



Master Thesis Behavioural Economics

MERGERS AND ACQUISITIONS

Exploring the difference between narcissism and overconfidence and its effect on conglomerate mergers

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Abstract

Mergers and acquisitions are the most remarkable actions a CEO can take and initiate (Chatterjee & Hambrick, 2007). However, the role of narcissism with conglomerate mergers has not been explored yet. Negative cumulative abnormal returns have been found for diversifying mergers by overconfident CEOs (Malmendier & Tate, 2008; Morck, Shleifer & Vishny, 1990). Since overconfidence and narcissism are positively related (Campbell, Goodie & Foster, 2004), this thesis explores the effect of narcissism on conglomerate mergers compared to overconfidence. Overconfidence leads to CEOs conducting more diversifying mergers and this results in negative market returns (Malmendier & Tate, 2008). The results are based on U.S. mergers and acquisitions from 2009 – 2019 using an event-study methodology, hand-collected narcissism measures and a self-constructed narcissism score. This thesis concludes that highly narcissistic CEOs do not engage more in conglomerate mergers than lowly narcissistic CEOs and conglomerate mergers of highly narcissistic CEOs result in higher market returns than conglomerate mergers of lowly narcissistic CEOs. Thus, there is a distinct difference between narcissism and overconfidence, because these results contradicts what is found in the literature about overconfidence.

Keywords: CEO narcissism, overconfidence, narcissism score, cumulative abnormal return, conglomerate mergers, event-study methodology

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1. Introduction

After the world economic crisis in 2008, there was a drop in the number and value of mergers and acquisitions (M&A) in North-America (IMAA, 2020). However, from 2009 on, this number and value has reached its highest peak in 2015 since 1985 with 14,565 transactions and a value of \$2,545.21 billion (IMAA, 2020). Because of its relevance, M&A's are still a trending and growing topic in the literature of corporate finance.

There are a lot of factors that influence the outcome of an M&A. Past research has focused mostly on the hard factors that could affect M&A (Agliardi, Amel-Zadeh & Koussis, 2016; DePamphilis, 2010; Ismail & Krause, 2010; Lang & Stulz, 1994) like acquirer's size, method of payment, Tobin's Q, leverage and more. Yet, there is not much research about the behavioural aspects of M&A's. In fact, the behaviour of CEOs in particular should be studied more.

One example of a behavioural aspect is overconfidence. Malmendier and Tate (2005) studied the overconfidence of CEOs and show how overconfident CEOs overestimate returns on investments such as M&A's. Moreover, narcissism is a psychological trait which is positively correlated with overconfidence (Campbell, Goodie and Foster, 2004). However, there is not much research about the effect of narcissism on M&A's. Therefore, this thesis explores the effect of narcissism on M&A's and whether the results are in line with overconfidence.

There is some research about narcissism and its effect on a company's strategy and performance. For instance, Chatterjee and Hambrick (2007) studied the influence of narcissism on a firm's performance in the computer and software industry. This was however not focused on M&A's. Moreover, Aktas et al. (2016) has focused on the process of takeovers by studying narcissism of the acquirer and the target but not on the consequences of M&A by narcissistic individuals. Therefore, it is in the main interest of this research to study the consequences of M&A's by narcissistic CEOs and in particular the consequences of conglomerate mergers.

Conglomerate mergers are mergers of companies who acquire companies in other lines of businesses or industries (Garcés & Gaynor, 2019). Malmendier and Tate (2008) also show that overconfident CEOs are more prone to do diversifying mergers but that it leads to a negative market return. Since overconfidence is positively related to narcissism, the main research question of this thesis is:

How does CEO narcissism differ from CEO overconfidence regarding the effect on the market return of conglomerate mergers?

By using different measures of narcissism and by constructing a narcissism score, the narcissism personality trait will be used in this study. Moreover, to make sure that overconfidence is not captured in the narcissism measures, overconfidence will be controlled for.

The contribution of this thesis is six-fold. First of all, there is a distinct difference between narcissism and overconfidence since no evidence is found for the negative market return of conglomerate mergers by narcissistic CEOs compared to overconfident CEOs. In fact, conglomerate mergers by narcissistic CEOs result in positive cumulative abnormal returns. Second, compared to the increasing probability of overconfident CEOs, no evidence is found for the increasing probability of narcissistic CEOs to do conglomerate mergers. Third, a narcissism score is constructed by four different narcissism measures from the literature, which makes it a possible narcissism indicator for further research. Fourth, overconfidence is not only used as a control but a distinction in the results is made between overconfidence and narcissism. Fifth, a new narcissism measure is created by combining two existing measures from the literature, namely the relative cash and non-cash compensation of CEOs. Lastly, in the best of my knowledge, only the paper of Aktas et al. (2016) is a peer-reviewed published research paper about narcissism and M&A's. Therefore, I contribute to a great gap in the literature.

This research gives insights into the consequences of narcissism in the field of corporate finance and could be of practical use for corporate governance policies. This research makes companies aware of narcissistic CEOs and therefore could help companies take this into account when creating policies. For instance, based on this research a company could decide to not give the CEO full control over a M&A decision but instead, could make M&A's a common decision of the management team and the shareholders of the acquiring firm.

The remaining of the paper is as follows. Section 2 will explain relevant concepts such as narcissism, overconfidence, mergers and acquisitions and conglomerate mergers using past literature. In section 3 and 4, the hand-collected data and the methodology will be outlined. Section 5 will present the results and in section 6 the results will be discussed in comparison to the literature. Finally, section 7 concludes.

2. Theoretical Framework

2.1 Mergers and acquisitions

Mergers and acquisitions (M&A) are one of the most attention-seeking actions a CEO can take and initiate (Chatterjee & Hambrick, 2007). The reason for this is that M&A deals are mostly of great value and also has a lot of consequences. In 2019, the value of the largest M&A deal in the U.S. was 69.7 billion dollars when Bristol-Meyers Squibb Co. acquired Celgene Corporation (IMAA, 2020).

There are various reasons for a company to do a merger or acquisition. One of the main reasons is synergy benefits (Koller et al., 2015). The acquiring company can generate value in this way for their shareholders if the company is transferred to a company with better management. The value that is created is a result of the difference between the acquisition premium and the value of improvements (Koller et al., 2015). Nevertheless, M&A's can also be value-destroying (Shleifer & Vishny, 1991). This is the case when the acquisition premium exceeds the value of improvements. The question remains whether narcissism has a value-destroying effect on mergers and acquisitions. In the following sections, this will be explored.

2.1.1 The influence of narcissism on mergers and acquisitions

Since narcissism is a personality trait that is both a cognitive framework and a motivational structure, the chances are high that narcissistic CEOs would engage in decisions and actions that are highly visible and deviate from the status quo (Chatterjee & Hambrick, 2007). Because of this, the performance of a company is not stable and will fluctuate quite extreme (Chatterjee & Hambrick, 2007).

Regarding mergers and acquisitions, these are actions that really grab the attention of the shareholders of the firm, but also the press and the world (Haspeslagh & Jemison, 1991). Even though mergers and acquisitions are not always in a positive light, especially when it is about inefficient diversification (Shleifer & Vishny, 1991), acquisitions are among the most noticeable actions a CEO can take and it will feed the need of a narcissistic CEO to be praised and seen (Wallace & Baumeister, 2002). In fact, a narcissistic CEO does not want delayed praise or applause, so he or she takes ambitious actions to continuously be the centre of attention (Chatterjee & Hambrick, 2007).

To further explain why CEOs do mergers and acquisitions, Roll (1986) came up with the "hubris hypothesis". This is the hypothesis that CEOs are overconfident that their valuations are correct and that they are able to manage the target firm better than the present management

of the target (Chatterjee & Hambrick, 2007). Since hubris is a related construct of narcissism as will be explained further in section 2.2, the narcissistic personality favours acquisitions both because they are overconfident in their ability to make it a success and because of the attention-grabbing aspect (Chatterjee & Hambrick, 2007).

Furthermore, Zhu and Chen (2015) showed in their paper that narcissistic CEOs tend to overestimate their own board experience, which leads CEOs to be confident in their ability to do mergers and acquisitions. Moreover, Campbell et al. (2004) showed that narcissists concentrate on success, but concern little about the possible downturn of the decision. Last but not least, Aktas et al. (2016) studied the effect of target and acquirer CEO narcissism on the takeover process. First, they found that the probability of initiation is positively related by narcissism of the acquiring firm, which is evidence for the motivation of a narcissistic CEO to conduct mergers and acquisitions. Secondly, they found that the probability of deal completion is negatively related to both the acquirer's and target's narcissism. Thirdly, Aktas et al. (2016) found that the cumulative abnormal returns of the acquiring firm are negatively related to narcissism of the target.

To conclude, there are multiple reasons for a narcissistic CEO to do a merger or acquisition, but the main reason seems to be to show confidence in their ability to make it a success and to receive the attention of the crowd while disregarding the fact that it could destroy shareholder's value.

2.1.2 Conglomerate mergers

Conglomerate mergers are mergers between firms that produce products that are either unrelated or are in some degree complimentary but not necessary to each other (Garcés & Gaynor, 2019). Lamont and Polk (2002) investigated the within-firm spread of diversity and find that conglomerate mergers have a negative effect on the firm value. Several other studies have shown that firms operating in different lines of industry have lower firm values than firms that have a more focused business (Berger & Ofek, 1995; Lang & Stulz, 1994; Servaes, 1996). Berger and Ofek (1995) has showed that firms operating in different Standard Industrial Classification (SIC) codes have lower firm values than firms operating in similar SIC codes. Also, Morck et al. (1990) found that acquiring firm's shareholders lose value with conglomerate mergers and Schoar (1999) found that conglomerate mergers lead to a decrease in firm productivity.

One explanation for the diversification discount is the so-called "inefficient internal capital markets hypothesis" (Lamont & Polk, 2002). This hypothesis means that diversified

firms focus too much on the bad parts of the company and too little on the parts that have more potential (Lamont & Polk, 2002). Berger and Ofek (1995) found that these firms overinvest in firms that have little and poor investment opportunities which goes along with a low firm value. Thus, this explanation suggests that diversity is value-destroying (Lamont & Polk, 2002). Another explanation could be that managers have little expertise and do not know how to effectively run their diverse businesses (Lamont & Polk, 2002). Moreover, it could also be the case that segments that are not related have different operational structures or company cultures (Lamont & Polk, 2002).

