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Earnings Management & the role of CEO Personality

- *Applying an algorithm to analyse whether conscientiousness affects real and accruals-based earnings management*

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Abstract

Despite extensive efforts to grasp and mitigate the problem of earnings management, research indicates that it remains a prevalent problem. We set out to investigate whether CEO personality, more specifically the trait of conscientiousness – characterised by long-term orientation, risk aversion and impulse control – plays a role in explaining the prevalence of earnings management. Using an algorithm based on the Big Five Personality traits model, we assess the personalities of 135 CEOs across 89 firms listed on NYSE and Nasdaq. The sample consists of 702 observations between the years 2012 to 2018. Our findings indicate that CEOs with low conscientiousness do more real earnings management. Thereby, we identify a new determinant of earnings management, corroborating that personality affects the level of earnings management. We find no such relationship for accruals-based earnings management, indicating that personality traits might also affect the choice of earnings management method. Consequently, we offer insights to the interplay between psychology and accounting research.

Key words: *CEO, real earnings management, accruals-based earnings management, conscientiousness, Big Five Personality traits*

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1. Introduction

“I am soft, I’m lovable, but what I really want to do is reach in, rip out their heart, and eat it before they die?” (Fuld, 2007), this is what Dick Fuld, former CEO of Lehman Brothers said about short sellers in 2007 just before the financial crisis hit. Fuld is believed to have had psychopathic tendencies (Stein, 2013) and was accused of corporate misconduct, more specifically excessive risk taking (Van Scotter & Roglio, 2018). His language should have raised a red flag for his recklessness, but it did not, and his leadership drove the company to bankruptcy in 2008. Standard setters and regulators continuously attempt to minimise corporate misconduct through rules and regulations (Cornaggia, Franzen & Simin, 2013), e.g. the Sarbanes Oxley Act of 2002 that aimed to minimise accounting fraud (Hsieh, Bedard & Johnstone, 2014). Despite these efforts, evidence shows that earnings management, a common form of corporate misconduct, is still prevalent worldwide (Leuz, Nanda and Wysocki, 2003). Managers can have multiple incentives to brush up their earnings, such as increasing their compensation (Healy & Wahlén, 1999) or lowering the cost of capital by being perceived a stable and well-performing firm (Francis, Olsson & Schipper, 2004). Managers might also deliberately report lower earnings, for example write off all predicted losses in one year to show creditable performance improvements thereafter (Henry & Schmitt, 2001). Managing earnings may indeed be tempting when the gains of a better financial report are substantial; and the pros of manipulation then seemingly outweigh the cons of ignoring rules and regulations. To understand all the mechanisms leading to earnings management, one needs to look beyond the financial motives. One important determinant of earnings management is the manager’s personality, which can trigger manipulations. This is rooted in Upper Echelons theory, postulating that executives are influenced by their experiences and inherent personalities, making them view their surroundings in unique ways. This in turn, affects their decisions and thereby the performance of the firm (Hambrick & Mason, 1984). In connection to this, it has been shown that managers’ attitudes have larger impact on misconduct than external circumstances (Heiman-Hoffman, Morgan & Patton, 1996). Manager personality has been studied through a number of characteristics, primarily narcissism (Capalbo, Frino, Lim, Mollica & Palumbo, 2018; Buchholz, Lopatta & Maas, 2019). It has been found that narcissism increases the likelihood of earnings management, restatements and weaker internal controls (Ham, Lang & Seybert, 2017). Studies have also shown that executives’ extensive overconfidence leads to over optimism, which increases the likelihood of overstating earnings (Schrand & Zechman, 2012; Li & Hung, 2013). Moreover, gender within earnings management is widely covered in research, where it has been found that female managers are less risk-taking and therefore less prone to manipulate earnings (Powell & Ansic, 1997; Byrnes, Miller & Schafer, 1999; Huang & Kisgen, 2013).

The importance of personality is institutionalised in industries where employees bear responsibility for the safety of others, such as in aviation and the military (Holstein, 2017). Being a manager of a large corporation, bearing responsibility for all stakeholders and not least investor’s money, should not be too different. Throughout the years, psychopathic CEOs have been responsible for numerous scandals, such as Bernard Ebbers at WorldCom (Perri, 2013) and Ken Lay and Jeffrey Skilling at Enron (Boddy, 2015) and the previously mentioned Dick Fuld of Lehman Brothers (Stein, 2013). This points to the importance of considering the psychological perspective, which is often left out when studying account manipulations (Horvat, 2018).

The Big Five personalities model is a well-established model that has so far primarily been used within psychology and leadership research (Judge, Piccolo & Kosalka, 2009). The model consists of five overarching personality components including *extraversion*, *emotional stability*, *agreeableness*, *conscientiousness* and *openness to experience*. It is based on the Lexical Hypothesis, which states that language serves the primary indicator of our psychological differences (Allport & Odbert, 1936). Thanks to new technology and improved data access, it has become much easier to assess the Big Five personalities (Mairesse, Walker, Mehl & Moore, 2007) and apply the model to more areas of research. Consequently, the goal of this study is to obtain an improved understanding of why earnings management occurs, through applying the Big Five model to identify the impact of personality. In more specific terms, this study aims to determine if a CEO's conscientiousness affects the level of earnings management; both in terms of real and accruals-based earnings management. The reason this thesis looks specifically at conscientiousness is two-fold. Firstly, to our knowledge there is little to no research that covers earnings management and conscientiousness. Secondly, we believe that conscientiousness is the most relevant trait out of the Big Five personalities to focus on, since conscientious individuals tend to follow rules, have strong impulse control, be dependable, risk averse and have a drive to achieve long-term objectives (Goldberg, 1993; Judge et al., 2009; Derue, Nahrgang, Wellman & Humphrey, 2011). Furthermore, low conscientiousness has been shown to correlate with less consideration of rules and consequences, as well as a higher likelihood of behaving unethically and carelessly (Van Scotter & Roglio, 2018). When it comes to organisational influence, CEOs have the utmost autonomy (Van Scotter & Roglio, 2018) and ability to impact corporate decisions (Graham, Harvey & Puri, 2013). For these reasons, this thesis focuses on conscientiousness amongst CEOs. With the aforementioned arguments in mind, we expect to find that CEOs with low conscientiousness engage in more earnings management.

In order to quantify the CEOs' levels of conscientiousness this study conducted a text analysis of their answers to questions asked during earnings calls. In contrast to presentations, which are likely prepared with assistance from other business functions such as the marketing department, questions are asked on the spot during earnings calls, making it more likely for the CEO's personality to shine through (Matsumoto, Pronk, & Roelofsen, 2011). The text analysis was conducted through the algorithm developed by Mairesse et al. (2007), which identifies and assigns a score to each Big Five personality trait. The scores for conscientiousness were included in Roychowdhury's (2006) real earnings management models; cash flow, production cost, discretionary expenditures as well as a combined proxy to determine the relationship between conscientiousness and real earnings management. The scores were also included in the Dechow, Sloan and Sweeney's modified Jones model (1995), and Kothari, Leone and Wasley's model (2005) to determine the relationship between conscientiousness and accruals-based earnings management. The sample consists of 89 firms with 702 firm-year observations in the consumer staples industry. This amounted to 135 unique CEOs and a collection of 683 earnings calls. All firms are listed on the New York Stock Exchange (NYSE) or Nasdaq Large Cap (Nasdaq) between the years 2012 to 2018. Our result presents evidence that CEOs with low conscientiousness engage in more real earnings management. We find no evidence that conscientiousness affects the level of accruals-based earnings management. However, our contrasting results for real and accruals based earnings management indicate that different personalities opt for different earnings management methods,

the same way different types of firms engage in different types of earnings management (Siregar & Utama, 2008; Achleitner, Gunther, Kaserer & Siciliano, 2013).

The findings of the study contribute to two streams of research; earnings management research (Burgstahler & Dichev, 1991; Dechow & Sloan, 1991; Subramanyam, 1996; Leuz, et al., 2003; Roychowdhury, 2006; Zang, 2012) by identifying conscientiousness as a new determinant of earnings management, as well as research on psychology in corporate decision-making contexts (Hambrick & Mason, 1984; Heiman-Hoffman et al., 1996; Chatterjee & Hambrick; 2007, Schrand & Zechman, 2012; Ham et al., 2017) by highlighting a formerly unexplored research area, namely if personality traits have a role in dictating the choice of earnings management method. This has implications for practitioners as well. As mentioned previously, personality assessment is institutionalised when appointing people to positions bearing great responsibility for others. Our findings indicate that the same should apply to CEOs for large companies, since we show that CEO personality affects earnings management. This suggests that companies can minimise the risk of earnings management, which is not only unethical but also affects future performance negatively, by hiring executives with the preferred set of personalities (Graham, Harvey & Rajgopal, 2005; Cohen & Zarowin, 2010; Achleitner et al., 2013). The disposition of this study is as follows; in section 2 we present previous literature on earnings management and personality psychology. In section 3 we present the research methodology used to test our hypotheses, followed by a discussion about limitations. In section 4, the descriptive statistics, results and robustness checks are presented. In section 5 we present the conclusion followed by suggestions for further research.

2. Literature review

2.1 Earnings Management

Modigliani and Miller (1966) established that earnings announcements have an impact on firm value, even to the point that earnings are the primary determinant of firm value and thus impact share price. Later on, research on earnings management started to flourish. Beaver (1968) built on the finding of Modigliani and Miller (1966) by pointing out that the significance of earnings gives incentive to manipulate them. He studied investors' reactions to earnings announcements and found that such announcements have a notable influence on investors' expectations. Initially, earnings management research focused on proving its existence, where the vast majority of research has agreed on its prevalence (Dye, 1986; Burgstahler & Dichev 1997; Healy & Wahlen, 1999; Roychowdhury, 2006). Sloan (1996) goes as far as saying that earnings management is so powerful it can inflate the share price with zero alteration of actual performance. Further on, research has sought to understand why earnings management is so widespread. Private gains including job security or increasing management's compensation is a common explanation for earnings management (Healy & Wahlen, 1999; Cheng & Warfield, 2005; Bergstresser & Philippon, 2006). When compensation is based on earnings it gives managers incentive to undertake aggressive methods to meet the target (Matsunaga & Park 2011) or manage earnings downwards to make future bonuses more obtainable (Walker, 2013). In connection to these incentives, Schipper (1989) defines earnings management as follows:

"Purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain."

(Schipper 1989 p. 92)

In line with this emphasis on personal gain, Burgstahler and Dichev (1997) claim that personal utility can be one overarching reason why managers are so eager to avoid losses, stipulating that the value of reporting a profit is higher than the cost of the risk that comes with conducting earnings management. The authors also offer a second explanation, which allows for the idea that earnings management is not strictly for personal gain, stating that earnings management can reduce transaction costs for the firm. This includes creditors offering lower interest rates and customers, suppliers and employees being more willing to maintain a relationship with the firm if it is perceived more reliable. Based on to this latter view, Healy & Wahlen (1999) offer the following definition of earnings management:

"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."

(Healy & Wahlen 1999 p. 368)

Unlike Schipper's (1989) definition, Healy & Wahlen (1999) do not emphasise private gains. It could indeed be argued that earnings management is always done for personal gain on some level, however the intent could also be to benefit the firm or its stakeholders (Tucker and Zarowin, 2006).

2.1.1 Suspect Firms

Dye (1986) introduced the notion that earnings management is commonly applied to meet the predicted result for the fiscal year. Later, it has been found that earnings management is used to avoid a negative result regardless of the analyst forecast (Burgstahler & Dichev, 1997; Degeorge, Patel & Zeckhauser, 1999; Roychowdhury, 2006). Roychowdhury (2006) refers to firms with near-zero earnings as suspect firms, as they are in a state where risk for earnings management is relatively higher. According to Burgstahler and Dichev (1997), the reason earnings management is particularly prevalent near the zero threshold can be explained through prospect theory, which stipulates that individuals make decisions in respect to a reference point rather than absolute wealth (Kahneman & Tversky, 1979). Under such circumstances, the decision weight placed on an outcome with low probability is often overstated, for example when gambling people often understate the probability of losing. In the context of earnings management, this means that the utility of avoiding a loss is higher than the cost of being detected. Therefore, the likelihood of being detected is understated and the relative gain of making a profit is the largest when earnings are near zero (Burgstahler and Dichev, 1997).

