Playing to which audience? Textual analysis of standalone sustainability reports in the South African Mining sector

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Statement

This is an original work that has not been submitted for publication elsewhere.

Abstract

We explore narrative styles of 50 standalone sustainability reports for the years 2016 to 2019 published by South African mining companies. Our analyses using computer-aided narrative analysis tools reveal that readability is very low, and optimism and commonality are the most prevalent narrative tones. We also investigate whether the intended audience is associated with differences in the readability and narrative tone by comparing reports of companies included (excluded) in the FTSE/JSE Responsible Investment (RI) index. We find that the more sophisticated audience of reports by companies included in the RI index is associated with even lower readability. These reports are also less optimistically phrased than those of companies not included in the RI index. We contribute to the theory by demonstrating that RI investors and ESG rating agencies may temper companies' tendencies to manage impressions in sustainability reports. We also contribute by placing the study in South Africa, an emerging economy.

Keywords

Responsible investments (RI), stakeholders, sustainability, readability, narrative tone, impression management

1 Introduction

> *"The extraction of natural resources is a controversial business practice that has profound ethical and economic risk implications for both firms involved in extractive activities and society at large."* *Baudot, Huang, and Wallace (2021, p. 151)*

An increase in devastating natural disasters around the world because of climate change, as well as health issues relating to pollution, have humans more concerned about our impact on the environment than ever before. Concerns arise not only about individuals' footprints but also about the way entities use natural resources and how their activities affect the natural environment and surrounding communities. There is thus increased pressure on companies to be socially and environmentally accountable to a broader range of stakeholders (Böhling & Murguía, 2014; De Villiers & Maroun, 2018; Eccles & Saltzman, 2011; Gray, 2007; Maubane, Prinsloo, & Van Rooyen, 2014). Sustainability (and its subsequent reporting) is specifically mentioned as an emerging ESG megatrend that can affect companies' competitiveness and even their survival (Lubin & Esty, 2010). The prominence of sustainability is also evidenced in the recent formation of the International Sustainability Standards Board and the publication of two exposure drafts to formalise sustainability information that financial stakeholders would like to see reported (IFRS & ISSB, 2022).

Sustainability information from the mining industry is especially of interest to stakeholders as mining poses an inherent risk to the environment through earth, air, and water pollution. Mining is an important contributor to GDP in South Africa, contributing seven per cent to South Africa's GDP in the fiscal year 2019 (PWC, 2020, p. 10). Mining companies are also the main employer in several rural communities of South Africa. However, labour and community relations in the South African mining industry are fraught with tension. The most well-known incident involved the killing of 34 protesting mineworkers in Northwest province by police on 16 August 2012, known as the 'Marikana

Massacre' (Evans, 2019). A more recent event relates to the murder of a community activist on 23 October 2020 that opposed the expansion of a mine in northern KwaZulu-Natal province which would have safeguarded thousands of miners' jobs (Savides, 2020). In Limpopo province, mining takes place in the Mapungubwe World Heritage Site, with negative impacts on tourism and the local community (Leonard & Lidskog, 2020). Leonard and Lidskog (2020) found that the local government and industries do not communicate properly with local communities about social and environmental risks, contributing to a lack of trust. Mining companies, therefore, are under increased scrutiny to convince investors and other stakeholders that they are mitigating potential damage to the environment as well as addressing workers' and communities' health and safety concerns (Böhling & Murguía, 2014; Boiral, 2013; De Villiers & Alexander, 2014; De Villiers, Low, & Samkin, 2014; Ngwakwe & Mtsweni, 2016).

Stakeholders should however be aware that companies can (and often do) emphasise the positive while downplaying the negative in their sustainability reporting (De Villiers & Maroun, 2018; Diouf & Boiral, 2017; Emel, Makene, & Wangari, 2012; Talbot & Boiral, 2018). Many companies are talking about sustainability, but few 'walk the talk' and sustainability reports have subsequently been criticised for lacking quality and reliability (Cho, Michelon, & Patten, 2012; Diouf & Boiral, 2017; Emel et al., 2012) and for being marketing tools for legitimisation, to obtain or maintain a social licence to operate, or impression management (Diouf & Boiral, 2017; Merkl-Davies & Brennan, 2011; Ngwakwe & Mtsweni, 2016; O'Donovan, 2002; Stacchezzini, Melloni, & Lai, 2016). Careful wording is often used to disguise poor performance through obfuscation (Hasan, 2020; Laskin, 2018). The use of 'difficult' words and long sentences can be used to affect readability and reduce the reader's ability to properly understand the text (Smeuninx, De Clerck, & Aerts, 2020). Cooper and Slack (2015), Courtis (1998, 2004); Talbot and Boiral (2018) argue that companies that do not perform well, tend to manipulate the narrative sections to confuse the reader. Both readability and

tone can be deployed by companies in various forms of communication for impression management and obfuscation purposes (FRC, 2019; Hasan, 2020; Smeuninx et al., 2020).

