ORIGINAL PAPER

How venture capital funding changes an entrepreneur's digital identity: more self-confidence and professionalism but less authenticity!

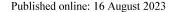Jörn H. Block[1,2] · Walter Diegel[1] · Christian Fisch[3]

Abstract

An entrepreneur's digital identity matters for resource acquisition and venture development. However, we know little about the factors that influence or change entrepreneurs' digital identities. This study explores how entrepreneurs' digital identities change after a venture capital (VC) funding round. Applying a language-based text analysis to a large sample of tweets from 2,094 US entrepreneurs, we analyze entrepreneurs' digital identities before and after VC funding. The results of our analysis show that VC funding can impact the entrepreneur's digital identity in both a positive and a negative way. On the positive side, entrepreneurs increasingly use language indicative of higher self-confidence, positive emotions, and increased professionalism. On the negative side, we find that the entrepreneur's digital identity loses its authenticity, particularly with high funding amounts raised. The latter can be problematic as authenticity is shown to be a critical resource that entrepreneurs possess to build legitimacy and engage stakeholders in their venture. Our study contributes to research on the consequences of VC funding for entrepreneurs as well as to research on entrepreneurial digital identities. Practical implications exist for entrepreneurs managing their entrepreneurial identities over the course of venture development.

Keywords Digital identity · Authenticity · Venture capital · Twitter · Entrepreneur · Text analysis · LIWC · Digital footprints

1 Introduction

Research into entrepreneurial finance has comprehensively assessed the selection process of venture capital (VC) investors (e.g., Block et al., 2019; Gompers et al., 2020). Knowing how VC investors select portfolio ventures helps entrepreneur-

---

🖄 Springer

ial ventures access badly needed external financing. An equally extensive research stream has focused on the consequences of VC investment for portfolio ventures (e.g., Chemmanur et al., 2011; Haro-de-Rosario et al., 2016; Sørensen, 2007). This research documents the impact that VC backing can have on the performance and prospects of portfolio ventures, which is important for appraising the economic significance of VC.

While the antecedents of VC investors' decisions and the consequences for portfolio firms are well explored, we know less about the consequences of VC backing for the entrepreneurs themselves. Entrepreneurship research typically portrays entrepreneurs as individuals in search of personal autonomy who try to fulfil their visions and personal goals by establishing their own ventures (e.g., Drnovšek et al., 2023; Lumpkin et al., 2009; Ryff, 2019; Witt, 2007). The acquisition of VC funding is a critical step in entrepreneurial careers and the lifecycle of entrepreneurial ventures and, thus, in the pursuit of entrepreneurs' goals. Therefore, VC backing may have a profound effect on the entrepreneur and his or her identity. Entrepreneurial identity has become an important and widely used construct in entrepreneurship research explaining the decisions, behaviour, and success of entrepreneurs and their ventures (e.g., Fauchart and Gruber, 2011; Shi et al., 2021; Soto-Simeone and Kautonen, 2021). Recent research suggests that the identity of entrepreneurs and a display of entrepreneurial leadership are important assets or resources that entrepreneurs (can) use to attract badly needed resources from funders (e.g., Block et al., 2022) and employees (Moser et al., 2017; Rudic et al., 2021). Hence, the question of what factors and events change an entrepreneur's identity is of high importance for both entrepreneurship theory and practice. The focus of our study is on an entrepreneur's *digital* identity and the digital image that an entrepreneur (either explicitly or implicitly) creates of him- or herself for the outside world. Prior research shows that digital identity and communication through social media matters for stakeholder engagement more generally (Fischer and Reuber, 2014) and resource acquisition from VCs more specifically (Block et al., 2022). Our study focuses on VC funding as an important milestone in venture development and poses the following research question: How does an entrepreneur's digital identity change in response to the receipt of VC funding?

While the majority of studies on entrepreneurial identities focus on qualitative methods such as interviews (e.g., Fauchart and Gruber, 2011; Powell and Baker, 2017; York et al., 2016), we follow the latest research and examine the evolution of US entrepreneurs' digital identities quantitatively by using archival data from Twitter and Crunchbase (e.g., Fisch and Block, 2021; Seigner et al., 2023; Tumasjan, et al., 2021). We apply a language-based text analysis tool to explore US entrepreneurs' digital identities before and after VC funding. Our analysis shows that US entrepreneurs increasingly use language indicative of a) higher self-confidence and positive emotions, b) increased professionalism, and c) reduced authenticity after VC backing. Moderation effects exist concerning the presence of a reputable VC investor and the amount of funding raised. The latter further strengthened the negative effect of VC funding on the authenticity that entrepreneurs display in their digital identities. Hence, the results of our analysis show that VC funding can impact the entrepreneur's digital identity in both a positive and a negative way. While the positive effects

(higher self-confidence and increased professionalism) may not be surprising, the loss in authenticity may be less expected.

With these findings, our study adds to the literature on entrepreneurial identities (e.g., Obschonka et al., 2017; Smith et al., 2017) where only few studies so far have investigated how entrepreneurial identity changes over time and with certain events (e.g., Fisch and Block, 2021). Prior research suggests that personal identities are not always stable over time and can change when life-changing events or developments occur (e.g., Fisch and Block, 2021; Jain et al., 2009). Such a longitudinal perspective is needed in research on entrepreneurial identities when trying to understand the complex relationship between an entrepreneur's identity and his or her behaviour and success. In this regard, our study complements recent qualitative research by O'Neil et al. (2022), who have developed a process model of how founder identity evolves and takes shape interacting with entrepreneurial action.

From a narrower perspective, we contribute to recent entrepreneurship research concerning *digital* identities. In general, this research is based on findings in psychology showing that the ways how individuals interact on social media platforms (e.g., Facebook, Twitter) are a reliable reflection of the user's offline personality (e.g., Chen et al. 2017; Gosling et al., 2011). The connection between digital identities and offline personalities has been extensively researched in psychology (e.g., Krämer and Winter, 2008; Mehdizadeh, 2010). In this vein, our research is closely related to that of Fisch and Block (2021), who show that the impact of entrepreneurial failure on entrepreneurs is reflected in their digital identities. Furthermore, our research is related to studies showing that the use of social media by entrepreneurs is an effective tool for opportunity recognition (e.g., Barness and Mattson, 2016), marketing campaigns (e.g., Kudeshia et al., 2016; Shih et al., 2014), business networking (e.g., Fischer and Reuber, 2014; Quinton and Wilson, 2016), and resource acquisition (e.g., Mumi et al., 2019; Yang and Berger, 2017). We add to this stream of research by showing that receiving VC funding is an event that can trigger substantial changes in entrepreneurs' digital identities. These changes are complex and can go in several directions (both positive and negative).

Finally, our findings also contribute to research concerning the consequences of VC funding (e.g., Chemmanur et al., 2011; Chemmanur et al., 2021; Haro-de-Rosario et al., 2016; Sørensen, 2007). While this research has predominantly taken an organizational-level perspective focusing on business-related consequences thus far (e.g., venture growth and performance), our study provides an entrepreneur-focused perspective enabling a more comprehensive understanding of the consequences of VC funding. Such an entrepreneur-focused perspective is needed to study and understand the development of young ventures and the role of VC funding therein. Young ventures critically depend on an entrepreneur's ability to identify opportunities and attract and manage the resources needed to exploit them.

The results of our study have practical implications for entrepreneurs managing their own (digital) entrepreneurial identities over the course of venture development. A loss in authenticity following VC funding can become problematic. Recent research shows that authenticity is crucial for entrepreneurs to engage with their customers and become accepted in their local communities (e.g., Schifeling and Demetry, 2021). In combination with a display of entrepreneurial leadership it can also help

new ventures to attract new employees (Hubner et al., 2021), which new ventures often struggle with as they are not able to pay the same wages and benefits as larger, established firms (Litwin and Phan, 2013; Nyström and Elvung, 2014). The findings of our study suggest that entrepreneurs need to carefully balance the need for commercialization and professionalization with the loss in authenticity that may come as an unintended side effect.

2 Prior research about the consequences of VC funding

Prior research assesses the consequences of VC funding. Most of this research deals with the consequences and impact of receiving VC for the funded ventures. These consequences include increased operation performance (e.g., Chemmanur et al., 2021; Sørensen, 2007), professionalization (e.g., Colombo and Grilli, 2010; Hellmann and Puri, 2002), and growth (Hellmann and Puri, 2000). So far, except for founder turnover following VC investment (e.g., Ewens and Marx, 2018; White et al., 2007), little research exists that investigates how VC funding impacts the entrepreneur as a person. Our predictions on how VC funding changes an entrepreneur's digital identity are based on prior VC research combined with research on entrepreneurial goals and motives.

2.1 Increase in entrepreneurial self-confidence and positive emotions

The acquisition of VC is a momentous step in a startup's life cycle and can be interpreted as a positive event because the vast majority of VC applications are rejected (e.g., Block et al. 2019; Gompers et al., 2020). Research concerning entrepreneurs' motivations shows that entrepreneurs possess a higher need for achievement than the average population and that they strive for greater recognition for their achievements (e.g., Carraher et al., 2010; Wu and Dagher, 2007). Receiving an investment serves as a signal to distinguish better-quality startups from lower-quality startups, thus confirming the founders' achievements. Indeed, multiple studies document that VC funding is a credible signal for the labor market, helping startups attract more employees (e.g., Davila et al., 2003; Engel, 2004). Furthermore, VC funding also serves as a signal for future investments. For example, founders who have attracted VC can raise more investor attention and money in subsequent IPOs. This claim is especially true for ventures that are backed by highly reputable VC firms (e.g., Chang, 2004; Chemmanur et al., 2021). Again, this indicates that receiving a VC investment is a positive event that may satisfy the founder's need for achievement.

Additionally, founders can increase their network and entrepreneurial reputation, especially if highly reputable VC firms invest in their ventures (e.g., Ferrary and Granovetter, 2009; Hsu, 2004). Research shows that larger networks, increased self-confidence, and a better reputation may positively influence the founder's chances of acquiring more funding and founding subsequent startups (e.g., Hayward et al., 2010; Mohr et al., 2014; Payne et al., 2009; Zhang, 2011).

