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Yamin Hao, Ying Mao, Xiaojia Wang

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Managerial Self-References in Corporate Disclosures: An Analysis of MD&A

Yamin Hao
Western Washington University

Ying Mao
Lingnan University

Xiaojia Wang
MacEwan University

This study examines strategic pronoun usage in the Management Discussion and Analysis (MD&A) section of annual reports. Through automated textual analysis of a large sample of MD&As, we find that managers of firms with higher earnings growth tend to use more self-inclusive pronouns (e.g., "we," "us," and "our") and fewer self-exclusive words (e.g., "the company"). This self-referential language pattern is associated with a higher likelihood of future financial restatements. Our findings contribute to the literature on corporate narrative disclosures and identify a potential new indicator of financial misstatements. The results have implications for investors, analysts, auditors, and regulators.

Keywords: self-reference, corporate disclosure, MD&A, restatement

INTRODUCTION

In corporate communications, pronoun usage can reveal how managers perceive and present firm performance. This study examines whether managers implicitly claim success for positive firm performance through self-references in annual reports and whether this self-referential tendency relates to subsequent financial restatements. We focus on the Management Discussion and Analysis (MD&A) section of annual reports, where managers explain company performance to stakeholders. The Securities and Exchange Commission (SEC) states that the MD&A should provide "a narrative explanation of a company's financial statements that enables investors to see the company through the eyes of management" (SEC, 2003). By studying managerial self-references in this context, we attempt to enhance the understanding of managers' disclosure strategies.

Although the SEC requires managers to provide informative explanations of firm performance, it is unclear whether the language choices of MD&A improve its informativeness or introduce bias. Prior studies provide experimental evidence that managers strategically use language to influence investors' perceptions of financial results (e.g., Barton & Mercer, 2005; Tan et al., 2014). This research area, however, lacks sufficient empirical evidence due to sample limitations. Our study attempts to complement and extend previous literature using

automated Perl algorithms to create a large sample of managerial self-references from the MD&A section of 10-K filings. Specifically, we measure managers' self-references as the tendency to use self-inclusive pronouns (e.g., first-person pronouns) instead of self-exclusive language (e.g., "the company") (Chen & Loftus, 2019; Li, 2010a). Our findings indicate that managers of firms with higher earnings growth tend to use more first-person pronouns and fewer self-exclusive words in the MD&A to implicitly claim credit for positive outcomes, and this pattern becomes more pronounced when earnings growths become more substantial.

Next, we explore how managerial self-references in the MD&A might indicate future financial restatements. Previous studies have shown significant market reactions to content words (nouns, verbs, and adjectives) in narrative disclosures because these words directly convey information to decision-makers (e.g., Hales et al., 2011). Whether function words (pronouns, conjunctions, and articles) are equally important and could help predict financial restatements, however, remains largely unexplored. Our empirical evidence suggests that the use of self-referential words in the MD&A is associated with a firm's likelihood of future financial restatements. Managers' implicit self-references through strategic pronoun usage may signal lower credibility of annual reports.

This paper makes three contributions. First, we extend the literature on managers' self-serving biases in corporate narrative disclosures. While previous research has identified various forms of attribution biases (Aerts, 1994, 2001; Bettman & Weitz, 1983; Clatworthy & Jones, 2003; Gong et al., 2024; Staw et al., 1983), the strategic use of self-referential words in the MD&A by managers remains largely unexplored. Our study demonstrates that managers use specific pronouns to implicitly claim credit for favorable firm performance. By analyzing these credit-taking patterns in language choices, we gain new insights into disclosure biases and their underlying motivations. This deepens our understanding of how subtle linguistic choices reflect managerial attitudes and could potentially influence financial statement quality. It also highlights the importance of considering not only the content of corporate disclosures but also how information is presented.

Second, we explore the importance of this pattern by investigating how managers' language choices reflect on accounting irregularities. Specifically, we examine the association between pronoun usage in the MD&A by firms with earnings increases and the likelihood of future financial restatements. Through quantitative analysis, we demonstrate the predictive value of managerial self-references and provide a new perspective on the red flags of financial restatements. While most prior studies focus on quantitative financial measures as determinants of financial restatements (Sievers & Sofilkanitsch, 2019), our study provides new insights that emphasize the value of textual analysis in identifying potential financial misstatements.