However, there are also studies that show that diversity has a positive impact on firm value. For instance, Hubbard and Palia (1999) find that acquisitions in the 1960s has gained a lot when a financially unconstrained company buys a more constrained target. Nevertheless, regarding overconfidence, Malmendier and Tate (2008) have shown that conglomerate mergers are unwise. They have found negative cumulative abnormal returns for conglomerate mergers just like Morck et al. (1990) have found in their data. Moreover, Doukas and Petmezas (2007) show that overconfident CEOs are more likely to engage in diversifying mergers than rational CEOs and that the announcement returns are negative which is in line with the literature. The question now remains whether the diversification discount comes from managerial overconfidence only or if it could also be because of narcissism?

2.2 Narcissism

Narcissism is a common personality trait for a lot of company leaders (Rosenthal & Pittinsky, 2006). Lubit (2002) explains in his research that personality traits with high levels of confidence and a strong drive to earn prestige will rise to high and powerful positions within a firm. Therefore, it is likely for a CEO to be narcissistic and to make important decisions such as M&A's.

Narcissism was first introduced in the psychological literature in 1898 when Havelock Ellis referred to someone with a "tendency for the sexual emotions to be lost and almost entirely absorbed in self-admiration" as *Narcissuslike* (Ellis, 1898). Not only Ellis but also Nacke (1899) used the term *Narcismus* in a summary of the paper of Ellis to refer to a person seeing their own body as a sexual object. This reference of narcissism has caught the attention of Freud (1914) who made a principal construct of the narcissism personality trait. The behavioural phenomena of the clinical use of Freud (1914) are for example: admiring and praising one's self, fear of loss or failure, denial, ignorance and repression, blaming others for mistakes and a

lack of empathy (Freud, 1957).

Moreover, according to *On Narcissism: An Introduction* by Freud (1957), a narcissistic individual wants to preserve their “ego-ideal”. This means that narcissistic individuals have some “ego-defence” mechanism (Brown, 1997). The first form of defence is denial, a narcissistic individual tries to cope with feelings such as anxiety, conflict, pain or emotional distress which could lead to the feeling of being invulnerable and more confident (Rhodewalt & Morf, 1995; Laughlin, 1970). Thus, through denial it is possible for a narcissistic individual to turn their back on responsibilities or mistakes they made. Another form of defence is rationalization (Rhodewalt & Morf, 1995). In this way, a narcissistic individual tries to rationalize behaviour which is normally not accepted. For this, some self-delusion is needed to make not normally accepted behaviour appear more acceptable (Laughlin, 1970). The third form is self-aggrandizement and this refers to the tendency of a narcissistic individual to overestimate his or her abilities or successes (Shengold, 1995). The fourth one is the attributional egotism, which is linked to the self-attribution bias. This means that successes will be attributed to the narcissistic individual and failures will be attributed to external factors or others (Bettman & Weitz, 1983). The last one is the sense of entitlement, which makes a narcissistic individual feels to have the right to exploit others (Lasch, 2018). In short, a narcissistic individual wants to obtain approval and admiration from others to preserve their “ego-ideal” or else they will use “ego-defence” mechanism.

According to Raskin and Terry (1988), by 1980 a lot of papers have written about narcissism as a disorder but some research has shown that narcissism is a personality dimension and that an individual can have different scores on this dimension (Emmons, 1987; Raskin & Terry, 1988). Hence, it is hard to say whether narcissism is a negative or positive personality trait. For instance, Fischer (1984) has found that highly narcissistic individuals are more positively viewed than low narcissistic individuals (Emmons, 1987). Thus, narcissism should be seen as a dimension with high and low ends on the spectrum.

Constructs that are related to narcissism are self-esteem, hubris and core self-evaluation (Chatterjee & Hambrick, 2007). Narcissistic individuals have a weak self-esteem in a way that it continuously needs to be maintained. Kernis (2005) refers this to as a “contingent self-esteem”. They need to be admired at all times and not just once. Thus, self-esteem differs from narcissism in the absence of arrogance, sense of entitlement but most importantly the continuous need for attention and affirmation (Chatterjee & Hambrick, 2007). Furthermore, core self-evaluation is also related to narcissism but core self-evaluation does not include being applauded or complimented such as narcissism. Lastly, hubris is exaggerated overconfidence

(Hayward & Hambrick, 1997). However, hubris also lacks the core characteristics of narcissism such as the sense of entitlement and the continuous need for affirmation (Chatterjee & Hambrick, 2007).

2.2.1 Narcissism measures

There are two ways to measure narcissism. One way is to measure it directly by letting an individual fill in a questionnaire which is called the Narcissistic Personality Inventory, or alternatively, make use of indirect measures which tries to capture the behaviour of individuals and link it to narcissism.

According to the first way, the American Psychiatric Association (APA) developed the characteristics for someone with the narcissistic personality disorder and is defined by the following: (i) great sense of self-importance, (ii) delusion of success, power, ideal love, (iii) immodesty, (iv) responds indifferently to criticism, failure or indifference, (v) need for entitlement without any feelings of reciprocity, (vi) exploitative and (vii) lack of empathy (Raskin & Hall, 1979). Raskin and Hall (1979) made up 233 items which are linked to the previous described characteristics of someone with the narcissistic personality disorder. Each item is paired by a narcissistic statement and a non-narcissistic statement. One example of this is: (a) "I am much like everybody else" (b) "I am an extraordinary person" (Raskin & Hall, 1979). Nonetheless, the NPI has now developed to 16 items (Ames, Rose & Anderson, 2005).

The second method is measuring narcissism through indirect measures. Chatterjee and Hambrick (2007) have developed some unobtrusive measures of narcissism. One can imagine that a CEO will not always have the time or will to fill in the NPI, since narcissism is also a sensitive topic. There are two main criteria for the narcissism measures: (1) The measures need to reflect the CEO's will (Chatterjee & Hambrick, 2007). Hence, the decisions of a CEO may not be influenced by external factors. (2) The measures need to reflect one or more aspects of the narcissistic personality according to Emmons (1987). These aspects are superiority or arrogance, exploitive or entitlement, self-absorption or self-admiration and leadership or authority.

The first unobtrusive measure is the proportion of first-person singulars to the total first-person pronouns of CEOs in interviews (Chatterjee & Hambrick, 2007). The use of first-person singular pronouns reflects self-absorption and indicates narcissism according to Raskin and Shaw (1988).

The second unobtrusive measure is the CEO prominence in the press (Chatterjee & Hambrick, 2007; Rijsenbilt, 2011). This measure is related to narcissism in a way that the CEO

is able to insist on being mentioned often in an article which could be out of desire of showing off his or her authority to the world.

The third unobtrusive measure is the relative cash pay, which is the total cash compensation of the CEO compared to the second highest paid executive in the same firm (Chatterjee & Hambrick, 2007). Past research has shown that CEOs have a great influence on their own pay (Bebchuk & Fried, 2009). A highly narcissistic CEO would think that he is more valuable than other executives in the firm and this should be reflected in his compensation (Chatterjee & Hambrick, 2007).

The fourth unobtrusive measure is the relative non-cash pay (Chatterjee & Hambrick, 2007), which has the same motivation as the relative cash pay. To calculate the relative non-cash pay, the deferred earnings, stock and option grants are summed up of a CEO and compared with the second highest paid executive within the company (Chatterjee & Hambrick, 2007).

There are more unobtrusive measures such as the prominence of the CEO's photograph in annual reports and more, but in this paper the focus will be on the previous mentioned measures. In table 1, the measures and the corresponding aspects of narcissism are outlined.

Table 1 Unobtrusive measures and corresponding aspect of narcissism

Measure	Aspect of narcissism
First person singular pronouns	Self-absorption/Self-admiration
CEO prominence in the press	Authority/Leadership
Relative cash compensation	Superiority/Entitlement/Exploitative
Relative non-cash compensation	Superiority/Entitlement/Exploitative

2.2.2 Narcissism versus overconfidence

Since this thesis want to study narcissism and distinguish it from overconfidence, it is important to understand the difference between the two concepts. Therefore, in figure 1, a schematic figure is displayed for the difference between narcissism and overconfidence.

As mentioned in the introduction, there is a positive correlation between narcissism and overconfidence (Campbell et al., 2004). However, there are distinct psychological and behavioural differences between the two. In psychology, overconfidence is a bias which is caused by illusion of control, the tendency of self-enhancement, not being sensitive to predictive accuracy and misconceptions of chance processes (Tversky, 1995). Besides, overconfidence refers to the tendency of making more accurate forecasts than actual probability distributions would justify, hence it also suggests risk-seeking behaviour. It could be that a

narcissistic individual would also have some degree of overconfidence, but they would suffer also from the behavioural constructions of narcissism as mentioned in section 2.2.

Furthermore, Tamborski et al. (2012) also make the distinction between narcissism and overconfidence. One important distinction is that a narcissistic individual could have a tendency towards overconfidence in their evaluations but they could also make non-ethical decisions and act in their own interests at the expense of others.

Moreover, narcissism and overconfidence do not predict the same (Ham et al., 2017). Narcissism predicts higher return and development (R&D) expenses, mergers and acquisitions (M&A) expenditures and total investment (except capital expenses), while overconfidence predicts higher capital expenditures but not M&A expenditures, R&D or total investment (Ham et al., 2017). Narcissism and overconfidence only overlap in the area of compensation where narcissism predicts both higher absolute and relative compensation, but overconfidence only predicts higher absolute compensation (Ham et al., 2017).

