



Linguistic Markers of CEO Hubris

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Abstract

This article explores the link between CEOs' language and hubristic leadership. It is based on the precepts that leaders' linguistic utterances provide insights into their personality and behaviours; hubris is associated with unethical and potentially destructive leadership behaviours; if it is possible to identify linguistic markers of CEO hubris then these could serve as early warnings sign and help to mitigate the associated risks. Using computational linguistics, we analysed spoken utterances from a sample of hubristic CEOs and compared them with non-hubristic CEOs. We found that hubristic CEOs' linguistic utterances show systematic and consistent differences from the linguistic utterances of non-hubristic CEOs. Demonstrating how hubristic leadership manifests in CEO language contributes to wider research regarding the diagnosis and prevention of the unethical and potentially destructive effects of hubristic leadership. This research contributes to the wider study of hubris and unethical leadership by applying a novel method for identifying linguistic markers and offers a way of militating against the risk of unethical and destructive CEO behaviours induced or aggravated by hubristic leadership.

Keywords CEOs · Computational linguistics · Ethical leadership · Hubris · Hubris syndrome · Language · Leadership · Linguistic markers

Introduction

Chief Executive Officers' (CEO) personality is an important factor in determining their leadership behaviours (Kisfalvi and Pitcher 2003; Miller et al. 1982; Picone et al. 2014), as such it can significantly affect their moral and strategic choices (Brown and Treviño 2006; Hambrick and Mason 1984; Hiller and Hambrick 2005; Hayward 2007; Peterson 2002) and impact on firms' ethical behaviours and business performance (Miller 1987; Nadkarni and Herrmann 2010; Trevino 1986). In this article, we are concerned with CEO behaviours manifesting as excessive self-confidence, inflated self-esteem, over-ambition and contempt for the advice and criticism of others, i.e. hubris (Akstinaite 2018; Owen 2018; Owen and Davidson 2009). In business, CEO hubris

is linked strongly with financially unsuccessful corporate mergers and acquisition decisions (Roll 1986) and other ultimately misguided strategic decisions in which CEOs labour under delusions of control (Eckhaus and Sheaffer 2018) and therefore overestimate the likelihood of positive outcomes and underestimate the likelihood of negative outcomes (Al Rahahleh and Wei 2012; Hayward 2007; Hiller and Hambrick 2005). Hubris played a significant role in leadership failures at Enron (Eckhaus and Sheaffer 2018) and most recently, and most damagingly, in the 2008 financial crash (Brennan and Conroy 2013; Lewellyn and Muller-Kahle 2012). There are numerous instances of leaders' hubris being associated with serious moral and strategic transgressions and bringing about significant and long-lasting negative outcomes for individuals, firms and wider society (Craig and Amernic 2018; Eckhaus and Sheaffer 2018; Hayward 2007; Kroll et al. 2000; Petit and Bollaert 2012; Picone et al. 2014; Sadler-Smith et al. 2017; Sims and Brinkmann 2003; Tang et al. 2015; Zhang et al. 2018).

The aim of this article is to explore the potential of natural language use (Pennebaker et al. 2003) for identifying 'linguistic markers' of CEOs hubris (i.e. the linguistic patterns that characterise hubristic speech). This technique offers an objective, real-time, scalable means for early warning and

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intervention for the prevention of unethical and dysfunctional leader behaviours and strategic choices emanating from hubris. The research objectives were to (1) test the hypothesis that the words CEOs use in spoken discourse may contain linguistic markers of hubris; (2) use computational linguistics as a means to identify linguistic markers of CEO hubris. Our research adds to knowledge in business and management regarding the potential ethical issues pertaining to CEO hubris and provides insights that could be used to help mitigate the failure of business organisations as a result of unbridled CEO hubris.

Literature Review

In this section, we review relevant literatures relating to hubris, natural language use and the language of hubris.

Hubris

The behavioural finance researchers who pioneered the study of hubristic leader behaviours in the 1980s conceptualised it in terms of ‘the hubris hypothesis’ (Roll 1986), later it was framed as ‘hubris syndrome’ (Owen and Davidson 2009; Picone et al. 2014) and latterly broadened into the study of ‘hubristic leadership’ (Akstinaite 2018; Sadler-Smith et al. 2017). The common thread is ‘hubris’ defined as an over-estimation of one’s abilities resulting in over-confident and over-ambitious judgements and decisions, when allied to a sense of invulnerability and contempt towards the advice and criticism of others it invites negative consequences (Owen and Davidson 2009; Picone et al. 2014; Sadler-Smith et al. 2017). In leadership studies, hubris is a type of destructive leadership (Padilla et al. 2007; Sadler-Smith et al. 2018). Previous research has linked hubristic leadership to a variety of negative consequences including the collapse of the hedge fund firm Long-Term Capital Management in 1998 (Lowenstein 2000; Stein 2003); Enron (Boje et al. 2004; Eckhaus and Sheaffer 2018); the collapse of Lehman Brothers and the wider financial crisis of 2008 (Brennan and Conroy 2013); NASA’s space shuttle *Challenger* and *Columbia* disasters (Mason 2004); BP’s Deepwater Horizon oil spill in the Gulf of Mexico in 2010 (Ladd 2012) and, perhaps in the most far-reaching and consequential geopolitical example, the after effects of the 2003 Invasion of Iraq (Beinart 2010; Isikoff and Korn 2006; Owen 2007).

Other research studies have focused on the positive effects of not being hubristic. Collins’ (2001) highly influential business book *Good to Great* (based on case studies of 1435 ‘good’ companies) found that a distinctive feature of the ‘good-to-great’ companies was that their executives were all ‘cut from the same cloth’ possessing—at the crucial juncture of the companies’ transition—a personal humility

and a self-effacing, quiet and reserved personality allied to an indomitable will which was aimed not at personal self-aggrandisement but at the greater good. Likewise, Hogan and Kaiser (2005) have proposed humble leadership as a much healthier and effective alternative. In virtue ethics terms hubrists incline towards excess (Sadler-Smith 2019) whilst humble leaders achieve a virtuous balance between extremes of particular virtues, for example, between the extremes of low self-esteem (deficiency) and arrogance (excess) (Vera and Rodriguez-Lopez 2004).

As well as its psychological and pathological aspects, hubris has important moral philosophical and ethical dimensions, involving the immoral and unethical use of power. Petit and Bollaert (2012) developed this idea with the claim that hubristic leaders fail to exercise control over their attitudes and behaviours, with a concomitant lack of reflexivity regarding motives, intentions and outcomes. Evidence is to be found in the unbridled hubris, arrogance, fraud and greed implicated in major ethical failures including the Enron collapse (Boje et al. 2004; Eckhaus and Sheaffer 2018) and ethical dimensions of the financial crisis of 2008 (Fassin and Gosselin 2011; Graafland and Van de Ven 2011). Moreover, hubristic leader behaviours show few signs of abating post-Enron and post-2008; recent research has established links between executive hubris and unethical behaviours, including company earnings manipulation (McManus 2018), firms led by hubrists being more polluting (Zhang et al. 2018) and negative effects of CEO hubris are made worse by weak board vigilance (Park et al. 2018). The antithesis of hubris, on the other hand, is humility which a number of scholars have recognised as an important virtue in leader character and strategic management (Morris et al. 2005; Owens et al. 2013; Vera and Rodriguez-Lopez 2004). A more authentic and ethical leadership style is likely to entail rejecting hubris and embracing humility (Owens et al. 2015).

Researchers have sought to develop means to identify en ante the early warning signs of hubristic leadership so that practitioners and policy makers might curtail its potentially destructive consequences (Craig and Amernic 2018; Garrard 2018; Garrard and Robinson 2016). Garrard et al. have, in their studies of political leaders, opened up a promising line of inquiry for the identification of consistent and systematic patterns in spoken natural language use associated with hubristic leadership; they refer to such patterns as ‘linguistic markers’ (Garrard et al. 2014).

Whereas Craig and Amernic (2018) in their application of this approach in the business arena sought to identify ‘language markers’ in CEOs’ written discourse (p. 973), in our research we sought to apply Garrard et al.’s approach to identifying linguistic markers in business leaders’ spoken utterances and ask: ‘what are the linguistic markers in spoken utterances that characterise CEO hubris?’. In focusing on spoken utterances as captured in media interviews in

a business and management context, our research extends prior research that has focused on politicians (e.g. Garrard et al. 2014) and written texts (Craig and Amernic 2018).