Although readability and tone analysis has been conducted on various types and parts of corporate disclosures (Bonsall IV et al., 2017; Caglio, Melloni, & Perego, 2020; Du Toit, 2017; Du Toit & Esterhuyse, 2021; Melloni, Caglio, & Perego, 2017; Melloni, Stacchezzini, & Lai, 2016; Stone & Lodhia, 2019), less is known about readability and other narrative strategies employed in standalone sustainability reports. Sustainability reports are aimed at stakeholders with a financial interest as well as those whose interest is non-financial (Cannon et al., 2019; Clementino & Perkins, 2020; Giese et al., 2019; Wang et al., 2020). Smeuninx et al. (2020) analysed the readability of sustainability reports and call for further research into language variety and industry differences in more domains. Fisher, Van Staden, and Richards (2020) too called for further research in different national settings to enrich the account of cultural and jurisdictional differences in disclosure.

The objective of our study is to supplement the limited research on the narrative styles used in standalone sustainability reports of companies operating in the mining industry of South Africa. Proper use of natural resources is critical to the sustainable development of resource-rich countries in Africa (Erdoğan et al., 2020) as emerging economies are thought to be more vulnerable and exploitable (Mahmood, Kouser, & Masud, 2019). Given the socio-economic and environmental relevance of mining in South Africa, we decided to conduct an in-depth exploratory study on narrative styles in this industry. Our first research question is: *what is the readability and narrative tone of standalone sustainability reports of mining companies based in South Africa?* Furthermore, preparers of sustainability reports have two audiences for their reports; one being socially responsible investors and rating agencies, and the other stakeholders such as communities, environmental groups, and employees. Addressing different information needs and audiences might impact readability and

narrative tone. Our second research question is thus: *is there a difference in narrative style employed by companies included in a responsibility index and those that are not*?

We contribute to the knowledge about narrative styles employed in corporate communications in South Africa, an emerging economy. Previous research on readability and narrative tone in corporate communications focused on other continents. The second contribution lies in the focus on mining companies that are subjected to greater issues of legitimacy and where community and other stakeholders are at greater risk from environmental and social fallout from mining activities. Our main contribution to the field of impression management in corporate sustainability reporting is in fleshing out the effect of the report's audience on its readability and narrative tone.

The rest of the article is organised as follows. Section 2 reviews the supporting theories and prior literature and develops the research questions. Section 3 covers methodology and data selection. Section 4 presents the empirical results, whilst Section 5 concludes.

2 Literature review and research questions

2.1 Theories supporting sustainability reporting

The study finds its theoretical foundation firstly in stakeholder theory (Freeman, 1984). Investors have a vested interest in the activities of a company, but so do employees, customers, suppliers, local communities, the government, and a plethora of other interested parties (Freeman, 1984). Sustainability reports supply information about an organisation's impact on the environment and wider society, actions taken to mitigate harmful effects, and projects beneficial to employees, communities, and the environment. It is thus aimed at a wider stakeholder group than those only interested in the financial performance of a firm, although these sustainability disclosures can also

meet the needs of shareholders, e.g. socially responsible investors (Eccles, Ioannou, & Serafeim, 2014; Hassan, 2019; IFRS & ISSB, 2022).

The motivation behind the publication of sustainability reports, aimed at a wider stakeholder audience, can also be explained by legitimacy theory. Legitimacy is obtained when entities try to portray their actions as desirable or appropriate and aligned with society's or communities' values (Suchman, 1995). Multiple studies argue that companies use sustainability reports strategically to legitimise their actions and obtain beneficial stakeholder opinions (Barkemeyer et al., 2014; Böhling & Murguía, 2014; Camilleri, 2019; De Villiers et al., 2014; Hoozée, Maussen, & Vangronsveld, 2019; Maubane et al., 2014). In the case of mining companies, legitimacy is also obtained when communities award a social license to operate mining activities (Amoako, Lord, & Dixon, 2017; Kaur & Qian, 2020; Komnitsas, 2020; Lindman, Ranängen, & Kauppila, 2020; Prno & Slocombe, 2012).