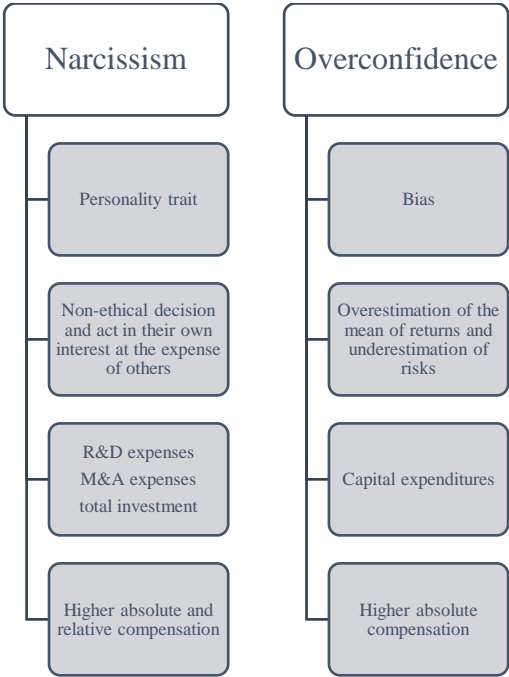


Figure 1 Narcissism vs Overconfidence

2.3 Hypotheses

Since overconfidence is positively related with narcissism (Campbell et al., 2004) and Doukas and Petmezas (2007) have concluded that overconfident CEOs are more prone to do conglomerate mergers than rational CEOs, in this study it is expected that there is also a positive correlation between narcissism and the probability of a CEO to do a conglomerate merger. Therefore, the first hypothesis is as follows:

Hypothesis 1: Highly narcissistic CEOs are more likely to do conglomerate mergers than lowly narcissistic CEOs.

In the literature, conglomerate mergers are known to cause lower firm values than firms investing in more similar businesses (Berger & Ofek, 1995). Hence, in this study it is expected that narcissism will also affect the result of diversifying mergers negatively. Therefore, the second hypothesis is as follows:

Hypothesis 2: The cumulative abnormal return of a conglomerate merger done by a highly narcissistic CEO is lower than a conglomerate merger done by a lowly narcissistic CEO.

3. Data

For this research, data has been collected from various databases. Firstly, M&A data is retrieved from the ThomsonOne Securities Data Company's (SDC) U.S. Mergers and Acquisitions database, which is a database that focuses on financial data from annual reports, M&A and initial public offerings (IPO's) worldwide. Second, accounting data is retrieved from the CompuStat North America database. This database contains data of annual and quarterly reports of listed American and Canadian firms. Third, daily stock data is retrieved from The Center for Research in Security Prices (CRSP) which contains stock and treasury data since 1925. Fourth, CEO's data is retrieved from the ExecuComp database which contains executive compensation data. Fifth, most of the CEO transcripts are retrieved from the Nexis Uni database. This database contains transcripts from different news sources such as The New York Times, PR Newswire, Fair Disclosure (FD) Wire and more. In Appendix A, table A-1 shows the sources for the CEO transcripts and in table A-2 the type of CEO transcripts can be found. Lastly, to look for the prominence of the CEO in the press, the Factiva database is used which

contains news and business information from both local and global databases such as the Financial Times, the New York Times, the Wall Street Journal as well as magazines and news wires like Reuters and Dow Jones.

The sample consists of M&A deals of U.S. companies from 2009 – 2019. This timeframe is selected to control for economic shocks such as the economic crisis in 2008. Furthermore, the sample has been selected based on some selection criteria following past research (Aktas et al., 2016). One of the selection criteria is that all the deals should be completed. Second, the deals should be significant, which means that the value of the deal should exceed \$1 million. Third, both the acquirer and the target are required to be publicly listed, since the information from the other databases are only available for public firms. Lastly, the acquirer is required to have less than 50% of the shareholdings in the target and 100% after the deal completion. A sample of 1,344 deals is provided by this selection criteria from the ThomsonOne database. After merging with the other databases (CompuStat, CRSP, ExecuComp) a sample of 361 deals is left and 261 CEOs.

4. Methodology

4.1 Dependent variables

The first dependent variable is the probability of doing a conglomerate merger. This variable is a dummy variable and is constructed by looking at the SIC code of both the acquirer and the target. If the first two digits of the SIC code of the acquirer and the target is not the same, the merger will be labelled as *conglomerate* = 1, else *conglomerate* = 0.

To compute the second dependent variable, the cumulative abnormal return (*CAR*), an event study is conducted which is a common methodology in finance (Fuller, Netter & Stegemoller, 2002). The event is the announcement date of M&A. The cumulative abnormal return is then calculated over a 5-day period around this announcement date (-2, +2), which is also the event day of a M&A. The abnormal return is then computed by equation 1 using a modified market-adjusted model. This research uses the S&P500 Index as market benchmark.

$$AR_i = r_i - r_m \quad (1)$$

where r_i is the return on firm i , and r_m is the return of the value-weighted market index (S&P500) (Fuller et al., 2002). Finally, the *CAR* is computed by summing up the abnormal returns of (-2, +2) for each firm i (Faccio et al., 2006; Golubov et al., 2015).

4.2 Independent variables

4.2.1 Narcissism measures

In section 2.2.1 some indirect narcissism measures were motivated and mentioned. Therefore, in this section, the construction of these measures will be explained.

The first narcissism measure (*narcissism1*) is the proportion of first-person singulars to total first-person pronouns. From different CEO transcripts (Appendix A, table A-2), the number of first-person singulars is computed using Microsoft Word's search function. The first-person singulars consist of: "I, me, my, mine, myself" (Aktas et al., 2016). Thereafter, the total number of first-person pronouns is computed and consists of: "I, me, my, mine, myself, we, us, our, ourselves, ours" (Aktas et al., 2016). To compute this measure, the proportion of first-person pronouns to the total first-person pronouns is computed by dividing the number of first-person pronouns by the total first-person pronouns (see equation 2).

$$\frac{\#(I, me, my, mine, myself)}{\#(I, me, my, mine, myself, we, us, our, ourselves, ours)} \quad (2)$$

The second narcissism measure (*narcissism2*) is the CEO prominence in the press. By looking up the CEO's name and company in the Factiva database, the number of press articles is shown and then divided by the CEO's tenure. This gives the average number of articles a CEO is mentioned during their tenure (Rijsenbilt, 2011).

The third measure (*narcissism3*) is the relative cash compensation. The cash compensation consists of the salary and bonus of the CEO. Using the Execucomp compensation database, the CEO's cash compensation is divided by the cash compensation of the second highest paid executive within the company (Chatterjee & Hambrick, 2007).

The last narcissism measure (*narcissism4*) is the relative non-cash compensation. The non-cash compensation consists of the shares owned by the CEO, the options granted and the deferred earnings. Just like the relative cash compensation, the CEO's non-cash compensation is divided by the non-cash compensation of the second highest paid executive within the company to construct this measure (Chatterjee & Hambrick, 2007).

4.2.2 Narcissism score

From the different narcissism measures mentioned in section 4.2.1, a narcissism score is developed. This score is constructed by summing up all the narcissism measures for each

CEO and then this sum is standardized¹. Standardization is important to give all four measures the same importance. Chatterjee and Hambrick (2007) also construct a similar narcissism score. The narcissism score (*Narcissism_score*) is our main variable of interest.

Table 2 summary statistics of the narcissism measures and score

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Narcissism_score	361	0.001	1	-0.429	15.940
Narcissism1	361	0.210	0.090	0.028	0.6
Narcissism2	361	92.334	255.576	0	3720
Narcissism3	361	1.772	2.314	0	15.631
Narcissism4	361	106.870	1105.763	-295.676	18207.53

In table 2, the summary statistics of the narcissism measures and score can be seen. *Narcissism_score* ranges from -0.429 to 15.940 and has a mean of zero and a standard deviation of one because of standardization.

Moreover, *narcissism3* and *narcissism4* are both measures of compensation, however in table 2 can be seen that the standard deviation of *narcissism4* is much larger than *narcissism3*. This means that the relative non-cash compensation between a CEO and the second highest executive differs greatly across CEOs. What is more, the minimum of *narcissism4* is negative, this could be the case when a CEO sells their shares or options.

Furthermore, *narcissism2* also has a quite large standard deviation, which means that the CEO prominence in the press varies greatly across CEOs and could make the difference between a highly and low narcissistic CEO. The descriptive statistics of the other variables can be found in Appendix C (tables A-4 till A-9).

Table 3 Correlation table narcissism measures

Variable	Narcissism1	Narcissism2	Narcissism3	Narcissism4
Narcissism1	1.000			
Narcissism2	0.024	1.000		
Narcissism3	0.041	-0.044	1.000	
Narcissism4	-0.024	-0.010	0.005	1.000

*significant at 10%; **significant at 5%; ***significant at 1%

¹Formula for standardization: $\frac{narcissism(x) - \mu(narcissism(x))}{\sigma(narcissism(x))}$

In table 3, the correlation between the different narcissism measures is shown. There is a positive correlation between *narcissism1* and *narcissism2*, *narcissism1* and *narcissism3*, but a negative correlation between *narcissism1* and *narcissism4*, *narcissism2* and *narcissism3* and *narcissism4*. However, there is a positive correlation between *narcissism3* and *narcissism4*. This could be due to the fact that both measure compensation data.

4.3 Control variables

4.3.1 Overconfidence control variables (main control variable)

Since overconfidence is a related construct of narcissism (Campbell et al., 2004) and the goal is to distinguish between overconfidence and narcissism, it is important to include overconfidence in all of our models. Therefore, two overconfidence controls are used in the analysis.

The first overconfidence control variable is the Holder 67 variable (*overconfident1*). Holder67 is an overconfidence measure based on the paper of Malmendier and Tate (2005). This variable is based on the options of a CEO that are exercisable – at the end of the vesting period – but a CEO decides not to exercise the option even when the option is in-the-money. Malmendier and Tate (2005) use 67% in-the-money as a threshold and a CEO is labelled as overconfident when he or she has an exercisable option that is at least 67% in-the-money and does not exercise the option at least twice during the sample period. The way Holder67 is constructed can be found in Appendix B, table A-3.