Natural Language Use

Natural language is defined as any language which arises naturally and unpremeditated (Pennebaker and Graybeal 2001) and as such natural language utterances provide insights into individuals' cognitions as well as important aspects of their inner world and personality (including identity and ideology) that continuously shape behaviours (Beukeboom et al. 2013; Holtzman et al. 2015; Pennebaker et al. 2003; Pentland 2008). Empirical results from a wide variety of studies confirm that language possesses a unique ability to reflect an individual's personality, to unveil one's cognitions and thinking style and to clearly communicate individual differences in a number of important respects (Tausczik and Pennebaker 2010).

Consequently, according to the theory of natural language use (Pennebaker et al. 2003), psychological changes (such as the acquired personality change that has been linked to hubris, see: Garrard et al. 2014; Owen and Davidson 2009) can be associated with distinctive patterns of spoken and written discourse (Pennebaker and Graybeal 2001; Robinson and Topping 2013). The term 'natural' in this context describes "relatively open-ended responses to questions, natural interactions and written or spoken text" as, for example, in a dialogue with another person such as an interviewer (Pennebaker et al. 2003, p. 549). People differ in their habitual speaking manner, i.e. the particular words they use and how they structure sentences. Based on the precept that personality is directly expressed through spoken language (Beukeboom et al. 2013), linguistic expression has the potential not only to reveal specific aspects of an individual's personality (Park et al. 2015; Tausczik and Pennebaker 2010) but also dysfunctional and potentially unethical leader behaviours associated with hubris (Garrard et al. 2014; Owen and Davidson 2009), see below.

Linguistic structures people use reflect unconscious behaviours and represent 'honest signals' through which individuals express their attitudes, beliefs, values and motivations (Pentland 2008). As such, speakers are often unaware of these subtle linguistic features of and patterns in their language use that signify aspects of personality and, concomitantly, such signals are difficult, if not impossible to conceal consistently and over the longer term (Laserna et al. 2014; Pennebaker et al. 2003). It follows that CEOs will express their personality through their verbal and written discourses (Amernic et al. 2010; Amernic and Craig 2006; Chatterjee and Hambrick 2007). Statements business leaders make in public speeches, interviews, press releases and letters to shareholders, reports or in other documents or settings

are reflections of their personalities which predispose and reflect their behaviours and cognitions (Amernic et al. 2010). What is more, CEOs' spoken or written utterances reveal complexities of their personal world and convey "symbolic, emotional, cultural and political overtones" (Amernic et al. 2010, p. 25) and allow for identifying and observing changes in personality, cognition and psychological modes (Pennebaker et al. 2003).

The core assumption of this approach is that the spoken or written discourse of the leader provides not only a window into their personality and behaviours (see above) but also their decision choices (Abe 2011; Chatterjee and Hambrick 2007; Mondak and Halperin 2008). And, given that researchers often experience difficulties in obtaining direct access to the upper echelons of business organisations, the 'at-a-distance' analysis of leaders' language can provide an alternative, practical, valid and reliable insight into a leader's personality, cognitions and actions (Burgoon et al. 2016; Chatterjee and Hambrick 2007; Markowitz 2018).

The Language of Hubris

If language provides a source of valid and reliable data that can be used to analyse personality and personality changes associated with power and success, then manifestations of hubris such as overconfidence are likely to be reflected in the discourse of those acquiring and exhibiting such behaviours, and expressed in a variety of linguistic features (Garrard et al. 2014). Furthermore, given that hubris has been hypothesised as an acquired personality change developing over time when a position of significant power is held and is accompanied by prior successes and lack of restraints (Garrard and Robinson 2016; Judge et al. 2009; Haynes et al. 2015; Owen and Davidson 2009; Owen 2016), it is unsurprising that the attributes of hubristic leadership come to be expressed as lexical choices.

As noted by Garrard et al. (2014), at least five of the 14 symptoms of hubris syndrome (Owen and Davidson 2009) imply lexical choices, influence language complexity or give rise to distinctive vocabulary as follows: need for power (1st symptom); use of the third person/'royal we' (6th symptom); excessive confidence (7th symptom); exaggerated self-belief (8th symptom) and supposed accountability to God or history (9th symptom). In their study of three UK political leaders (Thatcher, Major and Blair), Garrard and colleagues found that various markers (e.g. first-person pronouns 'I' and 'me', the word 'sure' and the 'we-to-I' ratio) showed strong temporal correlations with time in office and progression of the syndrome as well as, in the case of Blair, associations with specific events such as the UK's military interventions in Kosovo in 1999 and Sierra Leone in 2000 coinciding with the onset of Blair's hubris (Garrard et al. 2014).

Although the identification of linguistic markers have been used by clinicians to identify hubristic leadership in politics (see above), the use of such linguistic analyses in determining the presence of hubris in business leaders' spoken utterances is not well-developed (Brennan and Conroy 2013; Craig and Amernic 2014; Eckhaus and Sheaffer 2018). To date, there is only a small body of research that has analysed speeches, CEO letters to shareholders and transcribed debates in order to identify the linguistic manifestations of hubris (e.g. the use of first-person singular pronouns, 'keyness' value). This developing linguistic field of leadership and managerial inquiry may be seen as a part of a wider endeavour to understand organisations through communication and language (Tietze et al. 2003).

Craig and Amernic (2018) used DICTION text analysis software to study the language markers of a 'verbal tone' of hubris in annual letters to shareholders signed by CEOs of major companies. They analysed 193 letters to shareholders from three hubristic CEOs (Lord John Browne of BP; Fred Goodwin of Royal Bank of Scotland; Rupert Murdoch of News Corp). They found high use of the DICTION master variable 'realism' but further analysis revealed that this is not a distinctive marker of hubris but is likely to be a 'genre effect that is common in CEO letters to shareholders' (op cit., p. 973). In building on these findings, researchers need to (1) address the genre effect (i.e. identify 'hubris-speak' as opposed to general 'CEO-speak'); (2) avoid using letters to shareholders (given their limitations); (3) employ analytical tools which are commensurate with a pertinent theory of language use (e.g. Pennebaker et al. 2003). Our research addresses all of these issues.

Not only is hubristic leadership in business management and its expression through CEO language under-researched, often the realisation or acknowledgement that a leader has succumbed to hubris comes post ante and once the harmful effects have become apparent (Brennan and Conroy 2013). In addition, the potential negative outcomes of hubris can often be not only damaging for the leader herself or himself but also ethically and economically damaging for businesses and wider society (Babiak and Hare 2006; Boddy 2011; Boje et al. 2004; Brennan and Conroy 2013; Brunnermeier and Pedersen 2009; Hayward and Hambrick 1997; Petit and Bol-laert 2012). The maxim that 'prevention is better than cure' and the fact that hubristic leadership is prevalent and persistent at the top of business organisations confirms a pressing need for more research in this field.

Aim and Method

This research aims to answer the question 'what are the linguistic markers of CEO hubris and how may they be identified and understood?' Our hypothesis was that the language

used by CEOs who had been identified as hubristic whilst in post would show consistent differences from the language used by CEOs who had been judged not to have succumbed to hubris. This study compares discourse samples of hubristic and non-hubristic CEOs in order to identify linguistic markers of CEO hubris. We used computer-aided content analysis of texts based on the theory of natural language use as implemented in Linguistic Inquiry and Word Count (hereafter LIWC) program (LIWC 2015; Pennebaker et al. 2003).

LIWC is a computational linguistics technique that uses frequency counts of text samples and enables mathematical comparison of scores obtained on a number of theoretical dimensions, e.g. use of pronouns, negations, verbs, see LIWC manual (<http://www.liwc.net>) for a detailed specification. As discussed above, other computational techniques are available, such as DICTION; however, Craig and Amernic (2018) drew attention to the restricted capacity of DICTION to capture subtlety of language use and because we used LIWC and transcripts of CEO interviews, our research was not subject to the weaknesses of DICTION-based or of letters to shareholders-based studies. Moreover, LIWC was wholly commensurate with theoretical framing of our study, i.e. natural language use (Pennebaker et al. 2003).

Sample and Data

A non-probability purposive sampling strategy was used to determine both samples. The selection and categorisation of hubristic and non-hubristic CEOs for this research is based on the assessment of observers (hubris researchers and media assessments) that judged CEOs as hubristic or non-hubristic and was hence independent of our own assessment (and consistent with sampling methods used in prior research, e.g. Craig and Amernic 2018). Detailed steps in the sampling process for hubristic and non-hubristic CEOs are summarised below.

