similarity based on bibliographic coupling. Colors do not match Figure B-4.

Figure B-6: Network of Related Articles Based on Bibliographic Coupling

The **yellow cluster** broadly refers to research on language features like readability, tone, or concreteness, e.g., the experiments by Rennekamp (2012), who shows that more readable disclosures lead to stronger reactions from small investors, or those by Tan, Wang, and Zhou (2013), who find that the positive effects of readability and language sentiment on investor judgment have boundary effects, and may reverse when both are jointly considered along with investor sophistication.

The **violet cluster** broadly refers to research on accounting education, e.g., Wood et al. (2023), who use data from 14 countries and 186 institutions to provide evidence of how ChatGPT performs on different accounting assessment questions.

The **turquoise cluster** broadly refers to research on translation and IFRS, e.g., Evans (2004), who points out the implications of mistranslations of accounting terms for users and preparers of translated financial statements as well as for researchers, students, and standard setters in international accounting.

Additionally, we perform simple citation analysis to identify seminal articles in the sample. Table B-6 displays the most-cited articles, that each account for at least 1.0 % of total citations in our sample. Some of these articles have already been identified as highly influential via bibliographic coupling and are prominent in Figure B-6. Overall, the most cited articles vary widely in terms of methodology, with both qualitative and quantitative as well as mixed-method approaches being used. However, judging by cluster size and number of data points as well as the general development of trending topics, it seems fair to point out that across the entire research field there is a propensity towards rather quantitative, capital market-oriented research.

Aside from the seminal articles by Loughran and McDonald (2011, 2014, 2016) that revolve around textual analysis in accounting and finance (see red cluster in Figure B-6), Dyer et al. (2017), for instance, document the increases in length, boilerplate, stickiness, and redundancy and decreases in specificity, readability, and the relative amount of hard information in 10-K disclosure from 1996 to 2013. They find that narrative disclosure on fair value inter

and internal controls as well as risk factor disclosure are the main drivers behind this development.

Regarding disclosure readability, Lo, Ramos, and Rogo (2017) complement the studies by Li (2008) and Rennekamp (2012) by pointing out that companies likely engaging in earnings management, particularly to surpass prior-year earnings, disseminate more complex and less readable MD&A sections, supporting the notion of disclosure obfuscation. Moreover, Lehavy et al. (2011) show that annual report readability affects analyst following and the properties of their earnings forecasts.

Regarding disclosure tone, Tetlock, Saar-Tsechansky, and Macskassy (2008) suggest that the fraction of negative words in firm-specific news stories proxies otherwise hard-to-quantify aspects of firms' fundamentals, which investors quickly incorporate into stock prices. In a similar vein, Feldman, Govindaraj, Livnat, and Segal (2010) find that shifts in MD&A tone are significantly associated with short-term market reactions and contribute to post-earnings announcement drift, especially for firms with less transparent information environment. Similarly, Davis, Piger, and Sedor (2012) find that a net optimistic tone, measured by the frequency of optimistic versus pessimistic words, is positively associated with future return on assets and elicits a significant market reaction around the announcement date, indicating that managerial language serves as a credible signal to investors. Additionally, Huang, Teoh, and Zhang (2014) find evidence that is consistent with managers using strategic tone management to mislead investors about firm fundamentals. Cho, Roberts, and Patten (2010), for instance, argue that the degree of bias in corporate environmental disclosure narratives varies systematically based on firm environmental performance and show that the emphasis on optimism over certainty in these disclosures is associated with worse environmental performance.

Article	Title	Source	Citations
Loughran and McDonald (2011)	When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks	*JoF* 66: 35–65	2,716
Li (2008)	Annual report readability, current earnings, and earnings persistence	*JAE* 45 (2–3): 221–247	1,367
Tetlock, Saar-Tschansky, and Macskassy (2008)	More Than Words: Quantifying Language to Measure Firms' Fundamentals	*JoF* 63: 1437–1467	1,339
Loughran and McDonald (2016)	Textual Analysis in Accounting and Finance: A Survey	*JAR* 54: 1187–1230	1,048
Gray (2010)	Is accounting for sustainability actually accounting for sustainability… and how would we know? An exploration of narratives of organisations and the planet	*AOS* 35 (1): 47–62	830
Loughran and McDonald (2014)	Measuring Readability in Financial Disclosures	*JoF* 69: 1643–1671	694
Lehavy, Li, and Merkley (2011)	The Effect of Annual Report Readability on Analyst Following and the Properties of Their Earnings Forecasts	*TAR* 86 (3): 1087–1115	629
Beattie, McInnes, and Fearnley (2004)	A methodology for analysing and evaluating narratives in annual reports: a comprehensive descriptive profile and metrics for disclosure quality attributes	*AF* 28 (3): 205–236	604
Cho, Roberts, and Patten (2010)	The language of US corporate environmental disclosure	*AOS* 35 (4): 431–443	546
Oakes, Townley, and Cooper (1998)	Business Planning as Pedagogy: Language and Control in a Changing Institutional Field	*ASQ* 43 (2): 257–292	533
Huang, Teoh, and Zhang (2014)	Tone Management	*TAR* 89 (3): 1083–1113	501
Davis, Piger, and Sedor (2012)	Beyond the Numbers: Measuring the Information Content of Earnings Press Release Language	*CAR* 29: 845–868	419
Feldman, Govindaraj, Livnat, and Segal (2010)	Management's tone change, post earnings announcement drift and accruals	*RAST* 15: 915–953	412

Article	Title	Source	Citations
Lo, Ramos, and Rogo (2017)	Earnings management and annual report readability	*JAE* 63 (1): 1–25	395
Rennekamp (2012)	Processing Fluency and Investors' Reactions to Disclosure Readability	*JAR* 50: 1319–1354	382
Dyer, Lang, and Stice-Lawrence (2017)	The evolution of 10-K textual disclosure: Evidence from Latent Dirichlet Allocation	*JAE* 64 (2–3): 221–245	340

Table B-6: Most-Cited Articles

Apart from the aforementioned positivist research on language and translation in accounting, two of the most-cited articles take a more critical perspective (see green cluster in Figure B-6). Gray (2010) argues that traditional accounting frameworks are ill-suited to capture the systemic and planetary dimensions of sustainability, which are difficult to measure empirically at the organizational level. He advocates for the development narratives that challenge prevailing business-centric interpretations of sustainability, suggesting that such narratives can better address the complexities and contradictions of sustainability. Oakes, Townley, and Cooper (1998) illustrate the importance and power of language for issues of control, e.g., by specifying the form and structure of decision processes. Utilizing Bourdieu's concepts of symbolic violence and capital, the authors argue that business planning imposes market-oriented language and values on organizations, that can have the potential to marginalize traditional cultural priorities and thereby reshape organizational identities and practices.

IV. Discussion and Conclusion

While our analyses reveal many details of research on language and translation in accounting, the main results can be summarized as follows. Firstly, our bibliometric analysis of research on language and translation in accounting revealed a common structure of research fields in accounting. On the one hand, there is rather positivist, capital market-oriented research on corporate disclosure and features of narrative reporting that tends to use quantitative methods. The view of language here is largely instrumental, which reduces language to quantifiable dimensions, focusing on observable traits, like readability or tone. On the other hand, there is interpretive research on accounting narratives and accounting discourse, that is linked to institutional and critical theory and employs qualitative methods. Some interpretive studies question the objectivity of language measures and argue for more contextualized interpretations of disclosure practices that they view as embedded in structures of power and hierarchies. Our analysis shows, however, that unlike many other fields in accounting research, research on language and translation in accounting originated from the latter, rather interdisciplinary and interpretive perspectives, and from outside of North America. Traditionally, research on accounting history and accounting education also contributed to these perspectives.

Secondly, our analysis also shows that research on language and translation in accounting in general has benefited from recent technological advances, especially of the advent of natural language processing in accounting, which has fundamentally changed the approaches to analyzing textual data. The increase in the number of publications on language and translation in the JBE is exemplary for this development. In addition to being featured in the FT50 ranking, the JBE significantly benefitted from increased research efforts in the fields of sustainability and identity, where textual analysis of narrative reports has opened up efficient ways to analyze large quantities of textual data. Additionally, research on trending niche topics like foreign language effects (e.g., Fitzgerald, Stroet, Weißmüller, and van Witteloostuijn 2025) also

contributed to above-average growth rates in the field of business ethics. However, the fact that around 50 % of articles in our sample were published after 2018 is mostly attributable to research in financial accounting, that uses data from 10-Ks, earnings calls or MD&As to analyze effects of readability, tone, sentiment, or investor judgment with novel machine learning techniques. However, research on management accounting, auditing, or taxation remains largely underrepresented here.

Thus, our results have several implications for future research. As we show, in recent years, research on language and translation in accounting has experienced a shift in its epistemological focus. On the one hand, critical and interpretive research emphasizes the importance of contextualizing language and translation. This requires methods that not only take into account the formal characteristics of texts, but also their social, cultural and historical contexts. On the other hand, the focus of natural language processing on the identification of patterns and structures in large volumes of textual data tends to reduce multidimensionality. Thus, we do not share the view that "relative to quantitative methods traditionally used in accounting and finance, textual analysis is substantially less precise" (Loughran and McDonald 2016, 1187). In contrast, compared to qualitative approaches, quantifying language bears much higher risks of isomorphism, and does not necessarily reflect the complex, often ambiguous character of language. So, with ubiquitous natural language processing in accounting, the bold *linguistic turn*, that the AAAJs special issue on language and translation in accounting was potentially aimed at (e.g., Evans and Kamla 2018), might not have come closer. Such a linguistic turn would entail a change in belief that all thinking and being is dependent on the structures of language itself (see, e.g., Alvesson and Kärreman 2000): Is language just a neutral or passive carrier of meaning, or an active tool that shapes the production of knowledge and our realities? How do language and translation work in the social contexts of the real world? And how do language and translation affect the research process itself? However, we do not believe that the patterns of methodological choices between the research clusters we identify necessarily reflect

the worldviews prevalent in the different accounting subdisciplines. That is to say, that a strict dualistic view of positivist-quantitative versus constructivist-qualitative approaches should be regarded as largely outdated in current scientific practice. Existing unnecessary camp formation and siloing in this regard should be counteracted with mixed-method approaches (Morgan 2007). Rather, we show that research on language and translation in accounting has the potential for a more diverse community of contributing authors and international collaborations. With the US dominance even increasing in the last three years, contributions by authors from non-English-speaking countries are more relevant than ever.

Naturally, our study is not without limitations that might also inspire fruitful avenues for future research. Firstly, and although the quantifications entailed in the bibliographic method easily lead to this misconception, our analyses entail degrees of freedom. For instance, the parameters used for the visualizations of thematic clusters are subject to author discretion. For this reason, we applied the bandwidths already established in the literature.

Secondly, and evidently as a consequence of the journals included in our analyses, we only refer to articles published in English, the current and most likely also future lingua franca of accounting research. A detailed discussion of this meta-question lies outside the scope of our research question. To date, it is uncertain if technological progress will take on the role of a deus ex machina in this regard, even though it has the potential to do so. Ghio (2024, 1), e.g., argues that "far from democratizing research communication, the proliferation of AI models like ChatGPT is creating new power imbalances and hegemonic positions that raise important ethical concerns for the academic community".

Lastly, accounting itself is a technical language, serving not least an information function for internal and external users. By means of accounting as a language, data on journal entries and business decisions become useful information, that natural language can help to put into context in order to act upon (Ordelheide 2004; Weißenberger and Holthoff 2012). As such, accounting as a language is itself a fluid construct that changes with and through the contexts

in which it is used. Future research will show to what extent the recent technological advances will shape both language and translation in accounting as well as accounting as a language itself. In any case, we believe that excellent accounting scholars and practitioners should continue to be the ones *telling the stories behind the numbers*.

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Appendices

Appendix B-1: Details of the Database Query and Screening Criteria

Database	Scopus query
Query period	December 2024
Title keywords included	language; word; narrativ*; discourse; text*; translat*; linguist*; readability; tone; sentiment; jargon; summariz*; chat*
Title keywords excluded	tone at the top; tone from the top; tone from above; leadership tone; management* tone; media tone; word of mouth; word-of-mouth; parity; currency translation; foreign translation adjustment; textile *Notes: wildcards (*) allow for approximate phrases*
Sources	Journals included in at least two of the following lists: – 2016 Financial Times Research Rank – Australian Business Deans Council 2022 Journal Quality List (rated A*, A, or B) – VHB Publication Media Rating 2024 of Scientific Journals in Accounting (rated A+, A, or B) – accounting updates publication alert by Jochen Pierk
Document types	Published journal articles
Study types	No limitations regarding study design and methods
Publication dates	All available publications without temporal restrictions
Languages	De facto English, determined by the selected sources
Query string	TITLE (language OR word OR narrativ* OR discourse OR verbal OR text* OR translat* OR linguist* OR readability OR tone OR sentiment OR jargon OR summariz* OR chat* AND NOT {tone at the top} OR {tone from the top} OR {tone from above} OR {leadership tone} OR {management* tone} OR {media tone} OR {word of mouth} OR {word-of-mouth} OR parity OR {currency translation} OR {foreign translation adjustment} OR textile) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (EXACTSRCTITLE, "*SOURCE TITLE*"))
Screening	– included if sentiment analysis is applied via content or textual analysis, and excluded if not – excluded if translation is referred to solely figuratively, e.g., 'translation from strategy into performance', or in the context of currency translation – excluded if keywords are used solely idiomatically, e.g., 'actions speak louder than words' or 'word of caution' – excluded if evidently out of scope of accounting research
Results	701 documents from 76 sources, published between 1972 and 2024

Appendix B-2: Details of the Journal Selection and Number of Articles per Journal

Journal title	Scopus coverage	Number of articles		
		Total	Excl.	Incl.
Selected based on screening criteria				
Abacus	1965-2024	12	4	8
Accounting and Business Research	1970-2024	29	1	28
Accounting and Finance	1979-2024	44	8	36
Accounting Education	1992-1996; 1998; 2000-2024	26	7	19
Accounting Forum	2004-2024	15	0	15
Accounting Historians Journal	1974-2024	10	8	2
Accounting History	1996-2024	14	1	13
Accounting History Review	2011-2024	3	1	2
Accounting Horizons	1996-2024	8	1	7
Accounting in Europe	2006; 2008; 2010-2024	7	0	7
Accounting Perspectives	2007-2024	3	0	3
Accounting Review	1996-2024	22	6	16
Accounting, Auditing & Accountability Journal	1988-2024	81	0	81
Accounting, Economics and Law: A Convivium	2011-2024	5	0	5
Accounting, Organizations and Society	1976-2024	37	6	31
Administrative Science Quarterly	1975-1987; 1989-1990; 1993-1994; 1996-2024	7	6	1
Advances in Accounting	2000-2003; 2005-2024	9	1	8
Advances in Accounting Behavioral Research	2000-2006; 2008-2023	1	0	1

Auditing	1996-2024	6	1	5
Australian Accounting Review	1991-2024	6	0	6
Behavioral Research in Accounting	2009-2024	2	0	2
British Accounting Review	1988-2024	29	8	21
British Journal of Management	1990-2024	40	38	2
Business Ethics Quarterly	1993; 1996-2024	5	3	2
Business Strategy and the Environment	1992-2024	21	15	6
Contemporary Accounting Research	1984-2024	30	4	26
Corporate Governance: An International Review	1993-2024	3	1	2
Critical Perspectives on Accounting	1990-2024	55	0	55
European Accounting Review	1992-2024	31	2	29
Financial Analysts Journal	1996-2024	7	5	2
Human Relations	1947-2024	95	94	1
Information Systems Research	1990-2024	20	19	1
International Journal of Accounting	1996-2024	6	0	6
International Journal of Accounting Information Systems	2000-2024	16	0	16
International Journal of Auditing	2011-2024	6	0	6
Issues in Accounting Education	2009-2024	12	3	9
Journal of Accounting and Economics	1979-2024	13	2	11
Journal of Accounting and Organizational Change	2005-2024	8	3	5
Journal of Accounting and Public Policy	1982-2024	9	0	9

Journal of Accounting Literature	2013-2019; 2022; 2024	1	0	1
Journal of Accounting Research	1996-2024	10	2	8
Journal of Accounting, Auditing and Finance	1986-2024	6	3	3
Journal of Applied Psychology	1917-2024	142	140	2
Journal of Business Ethics	1982-2024	109	87	22
Journal of Business Finance and Accounting	1974-2024	19	7	12
Journal of Business Research	1973-2025	124	123	1
Journal of Cleaner Production	1993-2024	103	99	4
Journal of Emerging Technologies in Accounting	2009-2024	24	0	24
Journal of Finance	1946-2024	21	18	3
Journal of Financial and Quantitative Analysis	1966-2024	16	15	1
Journal of Information Systems	2009-2024	14	7	7
Journal of International Accounting Research	2007; 2009-2024	3	0	3
Journal of International Business Studies	1975-2024	36	34	2
Journal of Management	1975-2024	17	15	2
Journal of Management Accounting Research	2009-2024	2	0	2
Journal of Management Information Systems	1987-2024	22	20	2
Journal of Management Studies	1964-2024	51	50	1
Journal of Marketing	1969; 1971; 1973; 1977; 1979-1981; 1995-2024	10	9	1
Journal of Risk and Insurance	1978-1979; 1996-2024	2	1	1
Journal of Risk Finance	1999-2024	10	9	1