In summary, we posit that VC funding could trigger changes in an entrepreneur's digital identity that reflect an increase in self-confidence and positive emotions.

2.2 Increase in entrepreneur's level of professionalism

Moreover, prior research shows that VCs not only contribute financial resources to the venture but also help the venture to become more professional in its marketing and commercialization processes (e.g., Hellmann and Puri, 2002; Maula et al., 2005). This effect does not only apply to the venture and its processes but also concerns the entrepreneurs behind the venture. VC backing could lead to higher degrees of professionalism of entrepreneurs in terms of their external image and internal leadership qualities. For example, prior research documents that ventures which acquire VC are quicker to employ a vice president for marketing and sales, ensuring a more professional approach to external communication (Hellmann and Puri, 2002). The willingness of the founder to professionalize and adapt to necessary changes in leadership and communication is important if they want to remain in control and avoid being replaced by an external CEO (e.g., White et al., 2007).

In summary, we posit that VC funding could trigger changes in an entrepreneur's digital identity that reflect an increase in professionalism.

2.3 Increase in investor pressure, loss of control, and negative emotions

Being forced to adhere to VC investors' requirements is a potential downside of receiving VC financing. In contrast to debt-based financial instruments (e.g., loans), VC financing is equity-based and involves a loss of equity by the founder to the investor. Thus, VC investments can lead to a partial or even complete loss of control by the entrepreneur (e.g., Ewens and Marx, 2018). VC investment contracts often contain clauses that severely limit the control rights of founders if the company is not able to reach certain milestones (e.g., Kaplan and Strömberg, 2003). One of the most drastic consequences for the founder is the replacement by an external manager if the venture performs poorly. This situation may increase pressure on the founder to perform well and meet investors' requirements (e.g., Bruton et al., 2000; Pollock et al., 2009).

Additionally, prior research has suggested that entrepreneurs may be pressured by investors to make important decisions in favor of investors, for example, regarding faster internationalization (Mäkelä and Maula, 2005) or accelerating innovation processes (Hellmann and Puri, 2000). This third-party control by the VC investor contradicts one of the most important goals of founders, which is the pursuit of entrepreneurial autonomy (e.g., Lumpkin et al., 2009, Ryff, 2019). This loss of control may lead to negative emotions by the entrepreneur reflected in his or her digital identity.

In summary, we posit that VC funding could trigger changes in an entrepreneur's digital identity that reflect an increase in investor pressure, loss of control, and negative emotions.

2.4 Change in authenticity

Due to the salient position of the founder for their ventures, they have an important role in creating and signalling legitimacy (e.g., Beckman and Burton, 2008; Collewaert et al., 2021). With the use of storytelling, they tend to position themselves as

legitimate entrepreneurs and make use of different frameworks and settings, depending on the person with whom they interact (e.g., Fisher et al., 2017; Middleton, 2013). Increasing media attention may cause the founder to receive even more attention, which makes legitimacy and a positive impression even more important. In particular, young companies that engage in intense communication activities can attract higher degrees of media attention. In this case, the founders' and top management teams' human capital catalyzes the attracted attention even further (Petkova et al., 2013). This situation increases the startup's chances of acquiring further financial resources and reduces the risks of underpricing in IPOs (e.g., Petkova et al., 2013; Pollock and Rindova, 2003). The authenticity of a founder may also change throughout the evolution of the venture. O'Neil et al. (2022) show that founders align their personal identity with their founder identity and desire others to view themselves and their actions as authentic. This factor is of particular interest in the context of social ventures. For example, Block et al. (2021) show that the authenticity of the founding team is the most important funding criterion of impact investors that invest directly in startups. Finally, recent research by Markowitz et al. (2022) indicates that authenticity is a predictor of entrepreneurial success using the example of shark tank pitches.

This pursuit of authenticity, which refers to honest and spontaneous language that is free of self-regulation (LIWC, 2023), could be reflected in entrepreneurs' digital identities. For example, entrepreneurs' authenticity may change after funding because they are pressurized to quickly meet investors' expectations regarding growth. In turn, this can lead to a focus on short-term results related to growth and scaling up, while neglecting the company's mission and values. Also, entrepreneurs may want to present a more polished and less raw image to the outside world, further reducing their display of authenticity.

Hence, we posit that VC funding could trigger changes in an entrepreneur's digital identity that reflect a decrease in authenticity.

2.5 Possible moderating factors

VCs are not a homogenous group but differ in their reputations and track records as well as in the amount of funding that they can or are willing to provide (Block et al., 2019). We posit that this heterogeneity influences how VC funding impacts an entrepreneur's digital identity.

Our first moderating factor concerns the reputation of the VC investor. The reputation of the VC firm plays an important role regarding the added value that the investor may provide (e.g., Pratch, 2005). Reputation is an important characteristic in the VC industry, in which firms must constantly deal with information asymmetries (e.g., Cumming and Johan, 2008; Lerner, 1994). High reputation has beneficial effects for the VC firm and its portfolio ventures. Prior research shows that companies that have attracted investments from reputable VC investors exhibit higher performance, faster access to public markets, and higher asset productivity (e.g., Krishnan et al., 2011; Nahata, 2008). Furthermore, VC firms with a good reputation find it easier to engage in syndication (e.g., Lockett and Wright, 2001). Reputation is so important to VC firms that nascent VC firms tend to stimulate their portfolio ventures to go public earlier than more experienced firms to increase their reputation and gain legitimacy

(e.g., Gompers, 1996). Simultaneously, entrepreneurs are willing to give their shares to reputable VC firms at a lower price (Hsu, 2004). We posit that VC reputation moderates the digital identity changes triggered by VC funding. For example, self-confidence and positive emotions could be higher for entrepreneurs who receive backing from more reputable VCs versus less reputable VCs.

Our second moderating factor concerns the amount of funding raised, which determines the growth possibilities of the venture (Mason and Harrison, 2002). For example, the amount raised may influence the venture's business strategy because an oversupply of financial resources can lead to inefficient decisions that delay innovation (Hirukawa and Ueda, 2011). While George (2005) demonstrate empirically that an excess of resources lowers the performance of the company, Mason and Harrison (2002) find that larger investments offer greater opportunities to stage the investment. This tactic reduces the investor's risk if the venture does not perform well by cutting off the supply at an early stage. However, if the venture performs well, the investor may increase the investment at later stages. Nevertheless, prior also shows that higher amounts of funding offer the ability for faster venture growth. Higher funding increases the signalling effect of the investment, which, for example, positively influences the number of employees (Davila et al., 2003).

Because receiving larger investments is generally a positive event for the venture, we assume that the amount raised could moderate the digital identity changes in response to receiving VC funding. Again, self-confidence and positive emotions or displayed professionalism could increase more strongly for entrepreneurs who receive larger VC investments.

3 Data, method, and variables[1]

3.1 Sample and data sources

To investigate changes in entrepreneurs' digital identities after receiving VC funding, we first collected data on entrepreneurs with at least one successful funding round from the database Crunchbase (www.crunchbase.com). Crunchbase provides data on ventures, entrepreneurs, funding rounds, and investors. Furthermore, it provides the Twitter account information of the founders. Information on Crunchbase is provided by external contributors, public sources, and other data providers (Crunchbase, 2022). Offering a broad variety of information concerning entrepreneurial finance, data from Crunchbase have been used frequently in recent management and entrepreneurship research (e.g., Fisch and Block, 2021; Ter Wal et al., 2016).

We collected data from ventures that were founded from 2006 onward, which is the year when Twitter was founded. Additionally, we only consider ventures that received at least one round of funding between January 1, 2006, and December 3, 2019 (which is the date on which we accessed the Twitter API to retrieve our sample of Tweets). Since our analyses rely on data from Twitter, we omitted all founders who did not provide their Twitter account on Crunchbase. Additionally, we excluded

---

[1] The data and do files used to produce the main analyses can be accessed at: https://osf.io/kj8w6/.

all ventures that had passed the early stage according to the stage classification in Crunchbase.

Initially, we created a sample of 13,834 founders who founded 15,397 ventures. We excluded 654 founders who founded 695 companies for which we were not able to collect any Twitter data, either due to inactivity or inaccessibility. Using Twitter's API, we then collected more than 8 million Tweets posted by the entrepreneurs in the sample between January 1, 2006, and December 3, 2019. Because we examine the identity change that occurs after a VC funding, we are interested in the Tweets that were posted before and after the first VC funding that each venture received. Hence, we excluded 4,428 founders who had a) no Tweets posted before their first funding or b) no Tweets posted after their first funding. To avoid any overlaying effects from funding rounds other than the first, we only considered Tweets made until the second round of funding.

Because we seek to keep the entrepreneur's environment constant, we omitted all non-US founders, leading to a sample of 3,621 US founders and 4,012 companies. To further ensure that only the effects of one funding round were measured, we excluded all entrepreneurs who had founded multiple companies. This step led to a sample of 3,216 founders and 3,199 companies.

We matched the sample with further financial information from Crunchbase. In 242 cases, the information was insufficient, for example, due to missing investor data. Hence, we omitted these cases from the sample. We then manually checked the data for further inconsistencies, that is, non-US headquarters or funding types that were out of scope (e.g., crowdfunding). This step led to a sample of 2,333 US founders and 2,327 companies. Because the recommended minimum number of words that can be processed meaningfully by LIWC is 50 (e.g., Fisch and Block, 2021), we eventually excluded all observations in which we retrieved less than 50 words before the funding or after the funding. Our final sample included more than 1 million Tweets from 2,094 founders and 2,088 companies.