The second control for overconfidence is the proportion of confident words to non-confident words in CEO transcripts (*overconfident2*). Following the media portrayal overconfidence measure of Malmendier and Tate (2008) which was used in the paper of Aktas et al. (2016) and Campbell et al. (2011), the same CEO transcripts are used to construct this variable as for *narcissism1* (proportion first-person singulars). This variable is constructed by counting the number of times confident words like “optimistic, optimism, confidence, confident” occur and divide it by the total number of times confident and non-confident words like “reliable, cautious, conservative, practical, frugal, steady” occur. In this research, a non-confident word is added namely: “careful”, because it also portrays non-confidence such as the words “cautious” and “conservative”.

Table 4 Frequency table overconfident1

Overconfident1	Frequency	Percentage
0 (no Holder67)	56	15.51%
1 (yes Holder67)	305	84.49%
Total	361	100%

Table 5 Frequency table overconfident2

Overconfident2	Frequency	Percentage
0 (not overconfident in transcript)	222	61.50%
1 (overconfident in transcript)	139	38.50%
Total	361	100%

From table 4 and 5 it can be seen that there are more CEOs overconfident regarding the exercising of options, while there are less CEOs overconfident in the CEO transcripts. This could be an indication of capturing narcissism and not overconfidence when studying CEO transcripts.

4.3.2 Hard factors influencing mergers and acquisitions

Firstly, the size of the acquiring firm (*acquirer_size*) has a negative influence on the M&A performance (DePamphilis, 2010). This can be explained by for instance empire building. The motivation for CEOs empire building is the need for status, power, compensation and prestige (Jensen, 1986). The increase in firm size or diversifying projects could profit the CEOs in private ways (Hope & Thomas, 2008).

Second, the method of payment, cash or stock (*all_cash, stock*) can influence the CAR. In general, target's shareholders prefer a cash payment over a stock payment (Ismail & Krause, 2010). Furthermore, empirical evidence has shown that cash payments have a higher significant influence on the announcement returns (Ismail & Krause, 2010).

Third, Tobin's Q is interpreted as managerial performance and Tobin's Q is another important factor that influences the CAR. In fact, acquirers with high Q-ratios have significant positive abnormal returns (Lang & Stulz, 1994). The CAR is highest when a high Q firm takes over a low Q firm (Servaes, 1991). Therefore, when well performing firms take over poorly performing firms, it will lead to successful acquisitions.

Fourth, low leverage has a positive impact on the CAR (Agliardi, Amel-Zadeh & Koussis, 2016). The model of Agliardi et al. (2016) predicts that firms with low leverage have higher growth opportunities, lower bankruptcy expenses and therefore generate positive CARs.

Fifth, free cash flow has a negative impact on the CAR (Jensen, 1986). This is because M&A is a way for CEOs to spend cash instead of disbursing it to the shareholders of the firm (Jensen, 1986). Therefore, firms with high free cash flows are more likely to go for value-destroying mergers (Jensen, 1986). This is especially the case with diversification projects like conglomerate mergers (Jensen, 1986).

Lastly, CEO characteristics like *tenure, age, gender, number of shares owned* is also controlled for. In Appendix B, table A-3 all the control variables and how they are constructed can be found.

5. Results

5.1 Models

5.1.1 Probit model (Hypothesis 1)

To explain the relation between narcissism and the probability of a CEO to do a conglomerate merger, a probit model is used since our dependent variable is a binary variable (1=conglomerate merger, 0=no conglomerate merger). The model that is run looks like follows:

$$\begin{aligned} \Pr(\text{conglomerate} = 1 | \text{narcissism_score}, X) & \quad (3) \\ & = \Phi(\beta_0 + \beta_1 \text{narcissism_score} + \beta_2 \text{overconfident1} \\ & \quad + \beta_3 \text{overconfident2} + \beta_4 X) \end{aligned}$$

where Φ is the cumulative distribution function of the standard normal distribution. With the probit model, it is assumed that there is a normal distribution of the error terms. X is a vector of firm, deal and CEO control variables, *narcissism_score* is the main variable of interest and *overconfident1* and *overconfident2* are our main control variables.

Since the effects of a binary model are not constant, marginal effects are used to interpret the results.

5.1.2 Ordinary Least Squares model (Hypothesis 2)

To explain the relation between a narcissistic CEO who does a conglomerate merger and the CAR, an Ordinary Least Squares (OLS) model is used. Since only conglomerate

mergers are analysed for hypothesis two, the sample is restricted to conglomerate mergers and the sample is left with 244 deals and 177 CEOs. Moreover, clustered standard errors are used to control for dependency between the error-terms of the firms, since some CEOs and firms are not observed just once in the dataset. If clustered standard errors are not used, this could cause serial correlation and the OLS estimates are biased. The OLS model looks like follows:

$$CAR = \beta_0 + \beta_1 narcissism_score + \beta_2 overconfident1 + \beta_3 overconfident2 + \beta_4 X + \epsilon \quad (4)$$

where *narcissism_score* is our main variable of interest and *overconfident1* and *overconfident2* are our main control variables. Furthermore, *X* is a vector of firm, deal and CEO control variables.

5.2 Hypothesis 1

First of all, hypothesis 1 is tested which states that highly narcissistic CEOs are more likely to do conglomerate mergers than lowly narcissistic CEOs.

In figure 2, it can be seen that CEOs with low narcissism do more conglomerate mergers than CEOs with high narcissism. Nevertheless, after running a two-sample t-test of proportions with the null hypothesis that there is no statistically significant difference between the two samples, it can be concluded with a p-value of 0.798 that this null hypothesis cannot be rejected and that there is no statistically significant difference between highly and lowly narcissistic CEOs.

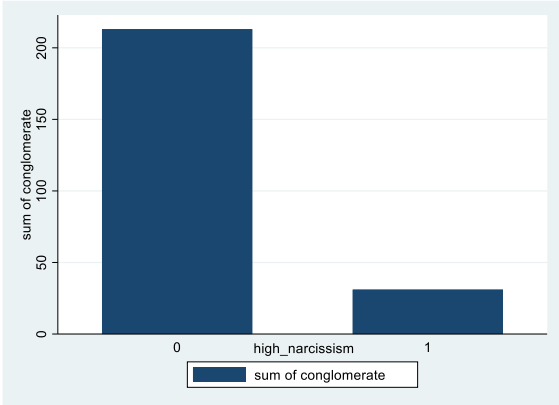


Figure 2 Number of conglomerate mergers for low/high narcissism

Table 6 shows the results of four probit regressions. The first probit regression includes all firm, CEO and deal control variables as well as the controls for overconfidence. The second probit regression adds the independent variable of interest narcissism score (*narcissism_score*) to the first probit regression. The third probit regression includes only the narcissism score and the fourth probit regression includes only the controls for overconfidence.

The coefficient for *narcissism_score* is negative and not statistically significant in model 2 and 3. Indeed, the higher the narcissism score, the lower the probability of a CEO to do a conglomerate merger. Since the coefficient is not statistically significant, hypothesis 1

should be rejected. Thus, there is no statistically significant difference between lowly and highly narcissistic CEOs regarding the probability of doing a conglomerate merger.

Furthermore, the coefficients of the controls for overconfidence are negative and not statistically significant in models 1 and 2. However, in model 4, the Holder67 measure (*overconfident1*) from Malmendier and Tate (2005) has a positive effect but not statistically significant effect on the probability of a CEO to do a conglomerate merger. Since the results for *overconfident1* are ambiguous, it is hard to say what effect overconfidence really has on the probability of doing a conglomerate merger.

Moreover, it is remarkable that capital expenditures and free cash flow have a negative and statistically significant effect at a 5% and 10% significance level on the probability of a conglomerate merger (model 1 and 2). For instance, the marginal effects of model 1 (Appendix D, table A-10) show that when free cash flow increases with \$1 million, the probability of a conglomerate merger decreases with 86.7 percentage points on average, *ceteris paribus*. Thus, this suggests that when firm characteristics such as capital expenditures and free cash flow increases, the probability of a firm to conduct a conglomerate merger decreases.

What is more, CEO's tenure has a positive and statistically significant effect at a 5% significance level on the probability of a conglomerate merger (model 1 and 2). For example, the marginal effects of model 1 (Appendix D, table A-9) show that when the CEO's tenure increases with one year, the probability of a conglomerate merger increases with 0.857 percentage points on average, *ceteris paribus*. This means that the longer the tenure of a CEO, the higher the probability of a CEO to do a conglomerate merger.

Another remarkable result is the negative and statistically significant coefficient of CEO's age at a 1% and 5% significance level (model 1 and 2). For instance, the marginal effects of model 1 (Appendix D, table A-9) show that when a CEO ages with one year, the probability of doing a conglomerate merger decreases with 1.05 percentage points. This result suggests that the older the CEO, the lower the probability that a CEO will do a conglomerate merger.

Furthermore, tender offers have a positive and statistically significant effect at a 5% and 10% significance level in model 1 and 2. This means that tender offers increase the probability of a CEO to do a conglomerate merger¹.

Moreover, Tobin's Q has a positive and statistically significant effect at 10% significance level in model 2. This means that the higher the managerial performance of a firm, the higher the probability a CEO will do a conglomerate merger².

¹ Marginal effects of the probit model of hypothesis 1 can be found in Appendix F, table A-10.

² Marginal effects of the probit model of hypothesis 1 can be found in Appendix F, table A-10.

Lastly, the Pseudo R-squared of the models ranges from 0.001 to 0.073, meaning that the models explain for about 0.1% to 7.3% of the variation in the probability of a conglomerate merger.

Table 6 Probit model of conglomerate merger on narcissism score

This table shows the coefficients of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is *narcissism_score*. Probit model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *narcissism_score*. Model (3) includes only *narcissism_score* and model (4) includes only the controls for overconfidence.