Lastly, one of the 'aims' of corporate reporting, including non-financial narrative reporting, is to make a favourable impression on investors and non-financial stakeholders. Impression management may even employ manipulation of public perception to ensure a company is perceived in a positive light, regardless of actual performance, to obtain or maintain legitimacy with its stakeholders (Ali, Lodhia, & Narayan, 2020; Cooper & Slack, 2015; Diouf & Boiral, 2017; Fialho, Morais, & Costa, 2020; Jones et al., 2017; Stacchezzini et al., 2016; Talbot & Boiral, 2018). Intentional impression management strategies may include, for example, deliberately hiding under-performance through poor readability and rhetorical manipulation, or obfuscation (De Souza et al., 2019; Diouf & Boiral, 2017; Hasan, 2020; Martínez-Ferrero, Suárez-Fernández, & García-Sánchez, 2019; Smeuninx et al., 2020) or text that is written in optimistic or positive language to create the impression that the company is doing well (Huang, Teoh, & Zhang, 2014). According to Barkemeyer et al. (2014), concealment is often used to cover negative results and in a study by Boiral (2013), it was found that negative news went unreported in 90% of cases. When impression management is employed in the

context of favourable sustainability reporting that is not supported by real actions on the ground, it is sometimes referred to as 'greenwashing' (Böhling & Murguía, 2014; Boiral, 2013; Fonseca, 2010). There have been calls for the standardisation of sustainability reports, but as it currently does not have to be formally assured, it still provides a platform for presenting information in a way that creates the best impression of a company (Emel et al., 2012; Merkl-Davies & Brennan, 2011).

2.2 Readability and narrative tone

Impression management through narrative disclosure is usually achieved by two means; readability (how easy the text is to understand) and narrative tone, where word choice creates a certain impression on the reader[i]. In combination, it can also be used to obfuscate the reader. In general, the requirement for corporate reports is that they should be written in fairly plain language to enhance readability, be concise and apply a *neutral 'tone'* or *balanced* representation of events (IIRC, 2021; IoDSA, 2016; Loughran & McDonald, 2014; SEC, 1998; Smeuninx et al., 2020; Stone & Lodhia, 2019). This requirement for readability and neutrality was specifically mandated by the US Securities Exchange Commission when they introduced the Plain English Handbook for disclosure (SEC, 1998) and it is implied in the wording of the transparency requirement of the King IV report, which states "…unambiguous and truthful exercise of accountability such that decision-making processes and business activities, outputs and outcomes (both positive and negative) are easily able to be discerned and compared with ethical standards" (IoDSA, 2016). The GRI guidelines stipulate six principles according to which sustainability information should be disclosed, namely *balance, comparability, accuracy, timeliness, clarity, and reliability* (Diouf & Boiral, 2017; Hassan, 2019). However, in their research, Diouf and Boiral (2017), through interviews with stakeholders, found that sustainability reports are rarely thought to display any of these characteristics. In an experimental setting, Hoozée et al. (2019) reported that plain language contributes to the credibility of disclosures when read by the general population but made no difference to a specialist audience.

Narrative analysis (readability, word count, length, tone) of annual reports, 10-Ks, and integrated reports are a well-studied terrain. Some of the most recent examples include Athanasakou et al. (2020), De Souza et al. (2019), D'Augusta and DeAngelis (2020), Hasan (2020), Hemmings, Hodgkinson, and Williams (2020), Stone and Lodhia (2019), Thoms, Degenhart, and Wohlgemuth (2020), Zhao et al. (2020). These studies cover reports from companies listed in the US, UK, Germany, Brazil, and China. The consensus of these international studies is that the readability of disclosures is low and not easily accessible to most laypersons and positive words are used more frequently than negative words. To the best of our knowledge, only four studies investigated the narrative styles of South African companies, and this was confined to integrated reports (Caglio et al., 2020; Du Toit, 2017; Du Toit & Esterhuyse, 2021; Melloni et al., 2017). These studies' findings for South African integrated reports of low readability and preference for certain tones are in line with the international studies mentioned earlier.

2.3 Standalone sustainability reports

Whilst annual and integrated reports have been the subject of numerous narrative studies, there is a paucity of studies employing narrative analysis (readability, word count, length, tone) of *standalone* sustainability reports. Fisher et al. (2020) studied the standalone CSR reports as well as annual reports for 89 Australian and 34 New Zealand companies for the years 2008 and 2009. They found that tone is associated with the report type, which was also a significant determinant of readability. Muslu et al. (2019) conducted narrative analysis on 2 462 standalone CSR reports of 401 firms with KLD ratings from 2000 to 2011 and found that longer reports with more pessimistic words, better readability, lower complexity, more numerical information, and forward-looking information, were associated with higher analyst forecast accuracy.