3.2 Text analysis with Linguistic Inquiry and Word Count (LIWC)

The software Linguistic Inquiry and Word Count (LIWC2015) enables the analysis of large amounts of text and has been used in recent entrepreneurship research (e.g., Block et al., 2022; Fisch and Block, 2021; Seigner et al., 2023). Originally developed by James Pennebaker and Martha Francis, the fields of application for LIWC quickly expanded beyond the domain of psychology (Tausczik and Pennebaker, 2010). LIWC calculates values for 93 variables and allows researchers to measure certain linguistic and psychological dimensions of the given text.

LIWC is a closed-dictionary software. That is, for most variables, LIWC counts words that are part of a certain dictionary and calculates the percentage that these dictionary words account for in the entire text (Pennebaker et al., 2015). For example, LIWC2015's dictionary for the category "positive emotions" comprises 320 words and word stems associated with positive emotions. These words include terms such as "love", "sweet", "excellent", or ":)". The resulting LIWC variable is a percentage value. For our sample, we obtain a value of 5.77 for positive emotions, indicating that 5.77 out of 100 words in the entrepreneurs' Tweets refer to words related to

positive emotions. In addition to these dictionary-based variables, LIWC includes a small set of summary variables. These summary variables (e.g., clout, authentic) are not derived directly from dictionaries but refer to variables generated from proprietary algorithms based on a set of studies in the domain of psychology. The values for these variables are standardized scores (0 to 99) that represent percentiles (based on the area under a normal curve), obtained from large comparison samples (LIWC, 2023; Pennebaker et al., 2015). Hence, a value of 71.24 for clout indicates that the entrepreneurs in our sample have language characterized by above average (>50) clout values.

The LIWC variables, their technical descriptions, and the dictionaries used are described in more detail in Table 1.

3.3 Variables

3.3.1 Variables that capture the entrepreneur's digital identity

We used several LIWC variables to investigate changes in founders' digital identities after receiving VC funding. These variables serve as our dependent variables. LIWC creates variables that measure linguistic dimensions, psychological processes, and other language characteristics. We used a selection of these variables to explore the constructs described in Section 2.

Self-confidence and positive emotions. To capture a change in self-confidence and positive emotions, we used four LIWC variables that are connected to these factors. Self-confidence was measured by the variables *clout* and *power*. First, *clout* measures how high an individual sees themselves ranked in terms of a social hierarchy. Language high in clout is indicative of high relative social status and confidence (LIWC, 2023). Because *clout* is one of LIWC's summary variables, it does not count the share of certain words in a given text but instead uses percentiles based on standardized scores found in previous research by LIWC's authors (Pennebaker et al., 2015). The higher the measurement of *clout*, the higher an individual ranks themselves in social hierarchies and the more that person expresses self-confidence (Kacewicz et al., 2014).

Second, *power* measures the extent to which an individual displays a need for power, using words such as "superior" or "bully". Prior research documents that entrepreneurs show comparably high levels of need for power (e.g., Carland et al., 1984; Carsrud and Brännback, 2011).

While these variables capture self-confidence, the variable *positive emotions* measures the number of words that are related to positive emotional feelings, such as "nice" or "love". Research shows that people tend to use more positive words when writing about positive events and more negative words when writing about negative events (Kahn et al., 2007).

Furthermore, the variable *achievement* measures the number of words that express an individual's need for achievement and contains words such as "win" or "better". Words from this category indicate the degree of need for achievement (Winter, 1998).

Professionalism. We use four LIWC variables to measure changes in displayed professionalization and leadership. First, the variable *informal* measures the number

Table 1 Dependent variables.

This table provides details on our core measures derived from LIWC based on entrepreneurs' Tweets.

Variable	Technical description	# Words in dictionary	Exemplary words
Self-confidence and positive emotions			
Clout	Refers to language indicative of relative social status and confidence. In LIWC, *clout* is a summary variable that is generated from a proprietary algorithm. The values are standardized scores that represent percentiles (based on the area under a normal curve), obtained from large comparison samples.	-	-
Achievement	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "achievement".	213	win, success, better, accomplish, confident, solve
Power	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "power".	518	superior, bully, assertive, CEO, greatest, upperclass
Positive emotions	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "positive emotions".	320	love, nice, sweet, :), excellent, funny, like, proud, wise
Professionalism			
I	Measures the percentage of words in the entrepreneur's Tweets that refer to the dictionary that measures first-person singular personal pronouns.	24	I, me, mine, my
We	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures first-person plural personal pronouns.	12	we, us, our, ourselves
Affiliation	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "affiliation".	248	ally, friend, family, mate, our, pal, relation, social, wife
Informal	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures the use of informal language.	380	bro, damn, haha, lol, oh, pls, sucks, thx, ty, ugh, wtf, yeah
Loss of control, pressure, and negative emotions			
Negative emotions	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "negative emotions".	744	hurt, ugly, nasty, aggressive, bad, fool, lonely, sad
Anxiety	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "anxiety".	116	afraid, anxious, confused, fear, scared, shy, tense, terrified
Risk	Measures the percentage of words in the entrepreneur's Tweets that refer to the LIWC dictionary that measures "risk".	103	crisis, danger, doubt, fail, hide, lose, safe, stop, wrong

Table 1 (continued)

Variable	Technical description	# Words in dictionary	Exemplary words
Authenticity			
Authentic	Authentic language is honest, spontaneous, and does not involve self-regulation. In LIWC, *authentic* is a summary variable that is generated from a proprietary algorithm. The values are standardized scores that represent percentiles (based on the area under a normal curve), obtained from large comparison samples.	-	-

Notes: All measures are obtained from the software Linguistic Inquiry and Word Count (LIWC2015) and described in detail by Pennebaker et al. (2015). For further information, especially on *clout* and *authentic*, see also https://www.liwc.app/help/liwc (last accessed January 9th, 2023). The full dictionaries can be exported from LIWC.

of informal words that are used in a text (e.g., "lol"). Prior research has shown that the use of informal language relates to a perception of lower expertise (e.g., Haberstroh, 2010; Li et al., 2019).

Regarding the demonstration of leadership, we use the LIWC Variables *I* (first-person singular), *we* (first-person plural), and *affiliation*. Research in business psychology indicates that leaders tend to use more first-person plural words and fewer first-person singular words, whereas subordinates use the plural less frequently and the singular more often (Meinecke and Kauffeld, 2019). This suggests that an increase in the LIWC variable *we* and a decrease in the LIWC variable *I* indicate language that embodies a greater level of leadership. The LIWC variable *affiliation* measures the number of words that are used when someone tries to befriend others and wants to be affiliated with a social group (Antonakis and Atwater, 2002). From a subordinate perspective, employees are more satisfied with leaders who display higher degrees of affiliation (Steinmann et al., 2016).

Loss of control, pressure, and negative emotions. To examine the effects of loss of control, pressure, and associated negative emotions, we use the LIWC variables *risk*, *anxiety*, and *negative emotions*.

First, the LIWC variable *risk* measures the number of words that are related to risks (e.g., "danger" or "doubt"). Using speculative language is related to risk, indicating that someone who uses these risk-related words displays uncertainty (Yang and Liu, 2017).

Second, we use the LIWC variable *anxiety*, which includes the use of words such as "worried" or "fearful", to measure work-related stress. Prior research has shown that the use of anxiety-related words relates to stress and may predict depressive feelings (e.g., Eichstaedt et al., 2018; Wang et al., 2016).

Finally, we use the LIWC variable *negative emotions*, containing words such as "hurt" or "nasty", to measure the overall well-being of entrepreneurs. Tov et al. (2013) show that the use of negative emotional words is connected with self-reported negative feelings.

Authenticity. We use the LIWC summary variable *authenticity* to measure the authenticity reflected in entrepreneurs' Tweets. Authentic language is characterized by honesty, spontaneity, and the absence of filters and self-regulation (LIWC, 2023). Research in psychology indicates that authentic language reflects a person's

engagement in self-monitoring. While spontaneous conversations tend to score high in authenticity, texts in which a person expresses themselves socially cautiously tend to score low in authenticity (LIWC, 2023). Authenticity is a summary variable that is not based on its own dictionary. Instead, the variable is generated from a proprietary algorithm and reflects a composite score of language variables (Markowitz et al., 2022). While the algorithm is not disclosed by LIWC directly, LIWC indicates that this variable is based on a study by Newman et al. (2003), which identified the use of certain words to distinguish between stories that were made up and stories that actually happened. Also, Markowitz et al. (2022), in a recent study on authenticity and entrepreneurial success, indicate that the measure is, amongst others, based on the LIWC variables I, differentiation, and relativity.

3.3.2 Moderating factors

We consider two moderating variables in our analysis that could influence the main effect of VC funding on entrepreneurs' digital identities.

The first moderator is *Tier 1 investor*, which serves as an indicator that an investor is very reputable. *Tier 1 investor* is constructed as a dummy variable. We use information from Crunchbase, which shows all investors who participated in a deal, and from the "Venture Capital Journal Top 50"[2], which ranks the largest VC firms depending on the amount of investment capital raised between 2015 and 2020. The variable takes a value of "1" if at least one of the investors is ranked in the top 50 and "0" if none of the deal participants were listed.

Our second moderator is the amount of funding that was raised. We included the total investment made during the first funding round. Due to the skewness of the variable, we use the logarithm (*Funding amount (log.)*)

3.3.3 Control variables

We use several control variables in our analysis. First, we use the logarithmized word count (*log_WC*) as a control variable that varies over time, as in Fisch and Block (2021). Second, we incorporate the variable *gender*, which takes was given a value of 1 if the entrepreneur is male and 0 if the entrepreneur is female. Prior research has shown that males and females differ in how they express themselves via written language (e.g., Argamon et al., 2003; Newman et al., 2008). Third, we control for whether the firm is headquartered in San Francisco or New York. Both areas represent the areas with the highest number of firms in our sample. Fourth, we control for the age of the venture as of 2019. Finally, we use *industry dummies* that were extracted from Crunchbase. The impact of VC investments may differ depending on the industry in which the funded venture is active. We also include a set of dummy variables that control for the year in which the venture received its first investment.