Variable	Probit model			
	(1)	(2)	(3)	(4)
<i>Narcissism_score</i>		-0.130 (0.086)	-0.129 (0.098)	
<i>Total assets</i>	0.004 (0.005)	0.005 (0.005)		
<i>Capital expenditures</i>	-0.000** (0.000)	-0.000** (0.000)		
<i>Free cash flow</i>	-2.586* (1.399)	-2.897** (1.437)		
<i>Tobin's Q</i>	0.112 (0.072)	0.134* (0.076)		
<i>Ln(Acquirer size)</i>	0.006 (0.057)	0.012 (0.057)		
<i>Leverage</i>	0.615* (0.389)	0.560 (0.391)		
<i>Tenure</i>	0.025** (0.011)	0.026** (0.011)		
<i>Age</i>	-0.031** (0.013)	-0.033*** (0.013)		
<i>Male</i>	-0.451 (0.449)	-0.453 (0.449)		
<i>All cash</i>	-0.245 (0.251)	-0.229 (0.251)		
<i>Stock</i>	0.042 (0.271)	0.031 (0.270)		
<i>Tender offer</i>	0.372** (0.185)	0.350* (0.186)		
<i>Overconfident1</i>	-0.011 (0.209)	-0.002 (0.209)		0.107 (0.188)
<i>Overconfident2</i>	-0.041 (0.151)	-0.059 (0.151)		-0.003 (0.141)
<i>Intercept</i>	2.258** (1.172)	2.255** (1.175)	0.455*** (0.069)	0.367* (0.177)
<i>Pseudo R²</i>	0.067	0.073	0.006	0.001
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

5.3 Hypothesis 2

The second hypothesis states that the CAR of a highly narcissistic CEO who does a conglomerate merger is lower than the CAR of a lowly narcissistic CEO. To test this, the sample is restricted to only conglomerate mergers and OLS regressions are conducted.

Table 7 shows the results of four OLS regressions. From model 2 and 3 it can be seen that the coefficient for narcissism score (*narcissism_score*) is positive but not statistically significant. The more narcissistic a CEO is, the higher the CAR. However, this is not in line with what was expected. Therefore, hypothesis 2 should be rejected.

Furthermore, the coefficient for the Holder67 overconfidence control (*overconfident1*) is positive but not statistically significant (models 1, 2 and 4). This means that overconfidence has a positive effect on the market return. Nevertheless, the CEO transcript control for overconfidence (*overconfident2*) has a negative but not statistically significant effect on the market return (models 1, 2 and 4). This means that the second control for overconfidence has a negative effect on the CAR. Thus, the result for overconfidence is ambiguous.

Moreover, the coefficient of free cash flow is positive and statistically significant at a 1% and 5% significance level (model 1 and 2). Following model 1, if the free cash flow increases with \$1 million, the CAR increases with 23.5 percentage points, *ceteris paribus*.

In addition, the coefficient of Tobin's Q is negative and statistically significant at a 5% significance level (model 1 and 2). This means that when Tobin's Q increases with one unit, the CAR decreases with 0.9 percentage points, *ceteris paribus*. Thus, the CAR decreases with managerial performance.

What is more, stock has a negative and statistically significant effect on the CAR at a 5% significance level. According to model 1, when a transaction consists of a payment which includes stock compared to a transaction that does not contain stock, the CAR decreases with 4.4 percentage points, *ceteris paribus*.

Lastly, the R-squared of the models ranges from 0.004 to 0.175, so the models explain for about 0.4% to 17.5% of the variation in the CAR.

Table 7 OLS regression

The dependent variable is the 5-day cumulative abnormal return (*CAR*) around the announcement day (-2, +2). The main independent variable of interest is the narcissism score (*narcissism_score*). OLS model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *narcissism_score*. Model (3) includes only *narcissism_score* and model (4) includes only the controls for overconfidence.

Variable	OLS model			
	(1)	(2)	(3)	(4)
<i>Narcissism_score</i>		0.021 (0.015)	0.015 (0.019)	
<i>Total assets</i>	-0.002 (0.001)	-0.001 (0.001)		
<i>Capital expenditures</i>	0.007 (0.005)	0.001 (0.005)		
<i>Free cash flow</i>	0.235*** (0.086)	0.228** (0.087)		
<i>Tobin's Q</i>	-0.009** (0.004)	-0.009** (0.004)		
<i>Ln(Acquirer size)</i>	-0.006 (0.004)	-0.006 (0.004)		
<i>Leverage</i>	0.014 (0.024)	0.014 (0.024)		
<i>Tenure</i>	0.001 (0.001)	0.001 (0.001)		
<i>Age</i>	0.001 (0.001)	0.001 (0.001)		
<i>Male</i>	0.002 (0.025)	0.005 (0.025)		
<i>All cash</i>	-0.011 (0.017)	-0.010 (0.016)		
<i>Stock</i>	-0.044** (0.018)	-0.043** (0.017)		
<i>Tender offer</i>	-0.006 (0.010)	-0.005 (0.011)		
<i>Overconfident1</i>	0.009 (0.015)	0.008 (0.015)		0.007 (0.017)
<i>Overconfident2</i>	-0.011 (0.009)	-0.010 (0.010)		-0.015 (0.010)
<i>Intercept</i>	0.073 (0.091)	0.060 (0.091)	-0.002 (0.005)	-0.003 (0.016)
<i>R²</i>	0.168	0.175	0.004	0.011
<i>Observations</i>	244	244	244	244

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

5.4 Robustness checks

5.4.1 Narcissism measures distinctively analysed

Since hypothesis 1 should be rejected according to table 6, the robustness is checked by running probit model 2 as in table 6, but with the four narcissism measures distinctively.

$$\begin{aligned} \Pr(\text{conglomerate} = 1 | \text{narcissism}x, X) & \quad (5) \\ & = \Phi(\beta_0 + \beta_1 \text{narcissism}x + \beta_2 \text{overconfident}1 \\ & + \beta_3 \text{overconfident}2 + \beta_4 X) \end{aligned}$$

In equation 5, the narcissism measures will be included independently from each other. The variable *narcissismx* indicates whether it is about *narcissism1*, *narcissism2*, *narcissism3* or *narcissism4*. *X* is a vector of firm, deal and CEO control variables, *narcissismx* is in this case the main variable of interest and *overconfident1* and *overconfident2* are still the main control variables.

From the results in table 8, only *narcissism2* is positive and statistically significant at a 10% significance level. If the CEO's prominence in the press increases with one percentage point, the probability of doing a conglomerate merger increases with 8.6 percentage points on average, *ceteris paribus* (marginal effects; Appendix D, table A-11). However, this is not in line with the results in table 6 where narcissism has a negative effect on the probability of a CEO to do a conglomerate merger. Nevertheless, the proportion of first-person singulars to total first-person pronouns (*narcissism1*) and the measures for relative cash (*narcissism3*) and non-cash compensation (*narcissism4*) have a negative effect on the probability of a CEO to do a conglomerate merger. Therefore, *narcissism1*, *narcissism3* and *narcissism4* are in line with the result for narcissism score in table 6.

Moreover, the two overconfident controls still predict the same such as in table 6. Both controls have a negative but not statistically significant effect on the probability of a CEO to do a conglomerate merger. Thus, the results are robust for the overconfident controls regardless which measure of narcissism is included.

To conclude, this analysis shows that different narcissism measures lead to different conclusions and it is hard to say which narcissism measure determines the narcissistic personality trait of CEOs best.

Table 8 Probit model of conglomerate merger on narcissism1, 2, 3 & 4

This table shows the coefficients of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is *narcissism_x* ($x=1,2,3,4$). All four models represent model (2) from table 6. Each model consists of either *narcissism1*, *narcissism2*, *narcissism3* or *narcissism4*.

<i>Variable</i>	<i>Probit model</i>			
	(1)	(2)	(3)	(4)
<i>Narcissism1</i>	-0.021 (0.075)			
<i>Narcissism2</i>	0.259* (0.137)			
<i>Narcissism3</i>	-0.050 (0.075)			
<i>Narcissism4</i>	-0.203 (0.153)			
<i>Overconfident1</i>	-0.005 (0.210)	-0.011 (0.210)	-0.009 (0.209)	0.000 (0.209)
<i>Overconfident2</i>	-0.049 (0.153)	-0.071 (0.153)	-0.045 (0.151)	-0.067 (0.152)
<i>Firm controls</i>	yes	yes	yes	yes
<i>CEO controls</i>	yes	yes	yes	yes
<i>Deal controls</i>	yes	yes	yes	yes
<i>Intercept</i>	2.223** (1.179)	2.445** (1.185)	2.383** (1.188)	2.277** (1.178)
<i>Pseudo R²</i>	0.067	0.077	0.068	0.077
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

To check the robustness of the results of hypothesis 2 (table 7), the four narcissism measures are again included independently from each other in model 2 from table 7, replacing the narcissism score with one of the individual narcissism measures (see equation 6).

$$CAR = \beta_0 + \beta_1 narcissism_x + \beta_2 overconfident1 + \beta_3 overconfident2 + \beta_4 X + \epsilon \quad (6)$$

where *narcissism_x* (*narcissism1*, *narcissism2*, *narcissism3* or *narcissism4*) is in this case the main variable of interest and *overconfident1* and *overconfident2* are still the main control variables. Furthermore, *X* is again a vector of firm, deal and CEO control variables.

The results are shown in table 9. The results of table 7 are only robust for *narcissism2* and *narcissism4*. Indeed, the coefficient for *narcissism4* is positive and statistically significant at a 5% significance level. This means that when the relative non-cash compensation of CEO increases with \$1 million, the CAR increases with 4.0 percentage points, ceteris paribus. However, the results for *narcissism1* and *narcissism3* are not in line with the results of table 7. These two measures predict a negative effect on the CAR. Since none of the narcissism measures predict the same, it is still hard to say which measure for narcissism is valid.

Moreover, the controls for overconfidence in table 9 also still give ambiguous effects on the CAR. Namely, the Holder67 measure for overconfidence (*overconfident1*) gives a positive effect and the CEO transcript control for overconfidence (*overconfident2*) gives a negative effect. Thus, it is not clear what effect overconfidence has on the CAR.

Table 9 OLS regression CAR on interaction variables conglomerate and narcissism1,2, 3 & 4

The dependent variable is the 5-day cumulative abnormal return (CAR) around the announcement day (-2, +2) and the main independent variable of interest is *narcissism_x* ($x=1,2,3,4$). All four models represent model (2) from table 6. Each model consists of either *narcissism1*, *narcissism2*, *narcissism3* or *narcissism4*.