Smeuninx et al. (2020) compared the readability of standalone sustainability reports for five English-speaking domains, i.e., the US, UK, Europe, India, and Australia to uncover regional or cultural differences. The sustainability reports for the fiscal year 2012 were analysed for 163 companies in the mining, oil, semiconductor, and apparel sectors. The readability scores of the sustainability reports were compared with the companies' financial reports and Smeuninx et al. (2020) conclude that, although sustainability reports are written for a more general audience, it is even more difficult to read than financial reports. Martínez-Ferrero et al. (2019) analysed an international sample of 273 CSR reports from companies in Canada, France, Germany, Hong Kong, Japan, Luxembourg, Netherlands, Singapore, Spain Switzerland, the US, and the UK from 2006 to 2014. In line with obfuscation motivations, they found that companies with the worst CSR performance, have CSR disclosures that are less balanced, more optimistic, longer, and less readable. Companies that performed well in CSR had higher quality CSR reports that were comparable, reliable, and aimed to enhance the companies' reputation. Investigating three self-constructed measures of transparency in CSR reports, Rim, Kim, and Dong (2019) studied CSR reports for 23 US, 22 South Korean, and 19 Chinese companies covering the period 2014 to 2017. US and South Korean companies had significantly higher scores for their participation and accountability measures, whilst Chinese companies performed better on the substantial information metric. They found that Chinese environmentally sensitive companies had significantly higher participation scores than Chinese companies in general industries. The US and South Korean companies reflected no industry differences (Rim et al. 2019). In conclusion, none of these studies included South African companies. Fisher et al. (2020), Martínez-Ferrero et al. (2019), and Smeuninx et al. (2020) called for further studies of readability and narrative tone in standalone sustainability reports in other countries.

In a public opinion poll of 1 000 adults in 27 countries each, Globescan & GRI (2020) reported that in South Africa, only 44 per cent of respondents agreed that companies communicate honestly about their sustainability performance. This compares favourably to the US (44%), and the UK (42%), and

is better than major European countries with scores in the thirties but is lower than the 27-country average of 51 per cent. Most Asian countries scored above the average, with the highest being Indonesia (81%). The aforementioned low level of trust in South African companies' sustainability communications lends further impetus to our rationale for conducting the study.

Following calls by Fisher et al. (2020), Martínez-Ferrero et al. (2019), and Smeuninx et al. (2020), we are interested in knowing what the readability and narrative tones are in standalone sustainability reports prepared by South African companies. As motivated before, we focus our study on the mining industry in South Africa as it is exposed to environmental risks and social scrutiny from workers and communities surrounding mines. We formulate our research questions as follows:

RQ1(a): What is the readability of standalone sustainability reports of mining companies listed on the JSE in South Africa?

RQ1(b): What is the narrative tone of standalone sustainability reports of mining companies listed on the JSE in South Africa?

2.4 FTSE/JSE Responsible Investment (RI) Index Series

It could be argued that inclusion in sustainability indices based on ESG ratings is an indicator of good sustainability performance as rating agencies review public corporate reports, as well as general press about companies (Arena, Bozzolan, & Michelon, 2015; Cannon et al., 2019; Fisher et al., 2020; Giese et al., 2019; Melloni et al., 2017; Muslu et al., 2019). To be included in the FTSE/JSE Responsible Investment Index[ii], companies' ESG and sustainability disclosures and practices are evaluated in terms of the FTSE Russell ESG rating methodology (JSE, 2017). In the South African context, Maubane et al. (2014) conducted a content analysis of the ESG disclosures in the annual and/or

sustainability reports of 48 companies included in the JSE's SRI Index in 2010 and compared the results across industries. The mining industry scored the highest of all industries for the quantity of environmental and social disclosures, but the lowest for the number of governance disclosures. Further breakdown of the components of the composite governance score indicates that the lower score is due to poorer disclosures by mining companies of indirect impacts as well as business values and risk management. This finding could be interpreted as potential impression management in the mining industry's reporting of sustainability matters. Standalone sustainability reports are primarily prepared for two audiences. On the one hand are non-financial stakeholders, such as the community, employees, and environmental groups, and on the other hand socially responsible institutional investors and the ESG rating agencies (we classify the latter group as a class of financial stakeholders). We argue that readability and narrative tone would be different between the two groups depending on whom management views as their primary audience for the report. Therefore, we frame our next research questions as follows:

RQ2(a): Is there a difference in the readability of standalone sustainability reports by South African mining companies included in the FTSE/JSE Responsible Investment Index compared to those that are not included?

RQ2(b): Is there a difference in the narrative tone of standalone sustainability reports by South African mining companies included in the FTSE/JSE Responsible Investment Index compared to those that are not included?

3 Research method

3.1 Narrative analysis tools

Narrative analysis is gaining popularity in accounting and finance research. Various software applications are available for this type of analysis and are believed to be more reliable than manual analyses (Al-Najjar & Abed, 2014; Loughran & McDonald, 2016). The benefits of using a software application lie in its inherent stability and objectivity, ease of use, clear coding rules for comparability, coder reliability, and its ability to process large volumes of text (Fisher et al., 2020; Loughran & McDonald, 2016; Melloni et al., 2017; Stone & Lodhia, 2019).