---

[2] "Venture Capital Journal" is a magazine that coverstopics the venture capital market and investment strategies. For further details, see https://www.venturecapitaljournal.com/the-vcj-50-venture-capitals-heavy-hitters/ (last accessed: December 2, 2021).

4 Results

4.1 Descriptive statistics

Table 2 displays descriptive statistics for our variables. The mean number of words expressed on Twitter is 5,727. The range of words used is relatively wide, from a minimum of 50 to a maximum of 51,446. 15% of the founders in our sample have a Tier 1 investor participating in their deal. The mean funding amount is 3.6 million US dollars, with a minimum of 5,000 US dollars and a maximum of 412 million US dollars. With a share of 85.77%, most founders in our sample are male. 16% of the firms in our sample are located in New York, while 24% of them are located in San Francisco. The average age of the ventures in our sample was approximately 6 years as of 2019.

4.2 Univariate analyses

We performed a series of t-tests to examine whether entrepreneurs' digital identities changed after receiving a VC investment. We performed t-tests for the full sample and separately for entrepreneurs who received funding from reputable and less reputable investors as well as entrepreneurs who received funding below or above the median funding amount. The results are displayed in Tables 3, 4, and 5.

Full sample. Except for *anxiety*, all LIWC values after funding differed significantly ($p < .05$) from those before funding. All variables related to self-confidence and positive emotions showed a significant increase after funding (i.e., *clout* (before $= 69.25$; after $= 73.23$, $+0.31$ SD), *achievement* (before $= 2.10$; after $= 2.38$, $+0.28$ SD), *power* (before $= 2.51$; after $= 2.62$, $+0.11$ SD), and *positive emotions* (before $= 5.59$; after $= 5.95$, $+0.17$ SD)).

The variables related to the entrepreneur's professionalism showed more diverse results. While the variable *I* (use of first-person singular pronouns) decreased significantly (before $= 2.63$; after $= 2.44$, -0.12 SD), the variable *we* (use of first-person plural pronouns) increased significantly (before $= 0.90$; after $= 1.25$, $+0.43$ SD).

Table 2 Descriptive statistics of control variables. This table presents means, standard deviations, minimum values, and maximum values of the control variables used in our analyses. Our main analysis also includes industry dummies and funding year dummies

Variable	Mean	SD	Min.	Median	Max.	n	Data source
Word count	5,727	7,753	50	2,411	51,446	4,188	LIWC (Twitter)
Tier 1 investor	0.15	0.35	0	0	1	4,188	Crunchbase/VCJ
Funding amount	3,606,397	13,700,000	5,000	1,400,000	412,000,000	4,188	Crunchbase
Gender (1=male)	85.77	0.35	0	1	1	4,188	Crunchbase
Location: San Francisco	0.24	0.43	0	0	1	4,188	Crunchbase
Location: New York	0.16	0.37	0	0	1	4,188	Crunchbase
Venture age (as of 2019)	5.75	2.68	0	6	13	4,188	Crunchbase

Table 3 T-tests of LIWC variables before and after funding

This table shows t-tests of the LIWC variables compared before funding and after funding

Variables	Over-all mean	(SD)	Mean before funding	(SD)	Mean after funding	(SD)	Mean difference	(Difference in SD)
Self-confidence and positive emotions								
Clout	71.24	(13.04)	69.25	(12.46)	73.23	(13.31)	+3.98***	(+0.31 SD)
Achievement	2.24	(0.99)	2.10	(0.82)	2.38	(1.12)	+0.28***	(+0.28 SD)
Power	2.57	(1.04)	2.51	(0.95)	2.62	(1.12)	+0.11***	(+0.11 SD)
Positive emotions	5.77	(2.13)	5.59	(1.91)	5.95	(2.32)	+0.36***	(+0.17 SD)
Professionalism								
I	2.53	(1.53)	2.63	(1.48)	2.44	(1.57)	-0.19***	(-0.12 SD)
We	1.07	(0.82)	0.90	(0.66)	1.25	(0.93)	+0.35***	(+0.43 SD)
Affiliation	3.12	(1.51)	2.88	(1.28)	3.36	(1.67)	+0.48***	(+0.32 SD)
Informal	2.36	(1.42)	2.58	(1.41)	2.14	(1.39)	-0.44***	(-0.31 SD)
Loss of control, pressure, and negative emotions								
Negative emotions	1.26	(0.71)	1.31	(0.66)	1.22	(0.77)	-0.09***	(-0.13 SD)
Anxiety	0.18	(0.20)	0.17	(0.17)	0.18	(0.22)	+0.00	(+0.00 SD)
Risk	0.47	(0.44)	0.46	(0.40)	0.49	(0.49)	+0.03*	(+0.07 SD)
Authenticity								
Authentic	42.60	(18.16)	44.51	(17.64))	40.68	(18.48)	-3.83***	(-0.21 SD)
Observations	4,188		2,094		2,094			

Notes: SD = standard deviation. Results of two-tailed t-tests. p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Furthermore, the variable *affiliation* also increased significantly (before = 2.88; after = 3.36, +0.32 SD). The extent of informal language use, captured by the variable *informal*, decreased significantly after VC funding (before = 2.58; after = 2.14, -0.31 SD).

Related to loss of control, increased pressure from the investor, and negative emotions, a t-test of the variable *negative emotions* showed that the use of words associated with negative emotions significantly decreased after VC funding (before = 1.31; after = 1.22, -0.13 SD). Furthermore, the variable *risk* showed a slight but significant increase (before = 0.46; after = 0.49, +0.07 SD). The variable *anxiety* showed no significant change.

Our final t-test was related to the authenticity of the entrepreneur. We found that the LIWC variable *authentic* decreased significantly after a VC funding round (before = 44.51; after = 40.68, -0.21 SD).

Moderator: reputable investor. In the next series of t-tests, we further examine whether the changes in LIWC variables differed between certain subgroups of the sample. More precisely, we examined more closely the change in LIWC variables (delta (Δ) = mean of LIWC variable after funding-mean of LIWC variable before funding) and conducted t-tests on the differences in these deltas between founders who received an investment from reputable investors (Tier 1) and founders who received an investment from less reputable investors (Tier 0). The results are displayed in Table 4.

Table 4 T-tests of LIWC variables Tier 1 and Tier 0 investors. This table shows t-tests of the change of LIWC variables compared between founders who received funding from Tier 1 investors and founders who received funding from Tier 0 investors.

Variables	Mean Tier 0	(SD)	Mean Tier 1	(SD)	Mean(diff)
Self-confidence and positive emotions					
ΔClout	3.69	(13.13)	5.72	(12.68)	-2.03*
ΔAchievement	0.27	(1.13)	0.34	(1.07)	-0.07
ΔPower	0.11	(1.16)	0.13	(1.01)	-0.02
ΔPositive emotions	0.34	(2.23)	0.48	(2.24)	-0.14
Professionalism					
ΔI	-0.18	(1.51)	-0.25	(1.25)	0.07
ΔWe	0.33	(0.93)	0.47	(0.85)	-0.13*
ΔAffiliation	0.45	(1.67)	0.65	(1.63)	-0.20*
ΔInformal	-0.44	(1.35)	-0.43	(1.34)	-0.01
Loss of control, pressure, and negative emotions					
ΔNegative emotions	-0.08	(0.76)	-0.16	(0.80)	0.09†
ΔAnxiety	0.00	(0.26)	0.01	(0.27)	0.01
ΔRisk	0.03	(0.49)	0.06	(0.52)	-0.04
Authenticity					
ΔAuthentic	-3.62	(19.22)	-5.06	(18.96)	1.43
Observations	2,094		2,094		

Notes: Δ=delta (after value-before value). SD=standard deviation. Results of two-tailed t-tests. p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

First, regarding self-confidence and positive emotions, the tests showed that founders who received funding from a reputable investor showed a significantly stronger increase in *clout* than founders who received funding from less reputable investors (Tier 0=3.69; Tier 1=5.72). We found no significant differences between Tier 1 and Tier 0 investors for changes in the variables *achievement*, *power*, and *positive emotions*.

In terms of professionalism, we found that entrepreneurs who received funding from a reputable investor showed a significantly stronger increase in the variables *we* (Tier 0=0.33; Tier 1=0.47) and *affiliation* (Tier 0=0.45; Tier 1=0.65). The t-tests showed no significant differences for the variables *I* and *informal*.

Investigating the effects of loss of control, pressure, and negativity, we did not find significant differences in the change in the variables *anxiety* and *risk* when distinguishing between entrepreneurs who received funding from a reputable or a less reputable investor. However, we found a slightly significantly stronger decrease in *negative emotions* (Tier 0 = -0.08; Tier 1 = -0.16) for entrepreneurs who received funding from Tier 1 investors.

Finally, we found no significant difference in the change in *authenticity* when distinguishing between Tier 1 and Tier 0 investors.

Moderator: amount raised. Table 5 compares differences between investors who received funding above the median (1.4 million US dollars) or funding that was equal to or below the median. We found a significantly stronger decrease in *authenticity* for founders who received funding above the median (below or equal median = -2.53; above median = -5.13). At a 10% level, the variable *affiliation* was significantly stronger for founders with funding above the median (below or equal median=0.41; above median=0.55). Furthermore, we found a significant difference at the 10% level regarding the variable *anxiety*. Whereas founders who raised funding

Table 5 T-tests of LIWC variables amount funding above or below median. This table shows t-tests of the change of LIWC variables compared between founders who received funding above the median or equal to or lower the median.