Sample 1: Hubristic CEOs

As a result of the nature of hubris, the lack of a measurable psychometric criteria, instruments for the assessment of hubris as a psychological construct, sensitivity around the topic and to avoid researcher subjectivity in sampling, the selection of hubristic CEOs for this research was based on the assessment of observers, namely other researchers and the media who deemed certain CEOs to be hubristic. A three-stage sampling process was employed: (1) systematic review of all the articles in the Business Source Complete database pertaining to CEO/business leader hubris; (2) review of all the media articles (outputs of the search engine query) pertaining to CEO/business leader hubris; (3) comparison of the results from outputs (1) and (2) in order to identify overlapping categorisations.

Step 1: Systematic Review of All the Articles in the Business Source Complete Database

Business Source Complete (BSC) is one of the key scholarly databases for business and management researchers. It has a coverage of peer-reviewed business journals since 1965 (and earlier for some journals like *Harvard Business Review*). A systematic review of the outputs in this source pertaining to leader/CEO hubris was conducted. Online Appendix 1a specifies the search criteria and outputs produced. The BSC database was searched for key words and phrases, including ‘CEO’, ‘leader’ and ‘hubris’ across the full text of the articles. This resulted in a large number of articles; results were refined according to the following criteria: (1) language: English articles only; (2) publication source: academic journal. This resulted in 908 and 1566 outputs, respectively. All 2474 articles were reviewed and from them, a list of 35 potentially hubristic CEOs was compiled (available from the authors upon request). (NB: given that this search was completed in 2015, any recent replication would be likely to generate different results).

Step 2: Review of All the Media Articles

In a similar manner to Step 1, the Google search engine was queried with the following search criteria specified in Online Appendix 1b. Key words and phrases, including ‘CEO’, ‘leader’ and ‘hubris’ were searched in the Google search engine. This resulted in a large number of search outputs, hence results were reviewed (13 pages for the first search and 12 pages for the second one) up to the point where no more directly related outputs appeared. In total, 250 outputs were reviewed, which produced the list of 23 potentially hubristic CEOs (available from the authors upon request).

Step 3: Comparing Search Results

The final step in the process included comparison of the two lists in order to match CEOs that appeared in both searches. CEOs that overlapped between lists (1) and (2) are listed in Online Appendix 2. In total, 15 CEOs overlapped between the two lists. To reduce the impact of potential mistakes in English grammar and syntax made by non-native speakers, only native English language speakers were shortlisted. Even though it can be argued that, for example, there are some differences in some expressions and grammatical structures of British English and American English, they are considered too minor to be of significance in this research which is concerned with overall patterns in language use.

Sample 2: Non-hubristic CEOs

Similar to the above, existing leadership literature lacks well-established criteria and descriptors for specific attributes and behaviours for a ‘good leader’ (Antonakis and Day 2017; Horner 1997). What is more, leadership is perceived differently by different people (Barker 1997; Lewis and Gates 2005), depending on previous experience, status, relationship with senior management and other factors. Unfortunately, there are no well-acknowledged lists or scientific criteria for shortlisting ‘non-hubristic’ CEOs. This research does not argue that competence is synonymous with a lack of hubris; in contrary, this research sees hubris as a continuum where an individual could freely move from the non-hubristic side to highly hubristic and vice versa. For the purpose of this research, the researcher does not attempt to determine where exactly on this continuum a certain CEO is at a given moment (in other words, how much hubris a certain research subject possesses), but places CEOs into two broad categories—hubristic and non-hubristic—based on the criteria described earlier in the sampling section.

For this reason, the most objective way to determine ‘good leadership’ is to look at well-established rankings that list CEOs based on their performance, both financially and from employees’ perspective. Although one could argue that CEO rankings might not provide sufficient information to determine whether a given CEO is ‘non-hubristic’, such rankings provide the most objective overview of a leader’s effectiveness and leadership style, given that these rankings cover a number of objectively measured criteria for ranking CEOs. Future research should address this further by attempting to establish clear theoretical and measurable criteria for what constitutes the opposite to hubris.

After a review of existing CEO rankings, the following rankings (years 2015–2017) were deemed appropriate for the purposes of this research: *Harvard Business Review’s* (HBR) annual ranking of ‘The Best-Performing CEOs in the World’, *Glassdoor’s* annual ranking of ‘Highest Rated CEOs’, *Richtopia’s* ‘Philanthropists and Social Entrepreneurs Top 200’ and *Fortune* magazine’s ‘The World’s Greatest Leaders’. These rankings were selected for the following reasons. First, votes were provided by employees, hence they are likely to have more accurate rankings compared to the paid ranking lists. Second, the focus in the ranking is on the leadership skills of the individual and philanthropy as opposed to the CEO’s yearly income or net worth. As noted by the HBR ranking producers (HBR 2015), “the goal is to create a list that gets beyond the most recent quarterly or even annual results and truly evaluates long-term performance” (p. 1).

In sampling for non-hubristic CEOs, a five-stage process was used: (1) review of all of the HBR’s annual ranking of ‘The Best-Performing CEOs in the World’; (2) review of the

Glassdoor's annual ranking of 'Highest Rated CEOs'; (3) review of the *Richtopia's* annual ranking of 'Philanthropists and Social Entrepreneurs'; (4) review of the *Fortune* annual ranking of 'The World's Greatest leaders'; (5) comparison of the outputs from rankings (1), (2), (3) and (4) to identify overlaps. The final step of the process included comparison of the four lists to match CEOs that appeared in several rankings. The full list of shortlisted non-hubristic CEOs is available from the authors on request. The key assumption for this exercise was that these four lists should provide sufficient coverage to determine a high-performing CEOs given that, as noted above, both financial and non-financial aspects of the performance were taken into consideration by all rankings used. The initial candidates in the non-hubristic sample are listed in Online Appendix 3. A given CEO has been added as non-hubristic if his/her name has appeared in at least two different rankings.

Hubristic and Non-hubristic Sample Cross-Check and Data Availability

The next step in the sampling procedure was cross-checking whether any CEOs listed as non-hubristic appear in the hubristic CEO list and vice versa. None of the CEOs shortlisted for the samples overlapped. As a final step, and given that our research used secondary, publicly available information sources, data availability was checked and verified for each shortlisted CEO in both samples. Data sources available for the subjects in both samples are listed in Online Appendix 4. Data availability was noted as 'Available' if there were sufficient data (at least two full length interviews given to different sources) for a given CEO for the required year. Data availability was marked as 'Limited' if the data found were for the incorrect year or if only an excerpt from the given interview was available.

Based on data availability, the final sample consisted of five hubristic and five non-hubristic CEOs as follows: hubristic CEOs (hereafter HCEOs) Steve Jobs (Apple), Howard Schultz (Starbucks), Elon Musk (Tesla, SpaceX), Jamie Dimon (JP Morgan) and Travis Kalanick (formerly of Uber); non-hubristic CEOs (hereafter NHCEO) were Jeff Bezos (Amazon), Mark Parker (NIKE), Robert Iger (Walt Disney), Mike Bloomberg (Bloomberg) and John Chambers (formerly of Cisco). Data for Donald Trump¹ as a further example of a hubristic CEO (when acting as CEO of The Trump Organisation, before his Presidency) were used to validate the analytical framework (see below).

Secondary data in the form of interviews with media were used in the study. Spoken utterances for the last full year

of being a CEO from at least two different internet sources (retrieved using search engines) were analysed. The last full year of being a CEO was chosen on the basis that hubris tends to develop over time with the acquisition of significant power and success and often remits once power is lost (Owen and Davidson 2009; Owen 2016). It is important to note that the sampling was conducted at the end of 2016 and therefore 'the last full year of being a CEO' differs for different CEOs in the sample. For example, interviews for year 2015 were used for Elon Musk, whilst interviews for year 2014 were used for John Chambers because he retired from his position in 2015. The secondary data materials used for each of these CEOs are available from the authors upon request.

Analytical Procedure

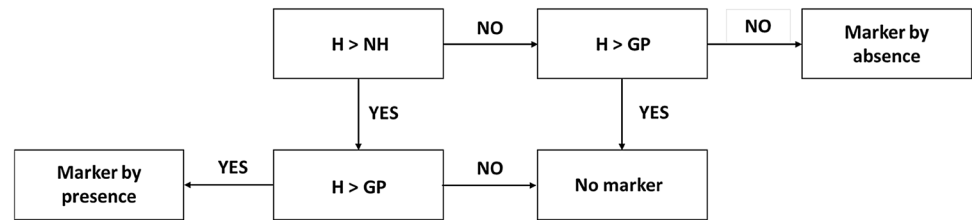
At the core of the LIWC analysis is the LIWC 2015 Dictionary which is composed of over 6000 words and word stems arranged into word categories or sub-dictionaries, many of which are arranged hierarchically, e.g. all 'sadness' words, by definition, belong to the broader "negative emotion" category. Word stems are captured, e.g. the stem *hungr** allows for any target word that matches the first five letters to be counted as an ingestion word (including 'hungry', 'hungrier', 'hungriest'). There are 93 dimensions in LIWC in total, for example, the category: 'Personal Pronouns' is comprised of 1st person singular ('I', 'me' and 'mine'), 1st person plural ('we', 'us' and 'our'), etc., (see <http://www.liwc.net>).