Third, this study has implications for a broad audience, as both financial reporting and corporate disclosures are essential information channels for market participants. From the subtle language in corporate disclosures, investors may detect potential misreporting, analysts may understand how managers guide earnings expectations before restatements, and auditors may use language patterns as additional risk assessment tools. More importantly, regulators can use our findings to evaluate current disclosure regulations and explore new policies to reduce implicit biases. Our research contributes to improving the overall transparency and reliability of corporate communications by showing the importance of nuanced language analysis in narrative disclosures.

The remainder of this paper proceeds as follows. Section 2 discusses related literature and develops hypotheses. Section 3 articulates the research design and provides detailed descriptions of key variables. Section 4 describes the sample collection process and presents descriptive statistics and univariate results. Section 5 presents multivariate empirical findings and implications. Section 6 concludes the paper.

RELATED RESEARCH AND HYPOTHESIS DEVELOPMENT

Firm Performance and Management Self-References

Over the past decades, regulators and policymakers have emphasized the essential role of narrative disclosures in helping investors understand firms' financial performance and allocate capital (Healy & Palepu, 2001; Beyer et al., 2010). For example, the SEC stated in Securities Act Release No. 6711 that "[t]he Commission has long recognized the need for a narrative explanation of the financial statements, because a numerical presentation and brief accompanying notes alone may be insufficient for an investor to judge the quality of earnings and the likelihood that past performance is indicative of future performance" (SEC, 1987). Recognizing the importance of narrative disclosures, the SEC has issued guidelines to improve the quality of narrative disclosures. These

include the Plain English disclosure guideline, which encourages the use of plain language for more effective disclosures (SEC, 1998), and the guidance on MD&A (SEC, 2003), which requires managers to provide informative and accurate descriptions in the MD&A section of annual reports. In 2001, the Financial Accounting Standards Board (FASB) also issued a Steering Committee Report to help companies improve discretionary narrative disclosures.

Despite these regulatory efforts, concerns remain about managers potentially using strategic language to obscure or misrepresent financial information (Li, 2008). The MD&A section of annual reports is a crucial outlet for managers to communicate their understanding of firm performance to stakeholders. In this context, managers have considerable discretion in presenting and explaining firm performance. However, empirical evidence is limited regarding whether managers strategically choose MD&A language to influence stakeholders.

Theoretical studies in social psychology have long recognized self-serving biases in performance explanations (e.g., Kelley, 1967). The egotism model posits that individuals tend to take personal credit for positive outcomes while blaming negative outcomes on factors beyond their control. This tendency stems from the fundamental human need to maintain and enhance self-esteem (Sedikides & Strube, 1997). Elsbach and Sutton (1992) apply impression management theory to organizational contexts and find that individuals and organizations strategically manage information to influence others' perceptions. Furthermore, the linguistic intergroup bias theory (Maass et al., 1989) suggests that people use more abstract language when describing positive in-group behaviors and negative out-group behaviors.

Managers could employ psychological and impression management tactics in corporate communications to influence stakeholders. Prior studies show that managers strategically disclose narrative information in financial reports to shape readers' impressions of corporate performance and executive achievements (Merkl-Davies & Brennan, 2007). Specifically, managers tend to select certain language to attribute negative outcomes to external factors, such as supplier problems, the weather, and natural disasters, while crediting positive outcomes to internal factors, such as visionary leadership and effective cost management (Aerts, 1994, 2001; Bettman & Weitz, 1983; Clatworthy & Jones, 2003; Gong et al., 2024; Staw et al., 1983). When announcing negative outcomes, firms are more likely to use technical accounting terms that are more difficult to understand and process. In contrast, they use more direct cause-effect statements to attribute good firm performance to internal factors when explaining positive outcomes (Aerts, 1994).