Variables	Mean<=median	(SE)	Mean>median	(SE)	Mean(diff)
Self-confidence and positive emotions					
ΔClout	3.79	(13.34)	4.17	(12.81)	-0.38
ΔAchievement	0.24	(1.07)	0.32	(1.17)	-0.08
ΔPower	0.09	(1.07)	0.13	(1.20)	-0.04
ΔPositive emotions	0.30	(2.21)	0.42	(2.25)	-0.12
Professionalism					
ΔI	-0.21	(1.56)	-0.17	(1.39)	-0.04
ΔWe	0.33	(0.93)	0.37	(0.91)	-0.04
ΔAffiliation	0.41	(1.67)	0.55	(1.67)	-0.14†
ΔInformal	-0.46	(1.40)	-0.42	(1.29)	-0.04
Loss of control, pressure, and negative emotions					
ΔNegative emotions	-0.09	(0.80)	-0.09	(0.74)	-0.00
ΔAnxiety	-0.01	(0.24)	0.01	(0.28)	-0.02†
ΔRisk	0.02	(0.52)	0.05	(0.47)	-0.03
Authenticity					
ΔAuthentic	-2.53	(19.72)	-5.13	(18.55)	-3.83**
Observations	2,094		2,094		

Notes: Δ=delta (after value-before value). SD=standard deviation. Results of two-tailed t-tests. p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

equal to or below the median showed a slight decrease in *anxiety* (-0.01), founders who raised funding above the median showed a slight increase in *anxiety* (0.01).

4.3 Multivariate analyses

4.3.1 Model

Our main analysis uses linear panel regression with random effects. Using a panel estimator enables us to assess the changes in the entrepreneurs' digital identities that occur over time (i.e., before vs. after receiving VC funding). We use a random-effects estimator because we utilize time-invariant moderators that would have to be omitted in a fixed-effects model.

Our models consider the LIWC variables described in Section 3 as the dependent variables. The variable of interest was the dummy variable *after_funding*, which indicates the occurrence of the funding round. In our moderation analysis, this dummy is interacted with *Tier 1 investor* to assess backing by reputable investors and with *funding amount (log.)* to assess large amounts raised. We account for heterogeneity at the entrepreneur level by incorporating several control variables. Specifically, we use *word count (log.)* (time-variant), *Tier 1 investor* (time-invariant), *log_money* (time-variant), *industry dummies* (time-invariant), and *gender* (time-invariant).

Tables 6.1–6.4 show the results for the variables that we investigated in the previous section.

4.3.2 Main results

Regarding the self-confidence and positive emotions of the founder, Table 6.1 shows that VC backing significantly increased the use of *clout* (coeff. = 3.331, p<0.1%, +0.26 SD), *achievement* (coeff. = 0.237, p<0.1%, +0.24 SD), *power* (coeff. = 0.094, p<0.1%, +0.09 SD), and *positive emotions* (coeff. = 0.260, p<0.1%, +0.12 SD) language.

Furthermore, Table 6.2 shows that language related to professionalism significantly changed: the occurrence of a VC funding event significantly decreases the use of *I* (first-person singular) (coeff. = -0.151, p<0.1%, -0.10 SD) and the use of *informal* language (coeff. = -0.368, p<0.1%, -0.26 SD). Also, the use of *we* (first-person plural) (coeff. = 0.306, p<0.1%, +0.37 SD) and *affiliation* (coeff. = 0.346, p<0.1%, +0.23 SD) increases significantly.

Considering the downsides of the funding event and how they are reflected in entrepreneurs' digital identities, Table 6.3 finds a significant increase in *risk*-related language (coeff. = 0.037, p<0.1%, +0.08 SD) after the funding event. The analysis

Table 6.1 Random effects panel regressions: self-confidence and positive emotionsThis table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	Clout		Achievement		Power		Positive emotions	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	3.331	(0.304)***	0.237	(0.0259)***	0.094	(0.0264)***	0.260	(0.0518)***
Control variables								
Word count (log.)	-0.748	(0.122)***	-0.047	(0.010)***	-0.021	(0.010)*	-0.115	(0.020)***
Tier 1 investor	-1.596	(0.709)*	-0.130	(0.052)*	-0.269	(0.057)***	0.149	(0.116)
Funding amount (log.)	0.634	(0.146)***	0.065	(0.011)***	0.058	(0.012)***	0.077	(0.024)**
Gender	-6.440	(0.690)***	-0.123	(0.050)*	-0.056	(0.055)	-1.359	(0.113)***
Location: San Francisco	-1.977	(0.567)***	-0.148	(0.041)***	-0.179	(0.045)***	-0.183	(0.093)*
Location: New York	0.235	(0.657)	-0.150	(0.048)**	-0.118	(0.052)*	0.013	(0.108)
Venture age	0.581	(0.146)***	0.009	(0.011)	0.022	(0.012)†	0.019	(0.024)
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Table 6.2 Random effects panel regressions: professionalismThis table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	I		We		Affiliation		Informal	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	-0.151	(0.035)***	0.306	(0.021)***	0.346	(0.038)***	-0.368	(0.031)***
Control variables								
Word count (log.)	0.040	(0.014)**	-0.053	(0.008)***	-0.154	(0.015)***	0.085	(0.013)***
Tier 1 investor	0.175	(0.088)*	0.004	(0.043)	0.019	(0.079)	0.237	(0.078)**
Funding amount (log.)	-0.095	(0.018)***	0.037	(0.009)***	0.064	(0.016)***	-0.062	(0.016)***
Gender	-0.228	(0.086)**	-0.284	(0.042)***	-0.690	(0.077)***	-0.086	(0.076)
Location: San Francisco	0.213	(0.071)**	-0.059	(0.034)†	-0.159	(0.063)*	0.227	(0.062)***
Location: New York	0.083	(0.082)	0.059	(0.040)	0.081	(0.073)	0.186	(0.072)**
Venture age	-0.027	(0.018)	0.031	(0.009)***	0.085	(0.016)***	-0.033	(0.016)*
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Table 6.3 Random effects panel regressions: loss of control, pressure, and negative emotionsThis table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)	
Dependent variable	Negative emotions		Anxiety		Risk	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable						
After_funding	-0.026	(0.018)	0.007	(0.006)	0.037	(0.012)**
Control variables						
Word count (log.)	0.071	(0.007)***	0.006	(0.002)**	0.005	(0.004)
Tier 1 investor	-0.021	(0.039)	-0.023	(0.010)*	-0.010	(0.023)
Funding amount (log.)	-0.009	(0.008)	0.004	(0.002)†	0.004	(0.005)
Gender	0.147	(0.038)***	0.008	(0.010)	0.069	(0.022)**
Location: San Francisco	0.087	(0.032)**	0.008	(0.008)	-0.017	(0.018)
Location: New York	0.036	(0.037)	0.014	(0.009)	-0.032	(0.021)
Venture age	-0.023	(0.008)**	-0.001	(0.002)	-0.010	(0.005)*
Industry dummies (46 cat.)	Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes	
Observations	4188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

shows no significant changes in the use of language related to *negative emotions* or *anxiety*.

However, the regression in Table 6.4 also shows that VC funding significantly decreased the *authenticity* (coeff. = -3,993, p<0.1%, -0.22 SD) of entrepreneurs' posted tweets.

4.3.3 Moderator: reputable investor (Tier 1 investor)

To assess whether the main effect was moderated by the reputation of the investor or the raised amount of funding, we conducted two additional series of random effects panel regressions. In the first series (Tables 7.1–7.4), we added an interaction term (*after_funding * Tier 1 investor*) that examined whether the effect of VC funding was moderated by the reputation of the investor.

Regarding the variables that were related to entrepreneurs' self-confidence and positive emotions, we found a significant and positive effect on the LIWC variable *clout*, indicating that the presence of a reputable investor positively moderated the effect of VC funding on the variable *clout* (coeff. = 1.983, p<5%, average marginal effect (AME)=3.333).

Investigating the moderating effect of investors' reputation on displayed professionalism, we found that the presence of a Tier 1 investor had a significant positive effect on the variable *we* (coeff. = 0.129, p<5%, AME=0.306) and a slightly significant effect on the variable *affiliation* ((coeff. = 0.194, p<10%, AME=0.346). This result indicated that the increase in the use of the first-person plural (*we*) and *affiliation*-related language was reinforced by the presence of very reputable investors.

There was no clear evidence concerning the effects that a Tier 1 investor had on variables related to loss of control, pressure, and negativity. While there was no significant moderating effect regarding the variables *anxiety* and *risk*, we found a small significant negative effect on the use of *negative emotions* (coeff. = -0.081, p<10%, AME = -0.026).

Table 6.4 Random effects panel regressions: authenticityThis table shows the results of a random effects panel regression. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)	
Dependent variable	Authentic	
Statistic	Coeff.	(SE)
Independent variable		
After_funding	-3.993	(0.447)***
Control variables		
Word count (log.)	-0.185	(0.177)
Tier 1 investor	1.674	(1.016)†
Funding amount (log.)	-0.465	(0.209)*
Gender	2.266	(0.988)*
Location: San Francisco	0.553	(0.812)
Location: New York	0.237	(0.941)
Venture age	-0.408	(0.209)†
Industry dummies (46 cat.)	Yes	
Funding year dummies (12 cat.)	Yes	
Observations	4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Table 7.1 Random effects panel regressions: interaction effects with Tier 1 investor (self-confidence and positive emotions)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	Clout		Achievement		Power		Positive emotions	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	3.045	(0.325)***	0.227	(0.028)***	0.091	(0.028)**	0.241	(0.056)***
After_funding*Tier 1 investor	1.983	(0.809)*	0.068	(0.070)	0.023	(0.071)	0.134	(0.138)
Control variables								
Word count (log.)	-0.745	(0.122)***	-0.047	(0.010)***	-0.021	(0.010)*	-0.115	(0.020)***
Tier 1 investor	-2.588	(0.817)**	-0.164	(0.062)**	-0.280	(0.067)***	0.083	(0.135)
Funding amount (log.)	0.634	(0.146)***	0.065	(0.011)***	0.058	(0.012)***	0.077	(0.024)**
Gender	-6.440	(0.690)***	-0.123	(0.050)*	-0.056	(0.0550)	-1.359	(0.113)***
Location: San Francisco	-1.976	(0.567)***	-0.148	(0.041)***	-0.179	(0.045)***	-0.183	(0.093)*
Location: New York	0.235	(0.657)	-0.150	(0.048)**	-0.118	(0.052)*	0.013	(0.108)
Venture age	0.581	(0.146)***	0.009	(0.011)	0.022	(0.012)†	0.019	(0.024)
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Regarding the variable *authenticity*, we found no evidence for a moderating effect of the presence of a Tier 1 investor.