To measure readability, we used *Readability Studio 2019*. The readability measures used in this software and for purposes of our study are calculated and interpreted as follows (Smeuninx et al., 2020; Stone & Lodhia, 2019):

- The Flesch Reading Ease is calculated as [206.835 - 0.846(number of syllables per 100 words) - 1.015(average sentence length in words)]. Higher scores imply *better* readability. A score between zero and 30 is the lowest category and is considered very difficult to read.
- The Flesch-Kincaid measure is calculated as [(0.39 x average sentence length) + (11.8 x average syllables per word) - 15.59]. Higher scores indicate *lower* readability, measured in the number of years of schooling (US grade levels) required to understand the text.
- The Gunning Fog Index is calculated as [0.4 x (average number of words per sentence + percentage of 'hard' words in the passage)]. This measure also indicates levels of schooling. In this metric, 'hard' words are defined as polysyllabic words. A score between 10 and 12 is suitable for a general audience. Higher scores indicate *lower* readability.

For narrative tone analysis, this study makes use of *Diction 7.1.3* and its corresponding word lists. *Diction*, developed by Hart (2000) and improved by Hart and Carroll (2013), measures the specific

textual characteristics of a piece of text to identify whether a certain linguistic strategy was applied. The broader categories of narrative tones (Diction calls it *master variables*) are Certainty, Optimism, Activity, Realism, and Commonality which are compiled from frequencies for 31 proprietary wordlists and four computed variables (Hart, 2000).

Table 1: Diction measures of narrative tone ('master variables')

Master Variable	Definition	Formula
Certainty	Language indicating resoluteness, inflexibility, completeness, and a tendency to speak ex-cathedra	[Tenacity + Levelling + Collectives + Insistence] – [Numerical Terms + Ambivalence + Self Reference + Variety]
Optimism	Language endorsing some person, group, concept, or event or highlighting their positive entailments.	[Praise + Satisfaction + Inspiration] – [Blame + Hardship + Denial]
Activity	Language featuring movement, change, the implementation of ideas, and the avoidance of inertia.	[Aggression + Accomplishment + Communication + Motion] – [Cognition + Passivity + Embellishment]
Realism	Language describes tangible, immediate, recognizable matters that affect people's everyday lives.	[Familiarity + Spatial Terms + Temporal Terms + Present Concern + Human Interest + Concreteness] – [Past Concern + Complexity]
Commonality	Language highlighting the agreed-upon values of a group and rejecting idiosyncratic modes of engagement.	[Centrality + Cooperation + Rapport] – [Diversity + Exclusion + Liberation]

Sources: Hart (2000); Hart and Carroll (2013)

In calculating the master variables (or what we call narrative tone), Diction first converts each of the 35 individual scores to a Z-score, then adds a constant 50 and provides a slight statistical correction depending on which normative standard is used for the analysis. Scores are averaged within each document per 500 words so that long and short documents can be compared. A further benefit of the standardisation is that scores can be compared directly between different studies that have used Diction. Each of the 35 individual scores and composite tone scores is measured against a set of pre-determined standards (or norms) built into the software and which the researcher selects for comparison purposes (Hart, 2000; Hart & Carroll, 2013). For this study, we compare our texts' scores against the Corporate Financial Reports normative base, similar to Arena et al. (2015), Craig and

Amernic (2018), as well as Melloni et al. (2017). The narrative tones are composed as shown in Table 1. Recent narrative studies in corporate report disclosures that used Diction software are Arena et al. (2015); Fisher et al. (2020); Hassan (2019); Melloni et al. (2017); Park, Byun, and Choi (2020); Rim et al. (2019).

3.2 Sample data

A list of the 44 mining companies listed on the JSE was extracted from the IRESS database on 30 November 2020. The individual company's websites were visited on 1 December 2020 to download *standalone* sustainability reports (we ignored integrated reports for those companies that did not produce standalone sustainability reports as these are concise reports with a different aim). The focus is on sustainability specifically, therefore the more specialised standalone sustainability report is used, rather than the more generic corporate social responsibility (CSR) report. Reports were downloaded for the four most recent years available at the time, i.e., 2019, 2018, 2017, and 2016. This yielded 50 company-year reports from 13 companies (two companies had standalone sustainability reports for three years only). A lack of standalone sustainability reporting in companies in an emerging economy was also found in Pakistan (Mahmood et al., 2019). Due to the small number of standalone sustainability reports produced by the JSE-listed mining companies, we consider this an exploratory investigation. Constituents of the FTSE/JSE Responsible Investment index series were obtained from https://www.jse.co.za/services/indices/ftsejse-responsible-investment-index-series.

The *Diction* and *Readability Studio* output and FTSE/JSE Responsible Investment Index membership for each standalone sustainability report were analysed in SPSS 26 as a pooled sample. All the variables, except FTSE/JSE Responsible Investment Index membership (categorical variable), are continuous. Due to the small sample and various outliers, tests of normality indicate that most variables are not normally distributed. Hence, we conducted non-parametric tests in all instances on

the pooled dataset. Tests for homogeneity of variance indicate similar distribution shapes between groups.

