The Impact of Individual and Collective Attribution on Earnings Calls Impression Management By Nathan Chiu

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Abstract
The thesis revolves around the language used by executives on earnings calls to respond to analysts’ questions on business performance and strategy. Every fiscal quarter, most publicly traded companies report financial performance over an audio call to analysts. The equity analysts, in turn, factor in the information conveyed over the call into their fundamental analysis of the company’s stock price, which drives their buy, sell, or hold recommendation. Earning calls consist of two components, the presentation as well as the questions and answers section. The CEO and CFO typically read financial information such as sales numbers modeled after the companies’ 10-K and 10-Q. In the Q&A section, analysts ask questions about specific financial indicators or the firm’s overarching business strategy to which company management can respond. Given that executives cannot predict analysts’ questions with complete certainty, executives’ responses tend to be more unscripted than in the presentation section. Executives often have coaches who provide instruction on how to best respond to questions on challenging situations such as declining profit or impending litigation. Following the completion of the earnings call, the stock price can drastically change if significant news or major guidance revision is disclosed. Written transcripts of earnings calls are typically collected and read post-hoc by investors researching the fundamentals of the company. More and more investment professionals are seeking more information from parsing the tone and syntax of executives’ language on the calls, a field of decision-making literature that this paper seeks to contribute to. The objective of this paper is two-fold: first, understanding how executives currently frame their responses to questions about good and bad events in terms of self-centered and collective attribution. Second, the paper determines the best rhetorical strategy of the two aforementioned options for executives to use to manage the impressions of analysts and clearly communicate business performance. As such, the paper compares and contrasts the language pattern and reveals what pattern garners the most favorable response and perception from investors and the broader audience. The paper finds that in both downturns and strong quarters, analysts and hence the market responds favorably to self-referential, individualist pronoun usage (“I”, “mine”) as opposed to self-referential, collectivist pronouns (“we”, “our”). Other syntactical dimensions such as internal and external attribution are examined as secondary characteristics of executives’ speech, providing additional avenues for further research.

Keywords
management

Disciplines
Business
The Impact of Individual and Collective Attribution on Earnings Calls Impression Management

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An Undergraduate Thesis submitted in partial fulfillment of the requirements for the

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MAY 2020
Acknowledgements

The author would like to extend a warm thank you to Polly Kang for constant guidance and feedback over the course of the past academic year from conception of the idea to its completion in this thesis. From experimental design to data wrangling, the day to day advice was paramount in the completion of the thesis. Thank you to Professor Maurice Schweitzer for letting me present preliminary findings to the lab and for the straightforward criticism as well as the illuminating questions on earnings calls. Another thank you to Bethany Hsiao for assistance procuring and analyzing the data — as a not-so-technically inclined researcher, the author found the support immensely helpful. Thank you to Luis Palacios and Eunji Oh from Wharton Research Data Services (WRDS) for meeting me in person on several occasions, pulling down sample datasets, and answering my incessant stream of questions over the phone and email. The author would also like to recognize the peer feedback from fellow JWS students in the WH 399 class as well as the hard work of Professor Cathy Schrand and Teaching Assistant Tong Liu in overseeing all of the theses.
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1.1 Abstract

The thesis revolves around the language used by executives on earnings calls to respond to analysts’ questions on business performance and strategy. Every fiscal quarter, most publicly traded companies report financial performance over an audio call to analysts. The equity analysts, in turn, factor in the information conveyed over the call into their fundamental analysis of the company’s stock price, which drives their buy, sell, or hold recommendation. Earning calls consist of two components, the presentation as well as the questions and answers section. The CEO and CFO typically read financial information such as sales numbers modeled after the companies’ 10-K and 10-Q. In the Q&A section, analysts ask questions about specific financial indicators or the firm’s overarching business strategy to which company management can respond. Given that executives cannot predict analysts’ questions with complete certainty, executives’ responses tend to be more unscripted than in the presentation section. Executives often have coaches who provide instruction on how to best respond to questions on challenging situations such as declining profit or impending litigation. Following the completion of the earnings call, the stock price can drastically change if significant news or major guidance revision is disclosed. Written transcripts of earnings calls are typically collected and read post-hoc by investors researching the fundamentals of the company. More and more investment professionals are seeking more information from parsing the tone and syntax of executives’ language on the calls, a field of decision-making literature that this paper seeks to contribute to.

The objective of this paper is two-fold: first, understanding how executives currently frame their responses to questions about good and bad events in terms of self-centered and collective attribution. Second, the paper determines the best rhetorical strategy of the two aforementioned options for executives to use to manage the impressions of analysts and clearly communicate business performance. As such, the paper compares and contrasts the language pattern and reveals what pattern garners the most favorable response and perception from investors and the broader audience.

The paper finds that in both downturns and strong quarters, analysts and hence the market responds favorably to self-referential, individualist pronoun usage (“I”, “mine”) as opposed to self-referential, collectivist pronouns (“we”, “our”). Other syntactical dimensions such as internal and external attribution are examined as secondary characteristics of executives’ speech, providing additional avenues for further research.

1.2 Contribution Statement

Uncovering the answer to how the language of perspective and attribution impacts investors’ perceptions of the firm and executives themselves bears major implications for corporate managers and financial analysts as well as the general populace. From reading this paper, managers can understand effective ways of communicating positive news to further boost perception of their business and assuaging fear following a negative business event. Analysts can understand how executives currently signal business performance subconsciously through their usage of pronouns and individual versus collectivist framing. This study will also include an online survey distributed via Qualtrics asking participants to read these excerpts, meaning that the implications go beyond a business context and speak to rhetorical strategies relevant for non-business participants. Earnings calls language research, therefore, has immediate ramifications.
for both business people and laypeople interested in how earnings calls affects businesses at large.