4.3.4 Moderator: funding amount

Tables 8.1–8.4 add an interaction term (*after_funding * funding amount (log.)*) that examines whether the effect of VC funding is moderated by the amount of funding that was raised in a particular funding round.

Regarding entrepreneurs' self-confidence and positive emotions, we found that the amount of raised funding significantly positively moderated the effect of VC funding on the LIWC variable *achievement* (coeff. = 0.023, p<10%, AME=0.237). We did not find moderation effects for the variables *clout*, *power*, or *positive emotions*.

Regarding the variables related to professionalism, we were only able to find a slightly significant positive effect for the variable *affiliation* (coeff. = 0.038, p<10%, AME=0.347), indicating that a high amount of raised funding positively influenced the effect of funding on the use of *affiliation*-related language.

Table 7.2 Random effects panel regression: interaction effects with Tier 1 investor (professionalism)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	I		We		Affiliation		Informal	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	-0.142	(0.037)***	0.287	(0.023)***	0.318	(0.041)***	-0.370	(0.034)***
After_funding*Tier 1 investor	-0.067	(0.092)	0.129	(0.057)*	0.194	(0.103)†	0.016	(0.083)
Control variables								
Word count (log.)	0.040	(0.014)**	-0.053	(0.008)***	-0.153	(0.015)***	0.085	(0.013)***
Tier 1 investor	0.208	(0.100)*	-0.061	(0.051)	-0.078	(0.094)	0.230	(0.088)**
Funding amount (log.)	-0.095	(0.018)***	0.037	(0.009)***	0.064	(0.016)***	-0.062	(0.016)***
Gender	-0.228	(0.086)**	-0.284	(0.042)***	-0.690	(0.077)***	-0.086	(0.076)
Location: San Francisco	0.213	(0.071)**	-0.059	(0.034)†	-0.159	(0.063)*	0.227	(0.062)***
Location: New York	0.083	(0.082)	0.059	(0.040)	0.081	(0.073)	0.186	(0.072)**
Venture age	-0.027	(0.018)	0.031	(0.009)***	0.085	(0.016)***	-0.033	(0.016)*
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

We were not able to find any significant moderating effects for the amount raised on the variables *negative emotions*, *anxiety*, and *risk*, which are all related to loss of control, pressure, and negative emotions for the entrepreneur.

Eventually, we found that the amount of funding raised significantly negatively moderated the effect of the funding event on the *authenticity* of entrepreneurs' online language (coeff. = -0.526, p<5%, AME = -4.007).

5 Discussion and conclusion

5.1 Summary of main findings and link to prior research

We find that the digital identities of founders change after VC funding. First, our results indicate that entrepreneurs' self-confidence and positive emotions increase after the acquisition of VC financing. Second, our results suggest an increase in professionalism after the investment. Third, changes regarding loss of control, pressure, and negative emotions are ambiguous. We find that entrepreneurs show fewer nega-

Table 7.3 Random effects panel regression: interaction effects with funding amount (log.) (loss of control, pressure, and negativity)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)	
Dependent variable	Negative emotions		Anxiety		Risk	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable						
After_funding	-0.015	(0.019)	0.009	(0.006)	0.032	(0.012)*
After_funding*Tier 1 investor	-0.081	(0.048)†	-0.012	(0.016)	0.037	(0.031)
Control variables						
Word count (log.)	0.071	(0.007)***	0.006	(0.002)**	0.005	(0.004)
Tier 1 investor	0.019	(0.046)	-0.017	(0.013)	-0.028	(0.028)
Funding amount (log.)	-0.009	(0.008)	0.004	(0.002)†	0.004	(0.005)
Gender	0.147	(0.038)***	0.008	(0.010)	0.069	(0.022)**
Location: San Francisco	0.087	(0.032)**	0.008	(0.008)	-0.017	(0.018)
Location: New York	0.036	(0.037)	0.014	(0.009)	-0.032	(0.021)
Venture age	-0.023	(0.008)**	-0.001	(0.002)	-0.010	(0.005)*
Industry dummies (46 cat.)	Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes	
Observations	4188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Table 7.4 Random effects panel regression: interaction effects with funding amount (log.) (authenticity) This table shows the results of a random effects panel regression. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)	
Dependent variable	Authentic	
Statistic	Coeff.	(SE)
Independent variable		
After_funding	-3.786	(0.478)***
After_funding*Tier 1 investor	-1.444	(1.190)
Control variables		
Word count (log.)	-0.187	(0.177)
Tier 1 investor	2.396	(1.177)*
Funding amount (log.)	-0.465	(0.209)*
Gender	2.266	(0.988)*
Location: San Francisco	0.552	(0.812)
Location: New York	0.237	(0.941)
Venture age	-0.408	(0.209)†
Industry dummies (46 cat.)	Yes	
Funding year dummies (12 cat.)	Yes	
Observations	4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

tive emotions after VC funding but an increase in risk-related language. Finally, our results indicate a decrease in authenticity after the funding event.

The increase in language related to self-confidence indicates a self-confirmation of the entrepreneurs' activities through the acquisition of VC, which may satisfy their

Table 8.1 Random effects panel regressions: interaction effects with funding amount (log.) (self-confidence and positive emotions)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	Clout		Achievement		Power		Positive emotions	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	4.778	(2.227)*	-0.081	(0.191)	-0.042	(0.194)	0.053	(0.380)
After_funding*Funding amount (log.)	-0.105	(0.160)	0.023	(0.014)+	0.010	(0.014)	0.015	(0.027)
Control variables								
Word count (log.)	-0.751	(0.122)***	-0.046	(0.010)***	-0.021	(0.010)*	-0.114	(0.020)***
Tier 1 investor	-1.596	(0.709)*	-0.130	(0.052)*	-0.269	(0.057)***	0.149	(0.116)
Funding amount (log.)	0.686	(0.167)***	0.053	(0.013)***	0.053	(0.014)***	0.070	(0.028)*
Gender	-6.440	(0.690)***	-0.123	(0.050)*	-0.056	(0.055)	-1.359	(0.113)***
Location: San Francisco	-1.977	(0.567)***	-0.148	(0.041)***	-0.179	(0.045)***	-0.183	(0.093)*
Location: New York	0.235	(0.657)	-0.150	(0.048)**	-0.118	(0.052)*	0.013	(0.108)
Venture age	0.581	(0.146)***	0.009	(0.011)	0.022	(0.012)†	0.019	(0.024)
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

need for achievement (Carraher et al., 2010). The increase in self-confidence after the investment might also be a sign of overconfidence. In contrast to our findings, Forbes (2005) shows that entrepreneurs who receive external equity funding are less overconfident. While Forbes (2005) argues that entrepreneurs with external funding show lower levels of overconfidence due to the monitoring of the investor and the entrepreneurs' responsibility to explain their actions, our findings suggest that the increase in confidence may be a direct consequence of acquiring VC funding. The increase in self-confidence might be interconnected with an increase in power that is caused by the new partnership with the investor, who provides the entrepreneur with additional financial resources and a valuable business network (e.g., Fast et al., 2012; Sapienza et al., 1996). This assumption is supported by our finding of a positive moderating effect of investors' reputation on the use of language related to self-confidence. This finding is in line with the fact that having a Tier 1 investor participate in the deal reinforces the positive effect of funding because reputable investors are usually more experienced and have greater networks to offer (e.g., Hsu, 2004).

The increase in professionalism after the investment may be interpreted as an intertwined effect. Prior research has shown that the presence of a VC investor has positive effects on the professionalization of a startup. The professionalization of a

Table 8.2 Random effects panel regression: interaction effects with funding amount (log.) (professionalism)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)		(4)	
Dependent variable	I		We		Affiliation		Informal	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable								
After_funding	-0.377	(0.252)	0.086	(0.156)	-0.176	(0.282)	-0.305	(0.229)
After_funding*Funding amount (log.)	0.016	(0.018)	0.016	(0.011)	0.038	(0.020)+	-0.005	(0.016)
Control variables								
Word count (log.)	0.041	(0.014)**	-0.053	(0.008)***	-0.153	(0.015)***	0.085	(0.013)***
Tier 1 investor	0.175	(0.088)*	0.004	(0.043)	0.019	(0.079)	0.237	(0.078)**
Funding amount (log.)	-0.104	(0.020)***	0.029	(0.010)**	0.045	(0.019)*	-0.060	(0.018)***
Gender	-0.228	(0.086)**	-0.284	(0.041)***	-0.690	(0.077)***	-0.086	(0.076)
Location: San Francisco	0.213	(0.071)**	-0.059	(0.034)†	-0.159	(0.063)*	0.227	(0.062)***
Location: New York	0.083	(0.082)	0.059	(0.040)	0.081	(0.073)	0.186	(0.072)**
Venture age	-0.027	(0.018)	0.031	(0.009)***	0.085	(0.016)***	-0.033	(0.016)*
Industry dummies (46 cat.)	Yes		Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes		Yes	
Observations	4,188		4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

startup is mainly attributed to the coaching function of the VC investor, who provides helpful assistance after investment (e.g., Colombo and Grilli, 2010; Sørensen, 2007). Expanding on previous research, our results indicate that VC investment also directly influences the professionalization and leadership skills of founders individually. First, the increase in leadership-related qualities may be attributed to VC-induced startup growth. Instead of just being a member of a small team, the founder is forced to take a leadership position as soon as the venture raises external capital and starts growing (e.g., Davila et al., 2003). Improved leadership qualities are further highlighted by the moderating effect of reputable investors. This finding might indicate that more reputable investors provide superior value-added services, such as management coaching, than less reputable investors, which allows entrepreneurs to improve their leadership or professionalization skills. Additionally, our results show a decreased use of informal language after investment. Hellman and Puri (2002) have shown that VC-backed startups are faster to apply measures that are important for external communication, such as hiring a marketing vice president. Although, irrespective of VC funding, new ventures use social media for communication and marketing, for example, through information-sharing and action-inducing content (Taecharungroj, 2017), our results