4 Results and Discussion

To answer RQ1(a) (readability), we conducted readability tests on the 50 standalone sustainability reports, and the descriptive statistics are displayed in Panel A of Table 2. The average Flesch Reading Ease score of 24.78 indicates text that is very difficult to read (lower than 30), requiring readers to have a postgraduate degree (i.e., advanced scientific material). The low readability is confirmed by the second readability measure, the Flesch-Kincaid measure, which shows an average of 15.70, indicating that the standalone sustainability reports are very difficult to read and only understandable by university graduates or postgraduate students (i.e., individuals with an education of almost 16 years). Lastly, according to the Gunning Fog Index formula, the texts have an average score of 15.77, confirming that the sustainability reports are too difficult for most people to read without many years of post-school education.

Next, we compare our readability results to that of the few studies that did investigate the readability of sustainability disclosures. Smeuninx et al. (2020) reported readability scores for their international sample of 2012 fiscal year sustainability reports of 17.32, 16.47, and 20.86 based on the Flesch Reading Ease, Flesch-Kincaid, and Gunning Fog scales and 15.56, 16.83, and 21.35 for the subsample of mining companies. Fisher et al. (2020) reported mean scores of 29.17, 15.05, and 18.31 for Flesch Reading Ease, Flesch-Kincaid, and Gunning Fog respectively for their Australian and New Zeeland sample from 2008 and 2009. For their international sample, Muslu et al (2019) report a SMOG readability measure (comparable to Gunning Fog) of 20.3, which also indicates that the average reader requires a graduate-level degree to understand the CSR reports in their sample from the years 2000 to 2011. Notably, the international studies had much lower (mid-teens) Flesch Reading Ease

scores (low readability) than the South African sample (24.78) from more recent years. Furthermore, the Gunning Fog measure for the international samples was also markedly higher than their Flesch-Kincaid measure, indicating heavy use of complex words. Our Gunning Fox (15.77) measure is only slightly higher than our Flesch-Kincaid measure (15.70). We propose that the South African sustainability reports, even though difficult to read, are not so 'technically' complex as the international samples' reports. This could be the result of South African sustainability reports being written to be more 'digestible' for non-technical readers (i.e., a specialist audience without engineering degrees). However, the readability scores are still poor enough (requiring many years of post-school education) to make it less understandable to large numbers of non-financial stakeholders such as some lower-skilled mine employees and members of communities surrounding the mines. It seems then that sustainability reports of mining companies in South Africa are targeted at a highly educated audience, i.e., the financial stakeholders such as socially responsible investors and rating agencies. Alternatively, reading difficulty could have been used as an obfuscation tactic to hide poor sustainability performance.

To answer RQ1(b) (narrative tone), we analysed the standalone sustainability reports with the Diction software. From Table 2 Panel B it can be seen that from the five narrative tones, Optimism, with a mean score of 50.05, and Commonality, with a mean score of 50.01 are the most prominent narrative styles. Optimism refers to the use of words that endorses or highlights positive achievements while commonality refers to words related to language that highlights the common values of a group (Diction). We propose that highlighting companies' sustainability achievements and prospects of positive outcomes from their sustainability projects in a sustainability report are driving the optimism score and using words to 'identify' or create 'common cause' with the stakeholders that read the reports drives the commonality score. Interestingly, Realism was the least popular narrative tone with a mean score of only 46.62. Realism encompasses words that describe tangible matters (Diction). The companies avoided using concrete language when reporting on their sustainability projects and

impacts, which can be construed as being vague or even obfuscation. We conclude that the high level of optimism and commonality, and low level of realism are consistent with the narrative tone being used for impression management to obtain legitimacy or approval from the mines' stakeholders.

Table 2: Descriptive statistics

n = 50	**Mean**	**SD**	**Minimum**	**Maximum**
Panel A: Readability				
Flesch Reading Ease	24.78	4.52	10.00	40.00
Flesch-Kincaid	15.70	1.25	10.70	17.20
Gunning Fog	15.77	1.22	11.60	17.30
Panel B: Narrative tone				
Optimism	50.05	2.89	44.71	60.98
Commonality	50.01	1.44	45.37	56.08
Activity	49.67	2.03	42.48	53.29
Certainty	47.32	2.83	36.33	53.20
Realism	46.62	2.65	42.13	55.50
Panel C: JSE/FTSE Responsibility Index	**Yes**	**No**		
2016	9	3		
2017	9	4		
2018	10	3		
2019	9	3		
Total (50)	37	13		

Next, we compare our tone results with that of Fisher et al (2020), who also used Diction to analyse tone in 60 standalone CSR reports of the largest Australian and New Zealand companies. Fisher et al (2020) report mean scores of 50.96, 51.81, 50.10, 48.52, and 41.85 for optimism, commonality, activity, certainty, and realism in the main disclosure sections of the CSR reports. Our findings are consistent with theirs in that optimism and commonality are the most used tones, whilst realism is the least used tone. The preference for optimism as a tone is borne out by Craig and Amernic (2018) who conclude from their study of CEO letters to shareholders that the language in corporate reports tends to highlight the positive. We contend that describing results of sustainability activities and prospects

in mostly positive terms is part of how impression management manifests in corporate reporting, especially where legitimacy is sought, as in the mining industry.