Journal of the American Taxation Association	2003; 2007; 2009-2024	1	0	1
Management Accounting Research	1990-2024	9	2	7
Management Science	1969-2024	38	35	3
Managerial and Decision Economics	1980-2024	10	6	4
Managerial Auditing Journal	1986-2024	16	1	15
Production and Operations Management	1992-2024	12	11	1
Public Management Review	2001-2024	16	15	1
Qualitative Research in Accounting and Management	2004-2024	7	0	7
Review of Accounting and Finance	2002-2024	7	3	4
Review of Accounting Studies	1996-2024	16	3	13
Review of Quantitative Finance and Accounting	1991-2024	30	23	7
Scandinavian Journal of Management	1988-2024	45	44	1
Strategic Management Journal	1980-2024	16	15	1
Manually included				
Journal of Business Economics	1973-1979; 2013-2024	4	1	3
Journal of International Accounting, Auditing and Taxation	1992-2024	12	1	11
Meditari Accountancy Research	2012-2024	16	2	14
Selected based on screening criteria but no articles included in the sample				
Academy of Management Journal	1975-1987; 1989-2024	26	26	0
Academy of Management Review	1978-1987; 1989-1991; 1996-2024	23	23	0
Accounting and the Public Interest	2009-2023	0	0	0

American Economic Review	1973-1975; 1978-2024	12	12	0
Business Ethics	1992-1995; 1997; 1999; 2001; 2008; 2010-2021	4	4	0
California Management Review	1970-2024	3	3	0
Econometrica	1974; 1977-1984; 1990-1991; 1994-2024	5	5	0
Entrepreneurship Theory and Practice	2004-2024	8	8	0
European Journal of Finance	1995-1998; 2000-2024	24	24	0
European Management Journal	1982-2024	14	14	0
Family Business Review	1988-2024	3	3	0
Foundations and Trends in Accounting	2006-2012; 2014-2016; 2018-2023	0	0	0
Harvard Business Review	1974; 1978-1987; 1989-2024	5	5	0
Information and Organization	1996-1997; 2001-2024	12	12	0
International Review of Law and Economics	1981-2024	5	5	0
Journal of Business Venturing	1985-2025	20	20	0
Journal of Consumer Psychology	1992-2024	30	30	0
Journal of Consumer Research	1977-1978; 1984; 1996-2024	40	40	0
Journal of Economic Behavior and Organization	1980-2024	55	55	0
Journal of Financial Economics	1974-2024	20	20	0
Journal of International Financial Management and Accounting	1989-1992; 1994-2024	2	2	0
Journal of Management Control	2011-2024	1	1	0
Journal of Marketing Research	1968; 1995-2024	24	24	0
Journal of Operations Management	1980-1991; 1993-2024	3	3	0

Journal of Political Economy	1969; 1973-1974; 1979-1985; 1987-2024	4	4	0
Journal of Portfolio Management	1995-2024	15	15	0
Journal of Risk	2011-2024	3	3	0
Journal of Risk and Uncertainty	1988-2024	0	0	0
Journal of the Academy of Marketing Science	1973-2024	11	11	0
Long Range Planning	1968-2024	0	0	0
Manufacturing and Service Operations Management	1999-2024	3	3	0
Marketing Science	1996-2024	13	13	0
MIS Quarterly: Management Information Systems	1980-2024	22	22	0
MIT Sloan Management Review	2001-2024	5	5	0
Operations Research	1969-2024	2	2	0
Organization Science	1996-2024	19	19	0
Organization Studies	1980-2024	71	71	0
Organizational Behavior and Human Decision Processes	1985-2024	17	17	0
Quarterly Journal of Economics	1886-2024	8	8	0
Research Policy	1971-2025	27	27	0
Review of Economic Studies	1933-2024	6	6	0
Review of Finance	2001-2002; 2004-2024	5	5	0
Review of Financial Studies	1996-2024	8	8	0
Small Business Economics	1989-2024	0	0	0

Strategic Entrepreneurship Journal	2011-2024	3	3	0
Selected based on screening criteria, but not indexed in Scopus				
Journal of Financial Reporting	not indexed	0	0	0
Journal of Governmental and Nonprofit Accounting	not indexed	0	0	0
	Total	*2.331*	*1.630*	*701*

Appendix B-3: Development of the Total Number of Articles (Cumulated) and the Number of Articles Published per Year Between 1972 and 2024
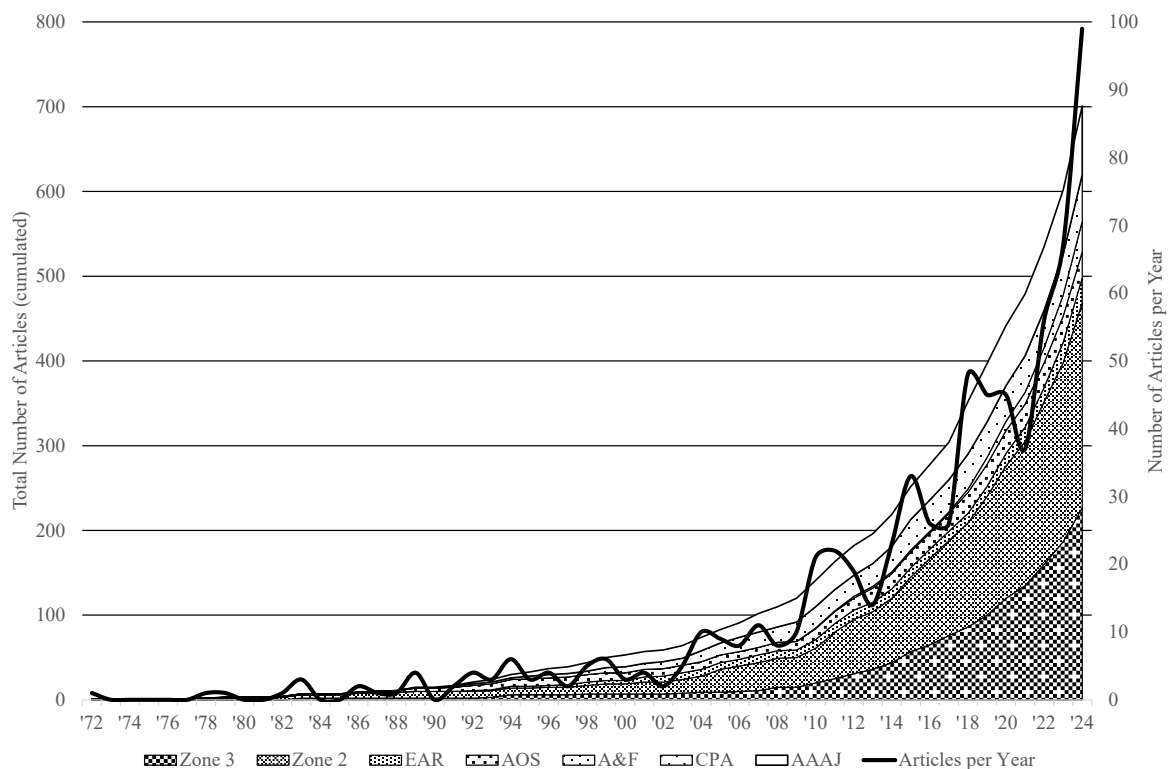
Notes: Graphs for the detail period from 2000 to 2024 are provided in Figure B-1.

C. Hidden in Plain Sight? How Readability and Reporting Language Influence the Impact of Sustainability Reporting

Authorship and Contributions

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All authors designed research.
Matthias B. Wesser performed, analyzed, and wrote research.

Presentations

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Hidden in Plain Sight? How Readability and Reporting Language Influence the Impact of Sustainability Reporting

Abstract

Readers skim. Therefore, reduced readability in corporate reporting is usually associated with an attempt to hide negative information, especially in narrative disclosure. Given the role of English as the lingua franca of international business, we investigate how readability (low versus high) and reporting language (native versus foreign) influence the assessment of corporate social responsibility information. Using an online scenario-experiment, we find that less readable disclosure leads to lower sustainability ratings, but only if the information is presented in the recipient's native language. Drawing on psychological research to explain these results, we predict and find that native language triggers emotional responses to violations of ethical norms, but only if reduced processing fluency from less readable information acts as a metacognitive cue, lowering reliance on the information itself and promoting affective responses instead. Since psychological distance is greater in foreign language processing, here, no emotional responses are triggered and reduced processing fluency from less readable information has no effect. We contribute to the accounting literature by highlighting how higher readability can contribute to the obfuscation of negative information, and by revealing how the use of English can have unintended consequences for investor relations.

I. Introduction

It is well established that the mere formulation of a decision problem can make a huge difference (Sunstein 2019, 4; Tversky and Kahneman 1981, 453). The differences in the responses to semantically equivalent descriptions of questions are referred to as framing effects (Tversky and Kahneman 1981). A rapidly growing body of psychological research adds to the existing research on framing effects and other biases in judgment and decision-making by pursuing a new approach. In their seminal paper, Keysar, Hayakawa, and An (2012) report on a series of experiments on decision biases in which the decision frame is not manipulated by the formulation but by the language in which the decision problems are presented. They show that framing effects and loss aversion disappear when choices are presented in a second language, i.e., a foreign language (Keysar et al. 2012). Note that consistent with literature in the field of linguistics, native language is referred to as first language, and foreign language is referred to as second language in this study. By using these different terms, the social, emotional, and political connotations of the terms native and foreign language are avoided (Ahrenholz 2017, 3–4). Based on the study by Keysar et al. (2012), psychological research shows that processing information in a second language not only affects biases in judgment and decision-making but also systematically influences ethical decisions (see, e.g., Costa et al. 2014; Hayakawa, Costa, Foucart, and Keysar 2016). The common explanation for second-language effects on ethical decisions is that first-language processing triggers emotional reactions and that this effect is attenuated during second-language processing (Sunstein 2019).

Considering the role of English as the lingua franca in international business (Andrew, Cooper, and Gendron 2020; Fredriksson, Barner-Rasmussen, and Piekkari 2006), it seems possible that millions of people systematically decide differently on ethical issues simply because they process a second language. In financial reporting and business ethics, however, second-language effects have been disregarded so far. This is remarkable, since business ethics is concerned with people's day-to-day business decisions, which impact the lives and well-

being of others inside and outside of organizations (Hunt and Vitell 1986; Jones 1991; Tenbrunsel and Smith-Crowe 2008; Treviño 1986). At the same time, people decide within power and authority structures: they tend to be influenced by leaders and peers while being conflicted with managing multiple stakeholders, interests, and values (Treviño, den Nieuwenboer, and Kish-Gephart 2014). Therefore, ethical dilemmas are ever-present in organizations. A decision is ethical if it is not only legal, but also "morally acceptable to the larger community" (Jones 1991, 367). In an ethical dilemma, decision makers face tension between economic objectives and a variety of relevant ethical norms (Bartels, Bauman, Cushman, Pizarro, and McGraw 2015, 479).

Society is increasingly aware that it can hold companies accountable for the impact their actions have on lives of people around the world, "not just in terms of the products and services they offer or the jobs and opportunities they create, but also in terms of working conditions, human rights, health, the environment, innovation, education and training" (European Commission n.d.), usually referred to as Corporate Social Responsibility (CSR). Therefore, CSR reporting is becoming increasingly common, even if not mandatory, and is very likely to become ever more important in the future (Cote 2021). However, we know from prior research in financial reporting that managers might have incentives to reduce disclosure readability in order to hide negative information in their reports, e.g., poor sustainability performance, by making it harder to extract (Bloomfield 2002; Li 2008). Moreover, while general news has become more readable over the last years, financial news and corporate reporting at large has grown substantially longer, more complex, and less readable (Dyer, Lang, and Stice-Lawrence 2017; Loughran and McDonald 2014). Even if complex language is not necessarily less informative than simple language (Bushee, Gow, and Taylor 2018), this trend still works against the huge efforts to increase the readability of corporate reporting (Securities and Exchange Commission 1998).

In this light, the aim of our study is to investigate the joint effects of readability and reporting language on the assessment of CSR performance. We develop and test theory suggesting that less readable information elicits stronger negative responses to poor CSR performance than more readable information, but only if that information is presented in the recipient's first language. We predict and find that processing first language triggers emotional responses to violations of ethical norms, but only if reduced processing fluency from less readable information acts as a metacognitive cue, lowering reliance on the information itself and promoting affective responses instead. Since psychological distance is greater in second-language processing, here, no emotional responses are triggered and reduced processing fluency from less readable information has no effect.

We test our hypothesis by conducting an online scenario-experiment using a 2 × 2 between-subjects design, in which we manipulate the readability (low versus high) and the language (first language versus second language) in which sustainability related information is presented. We use an experimental approach to keep all elements constant that are not part of our theory but may affect the assessment of CSR performance, particularly the amount of information conveyed in the text with different levels of readability. The text contains information on the business activities of a fictitious German battery manufacturer 'SmartPower' and describes its economic situation, the problems associated with the sourcing of cobalt from small-scale mining in Africa, and the company's efforts to establish a system of recycling and certification to reduce potentially harmful effects from its business activities. After having read the information, participants are asked to assess the company's CSR performance.

Our results are in line with our predictions. When information is presented in the first language, low readability, compared to high readability, reduces the assessment of CSR performance. When information is presented in the second language, however, readability has no effect on the assessment of CSR performance.

Our study contributes to accounting research in several ways. In financial reporting, our results add nuance to the benefits of readability, highlighting its potential contribution to the obfuscation of negative information. Even if not used deliberately for that purpose, high readability can bias readers decision-making in the context of CSR. Evidently, our policy implication for standard setters and regulators is not to reduce readability. We rather believe that efforts to promote and standardize CSR reporting can be a way to maintain accountability, nonetheless. Moreover, we shed light on the unintended consequences of adopting an otherwise beneficial language policy promoting English as corporate language. In this regard, our study contributes to management accounting, too, as informal management control instruments like language policy significantly contribute to establishing values in an organization, which employees can use as guidance in ethical decision-making (Paine 1994).

The remainder of this paper is organized as follows: section 2 describes the theory and develops the hypothesis, section 3 describes the method, section 4 reports the results, and section 5 concludes the study.

II. Theory and Hypothesis Development

Background and Theory

English as the lingua franca of international business

International business research lucidly shows that language barriers slow down decision-making processes while also increasing their costs (Harzing, Köster, and Magner 2011). This is particularly true regarding multinational corporations, as they are often confronted with multilingualism due to global business operations (Brannen, Piekkari, and Tietze 2014; Karhunen, Kankaanranta, Louhiala-Salminen, and Piekkari 2018). Once being "the forgotten factor in multinational management" (Marschan, D. Welch, and L. Welch 1997) language has now become an issue "at the heart of international business activities" (Brannen et al. 2014; for a review see, e.g., Tenzer, Terjesen, and Harzing 2017). A substantial part of this research is concerned with English as the lingua franca in international business contexts (Nickerson 2005). Over time, the debate on language policies in business has gained nuance. It has shifted away from the mere consideration of the benefits of establishing a common corporate language via top-management fiat (see, e.g., Luo and Shenkar 2006) to a more comprehensive understanding of active language management (Feely and Harzing 2003; Marschan-Piekkari, D. Welch, and L. Welch 1999a; Neeley, Hinds, and Cramton 2012) or even active non-management (Fredriksson et al. 2006). This debate has highlighted the mismatch between corporate language as a strategic asset and the actual communicative behavior (Fredriksson et al. 2006; Tange and Lauring 2009), leading to what is called a multilingual franca approach of coexisting corporate languages (Janssens and Steyaert 2014). This cosmopolitan understanding of language in business considers the multifaceted role and the intertwined effects of language use on inter- and intra-organizational relationships and communication. Precisely, the use of corporate languages impacts organizational work processes, and partly leads to the formation of groups and sub-groups within organizations (Barner-Rasmussen, Ehrnrooth, Koveshnikov, and Mäkelä 2014; Charles and Marschan-Piekkari 2002; Detzen and Loehlein 2018; Marschan-

Piekkari, D. Welch, and L. Welch 1999b; Piekkari, Oxelheim, and Randøy 2015; Selmier II, Newenham-Kahindi, and Oh 2015). In particular, corporate languages impact the cooperation between headquarters and subsidiaries (Björkman and Piekkari 2009; Harzing and Feely 2008; Peltokorpi and Vaara 2012) and the success of integration processes (Vuori, Vuori, and Huy 2018). Further, corporate languages can favor or hinder the exchange of knowledge (Barner-Rasmussen and Aarnio 2011; Harzing and Pudelko 2014; Reiche, Harzing, and Pudelko 2015; D. Welch, and L. Welch 2008), the exertion of power (Hinds, Neeley, and Cramton 2014; Marschan-Piekkari et al. 1999b), the emergence of trust (Tenzer, Pudelko, and Harzing 2014), status (Neeley 2013), and self-identity (Bordia and Bordia 2015), as well as the overall benefits of cultural diversity within the organization (Wille, de Bres, and Franziskus 2012). Yet, language barriers rarely manifest within Anglophone, Asian, Continental European and Nordic clusters. However, between these clusters language barriers are particularly pronounced (Harzing and Pudelko 2013).