Given that none of the LIWC dimensions has been directly linked to CEO hubris, previously, we based our analysis on the finest possible granularity of the LIWC dimensions. A total of 73 dimensions were used in this research (see Online Appendix 5 for the full list of dimensions used in this research and examples of words that belong to each dimension). 19 dimensions were excluded from the analysis because (1) seven dimensions were based on absolute word count rather than as proportions of spoken utterances expressed as percentages or counts percent of target² words captured by the LIWC (2015) Dictionary; (2) twelve punctuation dimensions have been excluded from the analysis as transcribed interviews have been used as material in the study with the possibility that punctuation has been introduced and influenced by the transcriber. LIWC analysis of our source material was used to obtain scores for all 73 dimensions.

¹ Spoken utterances for Donald Trump were from year 2014, whilst he was still CEO.

² Words contained in texts that are read and analysed by LIWC are called target words.

Fig. 1 Baseline analytical framework for the analysis



Results

In order to analyse the data, mean scores (expressed as a percentage of the total words) for each dimension for both samples were calculated (e.g. a mean score for the ‘function’ dimension in the hubristic CEO sample is 58.09, for the non-hubristic CEO sample it is 56.65); mean scores for all dimensions were compared to the scores of the general population provided in the LIWC manual (LIWC 2015). Ratios were then calculated as follows: (1) ratio for hubristic (HCEO) versus non-hubristic CEO (NHCEO) scores for each dimension, i.e. HCEO/NHCEO; (2) ratio for hubristic CEO (HCEO) scores versus general population (GP) scores for each dimension, i.e. HCEO/GP; (3) ratio for non-hubristic CEO (NHCEO) scores versus general population (GP) scores for each dimension, i.e. NHCEO/GP. Raw scores for each of the 73 LIWC dimensions and the aforementioned ratios are available on request from the authors.

In order to interpret the word-count results and attribute the scores on the various LIWC dimensions to five proposed analytical categories based on the dimensions of ‘linguistic markers by presence/absence’ (i.e. what they do and don’t say), ‘weak/strong’ (i.e. deviance from norms) and ‘CEO/non-CEO’ (a binary job category), the following logical framework was developed (see Fig. 1). Previous research, such as Garrard et al. (2014), has only focused on markers by presence (i.e. what a hubristic leader does say), but in this research we also allowed for the possibility of markers by absence (i.e. what hubrists don’t say compared to their non-hubristic counterparts).

The analytical framework (Fig. 1) assumes the following are logically true:

1. If $H > NH$ and $H > GP$, then words in this category can be potentially classified as ‘Markers of Hubris by Presence’: scores of the hubristic CEOs for these categories are consistently higher than those of non-hubristic CEOs or the general population;
2. If $H < NH$ and $H < GP$, then words in this category can be potentially classified as ‘Markers of Hubris by Absence’: because scores of the hubristic CEOs for these categories are consistently smaller than those of non-hubristic CEOs or the general population;

3. In any other case, a category is classified as not containing any potential linguistic markers of hubris.

This component of the analytical framework provides a tool for the identification of potential linguistic markers of hubris. However, it represents only an aggregate view (i.e. marker by presence, or marker by absence) and does not indicate the strength of individual markers. Therefore, a further component was included—the ratio of the scores for the non-hubristic CEOs versus those for the general population.

The analytical framework with the inclusion of this additional element is shown in Fig. 2. The formatting of the arrows in the framework depicts the logic of the different pathways and aids interpretation.³

Based on the above process, the 73 relevant LIWC dimensions were divided into the aforementioned five categories:

1. Strong markers of hubris by presence (SMHP, a linguistic marker with a stronger presence in hubristic CEO language);
2. Weak markers of hubris by presence (WMHP, a linguistic marker with a weaker presence in hubristic CEO language);
3. Strong markers of hubris by absence (SMHA, linguistic markers that are not present in hubristic CEO language, however present strongly in non-hubristic CEOs language or the language of the general population);
4. Weak markers of hubris by absence (WMHA, same as above with a weaker presence);
5. Generic markers of CEO language (MCEO, linguistic markers that can be attributed to CEOs in general, whether hubristic or not).

We report the categorisations in terms of this framework in three stages as follows: (1) preliminary categorisation; (2) validation of preliminary categorisation; (3) validated categorisation.

³ NB: If the ratio of results is equal (i.e. $HCEO/NHCEO = 1$), such result is treated as ‘Yes’.

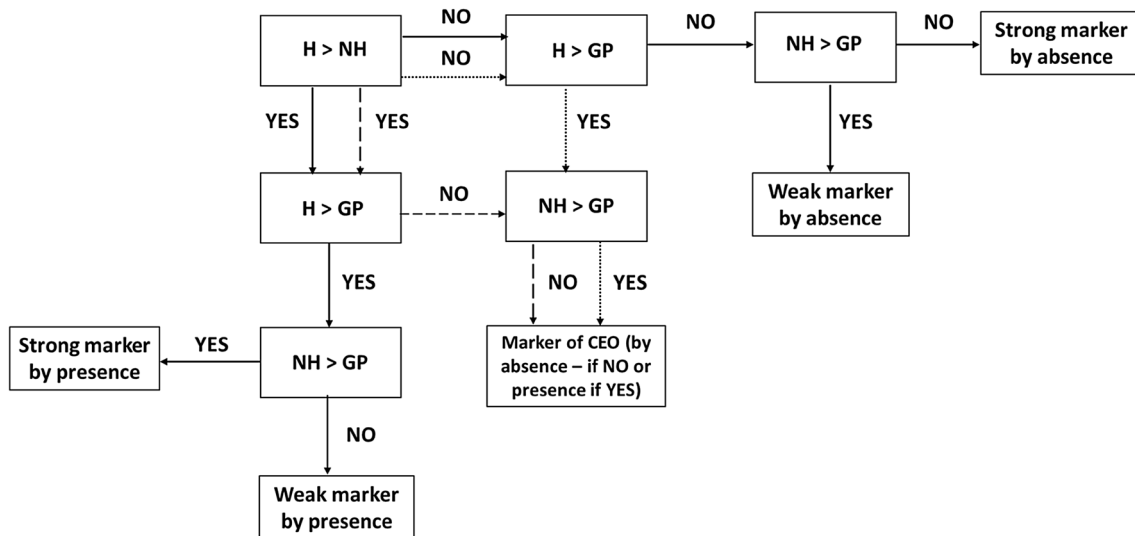


Fig. 2 Extended framework for the analysis

Table 1 Preliminary categorisations

Category	LIWC dimensions
Strong markers of hubris by presence (SMHP)	Function words; pronouns; use of 'we'; use of 'they'; impersonal pronouns; auxiliary verbs; adverbs; negations; verbs; comparisons; quantifiers; social processes; cognitive processes; insight-related words; discrepancies; tentative tone; certainty tone; differentiation; reward-related words; use of present tense; use of future tense; money-related words
Weak markers of hubris by presence (WMHP)	Risk-related words
Strong markers of hubris by absence (SMHA)	Use of 'she', 'he'; affective processes; positive emotion words; anger-related words; friends-related words; male-related words; perception-related words; sight-related words; feelings; perceptual processes; sexuality-related words; ingestion-related words; relativity-related words; time--related words; leisure-related words; religion-related words; death-related words; use of abbreviations in the language; non-fluencies; filler words
Weak markers of hubris by absence (WMHA)	Prepositions; adjectives
Generic markers of CEO language (MCEO)	Personal pronouns; use of 'I'; use of 'you'; articles; conjunctions; interrogations; numbers; negative emotion words; anxiety-related words; sadness-related words; family-related words; female-related words; causations; hearing-related words; health-related words; drives; affiliation; achievement; power-related words; use of past tense; motion-related words; space-related words; work-related words; home-related words; informal language; swear words; assent words

Preliminary Categorisation

Table 1 summarises the preliminary (i.e. prior to the robustness check on validity—see below) categorisation of 73 LIWC dimensions classified into the five types of linguistic marker referred to above (SMHP; WMHP; SMHA; WMHA; MCEO).