CEOs, CFOs, and other executives presenting on earnings calls will find this analysis intriguing and useful because their main objective on the call involves not only reporting on business performance, but also promoting their firm to analysts, who ideally assign a favorable designation to the company. For instance, some questions that the research will address include: “Is it better to take personal accountability and hence use individual-focused pronouns like ‘I’ and ‘me’ during a downturn quarter or is it better to address the problem in solidarity as a group or dilute blame to broader external, outside forces through pronouns like ‘we’ and ‘our’?” and “Is it better to use self-referential individualistic or collectivist language in quarters of strong earnings to continue the momentum?”. Sentiment analysis of the text from the Q&A section of earnings calls will also illuminate further insights on whether attributing causes of good and bad business events to internal or external causes appeals to analysts and markets. The analysis of this research also uncovers what rhetorical strategies executives among the Fortune 500 currently employ with regard to individual and collective framing. In addition, these current practices will be compared to survey results on whether individual or collective framing is more effective at managing analysts’ impressions. As discussed later in the data and methods section, the dependent variables measured in the lab are the perceptions of analysts and general readers. A measure of actual EPS versus predicted EPS will also be included in the analysis, enabling CEOs to tangibly see how usage of individualistic versus collectivistic pronouns translate into financial results. From this juxtaposition, executives can understand patterns in pronoun usage and glean insight on best practices for improving how they present on earnings calls, thereby maintaining and improving the value of their publicly-traded company. In reading this paper, management executives can gain actionable practices for minimizing negative variance that stems from poor quarterly results and maximizing overperformance in quarters of strong earnings.

For other listeners on an earnings call, namely the analysts, the implications of this paper are slightly different. Analysts’ goal on the earnings call is to accurately assess the value of the firm and construct rigorous financial models. As such, analysts filter through the rhetoric of CEOs to get a true understanding of the firm’s fundamental performance. From reading the paper, analysts can gain a better understanding of the linguistic cues and practices used CEOs in both good and bad business events to more accurately assess the firm. Language matters, and while the discrepancies in using “me” versus “we” to talk about oneself may seem trivial, in the context of financial valuation, this soft data can help inform more accurate predictions and models. For instance, analysts can deduce that a CEO who responds to a question on firm overperformance with “I” pronouns is competent and factors that into a higher valuation of the firm’s security. Similarly, analysts can compare pronoun usage with the difference in estimated and actual EPS for a given fiscal quarter, thereby enabling them to more accurately assess the firm. Language matters, and while the discrepancies in using “me” versus “we” to talk about oneself may seem trivial, in the context of financial valuation, this soft data can help inform more accurate predictions and models. As discussed in the literature review, finance and accounting scholars have already began looking into usage of colloquialism and laughter over these audio earnings calls, reinforcing the significance and potential of earnings calls as a field of research. Analysts need as much fundamental information to include in their modeling and projections and the language employed on an earnings call, especially by key corporate leaders, can provide helpful clues to make analysts’ predictions more accurate and precise.
Beyond the business context, people often have to give presentations on behalf of a larger group just as a CEO does on earnings call for their firm. The research is supplemented by lab exercises and Qualtrics surveys to see if these rhetorical strategies hold in managing the impression of everyday folks, broadening the scope of results to impact the broader population. Although everyday presentations in a non-business context may not be as high stakes as earnings calls, psychologically, a general audience will be interested to see if there is any causal effect on how language surround perspective influences the efficacy, namely the persuasiveness and impression of the presenter given. For instance, if the research finds that using “we” in bad events is more reassuring to an audience, the general presenter could change their presentation so that they say “we” more often to experience a similar effect in boosting persuasiveness in the eyes of the audience.

2.1 Literature Review

Sentiment analysis of earnings calls draws upon disparate disciplines ranging from decision making, management, finance, accounting, psychology, linguistics, and data science to derive conclusions on the optimal attribution techniques employed by individuals when publicly speaking. Existing literature on sentiment analysis as well as earnings calls impression management can therefore be divided into one of the aforementioned subject buckets.

Management scholars have explored the psychological underpinnings for taking and sharing credit as well as blame, underpinning the attributional language this paper explores. Chaudhry and Loewenstein formulated the responsibility exchange theory that stipulates that the four forms of communication, thanking, apologizing, bragging, and blaming bear the tradeoff between appearing competent and appearing warm (2019). Schilke and Huang examine how brief interpersonal contact causes the trustors to become more accurate in decisions and engage in perspective taking of the other side (2018). Given that analysts get this “brief interpersonal contact” in the question and answer section of earnings calls, this paper reinforces the importance of the question and answer section in earnings calls in analysts’ ability to make accurate valuation decisions. Ülkümen and Malle discuss variations in attribution language regarding negative events, delineating between knowable and random uncertainty (2016). In their paper, they assert that confidence statements such as “I am 90% sure” align with knowable uncertainty and that likelihood statements such as “I’d say there is a 90% chance” align with random uncertainty. These nuances in natural language processing provide help in further unpacking how managerial attribution functions.

Decision-making and management studies such as (Chatterjee 2007) posit CEO narcissism as a possible explanation for good and bad business outcomes. The level of confidence of the CEO matters as shown by research negatively or positively impact the stock price reaction to the company’s earnings call and hence, overall business performance. To operationalize “narcissism”, Chatterjee and Hambrick look at the behavioral determinants of risk-taking for CEOs (2007). Chatterjee and Hambrick look at the CEOs responses to stimuli and hypothesize that narcissistic CEOs are more prone to risk-taking as exhibited by their higher capital expenditures and investments in more risky research and development, which can produce stronger, though uncertain returns for the firm. Chatterjee and Hambrick also coined the term “capability cues,” which are contextual signs of a CEO’s efficacy as seen in the organization’s performance and social word and praise around the CEO (2007). These capability cues, Chatterjee and Hambrick argue, impact CEO’s riskiness when it comes to decision making.
Capability cues in the context of my research could be the level of individualistic language (“I” pronouns) versus collectivistic language (“we”). However, these studies focus on CEOs’ business decisions rather than language employed in an earnings call. Therefore, this research paper occupies a different niche through illuminating the rhetorical strategies that executives can use and measuring analysts’ perceptions, a novel departure from prior studies that revolve around executive investment decisions and compensation.