Language and readability in accounting

In accounting research, the role of language is especially pronounced regarding international accounting standard setting, taking into account the growing awareness that language—especially translation between languages—is an obstacle for achieving comparability and convergence of international accounting rules (Evans 2004; Zeff 2007). Translation alone may not be sufficient to ensure equivalent quality in global reporting since political, cultural, and legal influences of the environments in which companies operate have a significant impact on how accounting standards are interpreted and applied (Alexander 1993; Baskerville 2011). Research has shown that the terms used in different translations of the IFRS do not convey the same meaning (Nobes and Stadler 2018). In this context, the influence of language and culture on the translation and interpretation of probability and uncertainty expressions proved to be particularly robust (Davidson and Chrisman 1994; Doupnik and

Richter 2003, 2004). Moreover, it was shown that the use of IFRS in the first language has a positive impact on decision-making quality (Holthoff, Hoos, and Weißenberger 2015).

Additionally, accounting research addresses miscellaneous issues related to language, e.g., the tone of managers' language in earnings calls and shareholder letters (Bochkay, Hales, and Chava 2020; Hope and Wang 2018; Shin and You 2020), time-orientation with respect to income smoothing and earnings management (Cao, Myers, and Zhang 2023; Kim, Kim, and Zhou 2017), and causal language in performance feedback (Loftus and Tanlu 2018). Finally, accounting research points to specific language features, most notably readability. Prior research, e.g., finds, that more readable disclosures lead to stronger reactions from small investors (Rennekamp 2012), that bad news disclosures are less readable than good news, but only when managers have a stronger self-enhancement motive (Asay, Libby, and Rennekamp 2018), that managerial ability is significantly positively associated with the readability of narrative disclosures in 10-K reports (Hasan 2020), but also, that the simple measurement of linguistic complexity commingles obfuscation and information (Bushee et al. 2018). However, the interplay of readability and reporting language has not been subject to investigation.

Hypothesis Development

We investigate the effect of readability and reporting language on the assessment of CSR performance. The criteria for assessing CSR performance are derived from a variety of relevant ethical norms (Bartels, Bauman, Cushman, Pizarro, and McGraw 2015, 479), which are activated depending on the specific context. Here, the language dependence of human memory plays a vital role. Language dependency implies that all memories are stored with a certain kind of meta-information on the linguistic context in which they aroused (Marian and Neisser 2000). In the first-language environment memories and mental constructs, for example ethical norms, are easily activated. This is possible because first language is usually acquired and internalized in the early years of life through innate learning mechanisms (Lenneberg 1967; McDonald

2006; Newport, Bavelier, and Neville 2001). In contrast, second language is less strongly internalized and usually used less often (Ardila 2003, 238; Clahsen and Felser 2006; Volk, Köhler, and Pudelko 2014). Thus, in the second-language environment ethical norms receive less or no attention at all (Hadjichristidis, Geipel, and Surian 2017; Rottman and Young 2015). The notion of reduced access to normative knowledge when making ethical judgments in a second language is supported by empirical evidence (Geipel, Hadjichristidis, and Surian 2015a; Hadjichristidis, Geipel, and Keysar 2019; Li 2017). Moreover, despite some criticism (see Białek and Fugelsang 2019), no second-language effect was found in studies with bilingual participants (Čavar and Tytus 2018; Gawinkowska, Paradowski, and Bilewicz 2013). This also corroborates the notion of reduced access to normative knowledge, as multilinguals have access to normative knowledge in multiple languages (Dewaele 2015; Luna, Ringberg, and Perrachio 2008; Opitz and Degner 2012; Pavlenko 2012). Overall, due to the language dependency of human memory, the access to normative knowledge is restrained when processing second language.

Similarly, neurolinguistic research finds that affective reactions are stronger when processing first language compared to second language (Bond and Lai 1986; Caldwell-Harris 2014, 2015; Harris, Ayçiçeği-Dinn, and Gleason 2003; Morawetz, Oganian, Schlickeiser, Jacobs, and Heekeren 2017). Building upon dual-processing theories of higher cognition (see Evans 2008; Evans and Stanovich 2013; Stanovich and West 2000), prior research shows that both rapid autonomous processes and distinctive higher order reasoning can influence ethical judgments (see, e.g., Cushman and Greene 2012; Greene, Nystrom, Engell, Darley, and Cohen 2004; Greene and Haidt 2002; Moore, Lee, Clark, and Conway 2011; Muda, Niszczota, Białek, and Conway 2018; Reynolds 2006; Sunstein 2005). In our study, two effects are of critical relevance. First, due to language-dependent memory, emotional reactions associated with the violation of ethical norms are blunted when processing a second language (Białek and Fugelsang 2019; Cipolletti, McFarlane, and Weissglass 2016; Corey and Costa 2015; Geipel,

Hadjichristidis, and Surian 2015b; Hadjichristidis, Geipel, and Savadori 2015; Hayakawa, Tannenbaum, Costa, Corey, and Keysar 2017; Nakamura 2015, 2016; Turula 2016; Vives, Aparici, and Costa 2018). Additionally, second-language processing triggers higher-order reasoning processes, because second-language processing induces an increase in psychological distance (Corey et al. 2017; Costa et al. 2014; Hadjichristidis et al. 2019; Shin and Kim 2017; Ivaz, Costa, and Duñabeitia 2016; Ivaz, Griffin, and Duñabeitia 2019; Woumans, van der Cruyssen, and Duyck 2020). Psychological distance describes the notion that decision-makers mentally detach themselves from the consequences of their decisions and therefore elevate the decisions to higher levels of abstraction (Trope and Liberman 2010). Increased psychological distance then accounts for increased cognitive evaluations of overall outcomes (Białek et al. 2019; Cipolletti et al. 2016; Corey and Costa 2015; Nakamura 2015, 2016) and an increase in the relative weight placed on intentions versus outcomes (Geipel, Hadjichristidis, and Surian 2016). Neuroscientific research corroborates these findings by showing that second-language processing leads to high neuronal activity in the frontal (Abutalebi 2008; Chee, Hon, Lee, and Soon 2001) and cortical (Hasegawa, Carpenter, and Just 2002) regions of the brain. Frequent activation of these areas indicates a strong cognitive load and a high demand of neural control functions (Clahsen and Felser 2006), supporting the notion of second-language processing triggering higher-order reasoning processes and attenuating affective responses.

Readability of information influences manner and scope of readers' use of information for decision-making. It can be broadly defined as the entirety of all elements that affect the extent to which a group of readers understands a text, reads it at an optimum speed, and finds it interesting (Dale and Chall 1949). Therefore, readability of a text affects feelings of processing fluency, i.e., an individual's subjective feeling about how easy it is to process information (Rennekamp 2012). This is because the linguistic properties of the text are used as a subconscious cue regarding the quality of the information conveyed in terms of its decision usefulness. Higher processing fluency has been associated with to higher ratings of truth,

preference for the message and the messenger, willingness to rely on information, and confidence in judgments (Alter and Oppenheimer 2009). Higher readability of information on CSR performance, c.p., could therefore increase the assessment of the information itself through increased feelings of processing fluency, which trigger higher-order reasoning processes and attenuate affective responses. In contrast, lower readability could reduce the willingness to rely on the information conveyed, questioning the truthfulness of the information as well as the integrity of the sender's motives and thereby promoting the decision-maker's propensity to rely on her affective reaction, i.e., her 'gut feeling'. Since psychological distance is greater in second-language processing, in this case no emotional responses can be triggered and reduced processing fluency from less readable information has no effect. Therefore, we hypothesize:

Hypothesis. The assessment of CSR performance is lower when information is less (versus more) readable, but only in the first (versus second) language.

III. Method

Experimental Design

Overview

We test our hypothesis by conducting an online scenario-experiment using a 2 × 2 between-subjects design. The experiment was approved by the German Association for Experimental Economic Research e.V. (Institutional Review Board). Both of our factors, readability and reporting language, are varied at two levels, i.e., low versus high for readability, and first language (German) versus second language (English) for reporting language.

Participants' first assignment in our study is to read a text describing the business activities of the fictitious German battery manufacturer 'SmartPower' which produces rechargeable batteries for mobile phones. First, the text presents information on the company's good economic situation. Second, the challenges in the company's global supply chain management are described: the batteries are based on so-called lithium-ion technology, which among other things, requires the use of the metal cobalt, which is predominantly mined in the Democratic Republic of Congo, where up to 20 % of annual production comes from small-scale mining. People working in small-scale mining extract cobalt in unsafe mines by hand and suffer from harmful working conditions. Moreover, the profits from the sale of cobalt to suppliers of the electrical industry are repeatedly associated with the financing of armed conflicts in Central Africa. Third, the company's efforts to solve these problems are described: in the long term, the company plans to replace cobalt with aluminum or manganese. In the meantime, the amount of cobalt in the batteries has been reduced by more than half and partially replaced by cobalt recovered from recycled batteries. Finally, the company is campaigning to establish a transparent certification system for cobalt as a conflict resource. Participants' second assignment in our study is to complete a questionnaire related to the information conveyed in the text, measuring their assessment of the company's CSR performance.

Manipulation of the independent variables

Readability. *Readability* is manipulated at two levels (between-subjects): low and high. The manipulation refers to the design choices for plain English recommended by the SEC, holding constant the amount and order of information in all four groups, and only altering the visual representation of the text (Securities and Exchange Commission 1998). In the low readability conditions, the visual representation does not comply with the SEC's recommendations for high readability, whereas in the high readability conditions, the visual representation complies with the SEC's recommendations for high readability. The structure of the text is designed using section headings in **Tahoma** in bold (high) versus "in text" section headings in uppercase **FRANKLIN GOTHIC DEMI COND** in bold (low). The font is designed using the serif font Times New Roman (high) versus the sans serif font **Franklin Gothic Demi Cond** (low). Emphases are designed using **Times New Roman** in bold (high) versus uppercase **FRANKLIN GOTHIC DEMI COND** (low). Enumerations are designed using bullets to list information (high) versus in text enumerations (low). The layout is designed using wider margins (high) versus no margins (low), linespacing of 1,4 (high) versus 1,0/set solid (low), letter spacing with normal space (high) versus half the normal space (low) and different justification, i.e., left justified, ragged right text (high) versus fully justified text (low). The instrument for the second-language conditions and both readability conditions are represented in Appendix C-1 and Appendix C-2.

Reporting Language. *Reporting Language* is manipulated at two levels (between-subjects): first language and second language. Participants in the first-language conditions received a German version of the text, whereas participants in the second-language condition received an English version of the text. The rest of the study, including all instructions and measurement scales, are presented in German. To ensure that the meaning conveyed is the same in both language conditions, the text originally written in German was translated into English by an independent bilingual speaker.

Measurement of the dependent variable

Assessment of CSR Performance. *Assessment of CSR Performance* is calculated based on the average rating of the participants' agreement with five statements on the implementation of corporate responsibility by 'SmartPower', measured on a seven-point Likert scale, with 1 representing "fully disagree" and 7 representing "fully agree". The statements read: (1) "The behavior of SmartPower is beneficial overall", (2) "The behavior of SmartPower benefits the local community in Congo", (3) "SmartPower respects universal principles such as justice and human dignity", (4) "SmartPower sets the same standards for working conditions for all employees and suppliers worldwide", and (5) "SmartPower is aware of its responsibility and acts accordingly".

Participants and Procedures

We conducted our experiment online between November 16 and 22, 2021. We recruited 441 participants with German as their first language, and English not as their first language. Participants have a minimum age of 18 years, a mean age of 49 years and at least a high-school diploma ("Fachhochschulreife" or "allgemeine oder fachgebundene Hochschulreife/Abitur"). 49 % of the participants are female. There are no significant differences across groups for age (p = 0.74, two-tailed), gender (p = 0.79, two-tailed), experience (p = 0.88, two-tailed), proficiency in German (p = 0.25, two-tailed), proficiency in English (p = 0.61, two-tailed) or time to complete the study (p = 0.18, two-tailed).

Participants were not able to reach the online questionnaire via mobile devices. Our study was carried out online in cooperation with respondi AG, a German provider of online access pools ("online panels"). respondi AG is certified by the Austrian Standards Institute according to ISO 26362:2009-01 (Access panels in market, opinion and social research — Vocabulary and service requirements) and is complying with all GDPR requirements. Data collection and storage takes place within the IT network of our university and respondi AG.

At the beginning of the experiment, we informed the participants that participation in the study takes approximately 20 to 25 minutes, and that participation is completely voluntary. Additionally, we informed the participants that the data collected in our study is analyzed solely for the purpose of scientific publication and that by participating in this study, participants agree that the answers they give are used in scientific analyses and publications. We informed participants that all data is treated strictly confidentially, is evaluated completely anonymously and only presented in aggregated form so that no conclusions can be drawn about participants' individual answers. Participants did not receive detailed information about the objective of our study prior to participation. Our study did not involve deception of participants in any form. The disclaimer was followed by four screening questions concerning participants' age, first language and level of school diploma. Participants who met our above-mentioned screening criteria were then given the instructions. Participants received no monetary incentives in addition to their fixed compensation. Participants received their payments in credit points via respondi AG's platform "mingle" ("mingle-points"). 100 mingle-points equal 1 Euro. Participants who completed the questionnaire received 125 mingle-points. Participants who did not meet our screening criteria received 5 mingle-points. To avoid socially desirable response behavior (Jidin and Monroe 2018), they were made aware that there were no correct or incorrect answers (Dawson 1995). Participants had to answer a question prior to the experiment, ensuring that they had understood that there were no correct or incorrect answers, and were only allowed to continue if they had answered the question correctly. Next, the computer system randomly assigned the participants into the four different conditions. Participants then read the text and completed the questionnaire assessing our dependent variable. Subsequently, participants completed our post-experimental questionnaire including demographics. At the end of the experiment, participants were debriefed and given the opportunity to follow up on the results of the study.

IV. Results

Descriptive Statistics

Table C-1 displays the means and standard deviations as well as the number of participants across conditions on our dependent variable *Assessment of CSR Performance*. As displayed in Table C-1 and shown in Figure C-1, in the first-language condition, *Assessment of CSR Performance* is lower when readability is low, compared to when it is high (means: 4.59 versus 5.08), which is consistent with our hypothesis. Additionally, also consistent with our hypothesis, the difference in *Assessment of CSR Performance* between the low and high readability conditions is smaller in the second-language conditions (means: 4.72 versus 4.80).

Hypothesis Test

Our hypothesis predicts that the assessment of CSR performance is lower when information is less (versus more) readable, but only in the first (versus second) language. To test our hypothesis, we conduct OLS regression analysis using *Assessment of CSR Performance* as dependent variable. The independent variables are *Readability*, an indicator variable that equals to 0 for low and 1 for high, and *Reporting Language*, an indicator variable that equals to 0 for German (native) and 1 for foreign (English). The results of the regression are reported in Table C-2. The coefficient of *Readability* reflects the effect of readability when information is presented in the first language (German). The results show that when information is presented in the first language (German), low readability, compared to high readability, reduces the assessment of CSR performance ($\beta = 0.49$, $p = 0.004$, two-tailed). The coefficient of *Reporting Language* reflects the effect of reporting language when readability is low. The results show that when readability is low, presenting information in the first language (German), compared to the second language (English), has no effect on the assessment of CSR performance ($\beta = 0.13$, $p = 0.47$, two-tailed). In addition, the interaction effect is significantly negative ($\beta = -0.41$, $p = 0.047$, one-tailed).), indicating that the effect of readability is less pronounced

in the second language, compared to the first language. Follow-up simple effects tests, reported in Table C-2 show that the effect of *Readability* is significant in the native language (t = 2.86, p = 0.002, one-tailed), but not in the foreign language (t = 0.47, p = 0.640, two-tailed). Moreover, simple effects tests show that the effect of *Reporting Language* is not significant for either low readability (t = 0.78, p = 0.437, two-tailed) or high readability (t = – 1.61, p = 0.109, two-tailed). Taken together, these results support our predictions.