Of the 73 LIWC dimensions used in the analysis: 22 were classified as strong markers of hubris by presence (SMHP); one as weak marker of hubris by presence (WMHP); 21 as strong markers of hubris by Absence (SMHA); two as weak markers of hubris by absence (WMHA) and 27 as generic markers of CEO language (MCEO). As a further check, we

submitted these preliminary categorisations to review, validation and, where appropriate, reclassification (see below).

Validation of the Preliminary Categorisation

To validate the above framework, the hubristic sample of five CEOs was modified systematically to check whether a change in the sample (i.e. replacing each one of the hubristic CEOs in the sample with a different hubristic CEO) had an effect on the results and scrutinise the match between the categorisations when the altered sample was used. We did this as follows: every CEO in the original sample of five CEOs was replaced one-by-one with another hubristic

Table 2 Refined list of linguistic markers

Category	LIWC dimensions
Strong markers of hubris by presence (SMHP)	Pronouns; use of 'we'; use of 'they'; impersonal pronouns; auxiliary verbs; negations; verbs; quantifiers; discrepancies; tentative tone; certainty tone; reward-related words; money-related words; use of 'you'; adjectives; interrogations; power-related words
Weak marker of hubris by presence (WMHP)	Risk-related words; personal pronouns; use of 'I'; numbers; anxiety-related words; anger-related words; female-related words; hearing-related words; time-related words; leisure-related words; home-related words
Strong markers of hubris by absence (SMHA)	Positive emotion words; friend-related words; ingestion-related words; relativity-related words; death-related words; use of abbreviations in the language; non-fluencies
Weak markers of hubris by absence (WMHA)	Prepositions; function words; articles; social processes; use of future tense; space-related words
Generic markers of CEO language (MCEO)	Negative emotion words; sadness--related words; family-related words; causations; health-related words; drives; affiliation; achievement; use of past tense; space-related words; work-related words; informal language; swear words; assent words; use of 'she', 'he'; verbs; affective processes; male-related words; cognitive processes; differentiation; perception-related words; sight-related words; feelings; use of present tense; religion-related words
Obsolete dimensions	Insight-related words; conjunctions; motion--related words; sexuality-related words; adverbs; comparisons; perceptual processes; body-related words; filler words

CEO in an iterative process. The replacement data were Donald Trump's spoken utterances (from 2014a, whilst he was still a CEO and before he became a candidate for the presidency of the United States). The data for Trump's utterances were input to the analytical framework whilst keeping all the remaining four CEOs in the sample constant. Donald Trump was chosen for this validation due to his being 'indisputably hubristic' as a CEO (Osno 2017; Tracy 2016; Vera and Rodriguez-Lopez 2004).

Once each new sample had been established in this process, mean scores were recalculated and compared to the non-hubristic sample and to the general population following the procedure and using the framework provided in Fig. 2. The process (analogous to a bootstrapping procedure) was repeated five times (i.e. each CEO was replaced with Donald Trump) and scores recalculated. The full results of the validation are available from the authors on request. The results were compared to those obtained from the main sample in terms of the degree to which they overlapped with the categorisation obtained previously. By way of illustration of the procedure, a summary of the first validation round (Travis Kalanick replaced by Donald Trump) is presented in Online Appendix 6 and is interpreted as follows:

1. Total number of LIWC dimensions in a specific category in the original sample (i.e. 22 SMHP in the original sample);
2. Number (count) of LICW dimensions that overlap when results obtained in the main sample are compared with results obtained in this validation (i.e. 17 out 22 LIWC dimensions overlap for SMHP);
3. Result (count) of LICW dimensions that overlap when results obtained in the main sample are compared with

results obtained in this validation expressed as a percentage (i.e. 17 out of 22 LIWC dimensions equals to 77%);

4. Number (count) of new dimensions (that did not appear in the original sample) in a particular category, the title of that dimension and the category that this dimension has been previously classified to (i.e. use of articles appear as SMHP in the first validation, although in the original sample they appeared as Generic Markers of CEO language).

The overlap in this iteration ranged from 77 to 100% and was indicative of the reliability of the analytic process and the results obtained. However, to ensure that the framework consistently produces a high overlap of LIWC dimensions in the relevant categories, the validation described above was undertaken a further four times by replacing the other four remaining hubristic CEOs with Donald Trump.

Validated Categorisation

Once the validated set of results was established, the mean scores for each sample were recalculated and compared to the non-hubristic sample and to the general population in the same manner as before. Based on the results obtained, LIWC dimensions were classified into the five categories (i.e. SMHP, WMHP, SMHA, WMHA and MCEO). Once these categories were determined, the degree of overlap with the categorisation obtained in the original analysis was determined (i.e. the ratio of the overlap for each category). The validation process indicated a stable number of dimensions that overlapped in every category, and on this basis, the original baseline categorisation of LIWC dimensions was further refined. To pass the threshold for final inclusion as a linguistic marker, a given LIWC dimension had to appear in that category four out of six times (i.e. the

Table 3 Categorisation and examples of linguistic markers

Type of marker	Category	Examples
Strong markers of hubris by presence	Use of pronouns	I think I've done a great service; We made more, we worked harder; They've said they'll spend all it takes to win; It's not about me. It's about the company; When you're doing a start-up, you're an entrepreneur you're going to get knocked down
	Verbs and auxiliary verbs	A permanent battle that will be—people will lose battles; We wouldn't have come because it would have been quite rude to not have offered incentive; It's not the reason I'm doing this, but I do want to go into space at some point
	Vocabulary related to reward, money and power	When I buy them, I spend a lot of money It gives you fame, money and power; Our businesses benefit from each other; They have the power and capability to macro-manage the economy.
	Certainty in the tone and negations	We'd certainly consider that down the road, but I can certainly say that; I will never change this, I like it; That doesn't mean you shouldn't try them
Strong markers of hubris by absence	Positive emotion and friend-related words	I love my job and consider myself incredibly lucky; Give one of my peers and a good friend advice; You're doing a great job and let's just do more of it
	Words relating to relativity and death	We are in the middle of just starting at the end of the summer; People die every year from the effects of; This is where I would like to see countries come together
Weak markers of hubris by presence	Use of words related to emotions (risk, anxiety, anger), time, leisure and home	Something that is risky at the civilisation level; obesity kills you; we just hated them they were so awful to us; it was here in good times and bad times
	Use of female- and hearing-related words	A woman tapped me on the shoulder; I have heard from other CEOs; they are not listening
Weak markers of hubris by absence	Use of prepositions, function words and articles	It is hanging above; there is an issue with their markets; it's a very healthy content creation business; I had no idea what it was;
	Words related to space and future	I think within the space community; we keep kicking the can down the road; way too soon to make predictions
Generic markers of CEO language	Words related to drives, affiliation, achievement, masculinity	Give one of my peers and a good friend; he is going to be successful; we make something better or more interesting; it is important to keep an open mind

pronoun 'we' appears as Strong Marker of Hubris by Presence in the main samples as well as in Validation 2, 3, 4 and 5). The list of refined markers is shown in Table 2.

There is also a new category in Table 2 labelled 'Obsolete dimensions'. This category contains dimensions that are non-attributable to any of the previously established categories as they did not pass the validation threshold.

Overview of Findings

We report our findings in two stages: first, we identify a number of linguistic markers by presence of various strengths in the utterances of the hubristic CEOs; second,

and in contrast to previous research, we identify linguistic markers by absence, i.e. lexical choices that hubristic CEOs do not make by comparison to their non-hubristic counterparts. Table 3 provides a summary.

With the aim of focusing on the core findings of this research, only strong markers of hubris by presence and absence are discussed. In the following discussion, we indicate the relevant linguistic markers by means of **bold** typeface; we also provide quotes from CEOs in order that the use of the relevant marker may be contextualised within a particular utterance. The words in **bold** typeface are words from LIWC dictionary that constitute a certain dimension. For example, the dictionary for LIWC dimension "power" includes such words as "big", "celebrity", "fame" amongst

many others (for full dictionary see: LIWC 2015). It should be noted that these are for illustrative purposes only (analogous to the use of so-called ‘proof’ and ‘power’ quotes in qualitative research, see Pratt 2008) and were drawn selectively from a much larger corpus of utterances. As noted above, we have adopted a stringent approach by discussing strong markers only. A list of weak markers by presence and absence is contained in Online Appendix 7. Line numbers refer to the location in the materials analysed from which the quote was taken. Further details are available from the authors on request.