Delving more specifically into CEO narcissism, executive’s psychological dispositions have a large influence on organizational outcomes and merit studying (Chatterjee & Hambrick, 2007). Chatterjee and Hambrick constructed a five feature narcissism index that compiled measurements like the prominence of the CEO’s picture in the annual report, CEO’s prominence in press releases, CEO’s use of singular pronouns in interviews, ratio of CEO’s cash compensation to the second highest paid executive’s cash salary, and the same ratio for non-cash payment. Strategic dynamism was measured by compiling financial measures controllable by the CEO like advertising spend and R&D spending. The greater the narcissism of the CEO, the greater the firm’s dynamism of strategy. The higher the CEO’s narcissism, the higher number and size of acquisitions. The more narcissism, the greater the fluctuation in firm performance. The study found support for all hypotheses. CEO narcissism is positively related to the firm’s dynamism, number of acquisitions, and firm volatility. Narcissistic CEOs favor bold actions that draw attention and result in either big gains or losses, which can be measured through our research on singular first-person or third-person pronoun usage in attribution on earnings calls.

Risk taking by business executives is an interpretative act than purely economics driven. Some theorists think that narcissists are driven internally, and others think that they are driven by social adulation and others think that they respond in anger when criticized. And this may offer the psychological underpinning for the way in which CEOs frame their responses on earning call Q&A sessions (Chatterjee and Hambrick, 2011). According to Chatterjee & Hambrick, narcissistic CEOs are less responsive to objective indicators and highly receptive to social praise (2011). Another part of the hypothesis is that there is a positive relationship between the recent performance of the firm and risk-taking. However, CEO narcissism will diminish the effect of recent performance on risk-taking. As with strategic dynamism, risk taking was operationalized by taking the logged sum of R&S, capex, and acquisitions, which represented spending with uncertain returns. CEO narcissism was measured by “unobtrusive indicators” like the positioning of the CEO’s picture and the number of times the CEO’s name was mentioned by press releases gathered on Factiva. Capability cues was measured by summing total shareholder returns and return on assets on the financial side. Chatterjee and Hambrick then assessed social praise by performing a content analysis of press releases from prominent business journals. Recent objective performance was positively related to current risk taking. CEO narcissism diminished the strength of the positive relationship, however. There is limited support that social praise drives risky behavior. This may be linked to whether or not CEOs use “I” more often than “we”.

In terms of impression management, communications literature around linguistic patterns in earnings calls is fairly established and this paper supplements this backbone through taking a more managerial and qualitative approach to studying the impact of earnings calls. Indeed, scholars have conducted textual and audio analysis of conference calls to gauge their effect on business outcomes. In her review of linguistic and audio analysis of earnings call, Camiciottoli found unique combinations of informal and formal language used by executives in earning calls Q&A, speaking to how colloquialism in tone helps build rapport and trust between executives and analysts (Camiciottoli 2019). The frequency of “we” used by executives also reveal how
closely they identify with the company. Camiciottoli also talks about how rhetorical adjectives such as “very” and “really” suggests that executives have information they don’t want to disclose (2018). She also looks into how these boosters are used in earnings calls in times of financial crisis versus times of financial recovery. This paper will emulate prior literature’s longitudinal comparison across quarters, providing a view of usage of individualistic and collectivist pronouns variation across quarters as well as how the stock market responds to pronoun language given poor or strong earnings. Camiciottoli further looks at how executives use explicit language to establish trustworthiness and rapport with analysts and the market at large (2011). Here, analysts use anecdotal asks to get as much information as possible, showing how obfuscating the request and making it more polite enables analysts to achieve their goal of garnering as much information as possible for their models (2009). Looking at the “anecdotal” response from executives could reveal the efficacy of executives’ impression management of analysts. While several scholars including Camiciottoli have examined the usage of euphemisms and other linguistic mannerisms used by executives on earnings calls on firm value outcomes, few scholars have drawn the connection between how differences in pronoun usage and hence, attribution of good and bad business events are viewed by analysts and investors.

Elucidating more on internal versus external attribution, finance and accounting researchers have found that investors react more negatively to an earning call following a quarter with high seasonality, indicating how investors overweight the lower earnings results given historical data (Chang et al. 2014). In terms of seasonality, Chang et al. looked at how the market reacted to earnings calls following a highly seasonal quarter and found that investors were irrationally harsh, a fear that could be assuaged by language and confidence of the executives presenting (2014). Strong external headwinds as with a volatile macroeconomic according to attribution theory would elicit collective focused pronoun usage from executives. This information will be used in our research to see whether individualistic pronouns like “I” or collectivistic ones like “we” more effectively minimizes the stock price decline following a lower earnings result.

Earning calls have emerged as a prominent source of information for researchers. Researchers have also found that the qualitative information such as the tone of voice used by the executives and level of optimistic language employed are stronger predictors of a firm’s performance (Lee et al. 2014). In the Q&A section of the earnings call, speech is more unscripted. As such, executives’ tone and language are more communicative about the firm’s financial health. Optimistic and pessimistic sentiment in this section has dramatic ramifications for the value of the firm, which can decline if the executive doesn’t respond optimistically. Indeed, Chen et al. found that the intraday trading price declined significantly if the tone of voice used by the analyst was negative (2018). While the field of earnings call language research is becoming more and more popular, our research will contribute by looking at variations in individualistic and collectivist language across quarters of earnings calls for the same firm in seasonal industries. As such, this thesis builds upon Chen et al.’s discovery that optimism and positivity in tone is impactful on stock performance immediately following earnings calls. Moreover, the paper delves into determining how firms can best present themselves and give a positive impression to investors regardless of the ups and downs of their industry is critical for this paper.

This research also leverages access to new earnings call transcripts as well as sentiment analysis software often used to study financial language. Through Wharton Research and Data Services (WRDS), a proprietary system is in place that allows the procurement of raw company
earnings call transcript. The transcripts can be broken down into different speaking components from the Q&A section and then run through a sentiment analysis software, LIWC2015. LIWC2015 allows researchers to look for significant differences in individualistic and collectivistic language as well as other characteristics such as aggression and tentativeness according to its documentation (Pennebaker 2015). Methodologically, other papers have used this sentiment analysis software to analyze twitter responses to predict election outcomes (Tumasjan et al. 2010). Another paper examines internal and external attribution of managers on earnings calls and uses the LIWC software (Chen 2012). However, Chen placed the entire conference call transcript into the software. Therefore, there is novelty in applying LIWC2015 to the remarks in the Q&A section of earnings calls. An interdisciplinary method consisting of sentiment analysis and surveys further distinguish this research from preceding papers.