Robustness Check for Social Desirability Bias

We perform an additional robustness check to rule out social desirability bias. After having asked participants to indicate their own agreement with five statements on the implementation of corporate responsibility by 'SmartPower', we asked participants to indicate to what extent they think that, on average, society would agree or disagree with the same statements if they were in the same situation as themselves, to control for socially desirable response behavior (Jidin and Monroe 2018). We similarly calculate the *Unbiased Assessment of CSR Performance* based on the average rating for all five statements, measured on a seven-point Likert scale, with 1 representing "fully disagree" and 7 representing "fully agree". Using *Unbiased Assessment of CSR Performance* as an alternative dependent variable in our hypothesis test does not change the inference (β = – 0.42, p = 0.035, one-tailed).

Dependent Variable: *Assessment of CSR Performance*

Reporting Language

		First Language (German)	Second Language (English)	Total
Readability	low	4.59 (1.24) n = 111	4.72 (1.44) n = 110	4.66 (1.34) n = 221
	high	5.08 (1.23) n = 110	4.80 (1.14) n = 110	4.94 (1.19) n = 220
	Total	4.83 (1.26) n = 221	4.76 (1.29) n = 220	4.80 (1.28) n = 441

Notes: The table displays the means and standard deviations for *Readability* and *Reporting Language* as well as the number of participants per condition with *Assessment of CSR Performance* as the dependent variable.

Readability is manipulated at two levels (between-subjects): low and high. The manipulation refers to the design choices for plain English recommended by the SEC, holding constant the amount and order of information in all four groups, and only altering the visual representation of the text (Securities and Exchange Commission 1998). In the low readability conditions, the visual representation does not comply with the SEC's recommendations for high readability, whereas in the high readability conditions, the visual representation complies with the SEC's recommendations for high readability.

Reporting Language is manipulated at two levels (between-subjects): first language and second language. Participants in the first-language conditions received a German version of the text, whereas participants in the second-language condition received an English version of the text.

Assessment of CSR Performance is calculated based on the average rating of the participants' agreement with five statements on the implementation of corporate responsibility by 'SmartPower', measured on a seven-point Likert scale, with 1 representing "fully disagree" and 7 representing "fully agree".

Table C-1: Descriptive Statistics for Readability and Reporting Language

Panel A: Regression Results with *Assessment of CSR Performance* as Dependent Variable

	Coefficient	Std. Error	p-value
Readability	0.49	0.17	0.004**
Reporting Language	0.13	0.18	0.466
Readability × Reporting Language	– 0.41	0.24	**0.047***
Constant	4.59	0.12	< 0.001***
Adj. R^2			0.01
N			441

Panel B: Follow-up Tests of Simple Effects with Assessment of CSR Performance as Dependent Variable

	df	t-statistic	p-value
Simple Effect *Readability* when *Reporting Language* = 0	1	2.86	**0.002***
Simple Effect *Readability* when *Reporting Language* = 1	1	0.47	0.640
Simple Effect *Reporting Language* when *Readability* = 0	1	0.78	0.437
Simple Effect *Reporting Language* when *Readability* = 1	1	– 1.61	0.109

Notes: The tables display results of an OLS regression (Panel A) and follow-up tests of simple effects (Panel B). * p < 0.05; ** p < 0.01; *** p < 0.001, boldface indicates a one-tailed p-value, conditional on the direction of a hypothesized prediction. All other reported p-values are two-tailed.

Readability is an indicator variable that equals to 0 for low and 1 for high.

Reporting Language is an indicator variable that equals to 0 for German (native) and 1 for foreign (English).

Assessment of CSR Performance is calculated based on the average rating of the participants' agreement with five statements on the implementation of corporate responsibility by 'SmartPower', measured on a seven-point Likert scale, with 1 representing "fully disagree" and 7 representing "fully agree".

Table C-2: Effect of Readability and Reporting Language on Assessment of CSR Performance
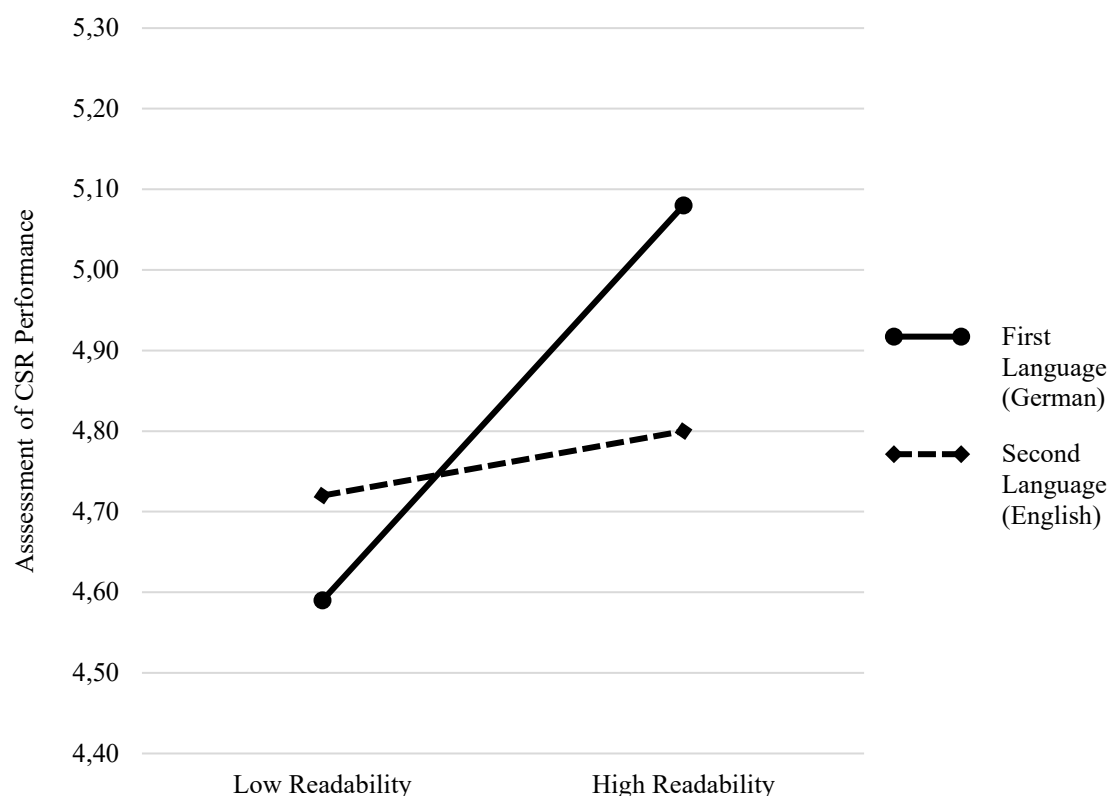
Notes: The figure displays the effect of *Readability* and *Reporting Language* on the *Assessment of CSR Performance.*

Readability is manipulated at two levels (between-subjects): low and high. The manipulation refers to the design choices for plain English recommended by the SEC, holding constant the amount and order of information in all four groups, and only altering the visual representation of the text (Securities and Exchange Commission 1998). In the low readability conditions, the visual representation does not comply with the SEC's recommendations for high readability, whereas in the high readability conditions, the visual representation complies with the SEC's recommendations for high readability.

Reporting Language is manipulated at two levels (between-subjects): first language and second language. Participants in the first-language conditions received a German version of the text, whereas participants in the second-language condition received an English version of the text.

Assessment of CSR Performance is calculated based on the average rating of the participants' agreement with five statements on the implementation of corporate responsibility by 'SmartPower', measured on a seven-point Likert scale, with 1 representing "fully disagree" and 7 representing "fully agree".

Figure C-1: Effect of Readability and Reporting Language on the Assessment of CSR Performance

V. Discussion and Conclusion

We show that less readable disclosure leads to lower sustainability ratings, but only if the information is presented in the recipient's native language. This is relevant because financial news and corporate reporting at large has grown substantially longer, more complex, and less readable (Dyer et al. 2017; Loughran and McDonald 2014). In a similar vein, companies face an increased demand for non-financial reporting and narrative disclosures in the context of CSR. We extend prior research by considering the role of English as the lingua franca in international business, and we provide experimental evidence on how to readability and reporting language might influence the assessment of CSR performance.

Our findings could support prior research in financial reporting that suggests that managers might have incentives to obfuscate negative information by reducing readability (Bloomfield 2002; Li 2008). If we assume that investors are aware of this effect and anticipate obfuscation if they observe low readability, they might lower their sustainability ratings in expectation of hidden negative information. However, the obfuscation hypothesis does not account for differences between native and foreign languages. What our findings suggest on the contrary is a form of inverse obfuscation, that we interpret as a *hidden in plain sight* effect. This means, that if readability is deliberately addressed and continuously improved, it could nonetheless bias investors' decisions in the context of ethical decision-making. For instance, strategic disclosure could make use of high readability to mitigate the negative responses to violations of ethical norms resulting from low CSR performance. Evidently, our policy implication for standard setters and regulators is not to reduce readability. We rather believe that efforts to promote and standardize narrative disclosures, e.g., through CSR reporting frameworks, can be a way to maintain accountability. In this light, we contribute to research in financial reporting by adding nuance to the benefits of readability, highlighting its potential contribution to the obfuscation of negative information.

Additionally, the results of our study have implications for management accounting. Through the lens of social network theory, language can be thought of as a management control instrument where control is not necessarily deliberately designed. Rather, social interaction is required to interpret, clarify, and exercise control (Tucker 2019). Despite the increasing importance of informal management control instruments in business ethics research (see, e.g., Goebel and Weißenberger 2017; Jin, Drozdenko, and Bassett 2007; Stöber, Kotzian, and Weißenberger 2019), only few studies highlight the control dynamics associated with the use of second language (Kraus and Strömsten 2016). Informal management control instruments contribute significantly to establishing values in an organization, which employees can use as guidance in ethical-economic dilemmas (Paine 1994). Unlike formal management control instruments, informal instruments convey the desired behavior much more strongly (Treviño 1990). Therefore, management accountants should be more aware of language-sensitive issues since they need to communicate appropriately to provide comprehensive support for managers. As described above, the ability to inspire confidence, to exert power, and to develop status within an organization is largely impacted by the corporate language culture. Thus, it is remarkable that even studies focusing on roles, authority, and involvement of the management accounting function in multinational business disregard language effects (see, e.g., Lambert and Sponem 2011).

Overall, the present study contributes to theory in behavioral accounting research by providing a linkage point to the psychological and linguistic research on the effect of second-language processing on individual decision-making behavior (Tenzer et al. 2017). It also underlines the arguments of those who are critical of the English language hegemony in accounting academia (Andrew et al. 2020; Kamla and Komori 2018), as it perpetuates the worldviews and ethics of western, educated, industrialized, rich, and democratic people (see, e.g., Jentzsch, Schramowski, Rothkopf, and Kersting 2019; Locke, Rowbottom, and Troshani 2018).

However, we made design choices in our experiment that leave room for further discussion. Firstly, we investigate the effect of readability and reporting language on the assessment of CSR performance, not the actual decision-making behavior based on this assessment. It could be that ethical considerations do not impact, e.g., a real subsequent investment decision. This could have been implemented in our study, for instance, by providing financial incentives for participants (Arnold and Triki 2018). The absence of those incentives is intended to avoid the implicit normative claims associated with those financial incentives. Secondly, in our study, we examine second-language effects in disclosure settings where information is read. In earnings calls, webcasts or in social media, however, it is also common that information is received through hearing (Miller and Skinner 2015). Here, prior research suggests that investors are more susceptible to managers' tone language when listening to disclosure, compared to when reading it, but only if the disclosure contains good news, compared to bad news (Elliott, Loftus, and Winn 2024). Additionally, research in linguistics finds that foreign-language effects are also present in auditory settings (Brouwer 2019). Thus, future research could extend our findings to disclosure settings where information is consumed other than by reading.

Secondly, in designing our study, we carefully considered the use of online workers as participants. Although budget considerations and practical data collection issues during COVID-19 did play a role in our decision, our main argument for using online workers was the fact that we needed a demographically representative sample of the population to rule out age effects in ethical decision-making, and that our task did not require particular accounting knowledge or expertise (Farrell, Grenier, and Leiby 2017). To still ensure sufficient sample quality, we decided to collaborate with a professional provider of online access pools, instead of choosing online labor markets like Amazon's Mechanical Turk. To further limit undue distractions during participation, we restricted access to our study via mobile devices.

Our study is not without limitations. Firstly, like most of the research on second-language effects to date, this study builds upon dual-processing theories of higher cognition. This

partially controversial view of decision-making does not account for families of fast-and-frugal heuristics, which might also be worth considering in the context of second-language effects (Gigerenzer and Brighton 2009; Polonioli 2018). Secondly, we look at psychological factors that drive intuitive and deliberate ethical decision-making. However, other situational, social, or physiological factors might also influence the process we identify in our study (Warner, Fortin, and Melkonian 2024). Taken together, as "we do not make decisions in a vacuum but rather in contextualized situations, the language we use in that context is playing an important role" (Costa, Duñabeitia, and Keysar 2019, 2). Therefore, we believe it is vital that accounting researchers and practitioners alike are aware that corporate reporting in a first and in a second language is not entirely identical. It is much rather 'saying almost the same thing' (Eco 2006).

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Appendices

Appendix C-1: Instrument for Condition: Second Language and Low Readability

STABLE PERFORMANCE: The battery manufacturer SmartPower produces rechargeable batteries for mobile phones. Smart Power is very successful. By international comparison, it has been holding its ground for a long time and growing at an above-average rate. For its shareholders, SmartPower has been generating reliably high rates of return and always pays one of the highest dividends.

CHALLENGES IN SUPPLY CHAIN MANAGEMENT: The batteries are based on so-called lithium-ion technology, which among other things, requires the use of the metal cobalt. Cobalt is a good conductor of electricity and heat, which increases the capacity of the batteries. 60 % of the world's cobalt is mined in the Democratic Republic of the Congo in Central Africa. Although most cobalt in the Congo is produced as a by-product of industrial copper mining, up to 20 % of annual production comes from small-scale mining. People working in small-scale mining extract cobalt in unsafe mines by hand, and suffer from harmful working conditions. WITHOUT ADEQUATE PROTECTIVE CLOTHING, POISONOUS DUST REPEATEDLY CAUSES LUNG, SKIN AND EYE DISEASES. Workers in the mines accept these and other serious human rights abuses, as they rely on the low pay they earn from working in the mines. At the same time, for the local middlemen the sale of cobalt is a lucrative business. THE PROFITS FROM THE SALE OF COBALT TO SUPPLIERS OF THE ELECTRICAL INDUSTRY ARE REPEATEDLY ASSOCIATED WITH THE FINANCING OF ARMED CONFLICTS IN CENTRAL AFRICA. Corruption and a lack of on-site controls, as well as complex and intertwined supply chains throughout the world mean that SmartPower cannot rule out the possibility that in the production of batteries, a substantial part of the cobalt comes from small-scale mining.

RECYCLING AND CERTIFICATION: Since its foundation, SmartPower has been aware of the problems arising when sourcing cobalt and is trying to solve them in several ways. In the long term, SmartPower plans to manufacture lithium-ion batteries without the use of cobalt. In order to achieve this, it is intended to replace cobalt with aluminum or manganese. However, the extensive research in this area has not yet provided a marketable alternative. IN THE MEANTIME, THOUGH, IT HAS ALREADY BEEN POSSIBLE TO REDUCE THE AMOUNT OF COBALT IN THE BATTERIES BY MORE THAN HALF. In addition, some of the cobalt is recovered from recycled batteries. SmartPower plays a pioneering role in the recovery of cobalt from old batteries throughout the industry. As a result, SmartPower is becoming increasingly independent of highly volatile cobalt prices and, in the long term, thus ensures the profitability of its battery production. As cobalt is not officially classified as a so-called "conflict resource", an internationally binding certification system is lacking. SMARTPOWER IS CAMPAIGNING TO ESTABLISH SUCH A TRANSPARENT SYSTEM WITH ADDITIONAL CONTROLS THAT ENSURES ORIGIN, MINING CONDITIONS AND COMPLIANCE WITH SOCIAL AND ECOLOGICAL STANDARDS IN THE COBALT SUPPLY CHAIN. This commitment will improve the working conditions of miners in small-scale mining in the long term without depriving workers of their means of making a living.

Appendix C-2: Instrument for Condition: Second Language and High Readability

Stable Performance

The battery manufacturer SmartPower produces rechargeable batteries for mobile phones.

Smart Power is very successful. By international comparison,

- – it has been holding its ground for a long time and
- – growing at an above-average rate.

For its shareholders, SmartPower has been

- – generating reliably high rates of return and
- – always pays one of the highest dividends.

Challenges in Supply Chain Management

The batteries are based on so-called lithium-ion technology, which among other things, requires the use of the metal cobalt. Cobalt is a good conductor of electricity and heat, which increases the capacity of the batteries. 60 % of the world's cobalt is mined in the Democratic Republic of the Congo in Central Africa. Although most cobalt in the Congo is produced as a by-product of industrial copper mining, up to 20 % of annual production comes from small-scale mining.