2.1.2 Two forms of earnings management

Earnings management can be separated into two categories: *real earnings management* and *accruals-based earnings management*. Real earnings management entails suboptimal changes of activities or timing of activities for the sake of altering earnings (Zang, 2012), which often has an impact on cash flow (Roychowdhury, 2006). An established way of identifying such manipulations is through looking at cuts in discretionary expenditures. Examples of such expenditures include research and development (R&D) expenditures (Baber, Fairfield & Haggard, 1991; Dechow & Sloan, 1991; Bushee, 1998), marketing expenditures (Cohen, Mashruwala & Zach, 2010) and selling, general and administrative (SG&A) expenditures (Roychowdhury, 2006). Earnings can also be manipulated through selling valuable assets (Bartov, 1993; Herrmann, Inoue & Thomas, 2003) or through temporary discounts to boost sales (Jackson & Wilcox, 2000) or offer more generous credit terms (Roychowdhury, 2006). Another real earnings management method is to overproduce in order to lower the unit cost of goods sold (Roychowdhury, 2006).

In contrast to real earnings management, accruals-based earnings management has no effect on an actual transaction (Roychowdhury, 2006). Rather, accruals-based earnings management is an alteration of accounting- or estimation method to present a transaction more favourably (Zang, 2012). In other words, accounting discretion is used to deliberately misinterpret the standards. Accounting literature has provided a long standing and still ongoing debate on whether accounting discretion for efficiency outweighs accounting discretion for opportunism (Bowen, Rajgopal & Venkatachalam, 2008). The intent of accounting discretion is to allow people with knowledge of the specific business to make judgements, but it can be misused. Examples of accruals-based earnings management include changing depreciation method, arbitrarily changing the provision estimates (Zang, 2012) or goodwill impairments (Pajunen & Saastamoinen, 2013). This can be done to temporarily brush up the earnings, but accruals-based earnings management can also be done as part of a more elaborate strategy. One such strategy is income smoothing, which is when a firm

portrays a stable performance by evening out its earnings between the years (Caruso & Ferrari, 2016). This can lower the cost of capital due to stability (Michaelsson, Jordan-Wagner & Wootton, 1995; Francis, Lafond, Olsson & Schipper, 2004), disguise bad news or limit the scrutiny that would follow an extreme result (Leuz et al., 2003). Big Bath accounting is another form of accruals manipulation that is most often employed by newly appointed CEOs who choose to write off all the predicted losses at once to show creditable performance improvements thereafter (Moore, 1973; AbuGhazaleh, Al-Hares & Roberts, 2011).

Zang (2012) finds that the trade-off between the two methods depends on their relative costliness and timing. When the scrutiny of accruals manipulation is high and the room for adjustments is small due to manipulations in the year prior, firms are more likely to turn to real earnings management. Additionally, Garcia-Osma and Young (2009) show that real earnings management is more common the year after reporting a negative result. Conversely, companies are more apt to choose accruals-based earnings management when real earnings management is more costly to them (Zang, 2012). Another striking finding of Zang (2012) is that companies tend to start off with real earnings management and depending on whether the actual outcome matches the desired outcome they will make the final adjustments through accruals-based earnings management. It is thus concluded that the two methods of earnings management are interdependent (Zang, 2012). In addition, after the introduction of the SOX act in 2002 it has been shown that real earnings management is favoured by firms, since disguising accruals-based earnings management was made more difficult (Cohen, Day & Lys, 2008). Furthermore, real manipulations are agreed to be associated with a larger negative impact on future performance compared to accruals management (Graham et al., 2005; Cohen & Zarowin, 2010; Achleitner et al., 2013).

Earnings management undoubtedly has a negative connotation. However, the story is not necessarily one-sided. Subramanyam (1996) defines discretionary accruals as efficient when they have a significant, positive correlation with future profitability. This is achieved when a manager uses his/her discretion to communicate private information. For example, income smoothing can be considered informative if it better represents the underlying performance of the firm (Tucker & Zarowin, 2006). Furthermore, large write-offs can be done to represent the true economic value, which reduces the information asymmetry between the firm and its investors (Hope & Wang, 2018). Nonetheless, firms will also use these techniques to fake a better performance. Therefore, the portion of intentional misleading of investors and fraudulent violations of accounting standards cannot be ignored (Walker, 2013).

2.2 Personality traits

2.2.1 The manager's influence on the organisation

Upper Echelon's theory states that organisational outcomes can partially be predicted by the manager's background and personal characteristics (Hambrick & Mason, 1984). Each person, or in this case manager, brings a combination of unobservable cognitive values and observable characteristics into a decision-making process. The former is unique to each individual and influenced by past experiences whereas the latter includes the observable characteristics of age, education, functional track (area of experience), other career experience, socioeconomic roots, financial position and group characteristics; which can serve as indicators of strategic choices and

ultimately the performance of the entire firm (Hambrick & Mason, 1984). In support of this theory, Heiman-Hoffman et al. (1996) argue that attitude factors, including personality traits, influence the behaviour and thus the decision-making in the organisation. Specifically, they argue that an executive's attitude is more important than situational factors when it comes to fraud or misconduct. A personality trait could be described as a set of behaviours, emotions and patterns that are rather stable in various situations and over time (Mairesse et al., 2007). Still, the psychological perspective has often been left out when researchers study account manipulations (Horvat, 2018), but in recent years researchers have started to pay more attention to the relationship between misconduct and personality (Ham et al., 2017; Capalbo et al., 2018; Horvat, 2018; Buchholz et al., 2019).

One of the most researched personality traits when it comes to unethical behaviour and earnings management is *narcissism*. Chatterjee and Hambrick (2007) found that narcissistic CEOs are more likely to undertake frequent and large acquisitions and Capalbo et al. (2018) found evidence that narcissistic CEOs are more prone to engage in accruals management. CEOs use the discretion given to them in order to adopt accounting policies to achieve their own goals. Buchholz et al. (2019) support this by arguing that highly narcissistic CEOs engage in accruals-based earnings management for self-gain. Narcissistic CFOs have also been proven to lead to more earnings management, higher probability of restatements and weaker internal control quality (Ham et al., 2017). Furthermore, a trait close to narcissism, which has been frequently found to have an impact on individual's ethical behaviour, is *machiavellianism* (manipulative, cynical, egoistic, self-centred etc.) (Horvat, 2018). Horvat (2018) found evidence that a higher level of machiavellianism leads to more accounts manipulation behaviour.

Another personality trait research has found to influence executives' decisions is *overconfidence*. Schrand and Zechman (2012) argue that overconfidence leads to optimistic bias, which increases the risk of intentional misstatements. Li and Hung's (2013) result goes in line with this, arguing that overconfident managers have a higher probability of engaging in earnings management activities. Hsieh et al. (2014) found similar results in their study, when they examine if the implementation of Sarbanes Oxley Act of 2002, a regulation to strengthen companies' internal control over financial reporting, had an impact on CEOs' level of earnings management. Overconfident CEOs were more inclined to engage in earnings management before and after the implementation of the Sarbanes Oxley Act, suggesting that these CEOs feel less constrained from regulators and might even work against them. Men are believed to exhibit more overconfidence than women when it comes to corporate decision-making (Huang & Kisgen, 2013), which is part of the explanation why studies have found *gender* to be significant in earnings management studies. Women are found to be more cautious, less risk-seeking and less risk-taking than males in a variety of decision-making contexts (Powell and Ansic, 1997; Byrnes, Miller & Schafer, 1999; Huang & Kisgen, 2013; Rau, 2014). This is strengthened by evidence that female CFOs have higher accruals quality with less estimation errors (Barua, Davidson, Rama & Thiruvadi, 2010) and that female CEOs engage less in earnings management than their male counterparts in suspect firms, i.e. firms with higher probability of earnings management (Na & Hong, 2017).

2.2.2 The Big Five personality traits model

One of the most acknowledged and well-merited personality traits models within psychology is the Big Five personality traits model (Goldberg, 1990; Judge et al., 2009 & Soto, 2019). Goldberg (1990) coined the term “Big Five factors” in an attempt to summarise the previous findings in psychology, which resulted in the following categories; i) *agreeableness* vs. disagreeableness, ii) *conscientiousness* vs. unconscientiousness, iii) *emotional stability* vs. neuroticism, iv) *extraversion* vs. introversion, and v) *openness to experience*. There are no exact definitions of these categories, but Hogan, Curphy & Hogan (1994) define the personalities as follows; *agreeableness* has to do with whether an individual is sympathetic and cooperative vs. cold and grumpy. *Conscientiousness* differentiates individuals who are hard-working and responsible vs. undependable and impulsive. A person described as *emotionally stable* is steady and self-confident vs. anxious and insecure. *Extraversion* measures the degree to which an individual is sociable and energetic vs. reserved and quiet. Lastly, *openness to experience* measures to what extent an individual is curious and broad minded vs. practical and narrow-minded, for a summary of the typical behaviours see *Table 1* below. The model has been subject to some criticism for its broad categorisation of the personality traits (Jackson & Roberts, 2017). Contrastingly, Leary and Hoyle (2009) argue that the problem is not that the categories themselves are too wide, but rather that some researchers have applied simplified methods to measure these personalities. They make the comparison that categorising all conscientious individuals as one would be the same as saying apples and pears are the same just because they are fruit. To overcome this problem, they suggest linguistic approaches as one of the few ways to properly measure personalities. The Big Five personalities model is based on such an approach, specifically the Lexical Hypothesis, which assumes that the most relevant difference between individuals is our language (Allport & Odbert, 1936; Goldberg, 1990). Additionally, the model explains how these traits translate to specific behavioural characteristics. The behavioural characteristics are based on whether an individual gets a low or high score in a particular trait.

Table 1. *Big Five personality traits*

A summary of the Big Five personality traits and the particular behaviors for each personality trait, depending on the trait’s level (high or low). Source: Hogan et al. (1994) and Mairesse et al. (2007).

Traits	High	Low
Agreeableness vs. Disagreeableness	Friendly, cooperative	Antagonistic, fault-finding
Conscientiousness vs. Unconscientiousness	Self-disciplined, organised	Inefficient, careless
Emotional stability vs. Neuroticism	Calm, unemotional, self-confident	Insecure, anxious
Extraversion vs. Introversion	Sociable, assertive, playful	Aloof, reserved, shy
Openness to experience	Intellectual, insightful, curious	Shallow, unimaginative, narrow minded

2.2.3 Conscientiousness

The reason this thesis looks specifically at conscientiousness in relation to earnings management is due to both the lack of prior research and its relevance for earnings management. Conscientious individuals tend to follow rules, have strong impulse control, be dependable, risk averse and have a drive to achieve long-term objectives (Goldberg, 1993; Judge et al., 2009; Derue, Nahrgang, Wellman & Humphrey, 2011), which seems incompatible with earnings management. The inherent characteristics of conscientiousness will be discussed in greater detail in the following section.

Little research exists regarding the impact conscientiousness has on earnings management. However, its impact on decision making overall has been more heavily studied. Individuals with high conscientiousness tend to be risk averse, analytical, cautious and less willing to innovate with unease towards stress/deadlines (Judge et al., 2009). Highly conscientious individuals can even develop into perfectionists, who hold on to procedures and policies (Judge et al., 2009). The carefulness and thoroughness can lead to new business investment opportunities being missed or not taking advantage of organisational resources (Judge et al., 2009). Furthermore, evidence shows that conscientiousness is negatively associated with firm growth (Gow, Kaplan, Larcker & Zakolyukina, 2016). However, when a strategic decision is implemented it usually affects the firm positively (Herrmann & Nadkarni, 2014). Additionally, individuals with high level of conscientiousness, especially the aspects of achievement-orientation and self-control, help mitigate the level of stress a manager faces and how to cope with it (Penley & Tomaka, 2002; Bartley & Roesch, 2011). Particularly, conscientious individuals are unlikely to procrastinate; they deal with problems on time and stay persistent (O'Brien & DeLongis, 1996). Individuals with conscientiousness often have high self-control, i.e. the ability to resist impulses, thus avoid being reckless or out of control (Jackson & Roberts, 2017). Which entails that a high combination of both conscientiousness and self-control induces the ability to set aside immediate short-term gain and gratification and instead strive to accomplish long-term goals. It has even been proven that conscientious individuals are less likely to engage in criminal activity (Krueger, Caspi, Moffitt, White, & Stouthamer-Loeber, 1996), as well as misbehave at work such as stealing or arguing with co-workers (Roberts, Harms, Caspi & Moffitt, 2007). Furthermore, conscientious individuals have better control of money and less prone to impulse driven spending (Verplanken & Herabadi, 2001). Further, conscientiousness is strongly positively correlated with job performance (highest among the Big Five traits), half as predictive as IQ and does not vary across job complexity (Barrick & Mount, 1991). In support, Mõttus, Allik, Konstabel, Kangro and Pullmann (2008) found evidence that a typical individual with high intellectual abilities scores high in conscientiousness.