Table 8.3 Random effects panel regression: interaction effects with Tier 1-Funding (loss of control, pressure, and negativity)This table shows the results of random effects panel regressions. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)		(2)		(3)	
Dependent variable	Negative emotions		Anxiety		Risk	
Statistic	Coeff.	(SE)	Coeff.	(SE)	Coeff.	(SE)
Independent variable						
After_funding	-0.112	(0.131)	-0.042	(0.044)	-0.050	(0.085)
After_funding*Funding amount (log.)	0.006	(0.009)	0.004	(0.003)	0.006	(0.006)
Control variables						
Word count (log.)	0.072	(0.007)***	0.006	(0.002)**	0.005	(0.004)
Tier 1 investor	-0.021	(0.039)	-0.023	(0.010)*	-0.010	(0.023)
Funding amount (log.)	-0.012	(0.009)	0.002	(0.003)	0.001	(0.006)
Gender	0.147	(0.038)***	0.008	(0.010)	0.069	(0.022)**
Location: San Francisco	0.087	(0.031)**	0.008	(0.008)	-0.017	(0.018)
Location: New York	0.036	(0.036)	0.014	(0.009)	-0.032	(0.021)
Venture age	-0.023	(0.008)**	-0.001	(0.002)	-0.010	(0.005)*
Industry dummies (46 cat.)	Yes		Yes		Yes	
Funding year dummies (12 cat.)	Yes		Yes		Yes	
Observations	4,188		4,188		4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

Table 8.4 Random effects panel regression: interaction effects with Tier 1 investor (authenticity)This table shows the results of a random effects panel regression. The dependent variables are LIWC variables. The variable After_funding marks the occurrence of the funding event.

Model	(1)	
Dependent variable	Authentic	
Statistic	Coeff.	(SE)
Independent variable		
After_funding	3.242	(3.269)
After_funding*Funding amount (log.)	-0.526	(0.235)*
Control variables		
Word count (log.)	-0.201	(0.177)
Tier 1 investor	1.675	(1.016)†
Funding amount (log.)	-0.202	(0.240)
Gender	2.267	(0.988)*
Location: San Francisco	0.552	(0.812)
Location: New York	0.237	(0.941)
Venture age	-0.408	(0.209)†
Industry dummies (46 cat.)	Yes	
Funding year dummies (12 cat.)	Yes	
Observations	4,188	

Notes: p-values: *** < 0.1%, ** <1%, * <5%, † < 10%.

suggest that the founder is made aware of the importance of professional online communication by VC investors.

Our results are less clear regarding loss of control, pressure, and negative emotions, which may be caused by the presence of a VC investor. Acquiring a VC invest-

ment may be a double-edged sword. Our findings suggest that the positive aspects of the investment outweigh the negative ones. The increase in risk-related language may be attributed to the growth of the startup that is induced by VC investment. Fast growth increases startups' risks, which need to be managed by founders and the management team (e.g., inappropriate startup infrastructure or inexperienced employees) (Picken, 2017). Our findings suggest that founders are aware of increasing risks, which is reflected in their digital identities' increase in risk-related language.

Finally, we show that VC funding can negatively affect founders' authenticity. This finding could be directly related to investment and might be initiated by investors or by founders. Less authentic language could be imposed on the founder by the investor, for example. While the founder had previously communicated openly and thus may have also shared business-relevant knowledge with the public, acting as a member of the venture's board, the investor could put a stop to this behaviour (Fried et al., 1998). Another reason could be related to agency theory. Although entrepreneurs do not need to justify their actions before investor entry, they are obliged to explain their actions to investors after investment and adopt an investor relations style of communication losing the typical entrepreneurial element. Such behaviour may be particularly likely when the ultimate goal of the VC is to exit the venture via an IPO. In such a case, the communication style is following the expectations and needs of financial analysts and stock market investors. This may come with the price of a loss in authenticity and a reduced use of a 'typical' entrepreneurial language.

5.2 Implications for practice

A loss in authenticity in an entrepreneur's digital identity could make it more difficult for new ventures to communicate their uniqueness. Prior research about what makes new ventures attractive for potential employees shows that displayed entrepreneurial leadership is an important factor influencing the employer attractiveness of new ventures (e.g., Hubner et al., 2021; Rudic et al., 2021). A loss in authenticity in an entrepreneur's digital identity makes it more difficult to communicate entrepreneurial leadership to potential employees. Entrepreneurs and new ventures should be aware of this negative side effect of professionalization and a financial market oriented communication style.

Next to being less attractive for potential employees, a loss in authenticity may also make it more difficult for new ventures to find their 'legitimate' space or niche in the product market. The entrepreneur and his or her (digital) identity often shapes crucially the brand image of new ventures and their products (Gruber, 2004). Hence, a loss in authenticity in an entrepreneur's digital identity can make it more difficult for new ventures to develop and implement a successful competition strategy.

5.3 Limitations and opportunities for further research

Our study is not without limitations. Using Twitter offers the opportunity to collect vast amounts of written text by individuals over a certain period. Because users on Twitter can delete messages, which cannot be recovered easily, our study is not able to guarantee that the text that was investigated per individual is complete or whether

it has been edited afterward. Also, while Crunchbase typically lists the private Twitter accounts of entrepreneurs, we cannot exclude the possibility that some entrepreneurs' Twitter accounts are run by a professional social media team to promote their companies. This might potentially influence the way in which VC funding is reflected in the entrepreneur's Tweets. Finally, we cannot rule out the possibility that external factors, such as current topics that shape the debate on Twitter, influence the language used by entrepreneurs. Future research should more carefully investigate whether and how the debate style on Twitter changes the language that entrepreneurs use.

By using only US-based founders and English LIWC dictionaries, our study is limited to founders located in the US that use the English language. Hence, a natural expansion of our study refers to extending our findings to entrepreneurs in other countries. Concepts such as professionalism or authenticity might be perceived differently in other countries so that it is unclear whether our findings also apply in a European or Asian context. In general, using LIWC to analyze text limits the analyses to the dictionaries incorporated in the software. A more comprehensive way to analyze the data would be the use of open-vocabulary tools that use machine learning and can analyze text in a more nuanced way (Schwartz et al., 2013). Furthermore, while our study shows several changes in founders' digital identities after a VC funding, we are not able to show why these changes occur. Future research should try to identify the causal mechanisms more carefully. This task is beyond the scope of our exploratory, correlational research.

Another methodological limitation refers to the fact that our setup requires entrepreneurs' Tweets before and after funding because we cannot compute our dependent variables if this information is missing. A bias could occur if entrepreneurs start or stop tweeting when receiving funding. Exploring whether and how VC funding affects the decision to become active or inactive on Twitter is a promising research avenue that would further nuance our findings.

While our study was able to show that the digital identities of entrepreneurs change after VC funding, future research could go deeper into the data and investigate whether the changes differ between different types of founders and VC investors. It is likely that the entrepreneur's personality, power, and position in the venture determine the extent to which VCs as external investors can impact changes regarding the entrepreneur's digital self. Prior research suggests that entrepreneurs are a very heterogenous group with regard to personality traits such as locus of control, entrepreneurial self-efficacy, and risk aversion (Block et al., 2015; Obschonka et al., 2017; Salmony and Kanbach, 2022). We would expect such personality traits to play a role how an entrepreneur changes his or her identity after having received VC funding. Also, VC investors are not a homogenous group. We would expect, for example, that corporate venture capital (CVC) investors as a sub-group have less experience than purely financial VCs in commercializing and professionalizing the venture (Dushnitsky and Shapira, 2010) and therefore also differ in their impact on the venture and the entrepreneur. Moreover, they may, in fact, choose to keep the venture under the radar so that they can pursue their strategic objectives without creating too much attention. Prior research shows that heterogeneity exists even *within* the group of CVCs (Balz et al., 2023). While some CVCs pursue more strategic

objectives related to the corporate sponsor behind the CVC, others tend more towards financial objectives.

Regarding our main result about the loss in authenticity of the entrepreneur's digital identity, several questions arise that our explorative approach is not able to answer. For example, it would be interesting to know more about *why* authenticity decreases. Next to the investor control and IPO explanation offered in our interpretation above, the loss in authenticity could also be because the push of VCs towards commercialization makes entrepreneurs less authentic in the digital image that they portray. An increasing gap may arise between one's own digital self, the (commercial) reality of the venture, and the associated expectations from investors. Another related explanation could be that an increase in professionalism of digital communication and an entrepreneur's digital identity is leading almost unavoidably towards a decrease in the authenticity of an entrepreneur's digital self. More qualitative research investigating in detail how VCs shape and influence entrepreneurs and their ventures could help to answer these questions and describe the mechanisms leading to the loss in authenticity loss that we observe in our data.

Another avenue of further research would be to go deeper into the *so-what question* of our findings. While a loss in authenticity in the entrepreneur's digital identity can certainly be problematic for new ventures trying to attract early employees and seeking legitimacy with their customers and their local communities, the loss in authenticity may be the price you have to pay to become professional and ultimately commercially successful. Further research is needed to disentangle these different effects of VCs on entrepreneurial digital identity and how they ultimately impact venture performance and survival. To what extent and under which conditions does one effect outweigh the other? Quantitative empirical research using longitudinal data and venture performance indicators as outcome variables could help to shed further light on this issue. The effect of a loss in authenticity may differ substantially by industrial and cultural context. Hence, studies comparing different industries and countries might also provide interesting and important insights. Also, (scenario or conjoint) experiments with different stakeholders (e.g., customers, employees, and investors) could help to measure to what extent and how a loss in authenticity impacts the legitimacy and attractiveness of a venture.

Finally, the question arises of whether a change in an entrepreneur's digital identity is an early indicator or a sign of a VC-induced mission drift towards financial goals. Future research could pick up this question and analyze whether a change in an entrepreneur's digital identity is accompanied by a change in the venture's goals and operations – a question of particular interest for social ventures and impact investors (Cetindamar and Ozkazanc-Pan, 2017).