Given managers' discretion in presenting and explaining firm performance, they may strategically select pronouns in the MD&A to obfuscate or clarify their accountability for the financial results. Previous studies document the important role played by pronouns in conveying responsibility and accountability (e.g., Chen & Loftus, 2019; Li, 2010a). Specifically, first-person pronouns (e.g., "we," "us," "our") create a sense of unity and shared responsibility, emphasizing collaboration and commitment. In contrast, third-person pronouns or self-exclusive languages (e.g., "the company") may distance the executives from firm performance and potentially reduce their perceived responsibility. We expect that managers tend to use more self-referential language to implicitly take credit for the favorable outcomes when a firm's financial performance improves. This self-serving language pattern could appear as a higher frequency of first-person pronouns or a lower frequency of self-exclusive language in the MD&A. By using more self-references when discussing positive firm performance, managers align themselves more closely with the company's success, which could potentially enhance their perceived competence and professional reputation. We formally state our first hypothesis as follows:

Hypothesis 1: *Managers of companies with positive changes in financial performance are likely to use more self-referential language in the MD&A.*

Financial Restatements and Management Self-References

Financial restatements are key indicators of financial misreporting (e.g., Sievers & Sofilkanitsch, 2019). The FASB requires companies to issue restatements when they identify material misstatements in previous financial reports. Since the accounting scandals of the early 2000s, financial restatements have become an important research topic in accounting and finance literature (e.g., Hennes et al., 2008). Researchers commonly view these as signals of poor reporting quality because firms acknowledge prior misreporting by issuing financial restatements (e.g., Sievers & Sofilkanitsch, 2019).

Sievers and Sofilkanitsch (2019) systematically review recent studies on factors affecting restatements. They identify changes in working capital (e.g., receivables and inventories), changes in employees, corporate soft assets, one-year cumulative stock returns, and discretionary accruals as key determinants for financial restatement. While prior research has extensively examined the quantitative determinants of financial restatements, the role of narrative disclosures remains largely unexplored. Our study extends this literature by focusing on the association between the MD&A language patterns and future financial restatements.

As discussed in the development of Hypothesis 1, managers may use self-referential language in the MD&A to implicitly claim credit for positive firm performance. Overconfidence theory (e.g., Roll, 1986; Skala, 2008) suggests that managerial overconfidence can lead to biased decision-making, which potentially results in aggressive accounting practices (e.g., Malmendier & Tate, 2005, 2008). Prior studies find that self-attribution behavior is an important source of overconfidence. For example, Gervais and Odean (2001) develop a theoretical model that explores the link between traders' self-attribution bias and overconfidence. They find that initially unbiased traders can become overconfident by attributing past successes to their own efforts. Similarly, Hilary and Menzly (2006) demonstrate that self-attribution bias can cause analysts with short-term success to become overconfident in their abilities to forecast future earnings. Billett and Qian (2008) show that CEOs develop overconfidence from self-attribution bias in mergers and acquisitions.

Regarding financial restatements, overconfident executives may unintentionally provide overly optimistic operational results, with a belief that these aggressive expectations could be realized in the future. Meanwhile, they may intentionally manipulate financial information, hoping that future improved performance will cover any inaccuracy. Both unintentional and intentional misstatements may lead to financial restatements (e.g., Hennes et al., 2008; Presley & Abbott, 2013).

Based on the above discussions, we expect that when managers overemphasize their involvement in the firm's past success, it may signal aggressive reporting or potential misrepresentation of financial results and indicate a higher risk of future restatements. Furthermore, managers' overconfidence may lead to overestimated firm performance, and this self-referential tendency could thus result in income-increasing restatements. Taken together, we state our second hypothesis as follows:

Hypothesis 2: *For firms with positive earnings changes and more self-referential language in the MD&A, the likelihood of future financial restatements is higher.*

EMPIRICAL MODELS

Measures of Self-References

To examine managers' self-referential language patterns, we randomly select a sample of 250 MD&As and read through their contexts. We observe that managers frequently use plural first-person pronouns (i.e., "we," "us," and "our") in the MD&As, while first-person singular pronouns (i.e., "I" and "my") are rare. Notably, managers often use "the company" instead of first-person pronouns, which can be viewed as a language strategy to distance themselves from the financial results.