Furthermore, conscientiousness is a good predictor of longevity, occupational success, health and marital stability (Roberts, Kuncel, Shiner, Caspi & Goldberg, 2007). The reasoning behind this is that conscientious individuals tend to follow social norms and therefore restrict themselves when it comes to alcohol, tobacco, drugs and speeding (Leary & Hoyle, 2009). Emotions that are positively correlated with conscientiousness include happiness, hope, pride and compassion (Penley & Tomaka, 2002). Generally, women score higher than men in conscientiousness (Keiser, Sackett, Kuncel & Brothen, 2016).

2.3 Hypothesis Development

As the literature review points out, there is extensive research on the Big Five Personalities and their relationship with executive decision-making. In addition, research regarding executives' personalities and their unethical behaviour has intensified in recent years. However, little to no research exists where the Big Five personalities model is applied to a financial accounting context. This is where the contribution of this study comes in, where we wish to determine the effect conscientiousness has on earnings management.

As previously mentioned, conscientious individuals tend to be risk averse, thorough, long-term oriented and conformant to social norms, which makes them unlikely candidates for any form of misconduct. On the contrary, as presented previously, individuals with low conscientiousness are more likely to behave unethically at work (Roberts et al, 2007) as well as engage in criminal activity (Kruger et al, 1996). Further, Van Scotter and Roglio (2018) found evidence that conscientiousness was significantly negatively correlated with unethical misconduct, fraud and excessive risk taking. Translating to an economic context, it has also been proven that individuals with low conscientiousness tend to have poor control over money (Brandstatter & Guth, 2000; Nyhus & Webley, 2001; Verplanken & Herabadi, 2001). Drawing on these findings, individuals with low conscientiousness are expected to be less duty-bound, less considerate of rules and consequences and more likely to behave unethically (Van Scotter & Roglio, 2018). With the poor self-control in mind, it is reasonable to assume that individuals with low conscientiousness have a harder time resisting financial short-term gains, especially due to the increasing emphasis on short-term targets from shareholders (Bowen et al., 2008). A well-documented practice for managers to reach short-term earnings targets is to manage earnings (Bowen et al., 2008). Hence, the hypotheses for this thesis are formulated as follows:

H1:

CEOs with low conscientiousness engage in more real earnings management

H2:

CEOs with low conscientiousness engage in more accruals-based earnings management

3. Method

Within psychology research surveys, self-report surveys and experimental studies are common methods to collect data (Cuttler, 2017). Earnings management research on the other hand tends to rely on large samples of historical data. This latter approach is used in this thesis for the financial as well as the psychology-oriented data in the form of transcribed past earnings calls. A major reason for choosing this approach lies in the high risk of low response rate from naturally busy managers (Gow et al., 2016). Therefore, a quantitative approach was used in this thesis to test the hypotheses that conscientiousness affects earnings management, which goes in line with previous research looking at decision-making and managerial behaviour in corporations (Graham et al., 2013). Earnings management was measured through Roychowdhury's (2006) three models for real earnings management as well as the accruals-based Modified Jones model (Dechow et al., 1995) and the Kothari model (Kothari et al., 2005). These models were selected following similar research in the field of earnings management (Cohen et al., 2008; Cohen & Zarowin 2010; Zang, 2012).

3.1 Sample and data collection

The dataset includes companies within the consumer staples industry listed on NYSE and Nasdaq, between the years 2010 to 2018. Besides containing world-known producers of consumables, such as Coca-Cola and PepsiCo, it has also been found that earnings management is particularly evident in the consumer staples industry (Ujah & Brusa; 2014). Two categories of data were collected; earnings calls transcripts to measure CEO personality traits (see subsection 3.2 *Measuring CEO Conscientiousness* for more detailed explanations) and financial data to measure earnings management. Transcripts of earnings calls were retrieved from Capital IQ and historical accounting data used to measure earnings management was collected from Capital IQ and Compustat. The CEOs' characteristics, apart from their personalities, were collected from Capital IQ when available and otherwise Bloomberg.

As can be seen in *Table 2*, the original number of companies listed on NYSE and Nasdaq were 118 with a total of 1019 observations. Insufficient or missing financial data constituted the largest reason for loss of observations (143). To mitigate loss of these observations, the value for the previous year was added when there was a gap between years. This was only applied for companies with low fluctuations over the period. Another considerable part of losing observations was due to no earnings calls being available. As can be seen, this was especially notable for firms listed on Nasdaq. This is likely because the companies listed there are relatively smaller compared to the firms listed on NYSE.

It should be noted that the category "CEO does not talk" includes instances where either other executives answer the questions, mainly the CFO, or the CEO is absent. This situation was not uncommon, as the *Table 2* shows. Earnings calls where no questions at all were asked by analysts were put in the category "No questions asked". Both of these categories could have been included in the "Too few words" category, but we chose to give a more detailed description of the causes for losing observations. As the table shows, CEOs that participated and were asked questions only once failed to reach the threshold of 3 000 words, see subsection 3.2 *Measuring CEO conscientiousness*. The final sample ended up at 702 firm-year observations, with a total of 89 companies.

Table 2. *Sample selection*

This table presents a detailed description of the sum of observations that were lost during the sampling process. Negative values are within parenthesis.

	<u>NYSE</u>	<u>Nasdaq</u>
Original n. of Companies	79	39
Sum original n. of Companies		118
Original observations	682	337
Sum original sample		1019
Finance data missing	(84)	(59)
CO-CEO	(9)	(2)
CEO does not talk	(32)	(16)
No questions asked	(3)	(8)
No earnings calls	(31)	(63)
Too few words	(1)	-
Too few years	(7)	(2)
Final n. of companies	66	23
Sum final n. of companies		89
Final n. of observations	515	187
Final sample		702

3.2 Measuring CEO Conscientiousness

CEOs can be considered the most relevant object of study since no other employee has more ability to influence decisions and autonomy in the organisation (Graham et al., 2013; Hope & Wang, 2018). This freedom to act provides more opportunity to pursuit opportunistic behaviour (Van Scotter & Roglio, 2018). In addition, the serious consequences for shareholders, employees, and stakeholders when CEOs misbehave, call for a thorough examination of the CEOs, where an analysis of their personality is essential (Van Scotter & Roglio, 2018). The severity of the consequences resulting from a CEO's misbehaviour makes it imperative to better understand the underlying reasoning behind the misconduct, thus enhancing this study's relevance.

In order to be able to include the CEOs' personalities in a regression model, we needed to analyse and quantify their personalities along the Big Five dimensions. This was done by downloading transcripts of earnings calls from the database Capital IQ. Earnings calls consist of two parts; first an executive manager (usually the CEO) makes a presentation of the financial quarter or year. Thereafter financial analysts are given the opportunity to ask questions, a so-called Q&A section. Earnings calls were considered a suitable base for our analysis, since language is said to serve the primary indicator of humans' psychological differences (Allport & Odbert, 1936). Of course, other forms of unprepared speech would have worked, but there is limited availability of that and in addition the setting of the speech might have varied and created biases. For these reasons, earnings

calls have been used extensively in research to analyse CEO behaviour (Hobson, Mayew, Peecher & Venkatachalam, 2017; Hope & Wang, 2018).

In order to avoid any biases, only the unscripted parts of the earnings calls, i.e. Q&A sections, were collected and manually cleaned to exclude the analysts' questions as well as answer given by other participants (e.g. the CFO). The unscripted parts of the earnings calls have proven to be the most informative, providing rigorous results concerning CEOs' personality traits (Matsumoto et al., 2011). This is because questions are asked on the spot, making it hard for the CEO to prepare an answer. Under such circumstances the CEO is forced to improvise and there is a greater likelihood of the personality shining through (Matsumoto et al., 2011). CEOs often make written statements in the financial report, but as with the presentation sections of earnings calls or any other prepared statement there is the imminent possibility that the statement has been edited or even fully prepared by other business functions, for example the communications department (Matsumoto et al., 2011). Therefore, the Q&A section of the earnings calls is deemed the best available option to base a CEO's personality assessment on.

A relatively new and advanced method for personality assessment is a Java-based algorithm developed by Mairesse et al. (2007). The algorithm is developed to recognise and quantify all the Big Five personality traits. It utilises machine learning based on 2 479 essays and conversation transcripts. The essays are written by students at Southern Methodist University in Taos, New Mexico, US and retrieved from Pennebaker and King (1999). The transcripts are everyday life conversations from students at University of Texas in Austin, US and retrieved from Mehl, Gosling and Pennebaker (2006). These essays and transcripts were used to connect linguistic features with personality traits and thus form a basis for the algorithm (Mairesse, 2007). The algorithm combines two text analysis databases: Linguistic Inquiry and Word Count (LIWC) (Pennebaker & King, 1999) and MRC Psycholinguistic database (MRC) (Coltheart, 1981). It employs frequency counts of 88-word categories from LIWC in order to extract the linguistic features and 14 additional features from MRC, which in turn is based on 150 837 words and estimate frequency of use and familiarity (Mairesse, 2007). This type of word count analysis is referred to as the "bag of words" approach. LIWC is one of the most prominent dictionaries within this type of linguistic analysis, which in turn enhances the objectivity of this thesis (Hope & Wang, 2018). The algorithm is argued to be more accurate in the long run compared to its peers since it allows for a continuous quantification score ranging from 1 (low) to 7 (high), instead of labelling an individual trait as something binary (e.g. conscientiousness or unconscientiousness) (Mairesse et al, 2007). The algorithm has four different models for computing personality scores: Linear Regression, M5' Model Tree, M5' Regression Tree and Support Vector Model. Following Green et al. (2019) we aggregate and average the scores from all four models to obtain a single personality score for each CEO and personality trait. The model has been validated in several different contexts, as a HR-recruitment tool (Faliagka, Iliadis, Karydis, Rigou, Sioutas, Tsakalidis, & Tzimas, 2014), in social media (Lima & Castro, 2014) and earnings conference calls (Green, Jame & Locket, 2019). Furthermore, the developers of the algorithm have argued that it measures consciousness the best, compared to the other personality characteristics (Mairesse et al, 2007).

Primarily, the earnings call for the fourth quarter of each fiscal year was collected. This selection was made due to time restriction, and the fact that the fourth quarter concludes the whole fiscal

year. However, some CEOs held their position for a shorter time, and some received fewer questions or gave shorter replies. This led us to include other quarters as well when needed, in order to reach the threshold sat at 3 000 words per CEO. The cut-off point was motivated by the AI properties of the algorithm, making the output more accurate the more text it analyses (Mairesse et al. (2007)). CEOs that could not meet this requirement were excluded from the sample, in order to increase the reliability of the CEOs' personality traits. Additionally, companies with co-CEOs were also excluded from the sample, as it cannot be determined which one exerts the most influence. The choice of only including companies listed in the US was made partly to reduce the possible language barrier in the earnings calls as most CEOs are native English speakers, but also due to the fact that Mairesse et al. (2007) trained the algorithm using American English data. This further enhances the reliability of the study.

Since the Big Five personalities can be considered broad, they undoubtedly influence each other. To find out the actual correlation, we constructed a pairwise correlation matrix, see *Table 3*. In order to ensure our validity, the results were compared to Van Der Linden, Nijenhuis and Bakker (2010) and Gow et al. (2016) who did similar matrices regarding personality traits. Except for a few discrepancies, most personality correlations were significant, and the directions of the correlations were similar to the matrices of Gow et al. (2016)¹ and Van der Linden et al. (2010)². Firstly, *agreeableness* and extraversion had a non-significant negative correlation of -0.0212 whereas Van Der Linden et al. (2010) and Gow et al. (2016) got a positive correlation of 0.18 and 0.28, respectively. Secondly, *conscientiousness* and emotional stability (*emotion*) had also a non-significant negative correlation of -0.0102. Van Der Linden et al. (2010) and Gow et al. (2016) also got negative correlations of -0.32 and -0.258 respectively, but since they looked at neuroticism (the inverse of emotion) the results still deviate. Lastly, the correlation between *emotion* and openness to experience (*openness*) had the right direction (0.0852), however it was only significant at 5 per cent whereas Gow et al. (2016) had significance at 1 percent. To conclude, it is worth noting that both Van Der Linden et al. (2010) and Gow et al. (2016) use different methods to obtain their personality scores. Nonetheless, the similarities across the three different matrices validate our study.

Table 3. *Pairwise correlations of Big Five personalities traits*

A summary of the pairwise correlations of the Big Five personality traits. Significance tested using t-statistics.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.010$.

	Agreeableness	Conscientiousness	Emotion	Extraversion	Openness
Agreeableness	1				
Conscientiousness	0.6058***	1			
Emotion	-0.0212	0.0762*	1		
Extraversion	0.25358***	-0.0102	0.3939***	1	
Openness	0.322***	0.6812***	0.44***	0.0852**	1

It has been debated whether personality can change or if it remains stable over time. Personality has been classified as a non-cognitive skill (Cobb-Clark & Schurer, 2012), i.e. something that goes on unconsciously. Non-cognitive skills in turn, are generally seen as stable over time (Cobb-Clark

¹ All correlations of Gow et al. (2016) were significant at 1% level.