The tone of the analyst also depends on the rapport between the analyst and the executive speaking in the Q&A section of the earnings call, drawing upon the field of social psychology. I would like to see how the language used by executives also impacts analysts and their language in asking questions. Agency theory or differences in goals between the analysts listening to the call and CEOs presenting can cause divergent behavior. To manage impressions, the CEO may use more “I” terms in downturns or “we” turn in upside moments to present themselves and the company in the best light possible (Davidson et al., 2004). Charismatic CEOs employ impression management and are more likely to deceive shareholders (Fanelli 2006). This paper looks at dyadic influence between managers and analysts and how managers can use impression management to change the analysts’ assessments in certain conditions (Washburn and Bromiley, 2014). Inclusive pronouns like “we” can “reveal how “I” and “we” pronouns can help writers create a sense of newsworthiness and novelty about their work, showing how they are plugging disciplinary knowledge gaps. Inclusive pronouns can act as a positive politeness device by describing and/or critiquing common disciplinary practices and elaborating arguments on behalf of the community (Harwood, 2005). In terms of building trust quickly, these papers are related to Schilke and Huang’s paper, whereby analysts can make more accurate decisions following brief interpersonal contact (2019).

Other relevant papers also link textual analysis of earnings calls with financial indicators, employing more of an accounting research approach. Other researchers have conducted robust analysis on cumulative abnormal returns following earnings calls. Lee et al. examine the significance of text analysis for predicting stock prices (2014). News on companies has become more prevalent and have an immediate impact on stock prices. Several other scholars have tracked how texts can influence market trends. While individual investors lack access to real-time trading tools and information, including textual analysis in financial models derived from publicly released 8-K financial statements, small investors can monitor and factor in event information like their institutional counterparts. Lee et al. used a text-corpus methodology to understand the impact of textual analysis on the prediction of stock price movements, whether it be up, down, or stay. The excerpts on which the textual analysis was performed came from publicly released 8-K reports, which companies are required to complete following a major event such as bankruptcies. To parse, Lee et al. removed HTML tags and irrelevant tables (2014). The researchers collected the 8-Ks for all S&P 500 companies between 2002 and 2012. The percentage change in stock price following an announcement was also normalized by subtracting the same difference in the overall S&P 500 index. The researchers also organized the 8-Ks into 21 event features and used a unigram model. The earnings surprise feature of the textual analysis reported a 50% accuracy in predicting future stock movement. Earnings surprise refers to the
difference in consensus EPS and actual EPS. Overall, several models that included textual considerations had a relative improved accuracy of 10%. Lee et al. conjecture that sentiment analysis of the 8-K text excerpts doesn’t outperform the unigram model because separating the text into positive and negative values doesn’t accurately model the financial world well. For our research on positive and negative earnings calls, our sentiment analysis will consider general valence of positive and negative sentiment and employ a comparison between consensus and actual EPS.

Other researchers focus on earning releases, which are not the same as the more formal earnings calls. Henry examines how the tone of the earnings press releases influences investors’ reactions. Tone refers to the linguistic and stylistic attributes of the language used. To explain why investors are influenced by the tone of earnings release language, Henry draws upon prospect theory, which stipulates that “framing financial performance in positive terms causes investors to think about the results in terms of increases relative to reference points” (2008). While the SEC regulates the structure and amount of disclosure of firms, the contents of press releases is up to the discretion of the company. The rhetorical analysis also unpacks the informational-promotional role of press releases, looking at the subtleties in how the language of press releases boost the firm’s image and conveys information to investors. Historically, press releases have grown more and more important as shown by the increase in average length of press releases over the years. Other studies found that there is a positive correlation between market returns and the number of optimistic statements made in a press release. Henry poses the question of whether investors are influenced by how earnings press releases are phrased. Henry offers a two-part hypothesis: First, a more positive tone of press releases positively affects investors’ reactions. Secondly, the tone of press releases bears the positive impact even when controlling for actual financial results. The paper also discusses investor complexity as part of its multipart hypothesis, but it isn’t relevant to the paper. Sample selection came from Compustat, CRSP, and IBES. Abnormal market returns were computed through the accumulated market returns in excess of a broad market portfolio over a period of time. Henry used Diction 5.0 to analyze the textual content. Tone is measured through the frequency of positive and negative words. Henry subsequently developed a word list of positive and negative words respectively. Tone and CAR were positively correlated, which suggests that profitable companies tend to release more positively worded press releases. The second regression included tone as an independent variable as well as financial and control variables. This model found that the market reacts positively to increases in positive tone, but only to a certain extent. Henry sets the foundational framework for examining the managerial credibility of a company affects the language employed in the press releases and hence, the market’s reaction. Moreover, Henry poses the question of whether all firms elect to use opportunistic language since the content of press releases are left to firms’ discretion.

To add further justification for the shift in focus toward “soft” information, scholar Demers finds that it yields more insight than traditional quantitative only analysis. Demers examines whether “soft” information is incrementally more informative than the “hard” information given by companies. Brandt et al (2008) find that the scope of information released around the announcement date is larger than most expect. Indeed, most of the market’s reaction is attributable to information outside of earnings numbers. In particular, managerial language used in earnings announcements offer a new source of data. This is aligned with the recent emergence of linguistic analysis software used by investment firms. Demers hypothesizes that markets respond more to the soft information given by managers with more stellar reputations.
Quarterly earnings announcements are curated from PR Newswire. As with other studies, Demers made sure to clean the data for tables to ensure the linguistics software could run smoothly. Demers used word count algorithms and other text analysis software to parse through the earnings announcements. Demers measured net optimism and certainty on a bounded scale from 0 to 100 through a formula that added and subtracted several word variables like tenacity and insistence. Then, the study computed the CAR over a period of time and compared the language of the press release to the returns. The study found that soft information uncertainty is significantly negatively associated with idiosyncratic volatility. In other words, the more complex and wavering the language used in the press release, the more uncertain and greater riskiness investors see in the firm’s cash flows. In terms of setting, the market also responds more to soft information when hard, financial measures come with noise such as with tech companies and those with a high P/E or R&D expenditure.