Variable	OLS model			
	(1)	(2)	(3)	(4)
<i>Narcissism1</i>	-0.000 (0.005)			
<i>Narcissism2</i>	0.002 (0.003)			
<i>Narcissism3</i>	-0.008* (0.004)			
<i>Narcissism4</i>	0.040** (0.018)			
<i>Overconfident1</i>	0.009 (0.015)		0.010 (0.015)	0.008 (0.015)
<i>Overconfident2</i>	-0.011 (0.010)		-0.011 (0.009)	-0.010 (0.009)
<i>Firm controls</i>	yes	yes	yes	yes
<i>CEO controls</i>	yes	yes	yes	yes
<i>Deal controls</i>	yes	yes	yes	yes
<i>Intercept</i>	0.073 (0.091)	0.071 (0.091)	0.098 (0.092)	0.057 (0.091)
<i>R²</i>	0.168	0.169	0.182	0.178
<i>Observations</i>	244	244	244	244

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

5.4.2 Relative cash and non-cash compensation combined

Since a CEO can choose between a cash compensation or a non-cash compensation, it could be the case that the narcissism measures for relative cash and non-cash compensation separately do not show the right results. Namely, when looking at the minimum of the relative non-cash compensation in table 2, it is negative (-295.676). The reason for this could be that this particular CEO suffers from financial distress and might have sold some options or shares to deal with it. However, this CEO might still have a lot of cash compensation in his or her portfolio. Therefore, a new variable has been constructed. This variable will be called *narcissism5* and takes into account both cash and non-cash compensation.

From table 10 below it can be seen that the minimum is still negative, but not as big as the minimum for the relative non-cash compensation measure (*narcissism4*) in table 2. Also, the standard deviation is a lot smaller than for *narcissism4*, namely \$5.62 million instead of \$1,105.76 million. Furthermore, from table 11, it can be seen that *narcissism5* has a positive correlation with all the other narcissism measures, except for the CEO prominence in the press measure (*narcissism2*). Hence, a combination of *narcissism4* and *narcissism5* might be a better measure for a relative compensation, because it takes into account the different preferences for cash and non-cash compensation.

Table 10 summary statistics of *narcissism5*

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
Narcissism5	215	4.344	5.624	-2.810	37.171

Table 11 correlation matrix of narcissism measures

Variable	Narcissism1	Narcissism2	Narcissism3	Narcissism4	Narcissism5
Narcissism1	1.000				
Narcissism2	0.024	1.000			
Narcissism3	0.042	-0.041	1.000		
Narcissism4	-0.024	-0.010	0.003	1.000	
Narcissism5	0.024	-0.013	0.343***	0.358***	1.000

*significant at 10%; **significant at 5%; ***significant at 1%

The robustness of the results of table 6 and 7 will now be checked by using this new measure of narcissism. First of all, the coefficient of *narcissism5* is negative but not statistically significant in model 1 of table 12. This result is in line with the result of narcissism score in table 6. Second, the coefficient of *narcissism5* is positive but not statistically significant in

model 2 of table 12. This result is also in line with the result of narcissism score in table 7. Hence, the results of hypothesis 1 and 2 are robust for this new measure of narcissism. Third, the (pseudo) R-squared is the highest when including this new constructed variable *narcissism5* compared to the models that include any of the other narcissism measures (table 8 and 9). This means including *narcissism5* explains more of the variation in the dependent variables. Yet, this analysis merely suggests that a combination of the relative cash and non-cash compensation measures might be a better measure than the two separately.

Table 12 Probit and OLS model including *narcissism5*

This table shows the coefficients of the probit model (model 1) and the coefficient of the OLS model (model 2). The dependent variable of model 1 is the probability of a conglomerate merger and the main independent variable of interest is *narcissism5*. Model 1 includes all control variables like model 2 in table 6. The dependent variable of model 2 is the 5-day cumulative abnormal return (*CAR*) around the announcement day (-2, +2) and the main independent variable of interest is *narcissism5*. Model 2 includes all control variables like model 2 in table 7.

<i>Variable</i>	<i>Model</i>	
	(1)	(2)
<i>Narcissism5</i>	-0.152 (0.104)	0.006 (0.008)
<i>Overconfident1</i>	0.057 (0.260)	-0.003 (0.018)
<i>Overconfident2</i>	0.175 (0.205)	-0.007 (0.012)
<i>Firm controls</i>	yes	yes
<i>CEO controls</i>	yes	yes
<i>Deal controls</i>	yes	yes
<i>Intercept</i>	4.496*** (1.616)	-0.022 (0.114)
<i>(Pseudo) R²</i>	0.139	0.204
<i>Observations</i>	244	244

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

5.4.2 Outliers

In figure 3, a cumulative distribution function (CDF) plot is displayed of *narcissism_score*. It can be seen that almost the whole sample has a narcissism score below two. Therefore, scores above two could be outliers that influence the results. Winsorizing is a way to minimize the effect of outliers making the results more robust. By using a 90% winsorization, the top 5% and bottom 5% get winsorized by modifying the outliers so there's

no need to remove these. In figure 4, a CDF plot is displayed of the winsorized *narcissism_score*. From this plot, it can be seen that approximately 60% of the CEOs has a narcissism score below -0.1 and about 90% has a narcissism score below 0.1.

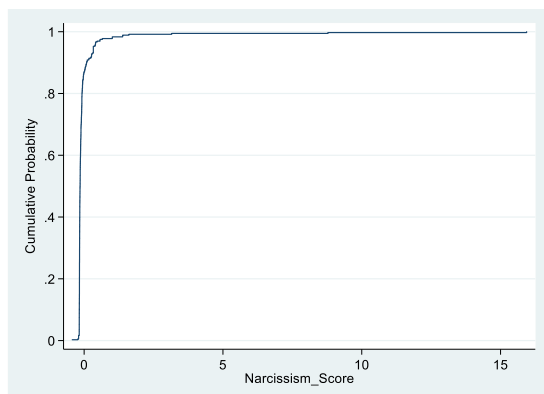


Figure 3 CDF plot of *narcissism_score*

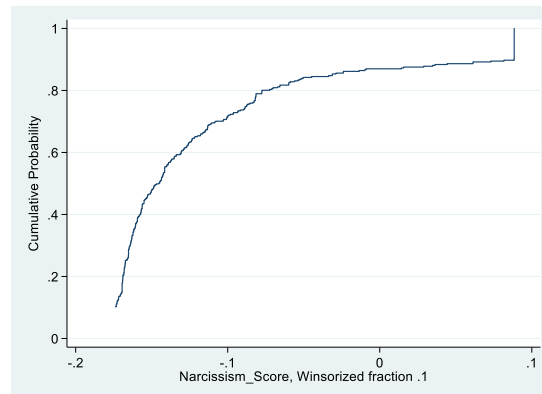


Figure 4 CDF plot of *Wnarcissism_score*

Moreover, in table 12 the summary statistics of the winsorized variable of the narcissism score (*Wnarcissism_score*) is displayed. The maximum of *Wnarcissism_score* is only 0.088. However, in table 2 it could be seen that the maximum of the narcissism score was about 15, so this was most plausibly an outlier, since the mean of the narcissism score was only 0.001. This shows that the narcissism score of this sample is rather low.

Table 12 summary statistic of *Wnarcissism_score*

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
<i>Wnarcissism_score</i>	361	-0.110	0.082	-0.174	0.088

Furthermore, table 13 shows the results of the probit model to test hypothesis 1 with a winsorized narcissism score. The coefficient for the winsorized narcissism score is negative but not statistically significant in model 3, just like the results in table 6. However, the coefficient for the winsorized narcissism score is positive and not statistically significant in model 2. Thus, the results of hypothesis 1 (table 6) are robust to outliers only for model 3 and not for model 2.

What is more, the effect of *overconfident2* is negative but not statistically significant for the probability of a CEO to do a conglomerate merger and for *overconfident1* the effect is the same except for model 4. Hence, the results of hypothesis 1 are robust to the overconfidence controls except for *overconfident1* in model 4.

Table 13 Probit model conglomerate merger on winsorized narcissism score

This table shows the coefficients of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is the winsorized narcissism score (*Wnarcissism_score*). Probit model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *Wnarcissism_score*. Model (3) includes only *Wnarcissism_score* and model (4) includes only the controls for overconfidence.

<i>Variable</i>	<i>Probit Model</i>			
	(1)	(2)	(3)	(4)
<i>WNarcissism_score</i>		0.258 (1.070)	-0.414 (0.833)	
<i>Overconfident1</i>	-0.011 (0.209)	-0.009 (0.209)		0.107 (0.188)
<i>Overconfident2</i>	-0.041 (0.151)	-0.045 (0.152)		-0.003 (0.141)
<i>Firm controls</i>	yes	yes	no	no
<i>CEO controls</i>	yes	yes	no	no
<i>Deal controls</i>	yes	yes	no	no
<i>Intercept</i>	2.256* (1.172)	2.297* (1.184)	0.411*** (0.114)	0.367** (0.177)
<i>Pseudo R²</i>	0.067	0.067	0.001	0.001
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

Since hypothesis 2 also uses the variable narcissism score, the robustness is also checked using the winsorized narcissism score. The results can be seen in table 14 below. The results of hypothesis 2 (table 7) are robust for the winsorized narcissism score in model 2. The coefficient is positive but not statistically significant just like the results in table 7. However, the coefficient for *Wnarcissism_score* is negative but not statistically significant in model 3. Nevertheless, since model 2 includes all control variables and the magnitude of the coefficient of *Wnarcissism_score* is also bigger in model 2 than model 3, it is plausible to conclude that the results of hypothesis 2 are robust to outliers.

Furthermore, the coefficients for *overconfident1* are positive but not statistically significant (model 1, 2 and 4) and the coefficients for *overconfident2* are negative but not statistically significant (model 1, 2 and 3). Hence, the results of hypothesis 2 are robust regarding the overconfidence controls in table 14. Nonetheless, the effect of overconfidence is also in this case ambiguous.