² Van der Linden et al. (2010) display no significance levels.

& Schurer, 2012; Cobb-Clark & Schurer, 2013) and are assumed to be fixed in previous economic research (Goldsmith, Veum & Darity, 1997; Cebi, 2007; Heineck & Anger, 2010). Cobb-Clark and Schurer (2012) have shown that the Big Five personality traits remain stable over a four-year period despite experiencing life-changing events relating to health (injuries, serious illness or new health conditions), family (death of a relative or friend, being a victim of property crime) and employment (being fired, becoming unemployed, retiring or worsening of finances). Furthermore, Srivastava, John, Gosling and Potter (2003) show that personality is more likely to change prior 30 and particularly unlikely to change between the age of 30-60. In support with this, Gow et al. (2016) found that CEOs, with a median age of 55 years, had a stable personality over time across all the Big Five personality dimensions. In our sample, the mean age was 55.5 and median age 56 years, supporting our assumption of stable CEO personality, see *Table 4* in subsection *4.1 Descriptive statistics*. This suggests that personality can be considered a stable input to many economic contexts (Cobb-Clark and Schurer, 2012; Gow et al., 2016). Therefore, each CEO was assigned one fixed personality score for each of the Big Five personality traits, and these scores were applied throughout their whole tenure. However, it is important to point out that if this assumption does not hold our result run a high risk of being biased due to simultaneity (Cobb-Clark and Schurer, 2013). In order to validate our assumption of fixed personalities a robustness test was conducted where the sample period was split in two, 2012-15 and 2016-18 for all CEOs that held their position for a minimum of six out of the seven years that constitute the sample period. The personality scores for these two periods were compared through two separate regressions, to check whether the assumption of stable personality holds. As can be observed in *Table 8*, the coefficient for conscientiousness remains stable across both time periods for all real earnings management models but not for the accruals-based models, see discussion in subsection *4.4 Robustness checks*.

3.3 Earnings Management models

As previously mentioned, this study looks at both real and accruals-based earnings management; the reasoning behind this approach is that both methods are used interdependently (Zang, 2012). Roychowdhury's (2006) three real earnings management models were all applied to capture several methods of real earnings manipulations. The first one looks at sales manipulations through identifying deviations from normal levels of cash from operations. The next one looks at abnormal levels of production costs, which indicates an attempt to lower cost of goods sold. The last one looks at reduction of discretionary expenditures including R&D, marketing and SG&A expenditures.

The models used to measure accruals-based earnings management are the well-known modified Jones model (Dechow et al., 1995) and the Kothari model (Kothari et al., 2005). The modified Jones model can be argued to be the standard model when it comes to measuring accruals-based earnings management after its release in 1995 (Walker, 2013). Kothari et al. (2005) refined the modified Jones model by adding a performance indicator (ROA) to their version, which they argue is the best method to detect discretionary accruals. Analysing both real and accruals-based earnings management provides a holistic picture of earnings management, which enhances the reliability of our results.

3.3.1 Roychowdhury's (2006) Real Earnings Management models

Roychowdhury (2006) presented three models to detect several types of real earnings management, thereby expanding the research to not only focus on R&D expenditures, which had formerly been the dominant variable for studying real earnings management.

The first model looks at sales manipulations. The idea is that firms temporarily boost sales through unsustainable methods, such as excessive discounts or more lenient credit terms. This results in lower operational cash flow (CF) than what is normal given the sales level. To capture the manipulation, the normal level of CF is estimated following Dechow et al. (1998).

$$CF_{it}/A_{it-1} = \alpha_0 + \alpha_1(1/A_{it-1}) + \beta_1(S_{it}/A_{it-1}) + \beta_2(\Delta S_{it}/A_{it-1}) + \varepsilon_{it} \quad (\text{Eq. 1})$$

Where;

CF_{it} = cash for operations for firm i at time t ,

A_{it} = total assets for the period for firm i at time t ,

S_{it} = the total sales for the period for firm i at time t , and

ΔS_{it} = the change in sales for firm i from year $t-1$ to year t .

The deviation from the normal levels, i.e. the estimated residuals, are defined as abnormal CF and are equal to the difference between actual CF and normal CF. Applying Zang's (2012) approach, we multiply the residual by (-1) such that higher values indicate more aggressive sales manipulations.

The second model looks at overproduction of inventory. Companies are expected to overproduce in order to lower the unit cost of goods sold and thus report better operating margins. Production cost (PROD) is defined as cost of goods sold (COGS) plus the change in inventory (ΔINV). Again, following Dechow et al. (1998), normal levels of both cost of goods sold and change in inventory are estimated. Combining these two we estimate the production cost as follows.

$$PROD_{it}/A_{it-1} = \alpha_0 + \alpha_1(1/A_{it-1}) + \beta_1(S_{it}/A_{it-1}) + \beta_2(\Delta S_{it}/A_{it-1}) + \beta_3(\Delta S_{it-1}/A_{it-1}) + \varepsilon_{it} \quad (\text{Eq. 2})$$

Where;

$PROD_{it}$ = the sum of COGS and ΔINV for firm i at time t .

The remaining variables are defined above, after Equation 1.

The deviation from the normal levels, i.e. the estimated residuals, are defined as abnormal PROD and are equal to the difference between actual PROD and normal PROD.

The third model looks at discretionary expenditures (DISEXP), which include R&D, advertising and SG&A expenditures. Companies can reduce these expenses to report a higher result or meet earnings targets. This is most common when such expenditures are not expected to yield immediate income. Following Dechow et al. (1998), normal levels of DISEXP are estimated.

$$DISEXP_{it}/A_{it-1} = \alpha_0 + \alpha_1(1/A_{it-1}) + \beta(S_{it}/A_{it-1}) + \varepsilon_{it} \quad (\text{Eq. 3})$$

Where;

$DISEXP_{it}$ = the sum of R&D, advertising and SG&A for firm i in year t .

The remaining variables are defined above, after Equation 1.

The deviation from the normal levels, i.e. the estimated residuals, are defined as abnormal DISEXP and are equal to the difference between actual DISEXP and normal DISEXP. In line with Zang (2012) we multiply the residual by (-1) such that higher values indicate more cuts in discretionary expenditures.

For R&D and advertising cost there was a substantial amount of missing values which we replaced with zeros. This was done after checking five sample firms to see if R&D and advertising expenditures were in fact specified in their annual reports. We found no such expenditures in any of the sample firms and therefore deemed it reasonable to assume that the expenses are zero.

Following Zang (2012) we aggregated the three real earnings management proxies into one single sum, REM. Since we multiplied the residuals for CF and DISEXP by (-1) we were able to aggregate the three real earnings management models into one proxy, which provides a comprehensive measure of real earnings management.

$$REM_{it} = \sum_{k=1}^n CF_{it}/A_{it-1} + PROD_{it}/A_{it-1} + DISEXP_{it}/A_{it-1} \quad (\text{Eq. 4})$$

Where;

REM_{it} = the sum of the three real earnings management proxies CF, PROD and DISEXP for firm i in year t .

The remaining variables are defined above, after Equation 1.

3.3.2 The Modified Jones Model

The Modified Jones model attempts to account for the effect of changing economic circumstances on non-discretionary accruals and relaxes the assumption of constant non-discretionary accruals. The modification from the Jones model (Jones, 1991) is put in place to prevent the measurement error of discretionary accruals when revenues are adjusted. This is done by implementing the change in receivables of the event period. Whereas the Jones model (1991) assumes that discretion is not exercised over revenue, the Modified Jones model (Dechow et al., 1995) assumes that all changes in credit sales in the event period result from earnings management. This is based on the argument that it is easier to manage earnings by exercising discretion over the recognition of revenue on credit sales compared to cash sales (Dechow et al., 1995).

$$TA_{it}/A_{it-1} = \beta_1/A_{it-1} + \beta_2(\Delta REV_{it} - \Delta REC_{it})/A_{it-1} + \beta_3 PPE_{it}/A_{it-1} + \varepsilon_{it} \quad (\text{Eq. 5})$$

Where;

TA_{it} = total accruals for firm i in year t , calculated as $\Delta \text{Current Assets}_{it} - \Delta \text{Current Liabilities}_{it} - \Delta \text{Cash \& Short term Investment}_{it} + \Delta \text{Debt Current Liabilities}_{it} - \text{Depreciation \& Amortisation}_{it}$

A_{it-1} = total assets for firm i at the end of year $t-1$

ΔREV_{it} = change in revenue for firm i from year $t-1$ to year t ,

ΔREC_{it} = change in accounts receivables for firm i from year $t-1$ to year t , and

PPE_{it} = gross property plant and equipment in year t scaled by total assets at $t-1$.

The left side of the equation shows the sum of total accruals scaled by lagged total assets in order to normalise the variable, and the right side shows the sum of non-discretionary accruals, which is also normalised by lagged total assets. The residuals from the equation equal the sum of discretionary accruals, and the absolute value of this sum is our proxy for accruals-based earnings management.

3.3.3 The Kothari model

Kothari et al., (2005) further developed the modified Jones model by adding a performance-indicator, ROA. Firstly, one reason to include such an indicator is to control for how performance affects a firm's discretionary accruals (Dechow, Kothari and Watts, 1998). Secondly, ROA is found to be a suitable variable for detecting non-discretionary accruals (Barber and Lyon, 1996). As with the Modified Jones model (Dechow et al., 1995), the Kothari model (Kothari et al., 2005) measures accruals-based earnings management by summing the absolute value of the residuals between total accruals and non-discretionary, i.e. the sum of discretionary accruals.

$$TA_{it}/A_{it-1} = \beta_1/A_{it-1} + \beta_2(\Delta REV_{it} - \Delta REC_{it})/A_{it-1} + \beta_3 PPE_{it}/A_{it-1} + \beta_4 ROA_{it} + \varepsilon_{it} \quad (\text{Eq. 6})$$

Where;

ROA_{it} = net income over total assets for firm i in year t .

The remaining variables are defined after Equation 5, subsection 3.3.2 *The Modified Jones Model*.

3.4 Variables

3.4.1 Main independent variable

CEO *conscientiousness* is the main independent variable throughout this thesis and in all regression models. All the other independent variables have been assigned as control variables and are presented and described in the following section.

3.4.2 Control variables

A summary of all control variables is presented in *Table 4*. All the Big Five personality traits have been found to influence each other (Mairesse et al., 2007; Gow et al., 2016; Green et al., 2019). Since it has been established that executives' behaviour is influenced by their personalities (Hambrick & Mason, 1984; Heiman-Hoffman et al., 1996), we wanted to include the remaining four of the Big Five personality traits as control variables. However, due to multicollinearity issues *openness* and *agreeableness* needed to be dropped from the regressions, see subsection 3.7 *Multicollinearity*. Consequently, only *extraversion* and *emotion* were included as control variables in the regressions. *Extraversion* is found to be positively associated with leadership effectiveness (Judge et al., 2002), i.e. the ability to guide an organisation to achieve its goals (Stogdill, 1948). Green et al. (2019) found further evidence that *extraversion* is positively associated with organisational success. Therefore, *extraversion* is included as a control variable as it is logical to believe that it has a negative association with earnings management. *Emotion* is included as a control variable as individuals scoring high in this trait are found to behave steadily under pressure and have the ability to both resolve conflicts and handle negative feedback (Hogan et al., 1994). In addition, neuroticism (the inverse of *emotion*) is found to be positively correlated with overconfidence (Durand, Newby, Tant & Trepongkaruna, 2013), a trait that has been found to influence earnings management (Schrand & Zechman, 2012; Lee & Hung, 2013; Hsieh et al., 2014), whereby we deem it reasonable for

emotion to be negatively associated with earnings management. As with conscientiousness, the Mairesse et al. (2007) algorithm assigns a continuous score ranging from 1 (low) to 7 (high) for these traits as well.

We also use four CEO-specific control variables, which have been proven to correlate with a firm's level of earnings management. The first one is *CEO age*, which is found to be negatively correlated with real earnings management, since the effect of investing in R&D is more likely to show after their retirement. *CEO age* has been included as a control variable in studies looking at accruals-based earnings management (Ali & Zhang, 2015). Davidson, Xie, Xu and Ning (2007) find that older CEOs tend to do more accruals management to maximise compensation near their retirement. It has also been found that CEOs approaching retirement do more real earnings management through cuts in discretionary expenditures (Dechow & Sloan, 1991). Another control variable is *CEO duality*, meaning if the CEO is also chairman of the board. This variable is included since there is evidence of higher likelihood of earnings management in firms with CEO duality (Jiraporn, Kim, Nemec, 2004). The last control variable is *CEO gender*, which is included since female executives are more risk averse than their male counterparts (Rau, 2014) and more prone to abide by regulations and ethical values (Barua et al., 2010). Additionally, gender diversity on the board of directors has shown to mitigate earnings management (Kyaw, Olugbode & Petracci, 2015). Furthermore, female CEOs (Na & Hong, 2017) and CFOs (Peni & Vähämaa, 2010) are found to do less earnings management compared to their male counterparts. The last CEO-specific control variable is *CEO tenure*, since newly appointed CEOs are more likely to manage earnings upwards to prove their abilities to the market (Ali & Zhang, 2015). The first year of appointment is equal to tenure of zero and the CEO's year of appointment is determined by whether he or she is appointed before the mid-year (July 1st). In other words, if a CEO is appointed after July 1st 2012, the year of appointment will be 2013 and the predecessor will be given the full year of 2012.