Researchers have also looked at general valence of texts and seen the response of markets. Davis et al. look at the implications of optimistic and pessimistic language in earnings press releases on investors’ perceptions of future expected firm performance. Literature prior to this study have examined how the numerical content, namely financial content of press releases have impacted investors. However, the narrative component warrants more exploration. Since other scholars have found that press releases usually communicate non-neutral values and sentiments, pessimistic and optimistic language appear in greater variation in press releases, especially since the tone of language is less regulated than numerical content. Scholars also found that managerial narratives in disclosures only resonate if they are verifiable. Davis et al. hypothesize that levels of optimistic and pessimistic language reliably indicate managers’ expectations for expected future firm performance. Even controlling for earnings surprise, markets respond significantly to levels of optimistic and pessimistic language. In terms of methods, earnings press releases are required by the NYSE and NASDAQ and both the FEI and NIRI have released reports on how to best craft these statements. The researchers sourced the earnings press releases from PR Newswire for journalists and examined stock returns around the press release date. For textual analysis, Davis et al used Diction 5.0 on the reports. Davis et al found that press releases increased in length by 15 words per month over the sampling period. From the multivariate regression model, the results show that market participants find the language used in press releases credible as indications of future firm performance.

Most recently, accounting scholars Chen and Loftus have completed a similar study in attribution on earnings calls in 2019. The thesis corroborates these findings albeit through a slightly different methodology. Chen and Loftus’ paper explores the impact of both individual and collective self-inclusive language and self-exclusive language on investors’ reactions given good or bad performance news (2019). Results indicate that individual self-inclusive languages drive positive market reactions in both good and bad business events. Results also show a negative reaction to collective self-inclusive language in bad events. In terms of methodology, the researchers sent a MTurk survey to several hundred participants to gauge what type of pronouns people prefer. Participants preferred collective pronouns, which is different from the actual market data which suggests a preference for self-exclusive individualistic pronoun usage (Chen, Loftus 2019). The paper also involved an archival study with earnings call transcripts from Thomson Financial and then Seeking Alpha, focusing on CEO speaking roles. They also compared the usage of pronouns between CEOs. The market reaction is measured through a regression CAR consisting of factors from LIWC. The actual market reaction around the event of
the earnings call was compared to a multifactor market model built off of the Fama-French model, a famous and standard asset-pricing model in finance.

Researchers are also delving into the actual audio files recorded from earnings calls. Call et al. found that analysts that used humor in their questions got more speaking time and received longer responses from managers (2019). On the manager side, when managers use humor on earnings calls, “abnormal returns surrounding the call are higher, analysts’ stock recommendation revisions following the call are more positive, and the tone of media coverage of the firm is more favorable” (Call et al. 2019). The researchers also conducted a cumulative abnormal returns analysis surrounding the earnings call with self-constructed regression variables such as the extent humor was used by the manager and analyst as well as the positivity of the tone. Similarly, individual analyst data was pulled from IBES records file though the analyst codes no longer correspond. Rather than measure humor, which requires constructing separate variables, this research measures attribution through pronoun usage, which is easier to measure and already done by the LIWC2015 software. However, Call et al.’s research does provide a helpful point of reference for conducting event studies surrounding earnings calls in the future.

As a whole, existing literature points toward the growing momentum in textual analysis of earnings call transcripts to understand impression management between executives and analysts. Past literature relied on complicated financial and data analyses that can be simplified by using LIWC 2015 software. Several theories around responsibility and attribution remain relevant for this study and will serve as the foundational framework for unpacking the psychological implications of executives’ speech in the Q&A section.

2.2 Hypothesis (Survey)

H1: Given overperformance, observers view CEOs who take individual credit (use more “I” words) more favorably than CEOs who share credit (use more “we” words).

H2: Given a negative instance of business underperformance, observers view CEOs who share the blame (“we” words) more favorably than CEOs who take blame (“I” words).

2.2 Hypothesis (Sentiment Analysis)

H1: Given overperformance, CEOs use more individualistic words (higher personal accountability) than collectivist words (lower personal accountability).

H2: Given underperformance, CEOs use more collectivist words (lower personal accountability) than individualistic words (higher personal accountability)

The sentiment analysis of past company earnings call transcripts is to find out what happens in the real world. Each row consists of a consolidated corpus of executive responses to analysts’ questions. There is one row of data for each quarterly earnings call. Each row of analyst and management response will be run through LIWC2015 and assigned an individual and collective pronoun sentiment score.

The paper explores how people perceive CEOs and firms based on the language (individualistic “I” or collectivist “we” ) used by CEOs and CFOs during earnings calls. Each
firm’s quarterly response is one data point, so we will have 500 data points each quarter. We will binary code each data point: 1 if the company met their earnings expectations and 0 if they did not. The binary variable depends on the standardized unanticipated earnings surprise (SUE) with the variable 1 assigned to positive SUE scores and 0 to negative SUE scores. This way, we can infer whether or not CEOs and CFOs share or take credit when they meet expectations or share and take blame when they do not meet expectations.

3.1 Data & Methods (Qualtrics Survey)

The experiment for the thesis consists of two distinct steps: First performing a Qualtrics survey gauging perceptions of the CEO and firm depending on individualistic or collectivist pronoun language used and second, sentiment analysis on the earnings call transcripts. The former experimental survey approach requires registration on AsPredicted, which was completed late last year to separate causal outcomes from the exploratory analyses. Overall, the combination of data analytics through sentiment analysis, survey analysis, and experimental component in the behavioral lab provides a robust assortment of data to understand how earnings calls language used by executives influences listeners and enables executives to manage the impressions of analysts who listen into the call.

The experimental design of the survey consists of a two by two panel as well as two controls for baseline comparisons of perception of the executives and the firm as a whole in the Q&A section of the earnings call (See Figure 3 for the illustration of the panel design). The two dimensions for the former are over and underperformance of the firm or more broadly, good and negative events for the firm. The other axis is the CEO’s usage of pronouns when assigning credit and or blame. For instance, the CEO can use individualistic “I” pronouns to take credit in a case of firm overperformance or share credit by using the collectivist “we” pronoun. Questions in both the survey and experiment gauge participants’ perception of the CEO and the firm as a whole as well as gather basic demographic information.