Following Li (2010a), we define self-references as the extent to which managers include or exclude themselves in the disclosure context. For each MD&A, we count the total number of sentences, sentences containing plural first-person pronouns (i.e., "we," "us," and "our"), and sentences with self-exclusive languages (i.e., "the company"). The variables *FirstPronoun* and *Company* represent the number of sentences with first-person pronouns (we, us, our) and self-exclusive language (the company), respectively, both scaled by the total number of sentences in the MD&A. We multiply these measures by ten for interpretation convenience in our regression analyses. The variables *FirstPronoun* (*Company*) represent the number of self-inclusive (self-exclusive) sentences in every ten sentences of the MD&A. We then define a continuous variable (*SelfRef*) to measure managers' self-referential tendency by subtracting the frequency of self-exclusive languages (*Company*) from the frequency of first-person-pronouns (*FirstPronoun*).

Regression Models for Self-Referencing Patterns

To test Hypothesis 1, we estimate regression models on the relationship between our self-reference measures

and changes in earnings performance. Specifically, we estimate the following equation:

$$LanguageChoice = \beta_1 \Delta ROA + \beta_2 Length + \beta_3 Size + \beta_4 MB + \text{Year FE} + \text{Industry FE} + \varepsilon, \quad \text{(Model 1)}$$

where *LanguageChoice* represents our three measures of self-referential language (i.e., *FirstPronoun*, *Company*, or *SelfRef*). ΔROA is the change in *ROA* from the previous year to the current year, where *ROA* is the income before extraordinary items scaled by average total assets. To control for factors that may influence management's self-referential language, we further include *Length*, *Size*, and *MB* as control variables. *Length* is the natural logarithm of the total words in the MD&A section, controlling for the length of the disclosure. *Size* is the natural logarithm of total assets, accounting for potential effects of firm size. *MB* is the market-to-book ratio of equity, capturing potential growth opportunities and valuation effects. Prior studies have documented significant impacts of these variables on the language patterns of qualitative disclosures (e.g., Brown & Tucker, 2011; Li, 2010b). We also include year- and industry-fixed effects to capture temporal and cross-industry variations.

The key variable of interest in Model 1 is ΔROA. Based on Hypothesis 1, we expect positive coefficients ($\beta_1>0$) when *LanguageChoice* is *FirstPronoun* and negative coefficients ($\beta_1<0$) when *LanguageChoice* is *Company*. This suggests that managers use more first-person pronouns to implicitly claim credit for earnings increases and use more self-exclusive languages to distance themselves from earnings decreases. When *LanguageChoice* is the overall measure *SelfRef*, we expect a positive coefficient on ΔROA ($\beta_1>0$), implying that managers tend to emphasize their involvement in the firm's success through more self-references.

Regression Models for Financial Restatements

To examine how managers' self-referential language patterns could help with predicting future financial restatements (Hypothesis 2), we estimate the following model using logistic regressions:

$$\begin{aligned} Restate = {} & \beta_1 SelfRef + \beta_2 \Delta ROA + \beta_3 SelfRef \times \Delta ROA \\ & + \beta_4 \Delta REC + \beta_5 \Delta INV + \beta_6 SoftAssets + \beta_7 \Delta CashSale + \beta_8 \Delta Employee \\ & + \beta_9 RET + \beta_{10} \Delta Accruals + \varepsilon, \end{aligned} \quad \text{(Model 2)}$$

where *Restate* is an indicator variable that equals one if financial statements of a specific year are later restated, and zero otherwise. ΔROA and *SelfRef* are defined in the same way as in Model 1. We control for a batch of factors that potentially influence the likelihood of financial restatements. Specifically, ΔREC and ΔINV represent changes in receivables and inventories from the previous year to the current year, respectively. *SoftAssets* is the percentage of soft assets (intangible and other non-physical assets) in the firm's total assets. $\Delta CashSale$ and $\Delta Employee$ capture changes in cash sales and number of employees from the previous year to the current year, respectively. *RET* is the one-year buy-and-hold stock return (size adjusted), and $\Delta Accruals$ is changes in total accruals from the previous year to the current year. In addition, we include year- and industry-fixed effects in the model as additional controls. Appendix A provides detailed definitions of all variables.