Panel C in Table 2 reveals the number of mining companies that were included in the FTSE/JSE Responsible Investment Index from 2016 through 2019. We used this data for our second research question. Our second research question considers whether narrative style would differ between companies included in the FTSE/JSE Responsible Investment Index and those that are not (hereafter referred to as RI and non-RI companies). To answer the two sub-questions (readability and narrative tone) we conducted non-parametric Mann-Whitney U tests for differences in mean ranks. From Table 3 we note that the test statistics indicate no significant differences in readability in the mean ranks between the groups. Nevertheless, it is interesting to observe the means and mean ranks. Bearing in mind that for the Flesch Reading Ease lower scores imply higher difficulty to comprehend, it seems that reports from companies not included in the RI attempt to write 'easier' texts. For Flesch-Kincaid and Gunning Fog, higher scores mean the text is more complex. For both metrics, the reports in the non-RI group were more readable. All three readability measures reflect the same trend that reports from companies that are not included in the RI indices produce reports that are slightly more readable, although this is not statistically significant. We tentatively argue that reports from companies excluded from RI favour their non-financial stakeholder audience.

Table 3 also presents the differences between groups for the five narrative tones produced by Diction. Only optimism is significantly different at the conventional level of $p < 0.05$ with reports in the non-RI group having a more optimistic tone than those in the RI group. When we analyse the six subaltern dictionaries that make up the optimism tone (see Table 1), we find that the difference is driven by non-RI reports using significantly more words from the praise, satisfaction, and inspiration dictionaries, whilst RI reports contain significantly more words from the denial dictionary (denial score is subtracted to arrive at optimism's combined score). The use of certainty as tone reveals

significant differences if the more relaxed cut-off of 0.10 is applied. Reports by RI-indexed companies' certainty scores indicate that it contains more authoritative sentiments and insistence. None of the other three Diction tones is used in a significantly different manner in reports of RI or non-RI companies.

Table 3: Mann-Whitney tests Readability and tone

		N	Mean	Mean Rank	Sum of Ranks	Mann-Whitney U	Exact Sig.[#]
Flesch Reading Ease	Non-RI	13	25.54	30.23	393.00	179.000	.171
	RI	37	24.51	23.84	882.00		
Flesch-Kincaid	Non-RI	13	15.55	20.38	265.00	174.000	.140
	RI	37	15.75	27.30	1010.00		
Gunning Fog	Non-RI	13	15.72	22.73	295.50	204.500	.425
	RI	37	15.79	26.47	979.50		
Optimism	Non-RI	13	51.74	35.69	464.00	108.000	**.003**
	RI	37	49.45	21.92	811.00		
Commonality	Non-RI	13	49.87	24.77	322.00	231.000	.834
	RI	37	50.06	25.76	953.00		
Activity	Non-RI	13	49.04	19.92	259.00	168.000	.109
	RI	37	49.89	27.46	1016.00		
Certainty	Non-RI	13	46.50	19.46	253.00	162.000	.083
	RI	37	47.60	27.62	1022.00		
Realism	Non-RI	13	47.05	28.35	368.50	203.500	.413
	RI	37	46.46	24.50	906.50		

[#] Two-tailed

Table 4 presents the Diction tones (composite dictionaries) for the two groups in order of popularity or preference. The non-RI reports used words indicating optimism the most, whilst it is only ranked third for the RI reports. The differences in the mean ranking were statistically significant, as discussed already. Words indicating certainty were the least used in the non-RI reports, whilst for the RI reports it was ranked second least used dictionaries. RI reports employed the realism dictionaries the least. We conclude that the intended audience, i.e., specialists (RI reports aimed at RI investors and the

FTSE/JSE ESG rating agencies) versus non-specialists seem to influence the word choice employed in sustainability reports of mining companies in South Africa.

Table 4: Popularity ranking of Diction tones for the Non-RI and RI reports

	Non-RI (n=13)			RI (n=37)	
	Mean	**Mean Rank**		**Mean**	**Mean Rank**
Optimism	51.74	35.69	Commonality	50.06	25.76
Commonality	49.87	24.77	Activity	49.89	27.46
Activity	49.04	19.92	Optimism	49.45	21.92
Realism	47.05	28.35	Certainty	47.60	27.62
Certainty	46.50	19.46	Realism	46.46	24.50