Strong Linguistic Markers by Presence (SMBP)

Personal and impersonal pronouns emerged as strong markers of hubris by presence, indeed the majority of strong markers of fall into the pronoun category. This finding is consistent with previous research which found that the use of pronouns, especially the use of ‘we’, to be an indicator of hubristic speak (Garrard et al. 2014; Kacewicz et al. 2014). For example: “**We** help, you know, consumers and big businesses. **We** help countries and banks, central banks, governments, sovereign wealth funds, and **we’re** hugely charitable. You know, the work **we** do in Detroit, **we’ve** hired 8000 veterans” (Jamie Dimon, *Bloomberg*, 2015b, Line 863).

Although previous research has focused mainly on the use of the first-person plural pronoun ‘we’ and the first-person singular pronoun ‘I’ (Amernic et al. 2010; Garrard et al. 2014), the present study suggests that the second person pronoun ‘you’ is also a strong marker, i.e. “But there always seems to come a moment where it’s just not working, and it’s so easy to fool **yourself**—to convince **yourself** that it is when **you** know in **your** heart that it isn’t. Well, **you** know what? It’s been that way with almost every major project at Apple, too...” (Steve Jobs, *Fortune*, 2008, Line 91). Furthermore, previous research has focused mainly on personal pronouns as potential markers of hubris, whereas our study suggests that there might be other impersonal pronouns that typify hubristic CEOs’ language. For example: “I mean, one guy, I bought a course, **it** cost \$58 million to build, and I bought **it** for \$3 million. No, that I can’t say. **It’s**... **it’s** too nasty. I bought **it** for 3, now I put 7 into **it**, I rebuilt **it** and everything, but **it** cost \$58 million, I bought **it** for 3” (Donald Trump, *The Golf Digest*, 2014b, Line 179). Given that the use of personal pronouns has been linked with hubristic speech before (Garrard et al., 2014), it seems logical that other categories of pronouns (i.e. impersonal pronouns) could mark hubristic speech as well.

Given that hubris is linked with excessive confidence and a relentless, sometimes reckless manner (Owen and Davidson 2009), it is not surprising that auxiliary verbs, i.e. “Technologically, **it’s** possible to do it soon. But **there’s** a difference between me speculating when **it will** be and me

telling you when **it will** be. **I’m** just speculating here, but I think **it will** be technologically possible in three years, but **it’s** going to be up to regulators to finally approve a self-driving car” (Elon Musk, *TechRadar*, 2015a, Line 543), and verbs, i.e. “Something **needs** to be **done** to **correct** the 535 economic error that’s **going** on with CO₂ emissions. If you **ask** any economist, they will **tell** you the same thing, that we are currently not pricing CO₂ correctly. The cost of CO₂ **is** tiny! If the CO₂ capacity of the air and the ocean **is** like a bank account, then we **are** just **spending** like it’s nothing.” (Elon Musk, *TechRadar*, 2015a, Line 535) appear amongst the strong markers of hubris. Whilst the LIWC dimension ‘verbs’ is a very broad category (comprised of over 1000 words), the auxiliary verb category is much smaller (just over 100 words) and contains only verbs used in forming the tenses, moods and voices of other verbs, such as ‘be’, ‘do’, ‘have’, which means that this dimension has a considerable potential as a linguistic marker of hubris due to its narrower range.

Another attribute of hubris that is often cited by researchers is a need for power and reward (Owen and Davidson 2009). Both power-related, i.e. “Nobody thought I was going to be **big** on television, and then I **dominated** the ratings and my name was on everybody’s lips. But being a **celebrity** is good 70% of the time—it gives you **fame**, money and **power**” (Donald Trump, *Forbes*, 2014a, Line 315), and reward-related, i.e. “And in terms of shareholder value, we must as leaders as stewards of the company link shareholder value to value for our people. And the history of the company has been based on just that, but this year alone has been the year of significant investments back to the people of Starbucks over \$200 million in healthcare **benefits**” (Howard Schultz, *Seeking Alpha*, 2015b, Line 467) words appear as SMHP. However, it should be noted that the ‘power’ dimension in LIWC is broad (more than 500 words) amongst which there are words that could be directly linked with ‘power holder’ (i.e. ‘confidence’, ‘largest’, ‘superior’) as well as words that indicate the use and/or abuse of power (i.e. ‘beg’, ‘obey’, ‘vulnerable’).

The reward dimension in LIWC is comparatively small (less than 150 words) and contains a mix of words from different parts of speech that relate to reward. The reward dimension appears consistently as one of the Strongest Markers of Hubris by Presence; this may be anticipated given that words in this category (i.e. ‘achieve’, ‘best’, ‘confidence’, ‘success’) reflect an excessively positive, confident and reward-striving manner bordering on illusions of control which can often be attributed to hubris (Craig and Amernic 2014; Eckhaus and Sheaffer 2018). References to money, i.e. “you’ll still end up **paying** that kind of **money**. Look maybe he would have done a better job if he was in my seat. But I don’t know. But I’m not going to jeopardize my company. And you know, at the end of the day, **banks** are, you know,

if governments don't, we have to operate under the laws of the land." (Jamie Dimon, *Bloomberg*, 2015b, Line 780) have never been explicitly linked with hubristic linguistic choices. However, this is to be anticipated given that, for example, Roll's foundational 'hubris hypothesis' (Roll 1986) made strong connections between CEO hubris and financial acquisitiveness and is supported by a voluminous body of empirical evidence in behavioural finance research (for a review see Sadler-Smith 2015).

One surprising discovery of the study is that both tentative tone, e.g. "but **perhaps, perhaps** we can be a catalyst for **some** people to take the message and take it away, take it to their children, take it to their workers, to co-workers, and have a conversation about race." (Howard Schultz, *CNN*, 2015a, Line 379), and certainty, i.e. "Yeah, **absolutely**. Yeah. We'd **certainly** consider that down the road, but I can **certainly** say that anyone who's been a huge jerk to us thus far is not going to be one of those franchisees. No, if they've been punching us in the face, they shouldn't expect we're going to be their friend." (Elon Musk, *The Texas Tribune*, 2015b, Line 652), appear as linguistic markers in hubristic CEOs' speech. Given one of the hallmarks of hubris is excessive confidence (Amernic et al. 2010), the appearance of the certainty dimension as a linguistic marker is anticipated; however the emergence of tentative tone as a linguistic marker is not explained easily. One possible explanation for the use of the tentative tone could be as a face-saving technique and as part of a communication strategy for the preservation of reputation and relationships. Such an interpretation is commensurable with prior 'linguistic style' research in which it was found that the dynamics of negotiations can fluctuate significantly in order to maintain positive interpersonal relationships (including face-saving) (Taylor and Thomas 2008).

We also found the use of negations as a strong marker by presence, i.e. "You have your own culture and your own ways of doing things. I hope Japan continues on this path. You **never** know exactly how new policies are going to work. That **doesn't** mean you **shouldn't** try them" (Jamie Dimon, *Asian Review*, 2015a, Line 910). This is consistent with the fact that in hubristic speak, media accounts have often noted hubristic CEOs as being very bold and 'straight-to-the-point' types of individuals, i.e. "there's no shortage of brash, aggressive, and successful personalities in business. (Think: Travis Kalanick, Marissa Mayer, and Rupert Murdoch, who've each earned a reputation for ruthlessness.) After all, a healthy dose of self-confidence is a necessity when it comes to getting your company off the ground" (Henry 2015, p.1). Negation words (i.e. 'mustn't', 'no', 'never', 'won't') indicate decisive and bold personality and are consistent with the attributes of hubristic leadership, i.e. self-confidence, self-assurance, positive self-evaluation and ambition.

Linguistic Markers by Absence

Research to date has focused solely on what we refer to as 'markers of hubris by presence', i.e. a particular linguistic utterance that is found typically in hubristic CEOs' speech, as for example in Garrard and colleagues studies of political leaders (Garrard et al. 2014) but did not explore whether the 'absence' of certain linguistic utterances might also be a valid marker of hubris.

We identified seven potential Strong Markers of Hubris by Absence: words related to friends (i.e. 'companion', 'friend', 'pal'); positive emotions (i.e. 'amazing', 'interest', 'well'); ingestion (i.e. 'caffeine', 'diet', 'taste'); relativity (i.e. 'deeper', 'further', 'region'); death (i.e. 'alive', 'dying', 'mortal'); informal abbreviations (i.e. 'bday', 'plz', 'thx') and non-fluencies (i.e. 'ah', 'huh', 'mmm'). With respect to the latter two categories it should be noted that informal abbreviations and non-fluencies may not be applicable as use of such words in the text could be introduced and/or influenced by the transcriber.