The variable of interest in Model 2 is the interaction item $SelfRef \times \Delta ROA$. Based on Hypothesis 2, we expect positive coefficients ($\beta_3>0$) for this interaction, suggesting that when managers use more self-referential language to take credit for positive earnings changes, the potential likelihood of future financial restatement will be higher.

SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

Data and Sample Selection

To construct our sample, we first collect 10-K filings for publicly traded companies from the SEC's EDGAR database for the period 1996—2019. The sample period starts in 1996 when EDGAR became available and ends before 2020 to avoid potential COVID-19 pandemic impacts. For each 10-K filing, we extract the MD&A section and use a keyword search as specified in section 3.1 to identify self-referential language. We then merge the initial MD&A sample with annual financial information from the Compustat database. Consistent with prior research,

we exclude companies in the utilities (SIC codes 4800-4999) and financial (SIC codes 6000-6999) industries. After dropping firms with missing control variables in Model 1, our primary sample for Hypothesis 1 comprises 77,033 firm-year observations from 11,017 unique firms. To examine the relationship between financial restatements and self-referential language for firms with earnings increases (Hypothesis 2), we further obtain financial restatement data from the Audit Analytics database. After excluding firms with missing control variables in Model 2, we have a subsample of 50,235 firm-year observations for Hypothesis 2.

Descriptive Statistics

Table 1 presents summary statistics for the key variables in Model 1. The mean (median) frequency of first-person pronouns (*FirstPronoun*) is 2.340 (1.638), suggesting that firms typically use about two first-person pronouns in every ten sentences. In contrast, the phrase "the company" (*Company*) appears in the MD&A with a mean (median) frequency of 1.477 (0.610), indicating that managers occasionally use self-exclusive language like "the company" when explaining financial results. As a result, the mean (median) of the overall measure (*SelfRef*), the difference between *FirstPronoun* and *Company*, is 0.863 (0.424). The MD&A sections in our sample have a mean and median length of 5,820 (=*exp*(8.669)) words and 6,496 (=*exp*(8.779)) words, respectively, in line with prior research on the textual characteristics of MD&A (e.g., Brown and Tucker, 2011; Li, 2010b).

TABLE 1
DESCRIPTIVE STATISTICS

This table presents the descriptive statistics of the variables used in Model 1. See Appendix A for the detailed variable definitions of all the variables. The sample period is from 1996 through 2019.

Variable	N	Mean	Std Dev	Q1	Median	Q3
FirstPronoun	77,033	2.340	2.390	0.000	1.638	4.630
Company	77,033	1.477	1.678	0.039	0.610	2.766
SelfRef	77,033	0.863	3.759	-2.606	0.424	4.492
ΔROA	77,033	-0.003	0.150	-0.030	0.000	0.023
Length	77,033	8.669	0.810	8.220	8.779	9.213
Size	77,033	5.861	2.038	4.363	5.822	7.219
MB	77,033	3.016	4.418	1.079	1.788	3.177

TABLE 2
CORRELATIONS BETWEEN VARIABLES INCLUDED IN MODEL 1

This table presents the Pearson (below) and Spearman(upper) correlations between variables included in Model 1. See Appendix A for the detailed variable definitions of all the variables. The sample period is from 1996 through 2019.

No.	Variable	1	2	3	4	5	6	7
1	*FirstPronoun*	-	-0.707	0.927	0.022	0.417	0.052	0.121
2	*Company*	-0.699	-	-0.873	-0.034	-0.400	-0.260	-0.083
3	*SelfRef*	0.948	-0.890	-	0.030	0.432	0.141	0.116
4	ΔROA	0.019	-0.025	0.023	-	0.018	0.021	0.114
5	*Length*	0.339	-0.380	0.385	0.008	-	0.495	0.002
6	*Size*	0.040	-0.251	0.137	0.015	0.429	-	0.003
7	*MB*	0.107	-0.030	0.081	0.054	-0.022	-0.089	-

Table 2 presents the correlation matrix for these key variables. *SelfRef* and Δ*ROA* are positively correlated, suggesting that managers tend to use more first-person pronouns (i.e., more self-referential language) when the firm's earnings performance has improved over the past year. Correlations among other variables are also consistent with prior studies.