We use several firm-specific control variables, which have been used in previous earnings management research. Firstly, we control for *size* by including the natural logarithm of total assets, since larger firms are subject to more external pressure to report more predictable earnings (Pincus & Rajgopal, 2002). In addition, larger firms have more incentive to manage earnings in order to avoid unwanted political scrutiny (Watts & Zimmerman, 1990). Market to book ratio (*M/B*) is a common proxy for growth opportunity, calculated as the market value divided by the total value of equity. This is controlled for since growth firms face significant value loss if failing to meet earnings targets (Skinner & Sloan, 2002; Hribar & Nichols). *Suspect firms* is included as a dummy variable which divides the observations into suspect and non-suspect firm years, where suspect firm years are believed to have a higher likelihood of earnings management (Roychowdhury, 2006). He defined suspect firm years as those where the net income scaled by total assets is greater than or equal to 0, but below 0.005, i.e. having a ROA between 0-0.5 per cent. Due to smaller sample size we define suspect firm years as those ranging between 0 and 0.02³. The amount of firm years with small profits, i.e. those above the zero earnings threshold, significantly exceed those below it, indicating the prevalence of earnings management and placing firms with small profits into the category of suspicion. The suspicion has later been confirmed by rigorous research showing that earnings management is used to avoid a negative result (Burgstahler & Dichev, 1997; Degeorge, Patel & Zeckhauser, 1999; Roychowdhury, 2006). The performance measure return on assets

³ This interval led to 62 firm-year observations being categorised as suspect.

(*ROA*), net income divided by total assets, is included since it has been shown that firms with poor performance have lower earnings quality (Dechow and Dichev, 2002). Earnings quality can be viewed as an inverse measure of earnings management (Baxter & Cotter, 2009) meaning that an increase in *ROA* should lower the amount of earnings management. It has also been found that a higher *ROA* leads to higher earnings quality (Baxter & Cotter, 2009; Barua et al. (2010). The last firm-specific control variable is *leverage* since it has a significant correlation with the level of earnings management. *Leverage* is considered a proxy for debt covenants, which is included since avoiding violation of debt covenants gives incentive for earnings management (Sweeney 1994; Hand & Skantz, 1998). On the other hand, *leverage* can also increase scrutiny in accordance with Jensen's (1986) "control hypothesis" stating that debt repayments shift control over the company's cash flow from the manager to the creditor. This hypothesis has later been backed in both accruals management research (Jelinek, 2007) and real earnings management research (Zamri, Rahman & Isa, 2013). *Leverage* is calculated as the sum of current and long-term debt divided by total assets. Moreover, in order to control for any macroeconomics effects on earnings management, we included year dummies (*year dummy*) across all regressions. We also control for the substitution effect between real and accruals-based earnings management (Zang, 2012) by including the proxy for the other earnings management model. The Modified Jones model proxy, *M. Jones*, was chosen as a control variable in the real earnings management regressions, as this is one of the most well-cited models to measure discretionary accruals. The combined real earnings management proxy, *REM*, was chosen as a control variable for accruals-based earnings management as it captures real earnings management overall.

Lastly, there are some additional control variables that are included specifically in the models for accruals-based earnings management. The first one is Change in revenue (ΔREV) as a measurement of growth, since it has been shown to positively correlate with discretionary accruals (Menon & Williams, 2004). A performance measure that we include is operating cash flow (*OCF*) since it has a significant negative relationship with a firm's discretionary accruals (Subramanyam, 1996).

Table 4. *Summary and definitions of control variables used in the regression models*

This table presents the control variables used in the regression models as well as the measurement and data source. The variables are defined in accordance with conventional earnings management and personality studies.

Panel A. *Control variables used in all regression models*

Variable	Measurement	Data source
Emotion	Continuous scale ranging from 1 (low) to 7 (high)	S&P Capital IQ
Extraversion	Continuous scale ranging from 1 (low) to 7 (high)	S&P Capital IQ
Agreeableness*	Continuous scale ranging from 1 (low) to 7 (high)	S&P Capital IQ
Openness*	Continuous scale ranging from 1 (low) to 7 (high)	S&P Capital IQ
CEO Age	Number of years since date of birth at year t	S&P Capital IQ & Bloomberg
CEO Duality	Binary variable (1 = chairman and CEO at year t ; 0 = CEO only at year t)	S&P Capital IQ & Bloomberg
CEO Gender	Binary variable (male = 1; female = 0)	S&P Capital IQ & Bloomberg
CEO Tenure	Number of years the CEO has held his/her position at year t	S&P Capital IQ & Bloomberg
Lev	Current liabilities and long-term debt over total assets for firm i in year t	WRDS Compustat
M/B	Market value of equity over book value of equity for firm i in year t	S&P Capital IQ
ROA	Net income over total assets times 100 for firm i in year t	WRDS Compustat
Size	Natural logarithm of total assets for firm i in year t	WRDS Compustat
Suspect firms	Binary variable (1 = firms with ROA of 0-2%; 0 = ROA outside that range)	WRDS Compustat
Year	Binary variable (1 = year t ; 0 = all other years)	N/A

Panel B. *Additional control variables used in the accruals' regression models*

Variable	Measurement	Data source
Δ Revenue	Change in revenue from year $t-1$ to time t , over total lagged assets for firm i	WRDS Compustat
CF	Operating cash flow over lagged total assets for firm i in year t	WRDS Compustat

* Variable was dropped due to multicollinearity

3.5 Regression models

3.5.1 Regression design

To test our hypothesis that low conscientiousness leads to more earnings management, as specified in subsection 2.3 *Hypothesis Development*, we conduct six different OLS regression models. Huber-White Robust Standard errors were used consistently throughout the models (Huber, 1967; White, 1980; White, 1982). As described in subsection 3.4 *Control variables*, we included several firm- and CEO-specific components as well as the remaining Big Five personality scores in order to control for various factors that could explain some of the variation in our dependent variable. However, as previously mentioned *openness* and *agreeableness* were excluded due to multicollinearity issues, see

subsection 3.7 *Multicollinearity*. Following Zang (2012) we winsorized all financial control variables at the top and bottom 1 per cent to eliminate extreme observations. When it comes to the earnings management proxies, some outliers were found here as well whereby we again followed Zang (2012) by winsorizing the real earnings management proxies at the top and bottom 1 per cent. We also winsorized the proxies for the accruals-based earnings management models, however since these are stated in absolute values, we only winsorize the top one per cent in accordance with Bucholz et al. (2019). Each models will be presented below, where the real earnings management models are used to test *H1*; that low conscientiousness leads to more real earnings management, and the accruals-based earnings management models are used to test *H2*; that low conscientiousness leads to more accrual based earnings management.

3.5.2 Real earnings management models

We used four different real earnings management models, resulting in four unique dependent variables; CF, PROD, DISEXP and REM. The CF regression model looks at cash flow manipulations, PROD looks at overproduction, DISEXP looks at cuts in discretionary expenditures and REM looks at real earnings management overall.

$$EM_{\text{real } it} = \alpha_0 + \beta_1 \text{Conscientiousness}_{it} + \beta_1 X'_{it} + \varepsilon_{it} \quad (\text{Eq. 7})$$

Where;

$EM_{\text{real } it}$ = one of the four dependent real earnings management variables for firm i in year t , and

X'_{it} = the set of control variables used in all the six regressions for firm i in year t , see *Table 4*, Panel A for specification.

3.5.3 Accruals-based earnings management models

We used two different accruals-based earnings management models, resulting in two unique dependent variables; one from the Modified Jones model (Dechow et al., 1995) and one from the Kothari model (Kothari et al., 2005). Both models look at discretionary accruals, where the latter is a modification of the Modified Jones model.

$$EM_{\text{accruals } it} = \alpha_0 + \beta_1 \text{Conscientiousness}_{it} + \beta_1 X'_{it} + \beta_1 Z'_{it} + \varepsilon_{it} \quad (\text{Eq. 8})$$

Where;

$EM_{\text{accruals } it}$ = one of the two dependent accruals-based earnings management variables for firm i in year t ,

X'_{it} = the set of control variables used in all the six regressions for firm i in year t , see *Table 4*, Panel A for specification.

Z'_{it} = the additional set of control variables included in the accruals-based earnings management regressions for firm i in year t , see *Table 4*, Panel B for specification.

3.6 Limitations

This study is subject to a number of limitations, predominantly relating to the psychological aspect, which will be discussed in this section.

As previously mentioned, the Mairesse et al. (2007) algorithm has been validated by the authors themselves as well through several other studies (Faliagka et al., 2014; Lima & Castro, 2014; Green et al., 2019). However, it has not been extensively validated in the specific context of CEO speech in Q&A sections of earnings calls. To ensure that the measurements are as reliable and rigorous as possible we have conducted a correlation matrix where personality correlations are compared with

similar studies, see *Table 3* in subsection 3.2 *Measuring CEO conscientiousness*, as well as manually cleaned the earnings calls text from questions and other non-CEO speech.

Furthermore, the algorithm is developed based on speech by ordinary people (Mairesse et al., 2007). The algorithm is thus not developed specifically for CEOs, who are argued to be more optimistic and risk tolerant than the average population (Graham et al., 2013). Additionally, CEOs are a homogenous group of people that diverges from the general public in terms of experience, education, age and socioeconomic background (Hambrick, 2007). This suggests that the algorithm may not accurately evaluate CEOs. One way to improve the algorithm would be to train it using input data from CEOs. However, this is perhaps more difficult than it seems since executives are known to be unwilling to participate in scholarly inquiries, which often leads to lack of sufficient data (Hambrick, 2007). This could be helped by including video metric measurements of CEOs, where videos are assessed and rated (Hill, Petrenko, Ridge & Aime, 2019). Complementing linguistic cues with visual and verbal cues could be used for validation or as input data to improve the algorithm. As of now, linguistic, visual and verbal cues are studied separately, but combining them could make personality assessments more accurate (Mairesse et al., 2007; Mayew & Venkatachalam, 2012; Hill et al., 2019).

Another limitation of the study is the assumption of a linear relationship between the dependent and independent variables. It cannot be guaranteed that this is the most suitable assumption for our study due to the complex relationships between psychology and corporate misconduct. This opens up for the possibility that more sophisticated, nonlinear models would better capture the true relationships.

Our relatively small sample size compared to similar studies within the field of earnings management could also pose a limitation. A small sample size reduces the power of the study and could lead to inaccurate results. For example, our sample size forced us to expand the interval for *suspect firms* from Roychowdhury's (2006) 0-0.5 per cent to 0-2 per cent. Such modifications increase the risk of missing true statistical inferences. Furthermore, only 6 per cent (32-40 observations in the respective models) of the sampled CEOs were female, impeding on the reliability of our result concerning *CEO gender*.

A further potential limitation of the study is the reliability of financial data collected from databases. After manually checking outliers we identified a few cases where the numbers in the database did not match those in the annual report and the data was corrected accordingly. Outliers were also corrected for by winsorizing the dataset. In connection to this, we noticed that the variables R&D and advertising had abnormally high amounts of missing values⁴, as previously mentioned. After checking a sample of firms, we noticed that the missing values were not explicitly stated in the annual reports, and therefore assumed to be zero. This assumption may seem bold; however, the alternative was to exclude Roychowdhury's (2006) discretionary expenditures model altogether and we would have lost an integral method of earnings management in our study. R&D investment is believed to be the origin of real earnings management since it has a direct and considerable impact on cash flow and profitability (Kouaib & Jarboui, 2016). R&D expenditures in particular have since long been prevalent in real earnings management studies, where Baber et al. (1991) and Bushee (1998) find that reduction of R&D expenditures are done to meet earnings benchmarks and Bens, Nagar and Wong (2002) find that managers reduce R&D in favour of stock repurchases to avoid

⁴ 291 and 200 observations were missing from R&D and advertising, respectively.

earnings per share dilution. Thus, the opportunistic reduction of R&D expenditure has been found to be a central part of real earnings management (Roychowdhury, 2006) and deemed too important not to be included.