People working in small-scale mining extract cobalt in unsafe mines by hand, and suffer from harmful working conditions. **Without adequate protective clothing, poisonous dust repeatedly causes lung, skin and eye diseases.** Workers in the mines accept these and other serious human rights abuses, as they rely on the low pay they earn from working in the mines. At the same time, for the local middlemen the sale of cobalt is a lucrative business. **The profits from the sale of cobalt to suppliers of the electrical industry are repeatedly associated with the financing of armed conflicts in Central Africa.**

Corruption and a lack of on-site controls, as well as complex and intertwined supply chains throughout the world mean that SmartPower cannot rule out the possibility that in the production of batteries, a substantial part of the cobalt comes from small-scale mining.

Recycling and certification

Since its foundation, SmartPower has been aware of the problems arising when sourcing cobalt and is trying to solve them in several ways.

In the long term, SmartPower plans to manufacture lithium-ion batteries without the use of cobalt. In order to achieve this, it is intended to replace cobalt with aluminum or manganese. However, the extensive research in this area has not yet provided a marketable alternative. **In the meantime, though, it has already been possible to reduce the amount of cobalt in the batteries by more than half. In addition, some of the cobalt is recovered from recycled batteries.** SmartPower plays a pioneering role in the recovery of cobalt from old batteries throughout the industry. As a result, SmartPower is becoming increasingly independent of highly volatile cobalt prices and, in the long term, thus ensures the profitability of its battery production.

As cobalt is not officially classified as a so-called "conflict resource", an internationally binding certification system is lacking. SmartPower is campaigning to establish such a transparent system with additional controls that ensures

- origin,
- mining conditions and
- compliance with social and ecological standards

in the cobalt supply chain. This commitment will improve the working conditions of miners in small-scale mining in the long term without depriving workers of their means of making a living.

D. Gained in Translation? How Corporate Culture and Corporate Language Affect Compliance

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Gained in Translation? How Corporate Culture and Corporate Language Affect Compliance

Abstract

Firms need rules to work, but rules are not perfect. They can be contradictory or inappropriate. Thus, firms rely on gray areas of compliance to ensure efficient problem-solving and innovation. This is why, in practice, work-to-rule and bean-counting are unpopular, while non-bureaucratic workarounds are ubiquitous, i.e., *beneficial non-compliance*. We investigate how corporate culture and corporate language affect compliance. Using an online vignette experiment, we show how the use of a foreign (versus native) corporate language increases the inclination towards beneficial non-compliance in values-based (versus compliance-based) corporate cultures without also increasing the inclination towards detrimental non-compliance. We argue that, through the language dependence of memory, access to normative knowledge, and thus norm activation is impaired when processing a foreign language, leading to a higher a higher likelihood of favorable rule violations in settings that allow for ambiguous normative judgements. Taking an organizational perspective on accounting, our study helps to advance understanding of how the combination of formal and informal controls relates to corporate governance in creating adaptive organizational structures.

I. Introduction

Firms need rules to work (Weber 1921/1980, 552). Work-to-rule, however, hardly qualifies as a sign of a firm's proper functioning. The opposite seems to be true: in practice, thinking outside the box, non-bureaucratic workarounds, unorthodox solutions, shortcuts, hacks, and bypasses are ubiquitous (Kühl 2020; Leake 2024), while working-to-rule seems to be as unpopular as 'cancerous' bureaucracy and red-tape itself (Hamel and Zanini 2018), and is often associated with go-slow and employee's quiet quitting (Zenger and Folkman 2022). Although compliance with rules is desirable in principle, working-to-rule can serve as an example of *detrimental compliance* (Alter 2015), i.e., adherence to the rules so rigorous that it contradicts the firm's objectives. Again, the opposite is often desired: firms reward *beneficial non-compliance* (Alter 2015), i.e., the bending (and breaking) of rules to a certain extent, as long as it is functional regarding the firm's objectives, latent, tacit, and non-abusive (Anteby 2008; Luhmann 1964; Yang, Algesheimer, and Dholakia 2017).

We are interested in the design of management control systems in the grey area of beneficial non-compliance and in the potential unintended consequences of combining apparently desirable, values-based corporate cultures, and convenient global language policies promoting the use of English as a foreign language. To that end, we experimentally investigate how corporate culture (values-based versus compliance-based) and corporate language (native versus foreign) affect compliance. Specifically, we develop and test theory explaining how and when, based on differences in the cognitive processing of native and foreign language, corporate language can enhance the effectiveness of the communication of corporate culture and thereby affect firm's members inclination to act in the best interest of the firm.

Understanding how corporate language and corporate culture affect compliance is important, because as a result of globalization, every day, millions of people engage in judgment and decision-making using foreign languages in the workplace. Already back in the mid-1990s, around 85 % of international organizations used English for professional purposes (Crystal

2003). In the mid-2010s, around 70 % of employers reported that English is important for their business, and that only for countries where English was not a native or official language (Cambridge English 2016). Today, more than ever before, English is the lingua franca of business.

At the same time, and also due to globalization, international business is becoming increasingly complex and dynamic, forcing firms to face the practically unmanageable challenge of defining their rules in such a way that they can be adapted to a changing environment spontaneously and situation-specific. As a result, over the past 20 years, firms have become more and more keen to invoke agility, flexibility, adaptability, independent thinking, and initiative (Edmondson and Gulati 2021; Guggenmoos and Van der Stede 2020). Orientation towards these values has long been criticised as an attempt to shift the responsibility for deliberately accepted non-compliance downwards in the hierarchy (Luhmann 1964, 305)—in other words: 'don't tell me how you did it, I don't want to know', or 'better ask forgiveness than permission'. In the case of, e.g., higher-growth and innovation firms, as well as for those that would benefit from aggressive reporting, experienced recruiters deliberately include language emphasizing that rule-bending is tolerated or even desired (Gay et al. 2024). However, efficient problem-solving, transformation, innovation, renewal, and momentum are possible at all if a certain degree of non-compliance is accepted in the first place (Luhmann 1964, 304–305; Lagace 2009).

Research on the interaction of management control systems and innovation, e.g., implicitly accounts for this dialectic when considering the interplay of formal and informal controls (e.g., Chenhall and Morris 1995; Chenhall, Kallunki, and Silvola 2011). Accordingly, firms must "walk the fine line between disciplined flexibility and bureaucracy" (Davila, Epstein, and Shelton 2006, 8) and balance "focused freedom […] with […] flexible discipline" (Davila, Foster, and Oyon 2009, 295) to foster innovation. To clarify the relationship between formal and informal controls, firms largely rely on corporate culture, i.e., the incorporation of shared

values, norms, and artifacts that influence the behavior of the firm's members (O. Ferrell, Fraedrich, and L. Ferrell 2017; Hackley 2000). These corporate cultures can be characterized based on which behavioral expectations they invoke. Specifically, compliance-based cultures emphasize adherence to formal rules, e.g.,

"Every employee is responsible for being familiar with and following the relevant laws, regulations and Company policies and procedures that govern the business activities in which the employee engages" (Johnson & Johnson 2024),

whereas values-based cultures emphasize alignment with socio-moral norms (Ferrell et al. 2017; Paine 1994), e.g.,

"The Company is proud of the values with which it conducts business. It has and will continue to uphold the highest levels of business ethics and personal integrity in all types of transactions and interactions." (Berkshire Hathaway 2024)

As a result, depending on the culture, different norms are more or less invoked, which ultimately can affect the behavioral inclination to deviate from the expected behavior within a firm (Bicchieri 2006; DeRidder and Tripathi 1992; Fiske and Taylor 1991; Reynolds 2006). With this in mind, we consider research in moral psychology and psycholinguistics that shows that in judgment and decision-making involving socio-moral norms, language foreignness can reduce access to normative knowledge and thus norm activation, leading to less disapproval of socio-moral norm transgressions, and a potentially higher inclination towards beneficial non-compliance compared to a native language (for a review, see Hadjichristidis, Geipel, and Keysar 2019). Therefore, in values-based cultures emphasizing socio-moral norms, foreign-language use could affect judgment and decision-making significantly, while in compliance-based cultures emphasizing formal rules, language foreignness should have a relatively smaller effect. Specifically, we hypothesize that the positive effect of values-based (versus compliance-based) corporate cultures on the inclination towards beneficial non-compliance is stronger in foreign (versus native) corporate language environments. Additionally, we expect no effect of corporate culture and corporate language on the inclination towards detrimental non-compliance.

We test our interaction hypothesis by conducting an online vignette-experiment using a 2 × 2 between-subjects design. Participants are 401 individuals with German as their native

language and English as a foreign language. We ask the participants to imagine working for an international company where they are faced with four different decisions that involve bending or breaking a rule. We manipulate (1) the information on the company's culture (compliance-based versus values-based) and the language in which the information on the company's culture is presented (native/German versus foreign/English). We use an experiment to keep all elements constant that are not part of our theory but may affect the assessment of rule deviations. Here, our vignette-based approach helps us to reduce social desirability bias while studying the sensitive issue of non-compliance (Aguinis and Bradley 2014; Dickel and Graeff 2018).

Our results are in line with our predictions. Controlling for sufficient foreign-language proficiency, we show that while culture has no effect in the native-language conditions, in the foreign-language conditions, inclination towards beneficial non-compliance is higher in values-based cultures compared to compliance-based cultures. Moreover, as predicted, we do not find this effect for detrimental non-compliance.

We contribute to the existing literature in management control and business ethics by showing how language and culture relate to corporate governance in creating adaptive organizational structures (Chenhall 2011). Specifically, we help to distinguish beneficial non-compliance from opportunistic and counterproductive work behaviors (e.g., Bellora-Bienengräber, Radtke, and Widener 2022; Guggenmoos and Van der Stede 2020), and we showcase in this context the importance of active language management as a variable in the design of control systems (Evans and Kamla 2018; Grabner and Moers 2013). More broadly, we also contribute to the growing body of research that examines language and language features in finance and accounting (e.g., Gay et al. 2024, Hales, Kuang, and Venkataraman 2011, Li 2008, Loftus and Tanlu 2018, Loughran and McDonald 2011, and Rennekamp 2012), as well as the literature on "Alleged Unintended Consequences of Apparently Desirable Company Cultures" (e.g., Guggenmos and Van der Stede 2020). The results of our study should also be of interest for business professionals. We highlight the use of corporate languages as promoters

of active leniency to maintain the organization's innovative ability (Lagace 2009), and identify combinations of control instruments that can mitigate the risk of abusive behaviors, e.g., in foreign subsidiaries. We therefore also aim to highlight the importance of individual's cognitive processing for the organizational process of negotiating and continuously (re-)evaluating shared rules.

The remainder of this paper is organized as follows: section 2 describes the theory and develops the hypothesis, section 3 describes the method, section 4 describes the results, and section 5 discusses the results and concludes.

II.   Theory and Hypothesis Development

Background and Theory

Formal Organization, Detrimental Compliance and Beneficial Non-Compliance

In accounting, adherence to rules is referred to as corporate compliance. Broadly, compliance can be defined as the company-wide organization of all measures to ensure that the behavior of a firm's members is in line with rules and norms, including but not limited to legal requirements, as well as corporate guidelines, directives, and policies, and lastly socio-moral norms (Junc 2010).Therefore, compliance is part of management control as it ensures that the behavior of the organzisation's members is consistent with the organization's overall objectives (Merchant and Van der Stede 2017).

We take a social systems-sensitive perspective on compliance in organizations, i.e., rules have the function of reducing complexity and uncertainty with regard to the actions of the organization's members. The boundaries of the organization are hence characterized by the boundaries of the expectability of actions (Luhmann 1964, 59–73). This is because organizations, like firms, differ from other membership-based systems, like families, in that they tie membership to compliance with formal rules, i.e., formalized organizational expectations of behavior (Luhmann 1964, 38; Luhmann 1972, 256–257). These formal

expectations are codified rules in a broad sense. The aforementioned corporate guidelines, directives, and policies include, e.g., manuals, process specifications, standard operating procedures, forms, or job descriptions.

Altough rules are intended to reduce complexity and thereby enable organization's members to pursue the organization's objectives, inconsistent rules can have the opposite, i.e., coercive effect (Adler and Borys 1996). That is problematic, because inconsistencies can easily arise from gaps and contradictions within the complex set of formal rules. Gaps can arise because formal rules become inadequate to cover changes in the organizational ecosystem, while contradictions can arise because ever more rules are established in response to those changes (Adams, Converse, Hales, and Klotz 2021). For the organization's member this creates a dilemma, because violating either one or the other inconsistent formal rule threatens their membership. Therefore, while the general formal expectation imposed on the organization's members is to fully comply with all formal rules, the general informal expectation imposed on the organization's members is, however, to enter gray areas of compliance, if and when word-for-word compliance contradicts the firm's objectives (Anteby 2008; Luhmann 1964, 304–305). The actual behavior of the firm's members, i.e., the decision whether or not to follow a rule, is therefore a result of both formal and informal expectations (Preisendörfer 2016, 69–70, 135).

In addition to this organizational dilemma, entering grey areas of compliance by bending and breaking some rules also involves a moral dilemma in the corporate context. This is due to the conflicting moral standards of market transactions and administered transactions (Heath 2007; Ouchi 1980). Following Heath (2007), distinguishing between those two types of transactions is key in business ethics, since market transactions are subject to the competitive logic of the market, whereas administered transactions are subject to the cooperative norms of collective action. On the one hand, due to their competitive structure, the ethics of market transactions are comparable to those of sport: in both cases, "competition permits forms of behavior that would, in other contexts, typically be regarded as anti-social" (Heath 2007, 359).

Many firms emphasize a "Fair Play Code of Conduct" (Adidas 2024) and prominently use this sports analogy, e.g.: "We 'Play to win' but not at all costs; we do the right thing to win the right way" (BP 2023), or "Let's win the right way" (SAP 2023). Consequently, in market transactions, the central moral obligation is to show respect for the spirit of the rules (Heath 2007), which is also explicitly stated in a large number of codes (e.g., Alphabet 2024; Bank of America 2024; Eli Lilly and Company 2024; JPMorgan Chase 2024). On the other hand, in the case of administered transactions, the sports analogy is however not adequate to account for the cooperative, principal-agent relationships within a hierarchical organization. Here, the central moral obligation is loyalty to the principal (Heath 2007). For this reason, a large number of codes of conduct appeals to the fiduciary obligations of the firm's members and explicitly requires them to "do what's best for the company" (NVIDIA 2023) and to put the firm's interests ahead of personal or other interests (e.g., Amazon 2024; Nestlé 2007). In comparison, the norms structuring cooperation are considerably more demanding, from the moral point of view, than those structuring competition (Heath 2007). For instance, a firm would hardly require its members to show courtesy and support for competitors to the same extent as for colleagues. In most cases, however, the codes of conduct used in practice do not distinguish between the moral thresholds of administered and market transactions anyway, despite being intended to provide the framework for both. Thus, firm's members are typically left with axiomatically conflicting moral standards and the possible dilemma of whether to respect the rules or to act in the best interest of the firm depending on the actual decision they are facing. Note that, however, neither the moral standards of market transactions nor those of administered transactions allow for self-interested actions of firm's members, i.e., detrimental non-compliance.

Taken together, organizational theory shows that while "rules are usually designed under the assumption that compliance would be beneficial, there are many situations in which compliance is detrimental and in which noncompliance is beneficial" (Alter 2015, 4). While the notion of detrimental compliance and beneficial non-compliance or "useful illegality"

(Luhmann 1964, 304) is not new, and prior research lucidly shows that sometimes non-compliance with formal rules can be in the best interest of the firm, it does not provide a comprehensive understanding of the extent to which the resulting moral dilemmas can be governed by cultural controls. Instead, research on positive and negative impacts of (non-)compliance continues to receive particular attention in the fields of healthcare (e.g., Halbesleben, D. Wakefield, and B. Wakefield 2008), information technology (e.g., Alter 2014), and public administration (e.g., Bozeman, Youtie, and Jung 2021; F. Artinger, S. Artinger, and Gigerenzer 2019). In accounting, the effect of corporate culture and language on rule-bending has been primarily addressed regarding productivity and firm value as well as creativity and innovation (e.g., Gay et al. 2024; Guggenmoos and Van der Stede 2020), but not regarding compliance and ethics (see, Graham, Grennan, Harvey, Rajgopal 2022).