Table 14 OLS model CAR on winsorized narcissism score

The dependent variable is the 5-day cumulative abnormal return (CAR) around the announcement day (-2, +2). The main independent variable of interest is the winsorized narcissism score (*Wnarcissism_score*). OLS model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *Wnarcissism_score*. Model (3) includes only *Wnarcissism_score* and model (4) includes only the controls for overconfidence.

<i>Variable</i>	<i>OLS Model</i>			
	(1)	(2)	(3)	(4)
<i>WNarcissism_score</i>		0.105 (0.064)	-0.004 (0.057)	
<i>Overconfident1</i>	0.009 (0.015)	0.010 (0.015)		0.007 (0.016)
<i>Overconfident2</i>	-0.011 (0.009)	-0.013 (0.010)		-0.015 (0.010)
<i>Firm controls</i>	yes	yes	no	no
<i>CEO controls</i>	yes	yes	no	no
<i>Deal controls</i>	yes	yes	no	no
<i>Intercept</i>	0.073 (0.091)	0.077 (0.090)	-0.004 (0.008)	-0.003 (0.016)
<i>R²</i>	0.067	0.067	0.000	0.011
<i>Observations</i>	244	244	244	244

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

5.4.3 High and low narcissism

In the main analysis, a narcissism score is used since the narcissism personality is placed as a continuum. To test the robustness of the results of hypothesis 1 and 2, the same analysis is done but on high or low narcissism, creating two ends of the personality. *Narcissism_high* is a dummy variable created from the narcissism score and indicates 1 when the narcissism score of a CEO is above the mean of the collective narcissism score and 0 when it is below. In the beginning of the results of hypothesis 1, it was already shown in a bar graph that lowly narcissistic CEOs do more conglomerate mergers than highly narcissistic CEOs (figure 2). However, in this section, we will see whether this difference is also statistically significant and also what effect low and high narcissism has on the CAR (hypothesis 2).

The coefficient of *narcissism_high* in table 15 is positive and not statistically significant in model 2. When a CEO is highly narcissistic, they will have a higher probability of doing a conglomerate merger than for a CEO who is lowly narcissistic. However, the coefficient of *narcissism_high* is negative and not statistically significant in model 3. Thus, the results of

hypothesis 1 (table 6) are robust only for high and low narcissism in model 2 of table 15.

Furthermore, the results of hypothesis 1 for the overconfidence controls are also robust with the inclusion of *narcissism_high* in models 1,2 and 4. Hence, the results of hypothesis 1 (table 6) regarding the overconfidence controls are robust.

Table 15 Probit model of conglomerate merger on high/low narcissism

This table shows the coefficients of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is the dummy variable high narcissism (*narcissism_high* = 1 = high narcissism, *narcissism_high* = 0 = low narcissism). Probit model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *narcissism_high*. Model (3) includes only *narcissism_high* and model (4) includes only the controls for overconfidence.

<i>Variable</i>	<i>Probit Model</i>			
	(1)	(2)	(3)	(4)
<i>Narcissism_high</i>		0.227 (0.263)	-0.052 (0.202)	
<i>Overconfident1</i>	-0.011 (0.209)	-0.005 (0.209)		0.107 (0.188)
<i>Overconfident2</i>	-0.041 (0.151)	-0.041 (0.151)		-0.003 (0.141)
<i>Firm controls</i>	yes	yes	no	no
<i>Deal controls</i>	yes	yes	no	no
<i>CEO controls</i>	yes	yes	no	no
<i>Intercept</i>	2.258* (1.172)	2.228* (1.176)	0.463*** (0.074)	0.367** (0.177)
<i>Pseudo R²</i>	0.067	0.068	0.000	0.001
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

The results for hypothesis 2 can be found in table 16 below. The coefficient for *narcissism_high* is positive but not statistically significant in model 2 and 3. However, highly narcissistic CEOs will produce higher CARs compared to low narcissistic CEOs. This result is in line with the results in table 7. Thus, the results of hypothesis 2 are robust to the extreme ends of narcissism (high/low).

What is more, the overconfidence controls in table 16 give again ambiguous results for the CAR. *Overconfident1* has a positive but not statistically significant effect on the CAR, while *overconfident2* has a negative but not statistically significant effect on the CAR. This is in line with the main results in table 7, hence, the results of hypothesis 2 regarding the overconfidence controls are as well robust to high and low narcissism.

Table 16 OLS model of CAR on high/low narcissism

The dependent variable is the 5-day cumulative abnormal return (CAR) around the announcement day (-2, +2). The main independent variable of interest is the dummy variable high narcissism (*narcissism_high* = 1 = high narcissism, *narcissism_high* = 0 = low narcissism). OLS model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *narcissism_high*. Model (3) includes only *narcissism_high* and model (4) includes only the controls for overconfidence.

<i>Variable</i>	<i>OLS model</i>			
	(1)	(2)	(3)	(4)
<i>Narcissism_high</i>		0.018 (0.016)	0.002 (0.014)	
<i>Overconfident1</i>	0.009 (0.015)	0.009 (0.015)		0.007 (0.016)
<i>Overconfident2</i>	-0.011 (0.009)	-0.011 (0.009)		-0.015 (0.010)
<i>Firm controls</i>	yes	yes	no	no
<i>Deal controls</i>	yes	yes	no	no
<i>CEO controls</i>	yes	yes	no	no
<i>Intercept</i>	0.073 (0.091)	0.061 (0.091)	-0.003 (0.005)	-0.003 (0.016)
<i>R²</i>	0.067	0.067	0.000	0.000
<i>Observations</i>	244	244	244	244

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

6. Discussion

Four different probit and OLS models were conducted with different firm, CEO and deal control variables following the literature. The first model was to see whether the hard factors influencing the market return have the same effects just like in past literature. This is only the case for the acquirer's size. As described in section 4.3.2, acquirer's size has a negative influence on the CAR (DePamphilis, 2010) and this is also the case in this sample. However, the results for cash payments, Tobin's Q, leverage and free cash flow, all give opposite results than what was expected based on previous literature. For example, even though cash does not have a positive effect on the CAR in this sample, stock payment does have a negative and statistically significant effect on the CAR. Therefore, this could indicate that indeed shareholders prefer a cash payment over a stock payment. Furthermore, according to previous literature, free cash flow should have a negative effect on the CAR (Jensen, 1986), because CEOs would prefer to spend cash compared to investing it in positive NPV projects. If not, they are more likely to invest it in value-destroying mergers and acquisitions like conglomerate mergers (Jensen, 1986). Nevertheless, in this sample, free cash flow has a negative effect on the probability of doing a conglomerate merger and actually has a positive effect on the CAR.

A possible explanation could be that narcissistic CEOs do want to show shareholders that they spend cash usefully to preserve their image and get praised, thus, they will only invest in conglomerate mergers if it will result in positive CARs. Therefore, free cash flow does not necessarily increase the probability of a narcissistic CEO to do a conglomerate merger but they would do a conglomerate merger if they expect that the CAR will be positive.

Models 2, 3 and 4 are then used to test the hypotheses. The first hypothesis is to test whether the narcissistic CEOs are also more prone to do conglomerate mergers just like overconfident CEOs as in Doukas and Petmezas (2007). The results in table 6 show that this is not the case with narcissism. In fact, narcissistic CEOs are less likely to conduct conglomerate mergers. To indicate narcissism in the analyses of table 6, a narcissism score was conducted, so a CEO could be on any part of the narcissism continuum. These results are robust to the two extreme ends of narcissism, low and high. Moreover, these results are also robust to outliers and the narcissism measures which measure the proportion of first-person singulars to total first-person pronouns (*narcissism1*) and the relative cash (*narcissism3*) and non-cash compensation (*narcissism4*) of CEOs. However, even though overconfidence is positively correlated with narcissism according to Campbell et al. (2004), overconfidence in this sample contradicts previous literature as well and therefore moves the dependent variable in the same direction as narcissism. Yet, regardless of the same effect of overconfidence as narcissism in this sample, since narcissism in this thesis do give the opposite result of overconfidence in past literature, a possible explanation could be that narcissistic CEOs really want to preserve their image and since conglomerate mergers are known to be value-destroying (Berger & Ofek, 1995; Lang & Stulz, 1994; Servaes, 1996), they will not risk their image. So, overconfident CEOs overestimate their ability to make a conglomerate merger a success, but narcissistic CEOs do not necessarily have to be overconfident in the same way. Possibly, they are more likely to choose to do a merger or acquisition with a great value compared to a conglomerate merger which is not shed in a positive light. Thus, it is important to distinguish between overconfidence and narcissism even though these two are positively related, as both can provide very different results.

The second hypothesis is to test whether the CAR of highly narcissistic CEOs who do conglomerate mergers is lower than the CAR of lowly narcissistic CEOs. This was done by restricting the sample to conglomerate mergers and still uses narcissism as a continuum. This hypothesis would then predict that the higher the narcissism score, the lower the CAR of the conglomerate merger. Morck et al. (1990) and Malmendier and Tate (2008) find negative CAR when an overconfident CEO did a conglomerate merger. However, the results from the main

analysis (table 7) show positive but not statistically significant results for the CAR. Thus, in the sample of this thesis, narcissistic CEOs lead to a positive effect on the CAR of a conglomerate merger. Moreover, these results are robust to the measure of the prominence of the CEO in the press (*narcissism2*) and the measure of relative non-cash compensation (*narcissism4*), outliers and the extreme ends of narcissism. Nevertheless, Aktas et al. (2016) found that negative CARs were related to the narcissism of the target. However, the target's narcissism is not researched in this paper. A possible explanation for the positive effect of narcissism on the CAR is that narcissistic CEOs focus on success and less on the possible failure of a project (Campbell et al., 2004). Furthermore, the results for the Holder67 measure of overconfidence are in line with the constructed narcissism score. Nonetheless, the CEO transcript measure of overconfidence has a negative effect on the CAR. Hence, the result of overconfidence is ambiguous for hypothesis 2. However, since narcissism does give different inferences as overconfidence in earlier literature, the difference between narcissism and overconfidence should be recognized.