In the survey, questions follow the one excerpt that participants read such as “in the excerpt that you read, to what extent was the CEO passing on the blame for underperformance?” or “sharing credit for overperformance”. Rather than copy in exact quotes from earnings calls in verbatim, researchers summarized and simplified quotes to use across the four conditions such as “We have restored this company to profitability. We have built a strong market position. We have positioned the company for success” for the condition where the executive shares credit and outperforms in a quarter (Figure 7). Each three-sentence summary of an earnings call statement is designed to be obvious in terms of pronoun usage as well as clearly indicate strong or weak financial firm performance in the given quarter. The summaries are derived from actual 2018 S&P 500 earnings call as documented in Figure 5. An odd-numbered Likert scale is appropriate because it prevents participants from choosing a neutral option, polarizing participants into selecting an option tilted toward approval or disapproval. The survey employs a between-subjects approach with each participant randomly assigned to read an excerpt from one of the four conditions. Exact questions are documented in the appendix under Figure 7 and Figure 8.

The second block of survey questions in Figure 8 consists of perceptions of the CEO in terms of characteristic traits. The question is as follows: “After reading the excerpt, to what extent was the CEO: trustworthy, competent, benevolent, has integrity, persuasive, reassuring, narcissistic, collectivistic”. Each trait lies on a seven-point Likert scale.
The third block of questions emulates the previous two questions and evaluates participants’ view of the firm as a whole. After reading the excerpt, survey participants are asked: “to what extent do you think the company: outperformed expectations, underperformed expectations, is financially stable, is financially unstable, is a well-run company, or is run poorly?” (Figure 8). Each of the performance measures is evaluated on a seven-point scale just as with the CEO characteristics. All responses on the seven-point scale constitute the dependent variable and the CEO and firm characteristics constitute the independent variable.

To test the hypothesis, a pair-wise statistical t-test will be performed across both dimensions of attribution as well as quarterly performance. As discussed further in the results, the t-tests measures for significant differences in average responses and hence perceptions from survey participants regarding CEO and overall firm performance.

3.1 Data & Methods (Archival Sentiment Analysis)

Through the Wharton Research Data Services (WRDS) library, we have managed to procure archival, quarterly earnings call data for the S&P 500 companies from 2008 to 2018. Since each of the 500 S&P 500 companies has four quarterly earnings a year, there should be 2,000 earnings calls to examine in a given year. However, some years have less than 2,000 observations due to firms merging or changing on the S&P list. The researchers selected the S&P 500 companies to examine because of the relatively low turnover rate of S&P 500 companies and considering most if not all S&P 500 companies report earnings over an earnings call. We also considered examining the Fortune 500 company, but ultimately realized that the turnover rate was too high and the list included private companies that do not perform earnings calls.

The researchers initially used the LexisNexis database to source calls, but sadly the backend of the website broke, preventing us from grabbing more earnings calls for a comprehensive data set. While the raw transcript files pulled from LexisNexis provided a helpful exploratory glimpse into language used, we did not use these files beyond informing the writing for the four condition statements for the Qualtrics survey. Next, we used the newly launched Capital IQ datasets on WRDS data libraries, coding Python and SQL queries to download datasets containing all remarks made by executives and analysts, decomposed into individual comments (Figure 4).

Then we found key common identifiers such as gvkey through IBES such that we could pull in relevant earnings data. Using common company identifiers, we concatenated datasets to get the complete sample containing the earnings calls transcript texts as well as the associated earnings data. We then created additional Python code to aggregate the comments made for each earnings call into a single corpus, one version for questions and one version for answers (Figure 6). We then ran the corpuses in Figure 6 through LIWC2015 to get the sentiment analysis scores across various linguistic dimensions that are unpacked in the results section. As mentioned in the hypothesis section, the data points following sentiment analysis are sorted into two buckets: overperform and underperform. In a given quarter, if a firm received a positive standardized unanticipated earnings (SUE) number, it was assigned an “overperform” designation and “underperform” for negative (SUE). Due to errors in matching the company identifiers precisely, we ended up with a dataset of n = 1,070 observations instead of the expected 2,000. Later improvements involving using other common identifiers such as tickers did improve the accuracy of matching the data, resulting in a 20% improvement in accuracy.
As such for variables, there is the dependent earnings variable, SUE as well as the independent sentiment analysis variables from LIWC2015. Starting with SUE, standardized unanticipated earnings measures the actual earnings per share (EPS) differs from the surprise earnings mean, which is the arithmetic average of analysts’ estimates for EPS for a given fiscal quarter. Earnings per share refers to the amount an investor hypothetically makes for every dollar invested i.e. an EPS of .25 means that in a given quarter, an investor would have earned $.25 for every dollar invested. When SUE is above 0, the firm performed above expectations and if SUE is less than 0, then the firm performed below expectation. The formula for SUE is as follows: 

\[
\text{SUE} = \frac{(\text{Actual EPS} - \text{Surprise Mean EPS})}{\text{Standard Deviation}}.
\]

While this is the primary dependent variable for the sentiment analysis, we later realized that surprise mean is the average of analysts’ estimates at the time of the earnings call, preventing us from precisely understanding the causal link between earnings call language and firm financial performance. For future research, using cumulative abnormal return (CAR) with a short event window offers a better metric to evaluate investors’ and hence, the market’s response to earnings calls. While not as granular as CAR, the results from SUE aligned with our hypothesis and corroborated peer papers that used CAR, showing by replication the validity of the study.

The independent variables in the sentiment analysis study are the sentiment and linguistic scores assigned by LIWC2015. Summary variables such as “emotional tone” are measured in percentiles from zero to a hundred percent, standardized based on dictionaries that LIWC classifies as “emotional” (Graph 12). All other variables are measured in terms of percentage of total words used with least zero and the most a hundred percent as seen in Graph 15. As such the results of the sentiment analysis plots the sentiment percentiles and percentages on the y axis and the overperformance and underperformance labels on the x axis.