4. Results

4.1 Descriptive statistics

A descriptive statistic of the final sample, independent and dependent variables used in this study are provided in *Table 4*. The sample consists of 135 CEOs from 89 different companies in the consumer staples industry, listed on the NYSE and Nasdaq. The sample period stretches from the year 2012 to 2018.

Table 4, Panel A shows the summary statistics from the 135 CEOs and their specific variables. Since each CEO recurs at least once, there are more observations than CEOs. The mean and median of the five personality characteristics are strikingly similar and standard deviations low, indicating a symmetric distribution with negligible skewness. The typical CEO in our sample is male (94.3 per cent), around 55 years (55.5) old with a tenure of approximately six years (mean of 6.849 and median 5 years). A bit under half (41.9 per cent) of the CEOs hold the position of both CEO and chairman of the board. Our median age of 56 supports the assumption of stable personalities, since personality is found to be particularly stable between the age of 30 to 60 (Srivastava et al., 2003). Furthermore, Gow et al. (2016) found that CEOs had stable personalities across all the Big Five dimensions with a median age of 55 years.

Table 4, Panel B shows the summary statistic of the firm-specific variables used in this study. Even with winsorizing we can still observe some abnormal values for *leverage* and *M/B*. For *M/B*, the mean and median have a notable deviation, indicating a positive skewness in the data. This is problematic since it violates the assumption of normal distribution, hence questioning the reliability of the variable. It can also be seen that 10.2 per cent of the firms in this sample were categorised as *suspect firms*, meaning they had a ROA ranging between 0-2 per cent.

Table 4, Panel C shows the summary statistic of earnings management proxies. The real earnings management proxies are similar to those of Zang (2012) and the proxies for accruals management are also similar to previous findings (Jones, Krishnan & Melendrez, 2008; Barua et al., 2010; Kuang, Qin & Wielhouwer, 2014), which validates our study. The observations vary slightly between the models due to different requirements of input variables.

Table 4, Panel D shows the summary statistic for earnings calls. 683 earnings calls were collected and put together into 135 documents, one per CEO. On average, five earnings calls have been collected per CEO, with a minimum of just one and a maximum of eleven. We had no threshold of number of earnings calls, as long as the total number of words reached at least 3 000. The number of analysts present at the earnings calls and tenure of the CEOs primarily explain the large dispersion of word counts, but the varying talkativeness from each CEO was also a factor.

Table 5. *Sample summary statistics for independent variables*

This table presents descriptive statistics for the CEO- and firm-specific control variables used in the regression models, as well as proxies for earnings management and earnings calls. The table is divided into four panels. All control variables are presented in subsection 3.4.2 *Control variables* and defined in Table 4.

Panel A: *Summary statistic of CEO-specific variable*

Variable	Obs.	Mean	Std. Dev	Min	Median	Max
Conscientiousness	558	3.635	0.654	1.794	3.623	5.007
Emotion	558	3.336	0.345	2.548	3.370	4.345
Extraversion	558	3.683	0.607	2.395	3.597	5.338
Agreeableness	558	3.790	0.425	2.194	3.704	4.793
Openness	558	3.734	0.488	2.523	3.765	4.782
CEO Age	558	55.504	7.243	27	56	77
CEO Duality	558	0.419	0.494	0	0	1
CEO Gender	558	0.943	0.233	0	1	1
CEO Tenure	558	6.670	6.849	0	5	47

Panel B: *Summary statistic of firm-specific variables*

Variable	Obs.	Mean	Std. Dev	Min	Median	Max
Lev	558	0.351	0.194	0.001	0.346	0.948
M/B	558	4.962	20.682	-75.405	2.665	142.740
ROA	558	0.064	0.060	-0.118	0.06	0.237
Size	558	8.487	1.781	4.197	8.415	12.462
Suspect firms	558	0.102	0.303	0	0	1
Δ Revenue	535	0.067	0.173	-0.397	0.027	0.804
OCF	558	0.110	0.069	-0.067	0.104	0.331

Panel C: *Summary statistic of proxies*

Variable	Obs.	Mean	Std. Dev	Min	Median	Max
CF	535	-0.000112	0.069	-0.204	0.0058	0.196
PROD	512	0.0032	0.241	-0.834	0.22	0.505
DISEXP	528	0.0012	0.247	-1.081	0.41	0.423
REM	505	0.0036	0.519	-2.117	0.69	1.125
M. Jones	528	0.030	0.033	0.000127	0.21	0.176
P. Matched	528	0.031	0.032	0.00009	0.21	0.167

Panel D: *Summary statistic of earnings calls*

Variable	Obs.	Mean	Std. Dev	Min	Median	Max
Earnings calls	683	5.059	2.157	1	5	11
Word count	135	10 584.21	6 820.491	3 021	8 006	40 398
Sentences	135	568.422	368.679	119	450	2 150

4.2 CEO conscientiousness and real earnings management

In this section, we present our results regarding our first hypothesis, *H1*; that *CEOs with low conscientiousness engage in more real earnings management*. In Table 6 below, the regression results for the dependent variables of the real earnings management models; CF, PROD, DISEXP and REM are presented. CF looks at sales manipulations through companies' operating cash flow. PROD focuses on overproduction as a means of increasing earnings. DISEXP looks at cuts in R&D, SG&A and advertising expenditures in order to increase earnings. Following Zang (2012) we also look at a combined proxy for real earnings management overall, REM.

It can be observed that the *conscientiousness* coefficient is negatively significant in all real earnings management models. In the CF models, it is significant at 10% level, whilst in the remaining three it is significant at 5% level. The coefficient of *conscientiousness* is consistently negative, which leads us to conclude that a one-unit increase in CEO *conscientiousness* corresponds to a decrease in real

earnings management. More specifically, a one-unit increase in *conscientiousness* corresponds to a 0.575 percentage point decrease in sales manipulations, a 3.37 percentage point decrease in overproduction, a 4.81 percentage point decrease in discretionary expenditure cuts and lastly an 8.29 percentage point decrease in real earnings management overall. Thereby, our results support *H1*; that *CEOs with low conscientiousness engage in more real earning management*. The intuitive reasoning behind this result is that managers with low conscientiousness have a harder time resisting short-term gains (Bowen et al., 2008), likely due to their poor self-control (Jackson & Roberts, 2017). These individuals are also found to be more likely to behave unethically, be less duty bound and less considerate of rules and consequences (Van Scotter & Roglio, 2018). Turning to a professional context, individuals with low conscientiousness are more likely to behave unethically at work (Roberts et al., 2007) and have poorer control over money (Brandstatter & Guth, 2000; Nyhus & Webley, 2001; Verplanken & Herabadi, 2001). With this in mind, our result that CEOs with low conscientiousness engage in more real earnings management goes in line with previous research.

Some noteworthy results have also been found in regard to the CEO characteristics control variables. First of all, the coefficient for *CEO age* is negatively significant at 1% in the CF model. This finding suggests that older CEOs do less cash flow manipulations. This contradicts the research indicating that CEOs do more earnings management to maximise compensation as they approach retirement (Dechow & Sloan, 1991). However, it goes in line with psychology research reporting a positive correlation between age and ethical behaviour (Mudrack, 1989). This is reinforced by studies showing that older business professionals display higher standards of ethical belief (Dawson, 1997) and are more likely to perceive certain business practices as immoral, such as falsifying reports (Deshpande, 1997). In connection to this, it has also been found that age is positively correlated with ethical decision-making (Loe, Ferrell & Mansfield, 2000) and higher reporting quality, meaning they make fewer financial restatements (Huang, Rose-Green, Lee, 2012). Nonetheless, since *CEO age* is not significant elsewhere, we cannot confidently conclude that age has a meaningful role in the level of real earnings management a CEO engages in overall. Next, the coefficient for *CEO duality* is found to be significant in all real earnings management models. For CF and PROD the significance level is at 10% and for DISEXP and REM it is at 5%. The coefficients are all positive, which is consistent with previous literature stating that CEOs with duality, i.e. that simultaneously hold the position of chairman of the board, are more prone to engage in earnings management (Jiraporn et al., 2004) The authors argue that this is due to an increase in the CEO's discretion over reported earnings as well as the increased pressure to perform well. Lastly, the coefficient for *CEO Gender* was found to be positively significant in the CF model at 5% significance level. The finding that male CEOs engage in more sales manipulations is in line with previous research which has established that gender diversity in boards of directors leads to less earnings management (Kyaw et al, 2015) and female CEOs are found to do less earnings management (Na & Hong, 2017) compared to their male counterparts. The underlying reasons are that female directors are more risk-averse (Rau, 2014) and follow regulations and ethical values to greater extent (Barua, et al., 2010). However, *CEO Gender* is still ambiguous in regard to real earnings management overall since we do not find significance elsewhere.

Regarding the firm-specific control variables we observe that the coefficient for *leverage* is negatively significant for PROD at 1% level, DISEXP at 10 % level and REM at 5% level. The negative association supports Jensen's (1986) "control hypothesis", that leverage limits managers' ability to

manipulate earnings, as well as more recent research (Jelinek, 2007; Zamri, Rahman & Isa, 2013). Furthermore, the coefficient for M/B is significant with a negative association in all four real earnings management models, with significance levels ranging between 1% and 10%. This goes against previous research suggesting that a higher M/B indicates more incentives to meet earnings targets, since failure to meet them leads to significant value loss (Sloan & Skinner, 2002; Hribar & Nichols, 2007). As discussed in subsection 4.1 *Descriptive statistics*, it should be noted that M/B is still plagued by outliers after winsorizing, whereby the reliability of this variable could be questioned. Next, the coefficient for ROA is found to be significant at 1% across all real earnings management models, with negative coefficients. This confirms the finding of Baxter & Cotter (2009) and Barua et al. (2010) that firms with lower ROA do more earnings management, indirectly also confirming the finding of Dechow and Dichev (2002) that firms with poor performance have lower earnings quality. The coefficient for $size$ is found to be positively significant in three of the four real earnings management models; CF, PROD and REM with significance levels at 1%, 10% and 10% significance level, respectively. This goes in line with previous findings that larger firms do more earnings management to fulfil analysts' expectations (Pincus & Rajgopal, 2002) as well as to avoid potential scrutiny (Watts & Zimmerman, 1990). Moreover, no significance was found for the coefficient for *suspect firms* in any of the real earnings management models. One reason may lie in the adjusted interval for our variable *suspect firms* compared to Roychowdhury (2006). The increase from the original interval of 0-0.5 per cent, to 0-2 per cent in ROA potentially dilutes the essence of what the variable intends to capture, i.e. firms with ROA just above zero. Lastly, we find no support for the substitution effect in either of the real earnings management models, as the coefficient for $M. Jones$ was not significant.

Table 6. Regression result for CEO conscientiousness and earnings management

This table present the results from our six earnings management models. The first four are real earnings management models; where CF looks at sales manipulation, PROD looks at overproduction, DISEXP looks at cuts in discretionary expenditures and REM looks at real earnings management overall. The last two are accruals-based earnings management models; where both M. Jones and Kothari look at discretionary accruals. Inc. stands for included. Year dummies are included in all regressions. All controls variables are presented in subsection 3.4.2 *Control variables* and defined in Table 4. Robust standard errors are in parentheses. * p<0.10, ** p<0.05, *** p<0.010.