As for the remaining five dimensions that were classified as Strong Markers of Hubris by Absence, lack of words related to friends, i.e. "Technology is, we believe, **friend** not foe, both to the programmer and to the consumer. I think the key in terms of bundles is, again, how much value is the consumer getting? How much choice do they have and at what price?" (Robert Iger 2015, *CNBC*, Line 1560), ingestion, i.e. "In a similar way, we've invested in a company that has invented a way to dye products without **water**. We call the technology ColorDry. If you consider it takes 30 litres of **water** to dye a single T-shirt, the impact could be massive." (Mark Parker, 2015, *Hype Beast*, Line 1371) and death, i.e. "I don't think you can finance coal development because people are walking away from it from all around the world, coal is a very dangerous thing. In America 13,000 people **die** every year from the effects of coal fire power plants" (Mike Bloomberg 2015, *NDTV*, Line 1780) could be explained by the type of material (official public interviews with CEOs) used in the study. Given that a majority of media interviews with leaders are within a business context with a focus on their companies and rarely about more personal topics, the appearance of these three LIWC dimensions as Strong Markers of Hubris by Absence is perhaps not surprising.

Relativity words ("So we are in the **middle** of just **starting** at the **end** of the **summer** and then it's the implementation done through it. But that is where our selling mission has **changed**." (John Chambers 2014, *CRN*, Line 2083)) that also appear as Strong Markers of Hubris by Absence, is another extremely wide dimension in LIWC consisting of more than 950 words related to motion (i.e. 'movement'), time (i.e. 'weekend') and location in space (i.e.

‘world’). Given the breadth of this dimension, its accuracy in determining linguistic markers of hubris has to be further reviewed and validated.

One surprising finding of the study was the appearance of positive emotion words (“I **love** my job and consider myself incredibly **lucky**—and that’s been **true** for 20 years, it hasn’t changed” (Jeff Bezos 2014, *The Telegraph*, Line 1330) as Strong Markers of Hubris by Absence. To date, due to narcissism being somewhat intertwined with hubris (Owen and Davidson 2009; Stein 2013) and narcissistic CEO-speak being pompous and overly positive by nature (Brennan and Conroy 2013), one could have expected hubristic CEO language to carry a particular emotional tone. However, we found overall CEO-speak contains more references to negative emotions than to positive (i.e. negative emotion words appear as generic indicators of CEO language, whilst negations appear as strong markers of hubris by presence) and hubristic CEO language lacks references to positive emotions (compared to the non-hubristic sample and general population).

Discussion

Craig and Amernic (2018) explored the links between language and hubris from a business ethics standpoint by asking the question of whether there are language markers of hubris in CEOs’ letters to shareholders. In their study, which framed hubris as an excessive and self-referential form of ‘moral rectitude’ that can have potentially negative consequences (p. 974) and applied DICTION to CEOs’ written utterances, the answer appeared to be ‘no’. In our research, we too asked if there are language markers of hubris in CEOs’ utterances; but instead we used CEO’s spoken utterances, an alternative theory of natural language use and its associated analytical technique (LIWC). Our answer to this question is ‘yes’. Below we explore the theoretical and practical contributions of our findings for business ethics research and management practice.

Theoretical Implications

A fundamental tenet of hubris research is that although some of the leader attributes related to hubris (e.g. confidence and ambition) might be important in achieving individual and corporate success, hubristic traits can ultimately become maladaptive and cause significant ethical-related problems for the organisation. Hubris and hubristic leadership have been implicated in serious ethical transgressions and misdemeanours which have led to reputational, organisational and corporate harm. The behaviour of the indisputably hubristic Kenneth Lay at ENRON was ‘instrumental in inculcating and steering its poor ethical record’ (Eckhaus and Sheaffer

2018, p. 5). Hubris and its ethical connotations contributed to collapse of a major European bank (Fassin and Gosselin 2011) and, as a contributor to unethical leadership behaviours and decisions, it has been shown to have concomitant and deleterious effects on ethical climate and employee misconduct (Mayer et al. 2010; McManus 2018), the misuse of power (Park et al. 2018) and in connection with unethical CEO and firm behaviours which have resulted in transgressions of environmental ethical norms (for example, in BP’s Deepwater Horizon disaster under the hubristic leadership of Lord John Browne (Ladd 2012; Owen 2011) and chemical and other forms of pollution (Zhang et al. 2018)). Recent work has also explored the wider societal links between the misuses of political power, hubristic leadership and the rise of populism and the ethical implications of these relationships not only for public life and civil society, but for democracy itself (Owen 2018). Against this backdrop, we outline three theoretical contributions of our research.

First, we have shown that it is possible to distinguish between CEOs who are hubristic and those who are not. Our research suggests that hubristic CEOs exercise a distinctive set of lexical choices both in terms of what they say (markers by presence) and what they do not say (markers by absence) in comparison to non-hubristic CEOs. These lexical choices offer insights into the underlying psychological changes that are associated with hubris as a hypothesised acquired personality disorder (Owen and Davidson 2009). A further aspect of this contribution is that our research has demonstrated clear linkages between an extant body of linguistic theory and research (Pennebaker and colleagues theory of natural language use) and hubris research. This further validates natural language use theory and its methods (i.e. the LIWC technique) and extends hubris theory by offering theoretically valid linguistic categories to the emerging lexicon of hubris (e.g. Garrard et al. 2014).

Second, as well as having relevance to leader psychology, these findings also have significance for business ethics and leader moral character research in that the aspects of leader psychology which typify hubris as indicated by lexical choices offer insights into leaders’ character. This is important given that hubris (expressed, for example, in leader behaviours of overconfidence and arrogance) manifests in socially irresponsible and unethical activities (Tang et al. 2015). In developing this line of argument further, it is possible to frame hubris in terms of virtue ethics, and more particularly of hubris as being antithetical to virtuous leadership, and specifically as antithetical to leader humility. In this respect, our research contributes to the emerging body of work in virtue ethics in business and management (Hartman 2013; Sison 2017) which recognises that (1) a good organisation requires leaders of good character (Hartman 2017); (2) a virtuous leader should not be concerned with extolling personal achievements Kelly (2017) and (3)

the virtue of humility, which is the antithesis of hubris, has a universality which spans Eastern and Western systems of philosophical thought (Chan 2017; Sadler-Smith 2019). Humility is foundational amongst the virtues in that it affords moral agents a tempering influence (Chan, 2017; Grenberg 2005; Whetstone 2001). De Bruin (2013) in a discussion of ‘epistemic virtues’ argued that the ‘virtuous knower’ strikes the right balance between deficiency and excess and consequently stays away from hubris. Owens et al. (2013) define ‘expressed humility’ (i.e. humility observable by others) as ‘an interpersonal characteristic that emerges in social contexts and connotes a manifest willingness to view oneself accurately, the display of appreciation of others’ strengths and contributions, and an intrinsic ‘teachability’” (p. 1518).

Humility has been proposed as a ‘strategic virtue’ which gives leaders a down-to-earth perspective on themselves, and the consequent ability to evaluate failure and success objectively and without exaggeration and tread the fine line between healthy self-confidence and self-esteem and over-confidence and narcissism (Vera and Rodriguez-Lopez 2004, p. 393). Humility, and more specifically De Bruin’s notion of ‘epistemic humility’, disposes an individual to acknowledging that in reality they may not know everything they think they know or know better than everybody else (2013, p. 592). Hubristic CEOs do not display epistemic humility in their lexical choices, on the contrary they are more likely to display what De Bruin terms an ‘epistemic arrogance’ which corresponds to hubris. This disposes leaders towards championing unethical, questionable and unsustainable practices which create the conditions for and invites negative unintended consequences (Lawrence et al. 2011; Sadler-Smith 2019).

Third, to tackle the unethical consequences of hubris, the tendencies described above must at first be detected. Moreover, early detection of the problem would significantly improve both preparedness and prevention; however, given the nature of hubris and its locus in the upper echelons, this poses a major organisational challenge (Eckhaus and Sheaffer 2018; Petit and Bollaert 2012). Ex ante it is, by definition, not possible to say whether or not a hubristic leader will fail. Hubristic failures only reveal themselves, by definition, ex post. However, our research shows that hubristic tendencies may show themselves in CEOs’ lexical choices and that it is possible to detect hubristic tendencies ex ante in CEOs utterances and thereby expose, in more-or-less real-time, the formation and emergence of hubris. Moreover, the method that we have innovated does not rely on the subjective, close reading and content analysis of texts, rather it is attained through objective means (i.e. computational linguistics) in terms of linguistic dimensions that are consistent with Pennebaker and colleagues’ theory of natural language use as validated both in the original LIWC framework and additionally in the extensive validation exercises

that we undertook in this research. The method we have used is both scalable and lends itself to automation for the analysis of other forms of CEO utterances, including ‘tweets’, text messages, emails, blogs. The method could be used by boards as part of their corporate governance remit and external bodies as part of their regulatory responsibilities.