MULTIVARIATE ANALYSES

Firm Performance on Management Self-Referential Language

This section examines the association between firm performance and managers' self-referential languages in the MD&A (Hypothesis 1). We present the regression results of Model 1 in Panel A of Table 3. In column (1), we find a significantly positive coefficient on Δ*ROA* (0.120, $t = 3.49$) when the dependent variable is *FirstPronoun*. This suggests that when the earnings increase is greater, managers tend to use more first-person pronouns (i.e., "we," "us," and "our") to relate themselves more closely to the favorable financial results. In contrast, column (2) presents a significantly negative coefficient on Δ*ROA* (-0.127, $t = -4.89$) when the dependent variable is *Company*, suggesting that managers are less likely to distance themselves from the firm's success by using self-exclusive languages (i.e., "the company"). Column (3) shows a positive and significant coefficient on Δ*ROA* (0.248, $t = 4.42$) when the dependent variable is the overall measure, *SelfRef*. This composite measure captures the excessive use of self-referential language, suggesting that managers tend to implicitly claim credit using more first-person pronouns than self-exclusive words when the firm's earnings performance has improved. The coefficients on control variables (i.e., *Length*, *Size*, and *MB*) are largely consistent with previous studies.

TABLE 3
FIRM PERFORMANCE AND MANAGEMENT SELF-REFERENTIAL LANGUAGE

This table presents the estimation results of Model 1 in Panel A and the results of a robustness check using an alternative earnings performance measure in Panel B. See Appendix A for the detailed variable definitions of all the variables. The sample period is from 1996 through 2019. The *t*-statistics reported in parentheses are based on standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Regressions of management self-referential language on ΔROA

Dependent variable:	*FirstPronoun*	*Company*	*SelfRef*
	(1)	(2)	(3)
Δ*ROA*	**0.120*** **	**-0.127*** **	**0.248*** **
	(3.49)	**(-4.89)**	**(4.42)**
Length	0.480***	-0.179***	0.659***
	(16.72)	(-10.15)	(17.09)
Size	-0.015	-0.097***	0.082***
	(-1.37)	(-13.98)	(4.98)
MB	0.032***	-0.016***	0.048***
	(10.63)	(-9.07)	(10.79)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	77,033	77,033	77,033
Adjusted R^2	0.383	0.380	0.406

TABLE 3
FIRM PERFORMANCE AND MANAGEMENT SELF-REFERENTIAL LANGUAGE
(CONTINUED)

Panel B: Robustness check: using ROA_Increase as an alternative measure

Dependent variable:	*FirstPronoun*	*Company*	*SelfRef*
	(1)	(2)	(3)
ROA_Increase	**0.033*** **	**-0.037*** **	**0.069*** **
	(2.66)	**(-4.22)**	**(3.66)**
Length	0.480***	-0.179***	0.659***
	(16.72)	(-10.15)	(17.09)
Size	-0.015	-0.097***	0.081***
	(-1.37)	(-13.98)	(4.97)
MB	0.032***	-0.016***	0.048***
	(10.63)	(-9.07)	(10.79)
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	77,033	77,033	77,033
Adjusted R^2	0.383	0.380	0.406

In Panel B of Table 3, we check the robustness of our results using alternative earnings performance measures. We define *ROA_Increase* as an indicator variable that equals one if the current year's *ROA* is greater than the previous year, and zero otherwise. We then re-estimate Model 1 by replacing ΔROA with *ROA_Increase* and report the results in Panel B of Table 3. The coefficients on *ROA_Increase* are significantly positive when *FirstPronoun* and *SelfRef* are dependent variables (0.033, $t = 2.66$ in column (1); 0.069, $t = 3.66$ in column (3)), and significantly negative when *Company* is the dependent variable (-0.037, $t = -4.22$). These results are consistent with those in Panel A.