Variables	CF	PROD	DISEXP	REM	M. Jones	Kothari
Conscientiousness	-0.00575* (0.00342)	-0.0337** (0.0168)	-0.0481** (0.0188)	-0.0829** (0.0370)	0.00158 (0.00227)	0.00207 (0.00221)
Emotion	-0.00953 (0.00641)	0.00622 (0.0304)	0.0123 (0.0329)	0.00770 (0.0652)	0.00178 (0.00376)	0.00201 (0.00365)
Extraversion	-0.000326 (0.00421)	0.0119 (0.0176)	0.0167 (0.0188)	0.0272 (0.0380)	-0.00151 (0.00258)	-0.000974 (0.00252)
CEO age	-0.00109*** (0.000378)	-0.00250 (0.00162)	-0.000785 (0.00165)	-0.00485 (0.00350)	-0.000560* (0.000286)	-0.000560** (0.000278)
CEO duality	0.00812* (0.00481)	0.0335* (0.0197)	0.0457** (0.0206)	0.0847** (0.0417)	0.00369 (0.00298)	0.00371 (0.00288)
CEO gender	0.0151** (0.00744)	0.0283 (0.0267)	0.0262 (0.0277)	0.0652 (0.0554)	0.0118*** (0.00372)	0.0114*** (0.00368)
CEO tenure	-0.000278 (0.000401)	0.00190 (0.00187)	0.00204 (0.00198)	0.00445 (0.00404)	0.0000171 (0.000272)	0.0000204 (0.000266)
Leverage	-0.00398 (0.0141)	-0.211*** (0.0611)	-0.119* (0.0659)	-0.344** (0.134)	0.00357 (0.00942)	0.00412 (0.00915)
M/B	-0.000137* (0.0000765)	-0.000545* (0.000309)	-0.000910*** (0.000351)	-0.00153** (0.000691)	-0.00000756 (0.0000358)	-0.0000188 (0.0000354)
ROA	-0.806*** (0.0547)	-1.933*** (0.219)	-1.286*** (0.244)	-4.104*** (0.479)	-0.0233 (0.0480)	-0.0207 (0.0466)
Size	0.00593*** (0.00147)	0.0124* (0.00703)	0.0101 (0.00711)	0.0281* (0.0151)	-0.00518*** (0.000956)	-0.00523*** (0.000937)
Suspect firms	-0.00363 (0.00772)	0.0181 (0.0293)	0.0426 (0.0274)	0.0516 (0.0595)	0.000858 (0.00652)	0.000659 (0.00633)
ΔRevenue					0.0148 (0.0122)	0.0142 (0.0118)
OCF					-0.0319 (0.0518)	-0.0279 (0.0486)
M. Jones	0.0721 (0.126)	-0.138 (0.464)	-0.432 (0.471)	-0.519 (0.977)		
REM					-0.00372 (0.00490)	-0.00283 (0.00463)
Year dummy	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
Constant	0.102*** (0.0310)	0.254* (0.133)	0.113 (0.148)	0.498* (0.294)	0.0936*** (0.0230)	0.0891*** (0.0225)
N	528	504	528	504	504	504
R ²	0.506	0.253	0.148	0.249	0.170	0.173

4.3 CEO conscientiousness and accruals-based earnings management

In this section we present the results regarding our second hypothesis, *H2*; that *CEOs with low conscientiousness engage in more accruals-based earnings management*. In *Table 6* above, the regression results for the dependent variables M. Jones and Kothari are presented. Both look at discretionary accruals manipulations, but the latter adds ROA as a performance indicator.

When observing the result in *Table 6*, it can be seen that neither *conscientiousness* nor any other personality traits have significant coefficients. In other words, we find no support for our second hypothesis, *H2*. Nevertheless, there are still some points to be discussed regarding these results. First of all, the fact that *conscientiousness* is negatively significant in the real earnings management models but not in the accruals models raises the question why the two differ. Turning to previous studies, it has been found that different types of companies opt for different types of earnings management (Siregar & Utama, 2008; Achleitner et al., 2014). Siregar and Utama (2008) find that family owned firms do more efficient earnings management as opposed to opportunistic earnings management, meaning they tend to opt for earnings management that enhances informativeness through communicating private information rather than maximizing their own utility. This can be explained by the limited prevalence of agency problems in these firms (Anderson, Mansi & Reeb, 2003). Achleitner et al. (2014) offer further evidence that family firms tend to avoid value decreasing earnings management methods. Put differently, the authors find that family firms engage in more accruals-based earnings management than real earnings management, as the former has less impact on long-term firm value. This finding is in accordance with the socioemotional wealth theory, stating that family members consider the firm a long-term investment to be passed on to future generations (Berrone, Cruz & Gomez-Meija, 2012). The long-term orientation resembles that of CEOs with high conscientiousness, whereby it makes intuitive sense that we found significance for the method that more extensively deteriorates the firm's long-term value, i.e. real earnings management. This points to the possibility that different personalities do different types of earnings management, similarly to how different types of firms engage in different types of earnings management. In turn, this possibility opens up for a new area of research.

Moving over to the control variables, we notice that the coefficient for *CEO age* is negatively significant in the M. Jones model at 10% level, and in the Kothari model at 5% level. This suggests that the older the CEO is, the less accruals management he or she engages in. This goes in line with the results for real earnings management, where it was found that the coefficient for *CEO age* is negatively associated with cash flow manipulations. As previously mentioned, it goes against previous earnings management research (Dechow & Sloan, 1991; Davidson, Xie, Xu and Ning 2007). However, it supports research stating that older CEOs exhibit higher ethical standard (Mudrack, 1989; Dawson, 1997; Deshpande, 1997; Loe et al., 2000). Additionally, the coefficient for *CEO gender* is strongly significant at 1% level in both models with a positive relationship. This indicates that male executives are more prone to do accruals manipulations, which supports previous research (Peni & Vähämaa, 2010; Kyaw et al, 2015; Na & Hong, 2017). The last significant coefficient is *size* at 1% in both accruals models. Contradicting the finding for real earnings management, *size* has a negative coefficient regarding accruals manipulations. However, this has an intuitive logic since accruals manipulations are more likely to be detected and larger firms are subject to more scrutiny. Thus, larger firms tend to primarily opt for real earnings management, which is easier to disguise (Cohen, Day & Lyn, 2008). Lastly, as for the real earnings management

models we find no support for the substitution effect in either the M. Jones or Kothari model, as the coefficient for *REM* was not significant.

4.4 Robustness checks

The purpose of a robustness check is to verify the correctness of the results, i.e. a safety precaution to deal with empirical issues and omitted variable bias (Francis, Hasan, Park and Wu, 2015). This section contains a discussion regarding the robustness checks conducted in this study.

4.4.1 Omitted variable bias

Omitted variable bias is a particularly prevalent problem in the area of social and behavioural sciences (Vella, 1998). Omitted variable bias is when one or several variables that affect the dependent variable (earnings management) are omitted from the regression. Consequently, the omitted variable/s end up in the error term, which becomes correlated with one or several explanatory variables (Wooldridge, 2002; Wooldridge, 2006). It is difficult in practice to include every possible explanatory variable in the regression due to observation, quantification and collection issues. One common practice to ensure a limited likelihood of omitted variable bias is to use two-stage least squares (2SLS) regression analysis, which uses an instrument to replace the variable causing the endogeneity problem. This approach was not chosen for two reasons; firstly, there was no suitable instrument available and secondly, this approach led to severe multicollinearity issues. Therefore, we opted for another approach developed by Emily Oster (2019), who states that omitted variable bias is less prominent when the coefficient of interest (*conscientiousness*) remains stable and the R-squared increases after including a wide range of control variables. A coefficient is classified as stable when the sign maintains its direction and there is relatively little change in magnitude. This approach has been used in previous personality research (Green, 2019). In *Table 7* we present each earnings management model with four different sets of control variables, partly to illustrate that omitted variable bias is not likely to be prominent, but also to illustrate the effects of including versus excluding the other Big Five personality traits and transparency of including versus excluding *agreeableness* and *openness* which were suspected of multicollinearity, see subsection 4.4.2 *Multicollinearity*. As could be observed in *Table 7*, panel A and B, the coefficient for *conscientiousness* maintains its direction in a stable manner for all real earnings management regressions after adding several sets of control variables and the R-squared increases subsequently. For the CF model, the coefficient ranges between -0.0163 and -0.00263, for PROD it ranges between -0.0412 and -0.0217, for DISEXP between -0.0582 and -0.0188 and lastly between -0.0478 and -0.106 for REM. Conclusively, since the coefficient for *conscientiousness* remains stable throughout the regressions as R-squared increases with additional control variables, it can be firmly stated that we fulfil the requirements of Oster's (2019) approach. This is reassuring as it leads us to conclude that omitted variable bias should not be a significant issue for our real earnings management results. However, for our accruals models, the coefficient for *conscientiousness* is not as stable and even changes direction when more control variables are included, see *Table 7*, panel C. The possibility of omitted variable bias in the accruals models and not the real earnings management models seems unlikely but not impossible. There are some obvious factors that have not been included in the regression and may well cause omitted variable problems. One example is company culture, which might affect how a company acts in regard to earnings management, but

also how the CEO presents him- or herself in public settings such as earnings calls. However, such factors are difficult to capture and thus omitted variable bias can never be fully rejected.

Table 7. *Robustness result for CEO conscientiousness and earnings management*

This table presents four different versions for all earnings management models, CF, PROD, DISEXP, REM, M. Jones and Kothari. Each version is presented in order to i) illustrate the effects of including versus excluding the other Big Five personality traits, ii) illustrate transparency of including versus excluding *agreeableness* and *openness* which were suspected of multicollinearity, see subsection 4.4 *Robustness Checks* and iii) illustrate that omitted variable bias is not likely to be prominent as discussed in subsection 3.6 *Omitted variable bias*. Version (1) includes only the Big Five personality traits that do not suffer from multicollinearity. Version (2) excludes all the Big Five personality scores apart from conscientiousness. In the main version (Main) all control variables are included except for *agreeableness* and *openness*. Lastly, version (4) includes all control variables. Year dummies are included in all versions. All controls variables are presented in subsection 3.4.2 *Control variables* and defined in Table 4. Robust standard errors are in parentheses. * p<0.10, ** p<0.05, *** p<0.010.

Panel A: *Robustness result for CF and PROD*

Variables	Cash-flow				Overproduction cost			
	(1) CF	(2) CF	Main	(4) CF	(1) PROD	(2) PROD	Main	(4) PROD
Conscientiousness	-0.00263 (0.00418)	-0.00584* (0.00339)	-0.00575* (0.00342)	-0.0163*** (0.00594)	-0.0412** (0.0164)	-0.0334** (0.0168)	-0.0337** (0.0168)	-0.0217 (0.0243)
Emotion	-0.0187** (0.00910)		-0.00953 (0.00641)	-0.0117* (0.00708)	-0.0118 (0.0350)		0.00622 (0.0304)	-0.0239 (0.0338)
Extraversion	-0.0103** (0.00513)		-0.000326 (0.00421)	-0.00372 (0.00457)	0.00459 (0.0184)		0.0119 (0.0176)	0.0460** (0.0197)
Agreeableness				0.00954 (0.00702)				0.0544* (0.0302)
Openness				0.0144* (0.00740)				-0.0698** (0.0296)
CEO-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Firm-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
M. Jones		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
Constant	0.108*** (0.0318)	0.0678*** (0.0220)	0.102*** (0.0310)	0.0668* (0.0361)	0.183 (0.125)	0.305*** (0.0965)	0.254* (0.133)	0.267* (0.147)
N	535	528	528	528	511	504	504	504
R ²	0.025	0.504	0.506	0.511	0.013	0.252	0.253	0.265

(Continued on next page)

Table 7. Robustness result for CEO conscientiousness and earnings management (Cont'd)

Panel B: Robustness result for DISEXP and REM

Variables	Discretionary expenditures				Real earnings management overall			
	(1) DISEXP	(2) DISEXP	Main	(4) DISEXP	(1) REM	(2) REM	Main	(4) REM
Conscientiousness	-0.0582*** (0.0181)	-0.0477** (0.0188)	-0.0481** (0.0188)	-0.0188 (0.0265)	-0.106*** (0.0366)	-0.0822** (0.0369)	-0.0829** (0.0370)	-0.0478 (0.0526)
Emotion	-0.00762 (0.0348)		0.0123 (0.0329)	-0.0362 (0.0362)	-0.0365 (0.0735)		0.00770 (0.0652)	-0.0724 (0.0721)
Extraversion	0.0193 (0.0182)		0.0167 (0.0188)	0.0761*** (0.0208)	0.00953 (0.0395)		0.0272 (0.0380)	0.120*** (0.0424)
Agreeableness				0.0837** (0.0330)				0.143** (0.0652)
Openness				-0.131*** (0.0319)				-0.191*** (0.0643)
CEO-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Firm-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
M. Jones		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
Constant	0.169 (0.129)	0.195* (0.107)	0.113 (0.148)	0.173 (0.159)	0.481* (0.270)	0.590*** (0.209)	0.498* (0.294)	0.542* (0.322)
N	528	528	528	528	504	504	504	504
R ²	0.025	0.146	0.148	0.184	0.019	0.248	0.249	0.268

Panel C: Robustness result for M. Jones and Kothari

	Modified Jones				Kothari			
	(1) M. Jones	(2) M. Jones	M. Jones	(4) M. Jones	(1) Kothari	(2) Kothari	Main	(4) Kothari
Conscientiousness	-0.00296 (0.00207)	0.00158 (0.00226)	0.00158 (0.00227)	0.00538 (0.00395)	-0.00263 (0.00201)	0.00209 (0.00220)	0.00207 (0.00221)	0.00594 (0.00387)
Emotion	0.00357 (0.00389)		0.00178 (0.00376)	0.00195 (0.00411)	0.00383 (0.00376)		0.00201 (0.00365)	0.00238 (0.00405)
Extraversion	-0.00562** (0.00249)		-0.00151 (0.00258)	0.000368 (0.00289)	-0.00522** (0.00244)		-0.000974 (0.00252)	0.000750 (0.00284)
Agreeableness				-0.00215 (0.00419)				-0.00259 (0.00416)
Openness				-0.00626 (0.00492)				-0.00604 (0.00478)
CEO-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Firm-specific control variables		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
REM		Inc.	Inc.	Inc.		Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
Constant	0.0559*** (0.0159)	0.0965*** (0.0185)	0.0936*** (0.0230)	0.105*** (0.0264)	0.0523*** (0.0155)	0.0941*** (0.0178)	0.0891*** (0.0225)	0.101*** (0.0259)
N	528	504	504	504	528	504	504	504
R ²	0.040	0.170	0.170	0.173	0.039	0.172	0.173	0.176