Moreover, the validity of the narcissism measures in this research is a challenge. The coefficients of the four narcissism measures in table 8 and 9 show different signs, magnitude and significance. For the first hypothesis, the proportion of first-person singulars to total first-person pronouns and the relative cash and non-cash compensation measure have a negative effect on the probability of CEOs to do a conglomerate merger. However, the coefficient of the CEO prominence in the press measure have a positive and statistically significant effect on the probability. Moreover, for the second hypothesis, the proportion of first-person singulars to total first-person pronouns and the relative cash compensation measure have a negative impact on the CAR, but the CEO prominence in the press measure and the relative non-cash compensation have a positive impact on the CAR. That is why constructing a narcissism score from all four measures could be a solution to this, since none of the measures predict the same even though they all measure narcissism following past research (Aktas et al., 2016; Chatterjee & Hambrick, 2007; Rijsenbilt, 2011).

Lastly, in addition to past research measures, a new measure of narcissism is constructed by combining the cash and non-cash compensation of CEOs. Including this measure of narcissism explained more of the variation in the probability of a CEO to do a conglomerate merger and in the CAR. Therefore, this measure might be better than the two compensation measures separately.

7. Conclusion

The main objective of this thesis was to find out whether the consequences of a CEO's narcissism are the same as the overconfidence bias on the probability of doing a conglomerate merger and the market return of conglomerate mergers. First of all, highly narcissistic CEOs are not more prone to do conglomerate mergers than lowly narcissistic CEOs. Second, conglomerate mergers of highly narcissistic CEOs result in higher market returns than conglomerate mergers of lowly narcissistic CEOs. Since the results of narcissism turned out to be in the opposite direction of overconfidence in past research, it is possible to conclude that narcissism and overconfidence give distinct results despite their positive relationship. Therefore, narcissism is a unique personality trait and should be studied distinctively from overconfidence. To conclude, narcissistic CEOs do not conduct more conglomerate mergers than non-narcissistic or less narcissistic CEOs and they actually have a positive effect on the market return regarding conglomerate mergers.

Further research could focus on finding a single valid narcissism measure, because the four narcissism measures used in this research and past literature give different results. Moreover, narcissism could also be more explored in the field of M&A by for example taking into account the target's narcissism or studying cross-border M&A's. Furthermore, the same models in this thesis could be tested on other samples to see whether overconfidence and narcissism move into the same direction as well, such as in this sample. If that is the case, then the effect of overconfidence from past research should be revisited. Lastly, it could be the case that some CEOs are aware of their narcissism and this could bias their speeches. Further research could try to find a way to take this into account as well.

All in all, the results of narcissism in this thesis do not follow the literature where narcissism is shed in quite a negative light and where narcissism is positively correlated with overconfidence. In fact, in this thesis, narcissism has a positive effect on the market return of M&A and conglomerate mergers in particular.

Last but not least, this thesis creates awareness for companies about the consequences of narcissistic CEOs on the firm performance due to conglomerate mergers conducted by these CEOs and this could be useful for corporate governance policies improvements or adjustments.

8. References

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9. Appendix

Appendix A Descriptive statistics CEO transcript sources and types

Table A- 1 Frequency table of sources used for CEO transcripts

Source	Frequency	Percent (%)
FD (Fair Disclosure) Wire	351	97.23
Financial Buzz	1	0.28
Financial Markets Regulatory Wire	1	0.28
MT Newswires Live Briefs PRO	4	1.11
TheStreet.com	4	1.11
Total	361	100

Table A- 2 Frequency table of types of CEO transcripts

Type	Frequency	Percent (%)
Analyst Meeting	5	1.39
Annual Shareholders Meeting	1	0.28
Conference Call	4	1.11
Corporate Analyst Meeting	1	0.28
Earnings Conference Call	333	92.24
Global Consumer Conference	1	0.28
Global Industrials and Transportation Conference	1	0.28
Global Media and Communications Conference	1	0.28
Healthcare Conference	4	1.11
Investor Day	3	0.83
News Program	1	0.28
Quarter Results	1	0.28
Shareholders Meeting	4	1.11
Technology Conference	1	0.28
Total	361	100

Appendix B Control variables and construction in STATA

Table A- 3 Control variables

Control variable	Construction in STATA
All_cash	All_cash = 1 if ofCash=="100" Replace all_cash = 0 if all_cash==.
Stock	destring ofStock, generate(ofStock_float) force gen stock=1 if ofStock_float>0 & ofStock_float<=100 replace stock=0 if stock==.
Tender_offer	gen tender_offer=1 if TenderOffer=="Y" replace tender_offer=0 if tender_offer==.
Ln(acquirer_size)	gen acquirer_size=price*shares outstanding gen ln_acquirer_size=ln(acquirer_size)
Tobin's Q	gen tobin_q=market_asset/total assets
Leverage	gen leverage=(total long term debt+debt in current liabilities)/total assets
Free cash flow	gen fcf = (operating income before depreciation-total interest and related expense-total income taxes-capital expenditures)/total assets
Overconfident1 (Holder67)	<ol style="list-style-type: none"> 1. gen av_realizable_value_per_option = estimated value of unexercised exercisable option/number of unexercised exercisable options 2. gen av_exercise_price_option=price - av_realizable_value_per_option 3. gen perc_av_moneyness=(pricec/av_exercise_price_option)-1 4. gen count=1 if perc_av_moneyness>0.67 5. gen overconfident1=0 6. replace overconfident1=1 if count2>=2
Overconfident2	Proportion of confident words to total of confident and non-confident words in CEO transcript
Age	CEO's present age
Tenure	CEO's tenure at firm
Male	gen male = 1 if gender=="MALE" replace male = 0 if gender == "FEMALE"

Appendix C Descriptive statistics CEO, firm, deal characteristics

Table A- 4 Frequency table of CEO's gender

Gender	Frequency	Percent (%)
Female	11	3.05
Male	350	96.95
Total	361	100

Table A- 5 Summary statistics of CEO's tenure and present age

Variable	Observations	Mean	Std. Dev.	Min	Max.
Tenure	361	11.216	7.794	1	41
Present age	361	60.978	6.773	40	81

Table A- 6 summary statistic firm characteristics

Variable	Observations	Mean	Std. Dev.	Min.	Max.
Total assets	361	29,607.81	59,517.18	95.41	685,328
Capital expenditures	361	1,061.09	2,870.246	0	20,272
Free cash flow	361	0.063	0.069	-0.310	0.540
Tobin's Q	361	2.387	1.365	0.962	15.190
Ln(acquirer's size)	361	15.943	1.795	12.239	19.792
Leverage	361	0.275	0.190	0	1.179

Table A- 7 Frequency table of payment method all cash

All_cash	Frequency	Percent (%)
0	164	45.43
1	197	54.57
Total	361	100

Table A- 8 Frequency table of payment method stock

Stock	Frequency	Percent (%)
0	232	64.27
1	129	35.73
Total	361	100

Table A- 9 Frequency table of tender offers

Tender offer	Frequency	Percent (%)
0	277	76.73
1	84	23.27
Total	361	100

Appendix D Marginal effects probit models

Table A- 10 Marginal effects of the probability of a conglomerate merger on narcissism score

This table shows the marginal effects of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is *narcissism_score*. Probit model (1) controls for all firm (total assets, capital expenditures, free cash flow, Tobin's Q, acquirer's size, leverage), CEO (tenure, age, gender, shares owned) and deal (cash/stock, tender offer) characteristics as well as overconfidence. In addition to model (1), model (2) adds the independent variable of interest *narcissism_score*. Model (3) includes only *narcissism_score* and model (4) includes only the controls for overconfidence.

Variable	Probit model			
	(1)	(2)	(3)	(4)
<i>Narcissism_score</i>		-0.043 (0.028)	-0.046 (0.035)	
<i>Total assets</i>	0.005 (0.006)	0.006 (0.006)		
<i>Capital expenditures</i>	-0.000** (0.000)	-0.000** (0.000)		
<i>Free cash flow</i>	-0.867* (0.464)	-0.964** (0.472)		
<i>Tobin's Q</i>	0.038 (0.024)	0.045* (0.025)		
<i>Ln(Acquirer size)</i>	0.002 (0.019)	0.004 (0.019)		
<i>Leverage</i>	0.206 (0.129)	0.187 (0.129)		
<i>Tenure</i>	0.008** (0.004)	0.009** (0.004)		
<i>Age</i>	-0.010** (0.004)	-0.011*** (0.004)		
<i>Male</i>	-0.151 (0.150)	-0.151 (0.149)		
<i>All cash</i>	-0.082 (0.084)	-0.076 (0.083)		
<i>Stock</i>	0.014 (0.091)	0.010 (0.090)		
<i>Tender offer</i>	0.125** (0.061)	0.116* (0.061)		
<i>Overconfident1</i>	-0.004 (0.070)	-0.001 (0.070)		0.039 (0.067)
<i>Overconfident2</i>	-0.014 (0.051)	-0.020 (0.050)		-0.001 (0.051)
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%

Table A- 11 Marginal effects of the probability of a conglomerate merger on narcissism1, 2, 3 & 4

This table shows the marginal effects of the probit model. The dependent variable is the probability of a conglomerate merger and the main independent variable of interest is *narcissism_x* ($x=1,2,3,4$). All four models represent model (2) from table 6. Each model consist of either *narcissism1*, *narcissism2*, *narcissism3* or *narcissism4*.

<i>Variable</i>	<i>Probit model</i>			
	(1)	(2)	(3)	(4)
<i>Narcissism1</i>	-0.007 (0.025)			
<i>Narcissism2</i>	0.086* (0.045)			
<i>Narcissism3</i>	-0.017 (0.025)			
<i>Narcissism4</i>	-0.067 (0.051)			
<i>Overconfident1</i>	-0.002 (0.070)	-0.004 (0.070)	-0.003 (0.070)	0.000 (0.069)
<i>Overconfident2</i>	-0.016 (0.051)	-0.023 (0.051)	-0.015 (0.051)	-0.022 (0.050)
<i>Firm controls</i>	yes	yes	yes	yes
<i>CEO controls</i>	yes	yes	yes	yes
<i>Deal controls</i>	yes	yes	yes	yes
<i>Observations</i>	361	361	361	361

SE in parentheses

*significant at 10%; **significant at 5%; ***significant at 1%