5 Conclusions, discussion, and limitations

The purpose of our exploratory study was first to determine the readability and narrative tones of standalone sustainability reports for mining companies listed on the Johannesburg Stock Exchange of South Africa. Readability is low, requiring post-school education to comprehend. However, the South African sustainability reports, even though difficult to read, are not as 'technically' complex as the international samples' reports. This could be the result of South African sustainability reports being written to be more 'digestible' for *educated* non-technical readers (i.e., a specialist audience without engineering degrees), but many readers with lower schooling may still struggle to read the reports. Given that sustainability reports should be prepared for a wider stakeholder audience, the lack of readability is disconcerting. If sustainability reports are less readable, it means that their purpose is not fulfilled in that it has limited informational value for stakeholders that form part of the public, the employee corps, and the layman investor. When we analysed the narrative tones, we found that words from the optimism and communality dictionaries are the most popular tones, and the realism dictionary is used the least. We propose that highlighting companies' sustainability achievements and prospects of positive outcomes from their sustainability projects in a sustainability

report are driving the optimism score and using words to 'identify' or create 'common cause' with the stakeholders that read the reports drives the commonality score. Companies avoid using concrete language when reporting on their sustainability, which can be construed as being vague or even obfuscation. We contend that describing results of sustainability activities and prospects in mostly positive terms and avoiding being specific is part of how impression management manifests in corporate reporting, especially where legitimacy is sought, as in the mining industry.

Our second purpose was to determine whether mining companies included in the FTSE/JSE Responsible Investment (RI) Index use specific narrative strategies in their stand-alone sustainability reports that differ from non-RI reporters. Although not statistically significant, it does seem that the readability of RI reports is even lower when the target audience is financial stakeholders and rating agencies. Of the five Diction narrative tones, only optimism was significantly different between the two groups. The difference is driven by non-RI reports using significantly more words from the praise, satisfaction, and inspiration dictionaries, whilst RI reports contain significantly more words from the denial dictionary. Reports by RI-indexed companies' certainty scores indicate that it contains more authoritative sentiments and insistence, although not statistically significant at conventional levels. When comparing the preference of the five narrative tones, optimism was used the most in non-RI reports, while it only ranked third for RI reports. We conclude that the intended audience, i.e., specialists (RI reports aimed at RI investors and the FTSE/JSE ESG rating agencies) versus non-specialists seem to influence the word choice employed in sustainability reports of mining companies in South Africa.

Our first contribution lies in the insights provided into the use of narrative styles in sustainability reports in South Africa, an emerging economy, whilst most previous studies on standalone sustainability reports were conducted in developed economies. Smeuninx et al (2020) analysed readability in five English-speaking regions, e.g., the USA, UK, Europe, Australia, and India, whilst

Fisher et al (2020) focused on Australia and New Zealand. We add an eighth English-speaking region, South Africa. We focused on the mining industry, as these companies are under scrutiny from society in South Africa due to ongoing conflicts between mines, workers, and communities. Although the readability of the pooled sample is low, it is better than that of similar international studies. We argue that societal pressure might lead to reports being more readable than would normally be the case for corporate reports. However, our main theoretical contribution to the impression management literature is demonstrating how responsible investment investors and ESG rating agencies might influence the readability and narrative tone employed in sustainability reports. When we split the sample, we find that if the primary audience is RI investors and rating agencies, readability decreased even further (albeit not statistically significant). Sustainability reports of companies included in the FTSE/JSE RI index thus decrease their usability for non-financial stakeholders of the company (they become a secondary audience). Optimism as a narrative tone is used much more (statistically significantly) in non-RI reports. Overly optimistic tones in non-RI reports might indicate impression management to obtain or keep the social licence to operate in the mining community. Sustainability reports aimed at the RI audience temper their use of words from the optimism libraries as management is aware that these highly informed readers can verify the information and will penalise them for 'greenwashing.' RI investors and rating agencies thus seem to curb impression management tendencies of management.

From a practical perspective, this research can potentially guide company officials such as CEOs, investor relations officers, and public relations officers on how to present sustainability information in a way that is accessible to all audiences, transparent, and accountable. It highlights the importance of word choice. The software tools can be acquired and used by companies themselves and draft reports can be analysed and improved upon, before being released to the public.

Our explorative study was based on 50 standalone sustainability reports in the mining industry in South Africa. But no study is without limitations. Two limitations to this study are (1) the limited sample, due to the unavailability of standalone sustainability reports, as well as (2) a focus on one industry alone. Future research may investigate reasons why companies do not prepare standalone sustainability reports, especially companies that are in an industry known for its impact on the environment and fraught relations with communities. It could also be insightful to include other industries and to expand the investigations over a longer period. Comparisons with mining companies in countries where labour and community relations are not so sensitive could also provide useful understanding.

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[i] Our study does not consider impression management through non-disclosure of negative facts or events in corporate reports, nor the extent or completeness of actual information disclosed. The focus is purely on readability and tone.

[ii] In 2015 the JSE's Socially Responsible Investment (SRI) Index was replaced with the FTSE/JSE Responsible Investment Index.