4.4.2 Multicollinearity

As previously shown in the correlation matrix, *openness* correlates with *conscientiousness* at nearly 0.7 (0.6812). This was our first indication of potential multicollinearity issues, since multicollinearity greater than 0.7 is generally considered severe (Vatcheva, McCormick, & Rahbar, 2016). However, this alone is not enough to safely say that multicollinearity problems prevail. A further indication was the inconsistent results of the *openness* coefficient, when including it in the regressions, see *Table 7* in subsection 4.4.1 *Omitted variable bias*. At a first glance, *openness* seems to affect earnings management negatively. Its significance indicates that it is a determinant of real earnings management and should be included in the regressions. However, as mentioned, the results are rather inconsistent, supporting our suspicion of multicollinearity. Firstly, in the CF model version (4), the coefficient for *conscientiousness* is negatively significant at 5%. Meanwhile, the coefficient for *openness* is positively significant at 10%. This seems counterintuitive since the correlation of the two variables is nearly 0.7, see *Table 2* in subsection 3.2 *Measuring CEO Conscientiousness*, suggesting that they should influence earnings management in the same direction. Additionally, they do not only contradict each other, but *openness* also contradicts itself. In all other models where *openness* is significant it has a negative coefficient, whereas for CF the coefficient is positive. Additionally, we observed our variance inflation factor (VIF). It has been debated where the threshold lies for a critical VIF-value; researchers commonly use a range between 4 and 10 (O'Brien, 2007). O'Brien continues to say that the VIF-values alone are not enough to determine whether multicollinearity problems exist, it needs to be evaluated in its unique context. In our case the VIF-value lies around 3.5 for *conscientiousness*, 3 for *openness* and for the model as a whole it was around 1.74, thus not exceeding any critical thresholds. However, due to the high correlation in combination with the inconsistent results we deemed it necessary to exclude *openness* from the regressions.

The correlation matrix provided another high correlation, see subsection 3.2 *Measuring CEO conscientiousness*, the one between *conscientiousness* and *agreeableness* at 0.6058. As with *openness*, this was our first sign of potential multicollinearity issues. However, at a first glance *agreeableness* seemed to be affecting earnings management positively, indicating that it should be included in the regressions. In addition, the VIF-value for *agreeableness* is only 2.2, which contradicted our initial suspicion of multicollinearity. Nevertheless, as mentioned earlier VIF-value alone is not sufficient to make an inference about multicollinearity. In addition, the high positive correlation between *conscientiousness* and *agreeableness* suggests that they should influence earnings management in the same direction, not the opposite as we observed. Moreover, *agreeableness* has a negative correlation with all real earnings management proxies, suggesting that if significant it should decrease real earnings management not increase it. This further validates our assumption of multicollinearity. Furthermore, in several instances, the coefficient for *agreeableness* changes direction depending on which control variables are included in the regression, see *Table 7* in subsection 4.4.1 *Omitted variable bias*. Commonly, this is caused by collinearity between the independent variables. Therefore, *agreeableness* has also been excluded from our regressions. As shown in *Table 7* in subsection 4.4.1 *Omitted variable bias*, the coefficient for *conscientiousness* changes direction when more control variables are added to the regressions for both accruals models. As with *agreeableness*, this is a sign of potential multicollinearity issues. However, in both models the VIF for *conscientiousness* is only 1.29 and the models have a low acceptable mean of 1.46, indicating that multicollinearity should not be a significant issue (O'Brien, 2007).

4.4.3 Robustness check for stable personality

Regarding the robustness check for stable personality presented in subsection 3.2 *Measuring CEO conscientiousness* and shown in Table 8, we can observe that the coefficient for *conscientiousness* is negatively stable across all real earnings management models, validating our assumption of stable personality. However, this is not the case when observing the accruals models. One important aspect to note is that the sample sizes are relatively small, which could affect the power of the robustness test. Furthermore, it should be noted that the results across the two groups support *H1* and the findings in our main models, since in six out of eight real earnings management models the coefficient for *conscientiousness* remains negatively significant.

Table 8. *Robustness result for CEO conscientiousness and stable personality*

This table presents the results of two separate regressions run for each earnings management model. The earnings calls of each CEO have been split into two different time periods (groups). These regressions are performed to test whether the assumption of stable personality holds. All control variables are presented in subsection 3.4.2 *Control variables* and defined in Table 4. Robust standard errors are in parentheses. * p<0.10, ** p<0.05, *** p<0.010.

Panel A: *Robustness result for stable personality in CF and PROD*

Variables	Cash-flow		Overproduction cost	
	Group 1 CF	Group 2 CF	Group 1 PROD	Group 2 PROD
Conscientiousness	-0.0122** (0.00598)	-0.0275*** (0.00896)	-0.0425 (0.0315)	-0.0690* (0.0363)
Big Five personality traits	Inc.	Inc.	Inc.	Inc.
CEO-specific control variables	Inc.	Inc.	Inc.	Inc.
Firm-specific control variables	Inc.	Inc.	Inc.	Inc.
M. Jones	Inc.	Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.
Constant	0.189** (0.0746)	0.0261 (0.0652)	0.258 (0.281)	-0.269 (0.249)
N	130	109	128	106
R ²	0.607	0.619	0.430	0.410

(Continued on next page)

Table 8. Robustness result for CEO conscientiousness and stable personality (Cont'd)

Panel B: Robustness result for stable personality in DISEXP and REM

Variables	Discretionary Exp.		Real earnings management overall	
	Group 1 DISEXP	Group 2 DISEXP	Group 1 REM	Group 2 REM
Conscientiousness	-0.0376 (0.0366)	-0.102** (0.0473)	-0.0870 (0.0690)	-0.195** (0.0829)
Big Five personality traits	Inc.	Inc.	Inc.	Inc.
CEO-specific control variables	Inc.	Inc.	Inc.	Inc.
Firm-specific control variables	Inc.	Inc.	Inc.	Inc.
M. Jones	Inc.	Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.
Constant	-0.115 (0.340)	-0.381 (0.305)	0.436 (0.664)	-0.602 (0.584)
N	130	109	128	106
R ²	0.248	0.219	0.379	0.374

Panel C: Robustness result for stable personality in M. Jones and Kothari

Variables	Modified Jones		Kothari	
	Group 1 M. Jones	Group 2 M. Jones	Group 1 Kothari	Group 2 Kothari
Conscientiousness	-0.00580 (0.00415)	0.00211 (0.00464)	-0.00526 (0.00404)	0.00294 (0.00459)
Big Five personality traits	Inc.	Inc.	Inc.	Inc.
CEO-specific control variables	Inc.	Inc.	Inc.	Inc.
Firm-specific control variables	Inc.	Inc.	Inc.	Inc.
REM	Inc.	Inc.	Inc.	Inc.
Year dummy	Inc.	Inc.	Inc.	Inc.
Constant	0.0451 (0.0519)	-0.0613** (0.0292)	0.0397 (0.0501)	-0.0673** (0.0290)
N	128	106	128	106
R ²	0.363	0.298	0.347	0.295

4.4.4 Robustness check for DISEXP model

An additional robustness check was conducted regarding the DISEXP model, since all missing values of R&D and advertising expenses were set to zero, see *subsection 3.3.1 Roychowdhury's (2006) Real Earnings Management model* for more detail. This also indirectly affects the REM model since it is a combined proxy of Roychowdhury's (2006) three real earnings management models. In this robustness check, another regression was run where the missing values were instead dropped. The result showed that the coefficient for *conscientiousness* stays significantly negative for both the DISEXP and REM model. Thereby, we can state that our findings remain robust. However, dropping the missing values led to a loss of over 300 observations, weakening the regressions, which was our primary reason not to choose this approach for our main model.

5. Concluding remarks

Researchers have been unanimous for decades over the existence of earnings management. Financial incentives and external factors have been the primary predictors of earnings manipulations, based on the idea that managers act opportunistically for their private gain. In recent years, the psychological perspective has started to be brought into the field of earnings management as an additional factor explaining the mechanisms behind this phenomenon. This perspective is rooted in Upper Echelon's theory, stating that executives view their surroundings in unique ways depending on their personality and past experiences. Especially narcissism and overconfidence have been shown to influence earnings management, and CEOs with psychopathic tendencies have been responsible for numerous corporate scandals. Therefore, this study explores the psychological perspective of earnings management, an aspect that is still understudied.

By applying the algorithm by Mairesse et al. (2007), based on the Big Five personality traits model we have assessed 135 CEOs. The personality scores for the CEOs are based on 683 manually cleaned earnings calls. As far as we are aware, this study is the first to highlight the relationship between CEO conscientiousness and real as well as accruals-based earnings management, thus expanding the pre-existing earnings management research. Our findings suggest that CEOs with low conscientiousness tend to do more real earnings management through sales manipulations, overproduction, cuts in discretionary expenditures as well as real activities manipulations overall. These findings can be explained by the fact that managers with low conscientiousness have a harder time resisting short-term gains, likely due to their poor self-control. These individuals are also more likely to behave unethically, especially at work, as well as be less duty bound and inconsiderate of rules and consequences. We find no significance for CEO conscientiousness in the accruals-based earnings management models. However, the fact that the coefficients for conscientiousness were significant for one type of earnings management and not the other points to the possibility that personality traits affect the choice of earnings management method, similarly to how different types of firms choose different earnings management methods.

The findings of this study imply that CEOs with low conscientiousness engage in more real earnings management. This has implications for practitioners as well as researchers. As mentioned previously, personality assessment is institutionalised when appointing people to positions bearing great responsibility for others. Our findings indicate that the same should apply to CEOs for large companies, since we show that CEO personality affects earnings management. This suggests that companies can minimise the risk of earnings management, which is not only unethical but also affects future performance negatively, by hiring executives with the preferred set of personality traits. Since we identify a new determinant of earnings management, conscientiousness, we add to the stream of earnings management research that stresses the importance of including psychology, whereby we hope to encourage future research to build on this emerging platform.

5.1 Suggestions for further research

As previously discussed, this study found significance for CEO conscientiousness when it comes to real earnings management but not for accruals-based earnings management. This points to the possibility that personality traits affect the choice of earnings management method, similarly to how different types of firms choose different earnings management methods. In turn, this opens

up for future research to further explore the question of whether personality traits have a role in dictating the choice of earnings management method.

Furthermore, considering that the Big Five personality characteristics are rather understudied in financial contexts, there are many opportunities for researchers to further explore the interplay between personality and corporate decision-making. A more specific suggestion is to examine whether the level of conscientiousness affects the outcome of investment decisions. Bearing in mind that conscientious individuals tend to be more long-term oriented and able to resist impulses, it is not unreasonable to believe that they make better economic decisions. In addition, it would also be relevant to examine the balance between the Big Five personality traits. Kaiser and Overfield (2010) explain that personality traits are linked to leadership style, which ultimately affects the effectiveness of the organisation. The authors argue that a manager's extent of the different Big Five personality traits dictate his/her leadership effectiveness. For example, it has been found that narcissism has a positive impact on productivity and leadership effectiveness up to a certain level before tilting over to a so called "dark side" trait, where it leads to excessive risk taking (Higgs, 2009). Similarly, it is reasonable to believe that too much conscientiousness would be a disadvantage if it makes the executive excessively careful and let valuable opportunities forego. On this note, it would indeed be interesting to further explore where the cut-off line is drawn between desirable and undesirable amounts of conscientiousness as well as other Big Five personality traits.

As previously discussed, conscientiousness is a rather broad personality trait which entails several types of behaviours. Therefore, it would be interesting to further explore what part within conscientiousness that drives unethical behaviour in a corporate context. Such research could in turn help make personality assessment tools more sophisticated, as it would be known in greater detail what the specific behaviours indicate and what they can be expected to lead to.

Personality traits could also be further explored in a corporate governance context. In corporate governance, gender diversity in boards of directors has been widely studied and findings indicate that a more diverse board operates more efficiently. However, even though certain characteristics may be overrepresented in either of the genders, gender itself is likely not the explanation. For example, overconfidence is found to be more common amongst men than women, which leads male executives to act reckless. Consequently, it is not the executive's gender but rather his/her personality traits that steer the recklessness. Therefore, gender itself is not the determinant, suggesting that diversity in regard to personality types would be a valuable research area to explore.

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