Overall, our findings in Table 3 provide empirical evidence for Hypothesis 1, suggesting that managers use more self-referential language when firms experience improvements in earnings performance. This pattern is consistent with our predictions that managers tend to relate themselves more closely to favorable firm performance.

The Likelihood of Financial Restatements

Next, we examine the relationship between managers' self-referential language and the likelihood of financial restatements. As discussed with Hypothesis 2, we expect that managers' self-references in the MD&A for favorable financial performance may signal a higher likelihood of future financial restatements.

Table 4 Panel A presents logistic regression results for Model 2. Column (1) shows a positive and significant coefficient on *SelfRef* (0.142, $z = 1.84$), suggesting that managers' self-referential tendency in the MD&A is positively associated with future financial restatements. Column (2) includes ΔROA and the interaction term between ΔROA and *SelfRef*. The coefficient on $\Delta ROA \times SelfRef$ is significantly positive (0.449, $z = 1.96$), implying that the positive relationship between the likelihood of subsequent restatements and *SelfRef* is stronger when ΔROA is higher. Taken together, these results suggest that managers' use of self-referential language may signal an increased risk of financial misreporting and future restatements, particularly for firms with substantial earnings improvements. When executives overemphasize their personal credit for the firm's success, it could reflect managerial overconfidence and potential financial misreporting.

TABLE 4
MANAGEMENT SELF-REFERENTIAL LANGUAGE AND FINANCIAL RESTATEMENT

This table presents the estimation results of Model 2 in Panel A and the results of an additional test for income-increasing restatement in Panel B. See Appendix A for the detailed variable definitions of all the variables. The sample period is from 1996 through 2019. We use logit regressions in this table. The *z*-statistics reported in parentheses are based on standard errors clustered by firm. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Regression of total restatements on self-referential language

Dependent variable:	*Restate*	*Restate*
	(1)	(2)
SelfRef	**0.142***	0.144*
	(1.84)	(1.87)
ΔROA		-0.300**
		(-2.32)
SelfRef × Δ***ROA***		**0.449***
		(1.96)
ΔREC	-0.740**	-0.774**
	(-2.54)	(-2.65)
ΔINV	-0.799**	-0.873**
	(-2.10)	(-2.26)
SoftAssets	0.526***	0.528***
	(4.05)	(4.06)
Δ*CashSale*	0.025***	0.026***
	(3.62)	(3.67)
Δ*Employee*	-0.006	-0.006
	(-0.98)	(-1.02)
RET	0.071***	0.080***
	(2.85)	(3.12)
Δ*Accruals*	0.026	0.161
	(0.32)	(1.50)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	50,235	50,235
Pseudo R^2	0.049	0.049

Next, we conduct an additional analysis to examine whether managers' use of self-referential language for earnings increases predicts future income-increasing restatements. We create an indicator variable, *RestateIncr*, which equals one if financial statements for a specific year contain income-increasing misstatements and are later restated, and zero otherwise. We re-estimate Model 2 using *RestateIncr* as the dependent variable. Table 4, Panel B reports the results. In Column (1), we observe a positive but non-significant coefficient on *SelfRef* (0.125, z = 1.62). However, in Column (2), the coefficient on $\Delta ROA \times SelfRef$ is significantly positive (0.372, z = 2.32), suggesting that managers' use of self-referential language for favorable earnings performance can indicate a higher likelihood of future income-increasing restatements.

TABLE 4
MANAGEMENT SELF-REFERENTIAL LANGUAGE AND FINANCIAL RESTATEMENT
(CONTINUED)