Compliance-based versus Values-based Corporate Culture

The famous, yet disputed Hawthorne studies in the 1920s (see, Roethlisberger and Dickson 1939; Preisendörfer 2016, 137–138) can be considered the starting point for organizational research that takes into account the importance of social relationships in organizations, i.e., organizational culture (Picot, Reichwald, and Wigand 2003, 473). 20 years ago, Schein (2004, xi) claimed that "organizational culture has come of age". Today, corporate culture it is by no means in a midlife crisis (see, e.g., Graham et al. 2022). For one thing, there are overwhelming contributions from research and practice with, both superficially and profoundly, different suggestions on how to approach, analyze, design, and manage corporate culture. Then again there is somewhat surprising agreement on "the basic concept of culture as a shared set of assumptions that is taken for granted" (Schein 2004, 200). Refining this basic definition, cultural typologies seek to establish useful categories for research on corporate culture (e.g., Paine 1994). However, they oversimplify the complexity of organizational realities and therefore reflect organizational theory rather than practice (Schein 2004). Acknowledging this,

we consider corporate cultures on a continuum whose end points are *compliance-based* and *values-based* cultures (Ferrell et al. 2017, 191; Graafland, van de Ven, and Stoffele 2003). We analyze which kinds of behavioral expectations are more salient in a given cultural context.

One the one hand, corporate cultures can be compliance-based. These cultures take a legalistic approach to rule transgressions. Focusing on laws and formal rules, compliance-based cultures are organized around risk management (e.g., Committee of Sponsoring Organizations of the Treadway Commission 2017; Ferrell et al. 2017, 191). The China National Petroleum Corporations Integrity and Compliance Guidelines state, e.g., that every member of the organization "must adhere to the integrity and compliance standard, abide by relevant laws, rules and regulations throughout our company and businesses" (China National Petroleum Corporation 2018). Potential shortcomings of these cultures can be an (extremely) tight monitoring, e.g., of gig workers (Soper 2021), or the absence of guidance for moral gray areas (Ferrell et al. 2017, 191). Deutsche Bank Group, e.g., closes its code of conduct with the black-or-white (here, black-or-blue) dichotomy of 'falling short' or 'getting it right', requesting the organization's members to 'be on the right side' (Deutsche Bank Group 2024).

On the other hand, corporate cultures can be values-based. These cultures define core values such as creativity or respect to resolve socio-moral issues (Merchant and Van der Stede 2017). Defining and reinforcing shared values within an organization is essentially a mechanism of peer-control (Merchant and Van der Stede 2017). Specifically, organization's members enjoy higher individual autonomy in values-based cultures, compared to compliance-based cultures (Hackley 2000). Instead of relying solely on formal rules, here, shared values serve as an enabler of self-coordination. They facilitate the correct anticipation of others' behavior (Meglino and Ravlin 1998), and thereby help to ensure efficient coordination in unanticipated situations (Jones and Sullivan 1994). In this regard, the TATA Code of Conduct, e.g., is designed to serve as "our guiding light when we are sometimes faced with business

dilemmas that leave us at ethical crossroads. […] TATA has always been values-driven" (TATA 2015).

Values-based cultures do not only rely on shared values—compliance is also commonly cited in values-based codes of conduct. However, in contrast to actual compliance-based cultures, in values-based cultures compliance is seen less as externally imposed obligation, and more as a baseline of self-imposed commitment. Instead of simply preventing criminal misconduct, values-based cultures seek to empower responsible self-governance (Paine 1994). The Google Code of Conduct, e.g., closes as follows:

"Google aspires to be a different kind of company. It's impossible to spell out every possible ethical scenario we might face. Instead, we rely on one another's good judgment to uphold a high standard of integrity for ourselves and our company. We expect all Googlers to be guided by both the letter and the spirit of this Code. Sometimes, identifying the right thing to do isn't an easy call. If you aren't sure, don't be afraid to ask questions of your manager, Legal or Ethics & Business Integrity. And remember… don't be evil, and if you see something that you think isn't right – speak up!" (Alphabet 2024)

The NVIDIA Code puts it more briefly: "Take risks, learn fast. […] Maintain the highest standards. […] Do what's best for the company." (NVIDIA 2023)

Taken together, in order to guide the behavior of the organization's members, compliance-based cultures refer to formal rules, while values-based cultures refer to socio-moral norms.

Language Effects in Moral Judgment and Decision-Making

Once being "The Forgotten Factor in Multinational Management" (Marschan, D. Welch, and L. Welch 1997, 591), in the last decade, international business research has begun to adopt an intra-personal, cognitive-processes perspective to develop theory about the consequences of foreign language use in organizational settings (Hadjichristidis, Geipel, and Surian 2017; Volk, Köhler, and Pudelko 2014). In this context, a distinctive stream of literature has emerged in the nexus with moral psychology, which we rely on to identify the mechanisms underlying judgment and decision-making in the context of corporate language, corporate culture and compliance decisions.

In moral judgment and decision-making the interaction and relative importance of different cognitive processes has been a source of great debate for years. While some explain moral judgment and decision-making referencing either deliberate (e.g., Kohlberg 1969) or intuitive processes (e.g., Haidt 2001), unifying both approaches in the renowned dual-process theories (e.g., Greene, Sommerville, Nystrom, Darley, and Cohen 2001; Kahneman 2003) has paved the way for the more comprehensive approach of *triple-process theory*, which describes competent moral judgment and decision-making as "based on an integrated network of intuitive, algorithmic, and reflective processing" (Sauer 2020, 43). Moral cognition accordingly relies on at least three types of processes: autonomous processes, which show few continuous individual differences (or System I), algorithmic processes, which manifest in individual differences in fluid intelligence (or System II), and reflective processes, which manifest in individual differences in rational thinking dispositions (or System III) (Stanovich 2009).

A growing body of literature shows that native and foreign languages trigger these cognitive processes differently: the *Foreign-Language Effect* (Keysar, Hayakawa, and An 2012) has become an umbrella-term describing the various effects of foreign-language use on judgment and decision-making. For example, compared to a native language, using a foreign language reduces the susceptibility to framing effects and magical thinking, increases the willingness to gamble on favorable bets and to make sustainable consumer decisions as well as the inclination towards utilitarian responses in moral dilemmas such as the renowned trolley problems (for a review, see Hadjichristidis et al. 2019). Particularly relevant for our research is that language foreignness affects judgment and decision-making in situations where socio-moral norms are affected (Cipolletti, McFarlane, and Weissglas 2016; Nakamura 2016). Specifically, the use of a foreign language promotes less disapproval of socio-moral norm transgressions, compared to a native language (Hadjichristidis et al. 2019). Following Cipolletti et al. (2016), we refer to this effect as the *moral foreign-language effect*. To explain this effect, a large number of empirical studies tries to disentangle the aforementioned complex

relationships of intuitive, algorithmic, and reflective cognitive processes. Some studies argue that the moral foreign-language effect ultimately results from a combination of emotional attenuation, cognitive load, psychological distance, stress, and increased deliberation when processing a foreign language (Caldwell-Harris and Ayçiçeği-Dinn 2009, 2020; Costa, Foucart, Arnon, Aparici, and Apesteguia 2014; Costa et al. 2019; Geipel, Hadjichristidis, and Surian 2016; Kron, Schul, Cohen, and Hassin 2010; Shin and Kim 2017). Others attribute the moral foreign-language effect solely to emotional attenuation (Corey et al. 2017; Vives, Aparici, and Costa 2018). In this context, some argue that this emotional attenuation is a result of the reduced activation of socio-moral norms in the foreign language (Hadjichristidis et al. 2017; Hayakawa, Tannenbaum, Costa, Corey, and Keysar 2017). This reduced activation is typically attributed to the language dependency of associative memory. It is argued that all ideas, experiences, and mental constructs are stored in long-term memory with information on the linguistic context in which they aroused. Socio-moral norms are learned and internalized in the early years of life, mostly in the native-language environment. Therefore, they are easily retrieved in a native-language environment, in which the same language is for retrieval as was used for learning, but not in a foreign-language environment (Marian and Neisser 2000; Rottman and Young 2015).

Taken together, it seems as if the moral foreign-language effect is best explained through this reduced access to normative knowledge and thus a reduced salience and activation of socio-moral norms when making moral judgments (Geipel, Hadjichristidis, and Surian 2015a, 2015b). In other words, the reduced activation of socio-moral norms directly induces the moral foreign-language effect—rather than being a direct result of reduced emotion—as foreign language reduces the sensitivity to the norms themselves as well as to the consequences of norm transgressions (Białek, Paruzel-Czachurac, and Gawronski 2019; Gawinkowska, Paradowski, and Bilewicz 2013; Hayakawa, Costa, Foucart, and Keysar 2016). However, some studies admit that native language serves as a carrier of socio-moral norms as well as emotions. Therefore, it is not unlikely, that both go hand in hand, because breaking a socio-moral norm is usually

associated with negative affect, so that norm transgressions and emotions could work in tandem regarding the moral foreign-language effect (Hadjichristidis et al. 2019; Muda, Niszczota, Białek, and Conway 2018).

Hypothesis Development

As we have tried to show so far, the appreciation of compliance is somewhat equivocal in settings that allow for ambiguous normative judgements. While self-serving actions are generally considered unacceptable within a firm, bending and breaking rules can be considered legitimate as long as it is done in the firm's best interest. This is to say that whereas some rules must be strictly followed, others may not, and firms may have an interest to actively control their leniency regarding the latter rules in order to create gray areas of compliance that allow space for beneficial non-compliance. In taking this perspective, we believe to account for the ambiguous reality in corporate compliance. Building on the previously outlined research in moral psychology, we aim to further analyze the moral foreign-language effect in an organizational setting where corporate culture may introduce moral ambiguity regarding compliance.

Recall that the moral foreign-language effect postulates that using a foreign (versus native) language promotes less disapproval of socio-moral norm transgressions (for a review, see Hadjichristidis et al. 2019). This is due to the language dependency of memory, i.e., the impaired access to memories if different languages are used for learning and retrieval. Thus, as socio-moral norms are typically internalized early in life in a native-language environment, they are not as accessible in a foreign-language environment (Marian and Neisser 2000; Rottman and Young 2015).

Turning to compliance decisions, how do firm's members decide which rules or norms apply in a given situation? Generally speaking, the more salient a rule or norm is, the more likely it is to be applied. Yet, given the sheer number of formal rules and informal norms in an

organization, it is not just their mere existence, but rather their violation that serves as a trigger, emphasizing their relevance and making them salient in a particular context (Bicchieri 2006; DeRidder and Tripathi 1992; Fiske and Taylor 1991; Reynolds 2006). As compliance-based cultures emphasize adherence to formal rules, here, potential violations make formal rules more salient. In values-based cultures, which emphasize socio-moral norms, potential violations make socio-moral norms more salient. It is in the latter case that we expect language foreignness to affect judgment and decision-making. Specifically, we expect foreign-language processing to interfere with the activation of socio-moral norms and to promote less disapproval of socio-moral norm transgressions, compared to native-language processing. This is because, as described above, foreign-language processing impaires the access to normative knowledge due to the language dependence of memory, but only in situations where socio-moral norms, not formal rules, are affected.

Note that, although being frequently criticized for their vagueness, we do not view values-based cultures as more 'touchy-feely' than compliance-based corporate cultures regarding their respective behavioral expectations (for a discussion see, e.g., Heath 2007). Rather, based on our previous line of argument, we see values-based cultures as more open-ended regarding the behavioral outcomes and more reliant on individual deliberation and autonomous decision-making, ultimately resulting in more ambiguous normative judgements compared to those in compliance-based cultures.

Lastly, we have to differentiate between the consequences of the socio-moral norm transgressions. Our main interest is how culture and language influence the inclination towards beneficial non-compliance, i.e., an action in the alleged best interest of the firm. Whether an action is indeed the best one cannot be clearly identified here due to the different formal versus informal expectations and cooperative versus competitive norms that apply in this context. We expect language foreignness to affect judgment and decision-making only in these settings that allow for ambiguous normative judgements. For detrimental non-compliance, the normative

assessment should be considerably less ambiguous as self-interested behavior is not covered by any of the aforementioned norms. Therefore, we do not expect language foreignness to have an effect on the inclination towards detrimental non-compliance.

Taken together, we expect the positive effect of values-based (versus compliance-based) corporate cultures on the inclination towards beneficial non-compliance to be stronger in foreign (versus native) corporate language environments. Additionally, neither culture nor language should have an effect on the inclination towards detrimental non-compliance. Therefore, we formally hypothesize the interaction effect as follows:

H1a. When socio-moral norms are salient, reduced access to normative knowledge has a positive effect on the inclination towards beneficial non-compliance.

H1b. Reduced access to normative knowledge has no effect on the inclination towards detrimental non-compliance.

III. Method

Experimental Design

Overview

We test our hypothesis by conducting an online vignette-experiment using a 2 × 2 between-subjects design. As we look at two different dependent variables, *Beneficial Non-Compliance* and *Detrimental Non-Compliance*, we have eight groups in total. Both independent variables, *Culture* and *Language*, are varied at two levels, specifically, compliance-based versus values-based for *Culture,* and native language (German) versus foreign language (English) for *Language*.

Our vignette-based approach uses fictious description of decisions to study the effect of our independent variables on our participants' preferences regarding beneficial non-compliance. As non-compliant behavior is a sensitive issue and participants answers might be subject to socially desirable response behavior, here, the experimental vignette methodology is more appropriate than a survey or an economic experiment (Aguinis and Bradley 2014; Dickel and Graeff 2018). As our theory is rather general in nature, we use a general subject pool to test our hypotheses. Institutional Review Board approval was obtained from the German Association for Experimental Economic Research.

The participants' assignment in our study is to imagine working for the fictious international company "DRT" and to read a text describing the company's corporate culture. Participants are then asked to decide upon a series of four vignettes that involve non-compliant actions that are either functional for the company and non-abusive (DV: *Beneficial Non-Compliance*) or functional for the individual and abusive (DV: *Detrimental Non-Compliance)*. Our post-experimental questionnaire includes a short language test for both German and English.

Manipulation of the independent variables

Corporate culture. *Culture* is manipulated at two levels (between-subjects): compliance-based and values-based. We carefully designed the materials to keep the manipulation of culture constant across the different language conditions. Therefore, in the style of Guggenmoos and Van der Stede (2020), participants in the compliance-based culture conditions receive a text stating that everybody at "DRT" describes the corporate culture there as follows: "At **DRT**, we act with integrity. This means: we strictly follow all laws, rules and regulations. Always! From time to time, we all have to make risky decisions. We then think of our motto: **D**iscipline, **R**ules, **T**ransparency: **DRT. Always!**" Participants in the values-based culture conditions receive a text stating that everybody at "DRT" describes the corporate culture there as follows: "At **DRT**, we act according to values. This means: we meet the highest standards and do the right thing. Always! From time to time, we all have to make risky decisions. We then think of our motto: **D**o the **R**ight **T**hing: **DRT. Always!**" In the native language conditions the acronym "DRT" translated to "Disziplin, Regeln, Transparenz" for the compliance-based culture, and "Das Richtige Tun" for the values-based culture, respectively.

Corporate language. *Language* is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test. To ensure that the meaning conveyed in the texts is the same in both language conditions, the translation of the text was approved by an independent bilingual speaker.

Measurement of the dependent variables

Beneficial non-compliance. *Beneficial Non-Compliance* is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely". *Beneficial Non-Compliance* is calculated using the average rating of all four vignettes depicting (1) working in the evening in order to meet an important deadline, even though the maximum number of permitted working hours has already been reached, (2) including a highly qualified application in the personnel selection process even though the application was received shortly after the deadline, (3) looking at confidential documents to which the participant has inadvertent access to better perform a task, and (4) including customer orders that are not expected until next year in the internal statistics already today so that the company can report better figures despite the otherwise bad situation.

Detrimental non-compliance. *Detrimental Non-Compliance* is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely". *Detrimental Non-Compliance* is calculated using the average rating of all four vignettes depicting (1) taking an extra long break while working from home and meeting up with friends for a coffee without clocking out, (2) including the application of an acquaintance in the personnel selection process even though the application is unsuitable, (3) looking at confidential documents to which the participant has inadvertent access and using this information for her/his own personal gain, and (4) including customer orders that are not expected until next year in the internal statistics already today so that the participant report better figures despite the otherwise bad situation and receive a bonus.

Participants and Procedures

We conducted our experiment online between November 13 and 19, 2024. All participants accessed the online questionnaire via a desktop computer to avoid differences in spatial layout (Grant 2020) and undue distractions associated with mobile devices. We recruited 401 participants with German as a native language and English not as a native language.

We assessed the participants' proficiency in German and English via two C-tests (Eckes and Grotjahn 2006). The C-tests consist of a short text in German and English in which for some words some letters are left out. The participants are asked to fill in all the blanks in the texts within three minutes each. The texts are designed at the C1 level of the Common European Framework of Reference for Languages, which aims at proficient users who are able to "understand a wide range of demanding, longer texts, and recognize implicit meaning" (Council of Europe 2024). Participants have 69.5 % of correct answers on average in German with 85 participants scoring 0 %, and 33,7 % of correct answers on average in English with 128 participants scoring 0 %. This supports our criteria of German as a native language and English not as a native language. Participants have a minimum age of 18 years, a mean age of 46.8 years, at least a high-school diploma ("Fachhochschulreife" or "allgemeine oder fachgebundene Hochschulreife/Abitur"), and 22.7 years of work experience on average. 49.6 % of the participants are female. Participants took on average 11.6 minutes to complete the study and were paid a fixed compensation of 50 points which convert to 0.80 EUR (4.14 EUR/hour on average). There are no significant differences across groups for age ($p = 0.98$, two-tailed), gender ($p = 0.71$, two-tailed), experience ($p = 0.91$, two-tailed), proficiency in German ($p = 0.47$, two-tailed), proficiency in English ($p = 0.22$, two-tailed) or time to complete the study ($p = 0.82$, two-tailed).