### 4.1 Results (Qualtrics Survey)

*Figure 9* features summary statistics for responses for all questions, namely the mean and variance across the four earnings call prompts assigned to participants with the sample n = 269. Plotting and visualizing the data along the four conditions Individualist Outperform, Individualist Underperform, Collectivist Outperform, and Collectivist Underperform yields the greatest insight (Graph 1-10). Each graph documents average survey participant responses on a scale of one to seven with one representing “not at all” and seven representing “very” with regards to agreement to the question.

*Graph 1* corresponds with “to what extent was the CEO trustworthy”, producing no statistically significant difference among the four conditions. However, it is notable that within the underperform category, participants did rate CEOs as more trustworthy when given the prompt with collectivist (“we”) pronouns. *Graph 2* corresponds with “to what extent did the CEO share credit for overperformance”. Both bars in the overperform category received higher ratings than underperform as expected. Similarly, within the overperform label, participants correctly identified that the CEO shared credit when using collectivist pronouns as opposed to individualist pronouns. This result functions mostly as an attention check and participants as a whole passed with \( p = .004 < \alpha = .05 \) between Individualist Outperform and Collectivist Outperform. *Graph 3* displays the extent to which participants trust individual CEOs. Participants significantly trusted CEOs in the Individualistic Underperform over the Collectivist
Underperform condition with a p-value of .003. Graph 4 illustrates the extent to which participants viewed CEOs as competent. Among the four conditions there were no significant differences with the outperform conditions having a slightly higher response than the underperform conditions. Graph 5 charts the extent to which the CEO is benevolent. Interestingly, there is a p = .04 difference between Individualistic Outperform and Collectivist Outperform favoring the latter and a p = .01 difference between Individualistic Underperform and Collectivist Underperform favoring the former. Graph 6 features participants’ response to how narcissistic they viewed the CEO. There was a significant difference between Individualistic Outperform and Collectivist Outperform with p < .001 with the former dominating. Graph 7 features participants’ response to how collective they view the CEO. There was a p = .009 difference in the outperform group and a p = .000 in the collectivist group both favoring the collective pronoun group. Graph 8 represents the responses to how participants view the financial stability of the entire company. There is a statistical difference where participants view firms where the CEO individualistic pronoun usage as significantly more stable compared to collectivist pronoun usage in the outperform condition with p = .003. Graph 9 reveals the extent to which participants view CEOs as having integrity. A statistically significant difference exists between Individualistic Underperform and Collectivist Underperform with p = .002, where individualistic language is viewed more favorably. Graph 10 assesses participants’ view that the firm will outperform expectations. There is a statistically significant difference between Individualistic Outperform and Collectivist Outperform where participants preferred Individualistic language as a predictor of future firm performance.

4.1 Results (Sentiment Analysis)

At an aggregate level, a total of n = 1,070 observations for the 2018 S&P 500 quarterly earnings calls were parsed through the LIWC 2015 software with each observation receiving a classification of LIWC2015’s 90 output variables. The sentiment scores of the were then sorted into underperform or overperform based on the SUE scores. Then a difference of means t-tests were conducted to find statistically significant differences. Graph 11 to Graph 15 plots sentiment scores on the y axis and the four conditions on the x axis. The conditions on the x axis are assigned on actual transcripts and words spoken by executives.

In Graph 11, executives use more individualistic language in both good and bad quarters. There is a statistical difference between Individualistic Outperform and Collectivist Outperform with p = .028 with more “I” pronouns used relative to “we” pronouns. In Graph 12, executives tend to use a higher proportion of emotional words in overperforming quarters than underperforming ones with p = .039. In Graph 13, positive emotion words appear in much higher frequency in outperforming earnings calls compared to underperforming calls with p = .054. Graph 14 shows how executives have a higher degree of analytical words in outperforming quarters compared to underperforming ones with p = .018. Finally, Graph 15 charts how CEOs use more tentative words such as “perhaps” and “maybe” in underperforming quarters than overperforming ones with p = .001.
4.2 Discussion

Reconciling the results of the Qualtrics survey and sentiment analysis shows how executives can cater their speech toward persuading analysts on future earnings calls. Starting with what CEOs are doing correctly, CEOs predominantly use self-inclusive individualistic pronouns such as “I” and “mine” in both underperforming and overperforming quarters (Graph 11), which aligns with slight edge to individualistic language in the eyes of survey participants with regard to overall firm’s reputation (Graph 8). Indeed, if a CEO is attempting to promote the firm, the CEO should use a larger proportion of “I” pronouns given the statistically significant difference in how favorably survey participants view the overall firm’s financial stability when the CEO employs individualistic language versus collectivist language. For CEOs concerned about their personal reputation, CEOs should also employ more individualistic pronouns in underperforming quarters because survey participants view CEOs who use individualistic language as having more integrity (Graph 9). Psychologically speaking, using “I” presumes accountability and competence, which is in line with current findings as was found in the Chen and Loftus paper (2019). Individualistic pronoun language is also most effective in maintaining the firm’s future outlook for performance. Since CEOs and other executives are trying to deliver forward looking guidance doing so with an “I” frame of reference is paramount because people view the firm’s performance as much stronger (Graph 10).

At the same time, executives should recognize the tradeoffs in adopting more individualistic language. First, CEOs would personally be viewed as more narcissistic naturally from using more “I” pronouns (Graph 6). However, this detriment is outweighed by the benefit of increased perceptions of personal integrity and competence as well as firm-wide financial stability and likelihood of future overperformances. On the metric of personal trust, in quarters of overperformance, CEOs should use collectivist language to promote unity and act in solidarity, and individualistic language in quarters of underperformance. Interestingly, individualistic language is looked upon favorably in terms of CEO benevolence in quarters of underperformance and vice versa in periods of overperformance. This result stems from the attributional phenomenon of taking blame and sharing credit, which generates an image of benevolence. Furthermore, under CEO narcissism, in quarters of underperformance, survey respondents viewed the collective pronoun usage as more narcissistic, which is in line with the sharing blame attribution theory, which renders the CEO more selfish in appearance. Similarly, as confirmed in the literature review, CEOs used more positive emotion words or optimistic language in quarters of overperformance, confirming the relationship between positivity and firm overperformance post-earnings calls. Therefore, CEO should evaluate their goals prior to the earnings call whether it be to bolster the entire firm’s image or boost their personal benevolence and adjust pronoun usage accordingly.