Panel B: An additional analysis for income-increasing restatements

Dependent variable:	*RestateIncr*	*RestateIncr*
	(1)	(2)
SelfRef	**0.125**	0.127*
	(1.62)	(1.65)
ΔROA		-0.359***
		(-3.71)
SelfRef × Δ***ROA***		**0.372****
		(2.32)
ΔREC	-0.606*	-0.655**
	(-1.97)	(-2.11)
ΔINV	-0.916*	-1.021*
	(-1.76)	(-2.05)
SoftAssets	0.568***	0.571***
	(3.88)	(3.91)
Δ*CashSale*	0.027***	0.027***
	(3.02)	(3.06)
Δ*Employee*	-0.007	-0.008
	(-0.70)	(-0.76)
RET	0.074**	0.086**
	(2.12)	(2.38)
Δ*Accruals*	-0.025	0.161*
	(-0.36)	(1.69)
Year FE	Yes	Yes
Industry FE	Yes	Yes
Observations	50,235	50,235
Pseudo R^2	0.052	0.053

Overall, the results in Table 4 support our Hypothesis 2. We demonstrate that for firms with improved earnings performance, managers' self-referential language in the MD&A may signal potential financial misreporting and future restatements.

CONCLUSION

This study examines the strategic use of pronouns in the MD&A section of annual reports. We investigate whether managers implicitly claim credit for positive firm performance through pronoun usage and if these language choices are associated with future financial restatements. Our findings reveal that managers of firms with earnings growth tend to use more self-inclusive pronouns and fewer self-exclusive words in the MD&A, particularly as earnings increases become more substantial. We also find that such self-referential language

patterns are associated with a higher likelihood of future financial restatements.

Our research contributes to literature in several ways. First, we extend the understanding of language biases by demonstrating how managers use pronouns in the MD&A to implicitly claim credit for favorable firm performance. Second, we provide new insights into potential indicators of financial misstatements by linking the pronoun usage in the MD&A with the likelihood of future restatements. These findings highlight the importance of considering not only the content of corporate disclosures but also how the information is presented. Our study has implications for various stakeholders, including investors, analysts, auditors, and regulators, who can leverage these insights to improve their assessment of financial report credibility and overall corporate communication transparency.

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Appendix A. Variable Definitions

Variable	Definition
Self-referential Language-related Variables	
FirstPronoun	The number of sentences with first-person pronouns (i.e., "we", "us", and "our") scaled by the total number of sentences in the MD&A, and then multiplied by ten.
Company	The number of sentences with self-exclusive languages (i.e., "the company") scaled by the total number of sentences in the MD&A, and then multiplied by ten.
SelfRef	A measure of managers' self-references, defined by subtracting the measure of self-exclusive languages (*Company*) from the measure of self-inclusive languages (*FirstPronoun*).
Restatement Variables	
Restate	An indicator variable that equals one if financial statements in a specific year are later restated, and zero otherwise.
RestateIncr	An indicator variable that equals one if financial statements in a specific year contain income-increasing misstatements and are later restated, and zero otherwise.
Other Variables	
ΔROA	The change in *ROA* from the previous year to the current year, where *ROA* is the income before extraordinary items scaled by the average total assets.
ROA_Increase	An indicator variable that equals one if *ROA* in the current year is greater than the previous year, and zero otherwise.
Length	The natural logarithm of the total number of words in the MD&A.
Size	The natural logarithm of a firm's total assets.
MB	The ratio of a firm's market value of equity to book value of equity.
ΔREC	The change in *REC* from the previous year to the current year, where *REC* is the total receivables scaled by the total assets.
ΔINV	The change in *INV* from the previous year to the current year, where *INV* is the total inventories scaled by the total assets.
SoftAssets	The soft assets defined as (*Total Assets* - *PPENT* - *CHE*) / (*Total Assets*), where *PPENT* is net property plant & equipment, and *CHE* is cash and short-term investments.
$\Delta CashSale$	The percentage change in *CashSale* from the previous year to the current year, where *CashSale* is the total sales in the current year minus the changes in total receivables from the previous year to the current year.
$\Delta Employee$	The absolute percentage change in the total number of employees from the previous year to the current year.
RET	The cumulative stock return over the fiscal year.
$\Delta Accruals$	The change in total accruals from the previous year to the current year. The total accruals is calculated as (*IBC* - (*OANCF* - *XIDOC*)) / (*Total Assets*), where *IBC* is income before extraordinary items, *OANCF* is net cash flow from operating activities, and *XIDOC* is cash flow from extraordinary items and discontinued operations.