Our study was carried out online in cooperation with Bilendi GmbH, the German subsidiary of Bilendi S.A., a provider of online access pools ("online panels"). Bilendi is certified by the Austrian Standards Institute according to ISO 20252:2019-02-01 (Market, opinion and social

research, including insights and data analytics) and complies with all GDPR regulations. Data collection and storage takes place within the IT network of our university and Bilendi GmbH.

At the beginning of the experiment, we inform participants that participation in the study takes approximately 15 minutes and that participation is completely voluntary. Additionally, we inform the participants that the data collected in our study is analyzed solely for the purpose of scientific publication and that by participating in this study, participants agree that the answers they give are used in scientific analyses and publications. We inform participants that all data is treated strictly confidentially, is evaluated completely anonymously and only presented in aggregated form so that no conclusions can be drawn about participants' individual answers. Participants do not receive detailed information about the objective of our study prior to participation. Our study does not involve deception of participants in any form. Participants receive no monetary incentives in addition to their fixed compensation.

The computer system randomly assigns the participants into the eight different groups. In order to avoid socially desirable response behavior, participants are made aware that there were no correct or incorrect answers (Dawson 1995). Participants answer a question prior to the experiment, ensuring that they understand that there are no correct or incorrect answers, and are only allowed to continue if they answer the question correctly. Participants then read the materials and complete the questionnaire assessing the dependent variable. Subsequently, participants complete the post-experimental questionnaire including demographics and the language test for both German and English. At the end of the experiment, participants are debriefed and given the opportunity to follow-up on the results of the study.

IV. Results

Manipulation Check

To assess the success of our culture manipulation, we asked participants to indicate the extent to which they agree that they trusted their intuitions when making their prior decisions. On a seven-point Likert scale with 1 representing "fully disagree" and 7 representing "fully agree", participants in the values-based culture conditions indicated a significantly higher agreement than participants in the compliance-based culture conditions (means = 5.08 versus 4.68, $p < 0.01$, one-tailed). This suggests a successful culture manipulation. We do not carry out a manipulation check for our language manipulation.

Descriptive Statistics

Table D-1 displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the full sample with *Beneficial Non-Compliance* as the dependent variable. As displayed in Table D-1 and shown in Figure D-1, the difference in *Beneficial Non-Compliance* between the compliance-based culture condition and the values-based culture condition is more pronounced in the foreign-language conditions than in the native-language conditions (means = 3.58 to 4.37 versus 3.98 to 4.27, respectively), which is consistent with our H1a.

Table D-2 displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the full sample with *Detrimental Non-Compliance* as the dependent variable. As displayed in Table D-2 and shown in Figure D-2, the difference in *Detrimental Non-Compliance* between the compliance-based culture condition and the values-based culture condition is less pronounced in the foreign-language conditions than in the native-language conditions (means = 3.07 to 2.98 versus 3.08 to 2.71, respectively), which is consistent with our H1b.

We perform a median split of our sample for English proficiency, in order to exclude those participants from the analysis for whom we do not assume that they have understood the English text. English proficiency is measured by the percentage of correct answers in our English language test. The median equals 25.0 % of correct answers. We perform corresponding robustness checks below.

Table D-3 displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the high English proficiency subset with *Beneficial Non-Compliance* as the dependent variable. As displayed in Table D-3 and shown in Figure D-3, the difference in *Beneficial Non-Compliance* between the compliance-based culture condition and the values-based culture condition is much more pronounced in the foreign-language conditions than in the native-language conditions (means = 2.97 to 4.04 versus 3.89 to 4.04, respectively), which is consistent with our H1a.

Table D-4 displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the high English proficiency subset with *Detrimental Non-Compliance* as the dependent variable. As displayed in Table D-4 and shown in Figure D-4, the difference in *Detrimental Non-Compliance* between the compliance-based culture condition and the values-based culture condition is less pronounced in the foreign-language conditions than in the native-language conditions (means = 2.51 to 2.63 versus 2.60 to 2.29, respectively), which is consistent with our H1b.

Dependent Variable: *Beneficial Non-Compliance*

Language

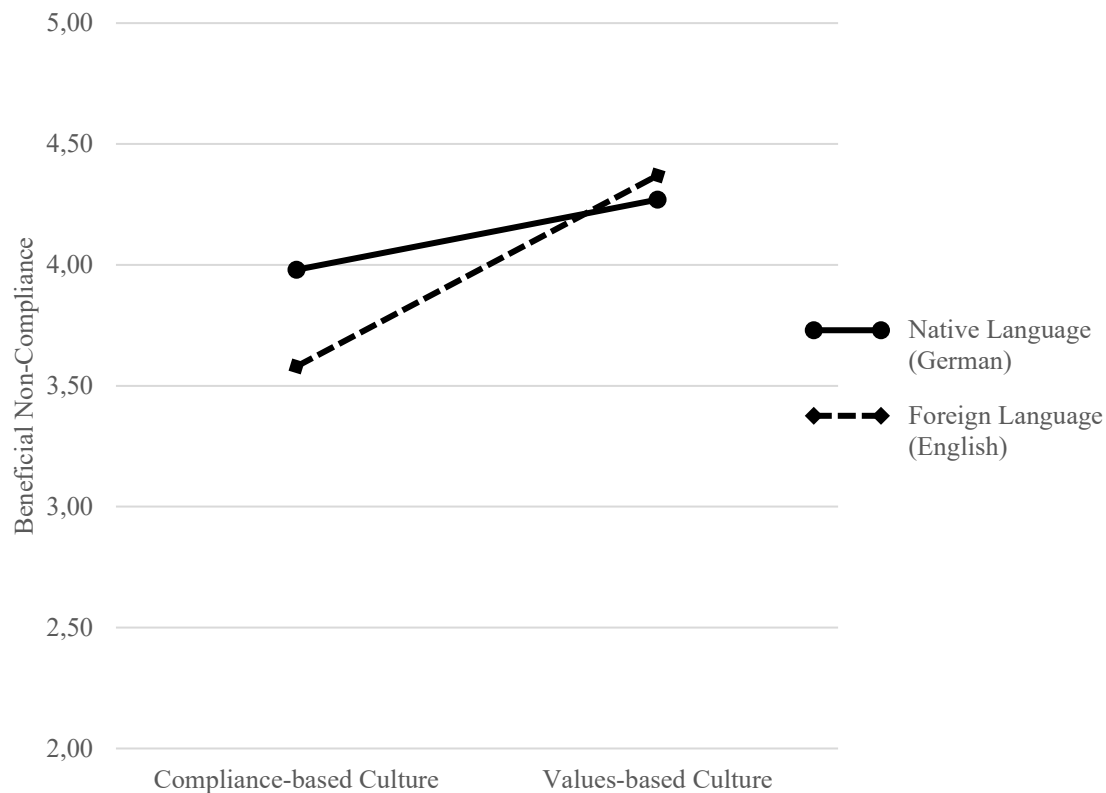|		Native Language (German)	Foreign Language (English)	Total
Culture	Compliance-based	3.98 (1.41) n = 50	3.58 (1.84) n = 50	3.78 (1.64) n = 100
	Values-based	4.27 (1.29) n = 50	4.37 (1.49) n = 50	4.32 (1.39) n = 100
	Total	4.12 (1.35) n = 100	3.98 (1.72) n = 100	4.05 (1.54) n = 200

Notes: The table displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the full sample with *Beneficial Non-Compliance* as the dependent variable.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Beneficial Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Table D-1: Descriptive Statistics for Culture and Language on Beneficial Non-Compliance

Notes: The figure displays the effect of *Culture* and *Language* on *Beneficial Non-Compliance* for the full sample.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Beneficial Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Figure D-1: Effect of Culture and Language on Beneficial Non-Compliance

Dependent Variable: *Detrimental Non-Compliance*

Language

		Native Language (German)	Foreign Language (English)	Total
Culture	Compliance-based	3.08 (1.51) n = 50	3.07 (1.71) n = 51	3.07 (1.60) n = 101
	Values-based	2.71 (1.59) n = 50	2.98 (1.46) n = 50	2.84 (1.52) n = 100
	Total	2.89 (1.55) n = 100	3.02 (1.58) n = 101	2.96 (1.56) n = 201

Notes: The table displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the full sample with *Detrimental Non-Compliance* as the dependent variable.
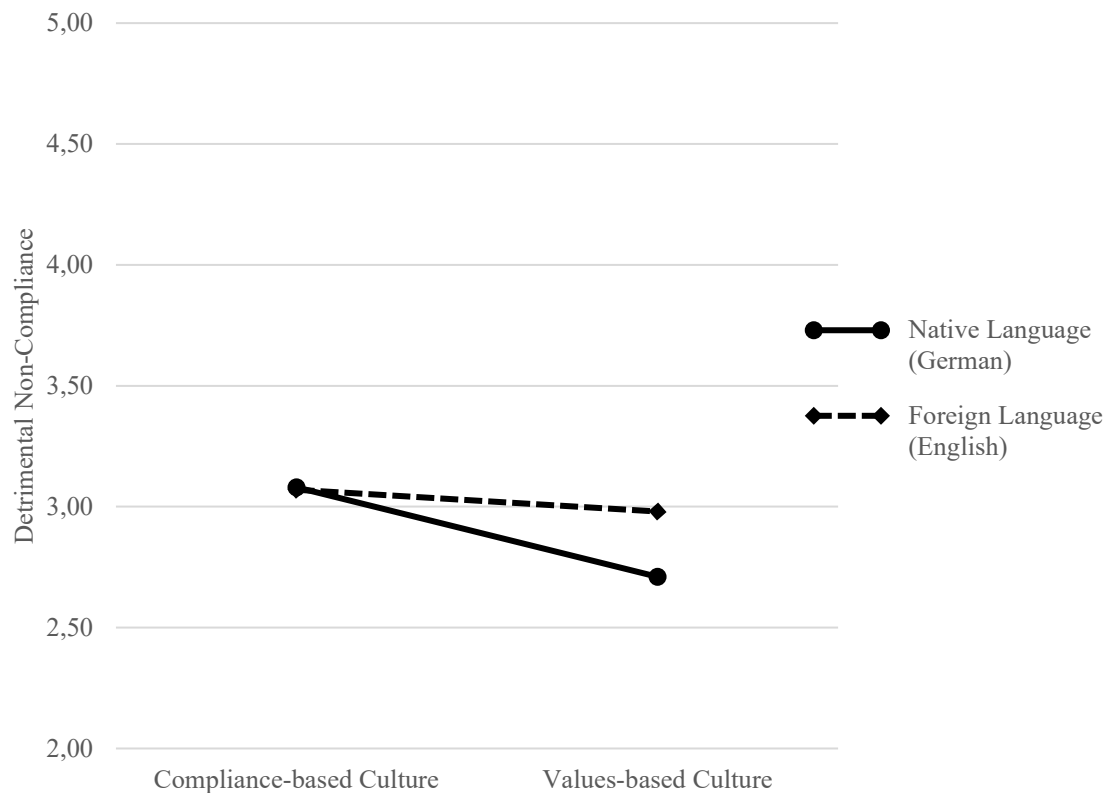
Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Detrimental Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Table D-2: Descriptive Statistics for Culture and Language on Detrimental Non-Compliance

Notes: The figure displays the effect of *Culture* and *Language* on *Detrimental Non-Compliance* for the full sample.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Detrimental Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Figure D-2: Effect of Culture and Language on Detrimental Non-Compliance

Dependent Variable: *Beneficial Non-Compliance*

Language

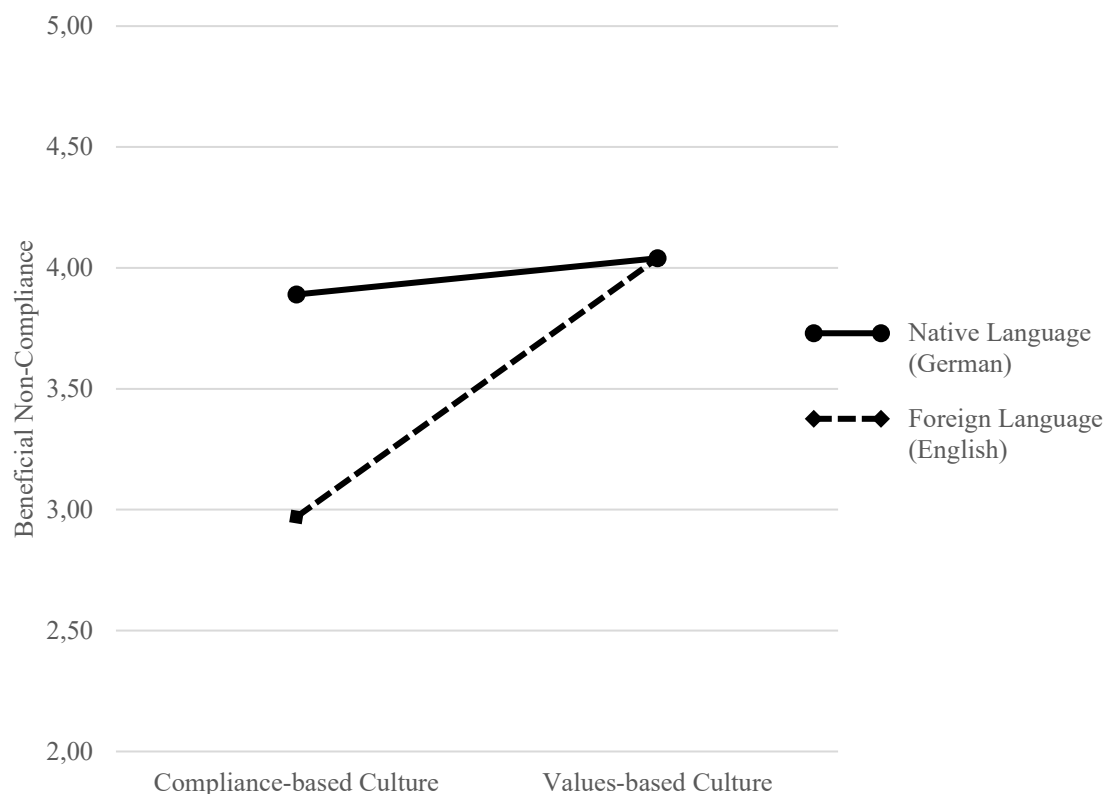|		Native Language (German)	Foreign Language (English)	Total
Culture	Compliance-based	3.89 (1.15) n = 31	2.97 (1.24) n = 27	3.46 (1.27) n = 58
	Values-based	4.04 (1.14) n = 25	4.04 (0.94) n = 20	4.04 (1.04) n = 45
	Total	3.96 (1.14) n = 56	3.43 (1.23) n = 47	3.71 (1.21) n = 103

Notes: The table displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the high English proficiency subset with *Beneficial Non-Compliance* as the dependent variable.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Beneficial Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Table D-3: Descriptive Statistics for Culture and Language on Beneficial Non-Compliance in the High English Proficiency Subset

Notes: The figure displays the effect of *Culture* and *Language* on *Beneficial Non-Compliance* in the high English proficiency subset.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Beneficial Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Figure D-3: Effect of Culture and Language on Beneficial Non-Compliance in the High English Proficiency Subset

Dependent Variable: *Detrimental Non-Compliance*

Language

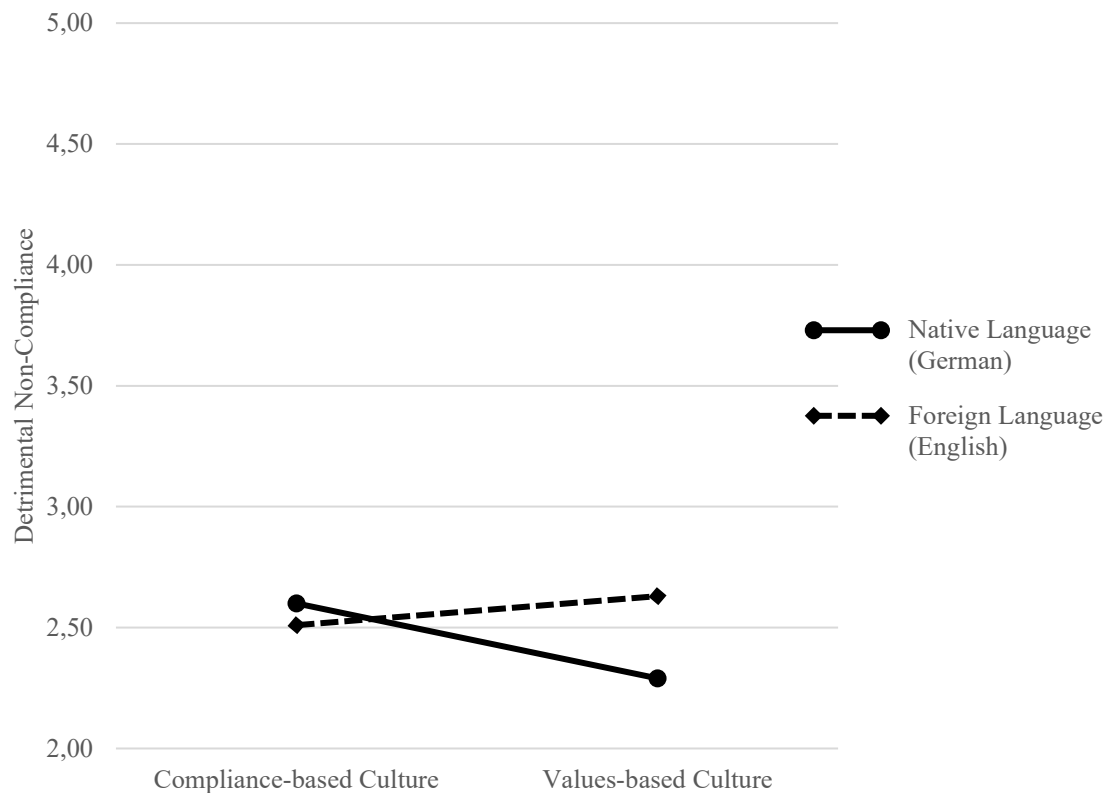|		Native Language (German)	Foreign Language (English)	Total
	Compliance-based	2.60 (1.29) n = 29	2.51 (1.13) n = 24	2.56 (1.21) n = 53
Culture	Values-based	2.29 (0.90) n = 26	2.63 (1.53) n = 25	2.46 (1.25) n = 51
	Total	2.45 (1.12) n = 55	2.57 (1.34) n = 49	2.51 (1.22) n = 104

Notes: The table displays the means and standard deviations for *Culture* and *Language* as well as the number of participants per condition for the high English proficiency subset with *Detrimental Non-Compliance* as the dependent variable.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Detrimental Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely, and combined over four different vignettes.