4.3 Areas of Further Research
This paper primarily utilizes standardized unanticipated earnings as its dependent variable for the sentiment analysis. However, a more precise measure is performing an event study to measure cumulative abnormal return to gauge investor response to the earnings calls more directly. WRDS already has a template of SAS code that produces an event study so future research can use the 2008 to 2018 S&P 500 company earnings calls and place them into the SAS code for more accurate analysis.

Beyond attribution, other linguistic features warrant further academic exploration. On actual earnings calls, CEOs disproportionately use more tentative language during underperforming quarters so it would be potentially rewarding to explore different rhetorical strategies for mitigating the response to uncertainty (Graph 15). Perhaps with additional preparation, executives can better field analysts’ questions and avoid a stock downswing following the earnings call. Another linguistic attribute of interest is analytical tone such as the use of industry specific jargon and the overall sophistication of language executive use on calls (Graph 14). Arguably related to tentativeness, the more technical the tone of the executive is, the more the stock overperforms. Narrowing down the type of certainty and technicality in language impresses investors the most therefore offers another promising avenue of research,

5.1 Conclusion:

With regard to attribution, the paper finds that CEOs in reality use more self-inclusive individualistic pronouns rather than self-inclusive collectivist pronouns in both underperforming and overperforming quarters. The paper found in the Qualtrics survey section measuring investors’ impressions through the proxy of survey participants that earnings calls audiences prefer individualistic and collectivist pronouns depending on the executive’s objective whether it be enhancing personal or firm-wide reputation. However, across the majority of attributes, it is systematically better to use individualistic language to bolster one’s and the firm’s image of competence and financial stability, replicating the results of recently published paper in the earnings calls textual analysis field.
Figure 1. Definitional framework.

Figure 1. Attributional framework from Chaudhry & Loewenstein

Figure 2. Earnings Calls Attributional flowchart from Chen and Loftus (2019), whose results of this paper corroborates

| Taking credit in a good | Sharing credit in a good | Neutral (avoiding question or |
event blaming external factors) in an ambiguous event (control)

Taking blame in a bad event

Sharing blame in a bad event

Neutral (avoiding question or blaming external factors) in an ambiguous

Figure 3. Four Conditions in bold measured for the Qualtrics survey. The vertical axis is good and bad earnings quarters. The horizontal axis is type of attribution such as taking credit (individualistic pronoun usage) and sharing credit (collectivist pronoun usage).

Figure 4. Earnings Calls broken down by individual remarks of executives pulled down from WRDS’ S&P 500 database

Note: Each row represents a response from a company executive, operator, or analyst. The author has procured the responses of just company executives and has analyzed questions and answers via LIWC2015.
Chiu 21

Figure 5. Raw Earnings Calls Transcript for Apple (.txt file and a source of excerpts for the Qualtrics survey) from Lexis Nexis Bulk Download (Now a Defunct Way of Procuring Earnings Calls)

Figure 6. Corpus-based excel file uploaded into LIWC2015 for sentiment analysis. Each row represents a single quarterly earnings call with aggregated questions and answers from both executives and analysts.
Figure 7. The four scenarios posed to Qualtrics survey participants, aligning with the four bolded conditions from Figure 3.
**Figure 8.** Qualtrics survey questions gauging participant sentiment on managers and the represented firm following the reading of their respective management earnings call statement.
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<td>Is financially unstable</td>
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<td>7.00</td>
<td>4.0</td>
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1. This person is a good leader.  1.00  7.00  4.68  1.46  2.13  266

2. This person has good leadership potential.  1.00  7.00  4.81  1.61  2.60  267

3. I would want this person to be my supervisor at work.  1.00  7.00  4.45  1.64  2.68  267

Figure 9. Summary Statistics for all Qualtrics questions

Graph 1. Average Trust as rated by participants across the four Qualtrics conditions. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.
Graph 2. The graph illustrates the extent to which the manager shares credit in a case of outperformance. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

\[ p = .004 \]

Graph 3. The graph illustrates the extent to which survey participants trust the CEO in each of the four scenarios. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

\[ p = .003 \]
Graph 4. The graph illustrates the extent to which survey participants view the CEO as competent. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

Graph 5. The graph illustrates the extent to which survey participants view the CEO as competent. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.
Graph 6. The graph illustrates the extent to which survey participants view the CEO as narcissistic. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

Graph 7. The graph illustrates the extent to which survey participants view the CEO as collectivist. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.
Graph 8. The graph illustrates the extent to which survey participants view the entire firm as financially stable. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

Graph 9. The graph illustrates the extent to which survey participants view the CEO as having integrity. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.
Graph 10. The graph illustrates the extent to which survey participants view the firm as outperforming expectations. The y axis operates on a 1-7 scale with 7 representing “very” and 1 representing “not at all”.

Graph 11. The graph illustrates the extent to which S&P 500 executives used self-inclusive pronoun usage across the four conditions of Figure 3. The y axis represents the percentage of total words that the self-inclusive pronouns take up.
Graph 12. The graph illustrates the extent to which S&P 500 executives used emotional tone between quarters of outperformance and underperformance. The y axis represents the extent to which the executive speaker used emotional speech on a scale from 1 to 100 with 100 representing the most emotional.

Graph 13. The graph illustrates the extent to which S&P 500 executives used positive emotion. The y axis represents the percentage of total words that the positive emotion words take up.
Graph 14. The graph illustrates the extent to which S&P 500 executives used an analytical tone between quarters of outperformance and underperformance. The y axis represents the extent to which the executive speaker used analytical speech on a scale from 1 to 100 with 100 representing the most analytical.

Graph 15. The graph illustrates the extent to which S&P 500 executives used tentative speech. The y axis represents the percentage of total words that the tentative words take up.

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<td>22</td>
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<td>And congrats on a great close to a great year...</td>
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Figure 10. Sample output from the earnings call remarks pulled from S&P CapitalIQ via Python and SQL
Bibliography:


Harwood, Nigel. "‘We do not seem to have a theory… The theory I present here attempts to fill this gap’: Inclusive and exclusive pronouns in academic writing." *Applied linguistics 26*, no. 3 (2005): 343-375.