Practical Implications

For the reasons outlined above, there is a real and pressing need to develop effective ways to recognise CEO hubris in real-time, and consequently, to mitigate the risk of the emergence of potentially unethical, dysfunctional and destructive leader behaviours. Language and computational linguistics is one such approach (Eckhaus and Sheaffer 2018; Garrard et al. 2014; Naderi and Hirst 2018; Taylor and Thomas 2008). Establishing an objective, real-time scalable solution for the easy, accurate and timely identification of hubris could ensure that businesses, as well as individuals, are able to recognise its origins, monitor its development and its change over time and to protect against its unethical consequences. This information could be used to enhance board vigilance which has been shown to be effective in mitigating CEO hubris (Park et al. 2018) or to signal to shareholder and regulators that a firm is being led down a morally dysfunctional and potentially destructive path.

Our research also has HR implications. As suggested by Brown and Treviño (2006), organisations “want to know how to select, develop and retain ethical leaders” (p. 613). Findings of this research could contribute to the selection and development of ethical leaders if implemented in recruitment, selection and training and development processes. Such practices could even potentially be applied by the reflexive leader him/herself under the guidance of a trusted individual, such as an executive coach or mentor, as a means to protect their leadership from succumbing to ‘dark side’, unethical traits. The analytical method we have innovated here could be applied in different contexts and to other leader derailers and pathologies, for example, narcissism, Machiavellianism and psychopathy.

Current leader assessment and development tools are “typically based on competency models, which focus on positive attributes associated with effective leaders and desirable leader qualities” (Padilla et al. 2007, p. 189). This indicates a clear need to expand leader selection, assessment and development policies and practices to also include ‘undesirable’ personality attributes and potential leadership derailers (e.g. hubris, narcissism) in order to identify and, in turn, protect against immoral and unethical leader behaviour. Alongside this, the assessment of ethical leader character strengths (see Crossan et al. 2013) could also be important, and our research highlights the importance not

only of selection *against* hubris but also selecting *for* the virtue of humility and humble leadership character traits. The theoretically robust and empirically rigorous approach that we have innovated in this research offers a practical way forward for HR practice, corporate governance and firm and industry regulation.

In sum, the use of linguistic choices as indicators of hubris and our proposed classification for such markers present opportunities for further research into understanding the causes and consequences of unethical leadership behaviours associated with the intoxication with power which, in turn, can contribute to the development of unethical climate in organisations and ultimately to organisational failure (Craig and Amernic 2018; Eckhaus and Sheaffer 2018; Mayer et al. 2010). Interventions based on our diagnostic technique could help to militate against this.

Limitations and Future Directions

This research is subject to a number of limitations. First, we have used at-a-distance techniques which although highly practicable in accessing hard-to-reach participants have limitations (see Craig and Amernic 2011). Second, if the novel technique applied here is used in future research, it might be beneficial to consider using larger samples and apply relevant statistical techniques. Third, since human personality is highly complex, there is a possibility that hubristic leaders will exhibit some characteristics of non-hubristic language and vice versa. We mitigated the limitations associated with the use of secondary materials by using only spoken materials (interviews with CEOs) since these are less likely to be prepared in advance or by multiple individuals (McKenny et al. 2018), especially in the case of live interviews. That said CEOs, and hubristic CEOs in particular, are a small and hard-to-access group and, although not ideal, future research is likely to rely on secondary materials, small sample sizes or even single case studies. In addition, future research should address any limitations associated with the use of newspaper or magazine interviews. Using a non-journalistic interview (i.e. ethnographic, psychological), could result in a more authentic interaction with the interviewee. Fourth, as alluded to above, the sampling techniques used came with certain limitations. Although this research attempted to ensure as objective sampling strategy as possible, yet no scientifically validated criteria exists as to what are the precise measures that can be used to sample hubristic and non-hubristic CEOs. Further research is required to establish not only precise measures that could be used by scholars in management research but also the theoretical links between hubris and leader attributes considered to be its opposite. Finally, in spite of the above limitations, we solidified our findings by using a rigorous five-iteration validation process, allied to which we were highly conservative in that we

focused our discussion on strong markers (by presence and absence); on this basis, we are satisfied that the approach we have adopted offers robust insights into linguistic markers for this group as potential indicators of hubristic leadership.

As far as future directions are concerned, the sampling strategy we employed focused on the data from the ‘most hubristic year’ (the last full year of being a CEO) and did not attempt to analyse the changes in a CEO’s language longitudinally. Future research might use our method to examine the changes in CEO language use over time as well as the study of CEOs’ biographies and explore links to key life or leadership events. In this regard, as noted by Akstinaite (2016), “in understanding the roots of ‘hubris’ and ‘Hubris Syndrome’ on the part of those in leadership roles and their childhood [educational and early career] development experiences, there would appear to be little or no research at all” (p. 203). The question of the antecedents and biographical origins of hubris could be addressed in future research studies so as to better understand the roots of the phenomenon and its developmental trajectory. In our word-count analysis, we used computational linguistic techniques as implemented in the LIWC software, but the analytical framework for the classification of the different types of marker (hubristic vs non-hubristic, and weak versus strong) was conducted manually (using an Excel spreadsheet). Future technical developments might involve automating this analysis such that textual materials are word-count analysed, categorised and validated automatically. This would provide a powerful tool for the analysis of large volumes of data, including materials generated through other channels of communication such as social media.

Our research aligns well with prior linguistics and ethics research which has sought to recognise automatically (using a neural networks-type approach) the language of face-saving (Naderi and Hirst 2018) and recent research in the area of risk management that has developed objective, scalable techniques for the real-time detection of assessment of hubristic disposition from email corpuses (Eckhaus and Sheaffer 2018). The technique is generic and therefore could be applied to different types of leaders, different occupational groups and other aspects of ethical and unethical behaviour and individual difference. This approach also opens the door to the use of machine learning for the analysis and identification of the linguistic markers not only of hubristic leadership but other leadership, management and organisational phenomena as well.

Conclusion

Overall, this study has built a novel analytical framework for the classification of linguistic markers of hubris based on five categories: strong markers of hubris by presence

(SMHP), strong markers of hubris by absence (SMHA), weak markers of hubris by presence (WMHP), weak markers of hubris by absence (WMHA) and Generic Markers of CEO language (MCEO). This framework was created on the basis of results obtained by analysing spoken utterances from samples of hubristic and non-hubristic CEOs; it is based on the theory of natural language use as implemented in the well-established LIWC software, compared results between these samples and baselined them against the scores for the same LIWC dimensions for the general population. In contrast to Craig and Amernic's study (2018), our study used spoken rather than written discourses and we identified systematic differences between hubrists and non-hubrists. This study offers a novel contribution to hubris research and uses an innovative method in that, to the best of the authors' knowledge, it is the first computational linguistics study to apply a comprehensive set of LIWC dimensions (total of 73) to spoken utterances in the analysis of linguistic markers of business leaders' hubris. We have also evolved a highly original analytical technique based on a logical framework for baselining within and between occupational groups, in our case CEOs, but which could be extended to other types of within-group or between-group differences. A further contribution to business and management research is that we have studied linguistic markers in leaders' spoken utterances in the field of business management, whereas previous computational linguistic studies of linguistic markers of hubris have tended focus on political leadership (for example, Garrard et al. 2014). In sum, this study is the first to use the theory of natural language use, computational linguistics and a novel analytical framework to successfully identify linguistic markers of hubris in business leaders' spoken utterances.

As a contribution to research on hubristic leadership, language and business ethics, this study has confirmed that linguistic markers have considerable potential to reveal how the complex phenomenon of hubris manifests through subtle differences in CEOs' language use. This could help to contribute to wider research regarding the diagnosis and prevention of hubris and mitigate against potentially detrimental effects of undiagnosed and unbridled executive hubris. Moreover, if intoxication by power is the main trigger of hubris (Owen and Davidson 2009), it is a risk that every senior and successful leader may face and is a hazard that linguistic analysis can help alert us to before the Rubicon of unethical behaviour has been crossed.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Research Involving Human and Animal Participants This article does not contain any studies with human participants performed by any of the authors.

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