Table D-4: Descriptive Statistics for Culture and Language on Detrimental Non-Compliance in the High English Proficiency Subset

Notes: The figure displays the effect of *Culture* and *Language* on *Detrimental Non-Compliance* in the high English proficiency subset.

Culture is manipulated at two levels (between-subjects): compliance-based and values-based. Participants in the compliance-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Discipline, Rules, Transparency". Participants in the values-based culture conditions receive a text describing the corporate culture at DRT, where DRT is an acronym for "Do the Right Thing".

Language is manipulated at two levels (between-subjects): native language (German) and foreign language (English). Participants in the native-language conditions receive a German version of the aforementioned text, and participants in the foreign-language conditions receive an English version of the aforementioned text. The rest of the materials, including all instructions and measurement scales, are presented in German, except for the English language test.

Detrimental Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely", and combined over four different vignettes.

Figure D-4: Effect of Culture and Language on Detrimental Non-Compliance in the High English Proficiency Subset

Hypothesis Tests

H1a: Effect of Culture and Language on Beneficial Non-Compliance

Our H1a predicts that when socio-moral norms are salient, reduced access to normative knowledge has a positive effect on the inclination towards beneficial non-compliance. In order to test our hypothesis, we conduct OLS regression analysis using *Beneficial Non-Compliance* as dependent variable. The independent variables are *Culture*, an indicator variable that equals to 0 for compliance-based and 1 for values-based, and *Language*, an indicator variable that equals to 0 for native (German) and 1 for foreign (English). The results of the OLS regression are reported in Table D-5. The coefficient of *Culture* reflects the effect of values-based versus compliance-based corporate culture in the native language (German) conditions. The coefficient of *Culture* is not significant ($\beta = 0.15$, $p = 0.62$, two-tailed). The coefficient of *Language* reflects the effect of foreign versus native corporate language in the compliance-based culture conditions. The coefficient of *Language* is negative and significant ($\beta = -0.91$, $p = 0.003$, two-tailed), indicating that for the compliance-based culture conditions, foreign language reduces the inclination towards beneficial non-compliance compared to native language. In addition, the interaction effect is positive and significant ($\beta = 0.91$, $p = 0.02$, one-tailed). Follow-up simple effects tests, reported in Table D-5 show that while culture has no effect in the native-language (German) conditions, in the foreign-language (English) conditions, inclination towards beneficial non-compliance is higher in values-based cultures compared to compliance-based cultures ($\beta = 1.07$, $p = 0.002$, two-tailed). Additionally, while language has no effect in the values-based culture conditions, in the compliance-based culture conditions, inclination towards beneficial non-compliance is higher in the native-language (German) conditions compared to the foreign-language (English) conditions ($\beta = -0.91$, $p = 0.005$, two-tailed). Taken together, these results support our H1a.

Panel A: Regression Results with *Beneficial Non-Compliance* as Dependent Variable

	Coefficient	Std. Error	p-value
Culture	0.15	0.31	0.618
Language	− 0.91	0.30	0.003**
Culture × Language	0.91	0.45	**0.024***
Constant	3.89	0.20	< 0.001***
Adj. R^2			0.11
N			103

Panel B: Follow-up Tests of Simple Effects with *Beneficial Non-Compliance* as Dependent

Variable

	Coefficient	Std. Error	p-value
Simple Effect of Culture when Language = 0	0.15	0.31	0.623
Simple Effect of Culture when Language = 1	1.07	0.33	0.002**
Simple Effect of Language when Culture = 0	− 0.91	0.31	0.005**
Simple Effect of Language when Culture = 1	0.00	0.32	0.994

Notes: The tables display results of an OLS regression (Panel A) and follow-up tests of simple effects (Panel B). * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, boldface indicates a one-tailed p-value, conditional on the direction of a hypothesized prediction. All other reported p-values are two-tailed.

Culture is an indicator variable that equals to 0 for compliance-based and 1 for values-based.

Language is an indicator variable that equals to 0 for German (native) and 1 for foreign (English).

Beneficial Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for the company and non-abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely".

Table D-5: Effect of Culture and Language on Beneficial Non-Compliance in the High English Proficiency Subset

H1b: Effect of Culture and Language on Detrimental Non-Compliance

Our H1b predicts that reduced access to normative knowledge has no effect on the inclination towards detrimental non-compliance. In order to test our hypothesis, we conduct OLS regression analysis using *Detrimental Non-Compliance* as dependent variable. The independent variables are *Culture*, an indicator variable that equals to 0 for compliance-based and 1 for values-based, and *Language*, an indicator variable that equals to 0 for native (German) and 1 for foreign (English). The results of the OLS regression are reported in Table D-6. The coefficient of *Culture* reflects the effect of values-based versus compliance-based corporate culture in the native language (German) conditions. The coefficient of *Culture* is not significant ($\beta = -0.31$, $p = 0.35$, two-tailed). The coefficient of *Language* reflects the effect of foreign versus native corporate language in the compliance-based culture conditions. The coefficient of *Language* is not significant ($\beta = -0.09$, $p = 0.79$, two-tailed). Lastly, the interaction effect is not significant ($\beta = 0.43$, $p = 0.37$, two-tailed). The results indicate that neither culture nor language have an effect on the inclination towards detrimental non-compliance. Taken together, these results support our H1b.

Robustness Checks

H1a: Effect of Culture and Language on Beneficial Non-Compliance

Recall that we perform a median split for English proficiency resulting in a subsample that only includes participants with 25 % or more correct answers in the English language test. For this subsample, we find the positive and significant interaction effect as reported above ($\beta = 0.91$, $p = 0.02$, one-tailed). Changing the cut-off point to 10 % or more correct answers ($\beta = 0.87$, $p = 0.02$, one-tailed) as well as to 62.5 % or more correct answers ($\beta = 1.04$, $p = 0.04$, one-tailed), which reflects the fourth quartile, does not change the inference.

Panel A: Regression Results with *Detrimental Non-Compliance* as Dependent Variable

	Coefficient	Std. Error	p-value
Culture	– 0.31	0.33	0.347
Language	– 0.09	0.34	0.785
Culture × Language	0.43	0.49	0.373
Constant	2.60	0.23	< 0.001***
Adj. R^2			– 0.02
N			104

Notes: The table displays results of an OLS regression. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$, boldface indicates a one-tailed p-value, conditional on the direction of a hypothesized prediction. All other reported p-values are two-tailed.

Culture is an indicator variable that equals to 0 for compliance-based and 1 for values-based.

Language is an indicator variable that equals to 0 for German (native) and 1 for foreign (English).

Detrimental Non-Compliance is measured by participants' rating of their inclination towards bending or breaking rules in a way that is functional for themselves and abusive, measured on a seven-point Likert scale with 1 representing "extremely unlikely" and 7 representing "extremely likely".

Table D-6: Effect of Culture and Language on Detrimental Non-Compliance in the High English Proficiency Subset

We perform additional robustness checks by including demographic variables into the regression. Including gender, age, work experience, as well as time to complete the study does not change the significance of the positive interaction effect ($p = 0.02$, one-tailed), and none of the variables has a significant effect on *Beneficial Non-Compliance*.

H1b: Effect of Culture and Language on Detrimental Non-Compliance

As for H1a, recall that we perform a median split for English proficiency resulting in a subsample that only includes participants with 25 % or more correct answers in the English language test. For this subsample, we find a non-significant interaction effect as reported above ($\beta = 0.43$, $p = 0.37$, two-tailed). Changing the cut-off point to 10 % or more correct answers (β

= 0.69, p = 0.13, two-tailed) as well as to 62.5 % or more correct answers (β = 0.90, p = 0.17, two-tailed), which reflects the fourth quartile, does not change the inference.

As for H1a, we perform additional robustness checks by including demographic variables into the regression. Including gender, age, work experience, as well as time to complete the study does not change the inference of our prior analyses.

V.   Discussion and Conclusion

We show how the use of a corporate language that is foreign to the organization's members can promote beneficial non-compliance, while not affecting detrimental non-compliance. From the organizational perspective, however, the distinction between beneficial and detrimental behavior falls within the gray areas that we describe above. In this regard, our findings may even raise the need for management control when lack of direction is high (Merchant and Van der Stede 2017). This is because, firstly, in values-based cultures, where the influence of intrinsic motivation on innovativeness is high (Ritala, Vanhala, and Järveläinen 2020), the risk of well-intentioned, but actually detrimental non-compliance might be higher in foreign-language environments. Moreover, the reduced access to normative knowledge in foreign languages could also give rise to novel justifications, interpretations, and excuses for fraudulent behaviors, especially in cases of employee fraud (Andon and Free 2024). Secondly, in compliance-based cultures, foreign-language use might reduce the organization's members' susceptibility to superior pressure, making judgments less aligned with superiors' preferences compared to a native language (Sugahara, Tsunogaya, and Kim 2023). Taken together, the actual, long-term beneficialness of non-compliance is highly ambiguous. Thus, while in this study we refer to codes of ethics to approximate corporate culture, we advocate considering the entirety of corporate ethics programs, i.e., also ethics trainings, accountability policies, monitoring and auditing, investigation and correction policies, ethics report lines, and incentive policies (Kaptein 2015), when designing management control systems.

From the individual perspective, non-compliance is inherently risky. Prior research suggests that when processing a foreign-language, loss aversion decreases and the willingness to take risks increases (e.g., Besuglov and Crasselt 2020; Hadjichristidis, Geipel, and Savadori 2015; Hayakawa, Lau, Holtzmann, Costa, and Keysar 2019). However, in the case of our study, it seems plausible to assume that foreign-language processing promotes risk aversion, because foreign-language use reduces the confidence necessary to break rules in the first place. To control for these potential effects, we use our post-experimental questionnaire to assess our participants' risk perception when deciding upon the presented situations and to assess their confidence in the respective decisions. We do not find significant effects here. However, this might be due to the fact that we do not address the probability of detection and possible sanctions in our vignettes. In this regard, rule-bending and rule-breaking could be distinguished from each other considering their sanctionability, i.e., rule-breaking as sanctionable, and rule-bending as non-sanctionable behavior. Moreover, future research could differentiate between conscious and unconscious non-compliance and non-compliance via action and inaction. Therefore, our findings might have different implications for the violation of 'red rules', that do not fall within the above-mentioned gray areas, and for 'blue rules', that are not equally enforced.

In designing our study, we carefully considered the relationship of our two independent variables, culture and language. In general, we do not consider language choice to be dependent on corporate culture, and vice versa. It is rather degree of internationality that determines language choice. However, we considered how national culture might embed its related values, e.g., conformity or fairness, into the respective national language, to the extent that close languages share similar cultures. We therefore turned to prior research that takes into account a variety of different combinations of languages from very close to more distant language families. Foreign-language effects are found, e.g., between English and Chinese (Pan and Patel 2018), Dutch (van Hugten and van Witteloostuijn 2018), French (Keysar et al. 2012), German

(Besuglov and Crasselt 2020; Hayakawa et al. 2017), Italian (Hadjichristidis et al. 2015, 2017), Japanese (Keysar et al. 2012; Sugahara, Tsunogaya, and Kim 2023), Korean (Keysar et al. 2012; Shin and Kim 2017), Spanish (Cipolletti et al. 2016; Hayakawa et al. 2017; Kyriakou and Mavrou 2023), and Turkish (Caldwell-Harris and Ayçiçeği-Dinn 2020), as well as between Swedish and French (Dylman and Champoux-Larsson 2020) and Arab and Hebrew (Costa et al. 2014). We consider the worldwide distribution of participants with the same native and foreign languages as an effective control for culture when looking at the foreign-language effect. If at all the closeness of cultures and languages drives our results, this should work against us finding an effect between two West Germanic languages, English and German, and the foreign-language effect should be even more pronounced between more distant cultures and language families.

Considering the environment in which participants learned English as a foreign language, we test whether a formalized environment of language acquisition affects adherence to formal rules. In our language background assessment, we ask participants to indicate the contexts in which they learned English. We code elementary or secondary school, language courses, and professional contexts as rather formal, as opposed to family, friends, kindergarten, preschool, or social media, films, series or music. There are no significant differences across groups for the formalization of language acquisition environment (p = 0.14, two-sided), and including the formalization score into the regressions does not change the inference of our hypothesis tests. Note that both the relative distance of the languages in question as well as the context in which the foreign language was acquired might affect the occurrence of foreign-language effects in general (Fitzgerald, Stroet, Weißmüller, and van Witteloostuijn 2025).

Our results have important implications for both research and practice. As globalization forces firms to adopt English as a corporate language, investigating unintended consequences of foreign-language policies on judgment and decision-making is an important research area. Especially for apparently desirable company cultures such as values-based cultures, the

equivocal risks and benefits of beneficial non-compliance could undermine some of the intentions associated with a reduction of language barriers. Recognizing this ambiguity has implications for different groups. Acknowledging foreign-language policy as a promoter of active leniency to maintain the organization's innovative ability could help management to use corporate governance as a means of creating adaptive organizational structures, and to reduce overly defensive decision-making in organizations. At the same time, our results might help to identify combinations of control instruments that can promote or mitigate the risk of abusive behaviors, e.g., in foreign subsidiaries. In this regard our study's main contribution is to provide evidence why and under what conditions language choice promotes or hinders compliance. We contribute to the literature in management control and business ethics by highlighting the importance of active language management as a variable in the design of control systems. Moreover, we help to distinguish beneficial from detrimental non-compliance, such as opportunistic and counterproductive work behaviors on a theoretical level.

However, our study is not free from limitations. Firstly, our vignettes depict simplified settings that may not fully reflect all factors of real-world decisions. In designing our experiment, we tried to balance experimental realism and the time necessary to participate in our study, taking into account the limited attention of our participants. We rely on future research using other methods to add nuance to our findings. Secondly, our findings generalize to late bilinguals, i.e., speakers that acquired a foreign language later in life. Prior research suggests that for early bilinguals and speakers with a high exposure to a foreign language, e.g., expats, foreign-language effects might be significantly less pronounced or even absent. Lastly, the inclination towards beneficial non-compliance might be intertwined with personality traits such as narcissism (Gay et al. 2024). In these cases, firms might inadvertently attract employees whose personalities conflict with key elements of the company culture. Against the background of these limitations, the refinement of our results might offer promising avenues for future research.

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E. Affidavit

Ich, Herr Matthias Bernhard Wesser, versichere an Eides statt, dass die vorliegende Dissertation von mir selbstständig und ohne unzulässige fremde Hilfe unter Beachtung der „Grundsätze zur Sicherung guter wissenschaftlicher Praxis an der Heinrich-Heine-Universität Düsseldorf" erstellt worden ist.

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Mülheim an der Ruhr, den 20. Mai 2025