References

Antonakis J, Atwater L (2002) Leader distance: a review and a proposed theory. Leadersh Q 13(6):673–704

Argamon S, Koppel M, Fine J, Shimoni AR (2003) Gender, genre, and writing style in formal written texts. Text & Talk 23(3):321–346

Balz FP, Brinkmann F, Kanbach DK (2023) The impact of independent and heterogeneous corporate venture capital on firm efficiency. J Bus Venturing Insights, 19, e00384

Barnes SJ, Mattsson J (2016) Building tribal communities in the collaborative economy: an innovation framework. Prometheus 34(2):95–113

Beckman CM, Burton MD (2008) Founding the future: path dependence in the evolution of top management teams from founding to IPO. Organ Sci 19(1):3–24

Block J, Sandner P, Spiegel F (2015) How do risk attitudes differ within the group of entrepreneurs? The role of motivation and procedural utility. J Small Bus Manage 53(1):183–206

Block J, Fisch H, Vismara C, Andres S, R (2019) Private equity investment criteria: an experimental conjoint analysis of venture capital business angels, and family offices. J Corp Finance 58:329–352

Block JH, Hirschmann M, Fisch C (2021) Which criteria matter when impact investors screen social enterprises? J Corp Finance 66:101813

Block JH, Fisch C, Diegel W (2022) Schumpeterian entrepreneurial digital identity and funding from venture capital firms. J Technol Transf, 1–39

Bruton G, Fried V, Hisrich RD (2000) CEO dismissal in venture capital-backed firms: further evidence from an agency perspective. Entrepreneurship Theory and Practice 24(4):69–77

Carland JW, Hoy F, Boulton WR, Carland JAC (1984) Differentiating entrepreneurs from small business owners: a conceptualization. Acad Manage Rev 9(2):354–359

Carraher SM, Buchanan JK, Puia G (2010) Entrepreneurial need for achievement in China, Latvia, and the USA. Baltic J Manage 5(3):378–396

Carsrud A, Brännback M (2011) Entrepreneurial motivations: what do we still need to know? J Small Bus Manage 49(1):9–26

Cetindamar D, Ozkazanc-Pan B (2017) Assessing mission drift at venture capital impact investors. Bus Ethics: Eur Rev 26(3):257–270

Chang SJ (2004) Venture capital financing, strategic alliances, and the initial public offerings of Internet startups. J Bus Ventur 19(5):721–741

Chemmanur TJ, Gupta M, Simonyan K, Tehranian H (2021) The relationship between venture capital backing and the top management team quality of firms going public and implications for initial public offerings. J Bus Ventur 36(6):106148

Chemmanur TJ, Krishnan K, Nandy DK (2011) How does venture capital financing improve efficiency in private firms? A look beneath the surface. Rev Financial Stud 24(12):4037–4090

Chen L, Gong T, Kosinski M, Stillwell D, Davidson RL (2017) Building a profile of subjective well-being for social media users. PLoS ONE 12 (11), e0187278

Collewaert V, Vanacker T, Anseel F, Bourgois D (2021) The sandwich game: founder-CEOs and forecasting as impression management. J Bus Ventur 36(1):106075

Colombo MG, Grilli L (2010) On growth drivers of high-tech start-ups: exploring the role of founders' human capital and venture capital. J Bus Ventur 25(6):610–626

Crunchbase (2022) The Crunchbase data difference. Retrieved from: https://about.crunchbase.com/products/the-crunchbase-difference. Last accessed: January 25, 2022

Cumming D, Johan S (2008) Information asymmetries, agency costs and venture capital exit outcomes. Venture Capital 10(3):197–231

Davila A, Foster G, Gupta M (2003) Venture capital financing and the growth of startup firms. J Bus Ventur 18(6):689–708

Drnovšek M, Slavec A, Aleksić D (2023) "I want it all": exploring the relationship between entrepreneurs' satisfaction with work–life balance, well-being, flow and firm growth. RMS, 1–28

Dushnitsky G, Shapira Z (2010) Entrepreneurial finance meets organizational reality: Comparing investment practices and performance of corporate and independent venture capitalists. Strateg Manag J 31(9):990–1017

Eichstaedt JC, Smith RJ, Merchant RM, Ungar LH, Crutchley P, Preoţiuc-Pietro D…, Schwartz HA (2018) Facebook language predicts depression in medical records. Proc Natl Acad Sci 115(44):11203–11208

Engel D (2004) The performance of venture-backed firms: the effect of venture capital company characteristics. Ind Innovat 11(3):249–263

Ewens M, Marx M (2018) Founder replacement and startup performance. Rev Financial Stud 31(4):1532–1565

Fast NJ, Sivanathan N, Mayer ND, Galinsky AD (2012) Power and overconfident decision-making. Organ Behav Hum Decis Process 117(2):249–260

Fauchart E, Gruber M (2011) Darwinians, communitarians, and missionaries: the role of founder identity in entrepreneurship. Acad Manag J 54(5):935–957

Ferrary M, Granovetter M (2009) The role of venture capital firms in Silicon Valley's complex innovation network. Econ Soc 38(2):326–359

Fisch C, Block JH (2021) How does entrepreneurial failure change an entrepreneur's digital identity? Evidence from Twitter data. J Bus Ventur 36(1):106015

Fischer E, Reuber AR (2014) Online entrepreneurial communication: mitigating uncertainty and increasing differentiation via Twitter. J Bus Ventur 29(4):565–583

Fisher G, Kuratko DF, Bloodgood JM, Hornsby JS (2017) Legitimate to whom? The challenge of audience diversity and new venture legitimacy. J Bus Ventur 32(1):52–71

Forbes DP (2005) Are some entrepreneurs more overconfident than others? J Bus Ventur 20(5):623–640

Fried VH, Bruton GD, Hisrich RD (1998) Strategy and the board of directors in venture capital-backed firms. J Bus Ventur 13(6):493–503

Gompers PA (1996) Grandstanding in the venture capital industry. J Financ Econ 42(1):133–156

Gompers PA, Gornall W, Kaplan SN, Strebulaev IA (2020) How do venture capitalists make decisions? J Finance Econ 135(1):169–190

Gosling SD, Augustine AA, Vazire S, Holtzman N, Gaddis S (2011) Manifestations of personality in online social networks: self-reported Facebook-related behaviors and observable profile information. Cyberpsychology Behav Social Netw 14(9):483–488

Gruber M (2004) Marketing in new ventures: theory and empirical evidence. Schmalenbach Bus Rev 56:164–199

Haberstroh S, Cyberpsychology (2010) Behav Social Netw, 13(4), 455–459

Haro-de-Rosario A, Caba-Pérez MDC, Cazorla-Papis L (2016) The impact of venture capital on investee companies: evidence from Spain. RMS 10:577–600

Hayward ML, Forster WR, Sarasvathy SD, Fredrickson BL (2010) Beyond hubris: how highly confident entrepreneurs rebound to venture again. J Bus Ventur 25(6):569–578

Hellmann T, Puri M (2000) The interaction between product market and financing strategy: the role of venture capital. Rev Financial Stud 13(4):959–984

Hellmann T, Puri M (2002) Venture capital and the professionalization of start-up firms: empirical evidence. J Finance 57(1):169–197

Hirukawa M, Ueda M (2011) Venture capital and innovation: which is first? Pac Econ Rev 16(4):421–465

Hsu DH (2004) What do entrepreneurs pay for venture capital affiliation? J Finance 59(4):1805–1844

Hubner S, Rudic B, Baum M (2021) How entrepreneur's leadership behavior and demographics shape applicant attraction to new ventures: the role of stereotypes. Int J Hum Resource Manage, 1–36

Jain S, George G, Maltarich M (2009) Academics or entrepreneurs? Investigating role identity modification of university scientists involved in commercialization activity. Res Policy 38(6):922–935

Kacewicz E, Pennebaker JW, Davis M, Jeon M, Graesser AC (2014) Pronoun use reflects standings in social hierarchies. J Lang Social Psychol 33(2):125–143

Kahn JH, Tobin RM, Massey AE, Anderson JA (2007) Measuring emotional expression with the Linguistic Inquiry and Word Count. Am J Psychol 120(2):263–286

Kaplan SN, Strömberg P (2003) Financial contracting theory meets the real world: an empirical analysis of venture capital contracts. Rev Econ Stud 70(2):281–315

Krämer NC, Winter S (2008) Impression management 2.0: the relationship of self-esteem, extraversion, self-efficacy, and self-presentation within social networking sites. J Media Psychol 20(3):106–116

Krishnan CNV, Ivanov VI, Masulis RW, Singh AK (2011) Venture capital reputation, post-IPO performance, and corporate governance. J Financial Quant Anal 46(5):1295–1333

Kudeshia C, Sikdar P, Mittal A (2016) Spreading love through fan page liking: a perspective on small scale entrepreneurs. Comput Hum Behav 54:257–270

Lerner J (1994) The syndication of venture capital investments. Financ Manage 23(3):16–27

Li X, Chan KW, Kim S (2019) Service with emoticons: how customers interpret employee use of emoticons in online service encounters. J Consum Res 45(5):973–987

Litwin AS, Phan PH (2013) Quality over quantity: Reexamining the link between entrepreneurship and job creation. Ind Labor Realt Rev 66(4):833–873

LIWC (2023) LIWC analysis. Available at: https://www.liwc.app/help/liwc. Last accessed: January 10, 2023

Lockett A, Wright M (2001) The syndication of venture capital investments. Omega 29(5):375–390

Lumpkin GT, Cogliser CC, Schneider DR (2009) Understanding and measuring autonomy: an entrepreneurial orientation perspective. Entrepreneurship Theory and Practice 33(1):47–69

Markowitz DM, Kouchaki M, Gino F, Hancock JT, Boyd RL (2022) Authentic first Impressions relate to interpersonal, social, and entrepreneurial success. Social Psychological and Personality Science, p 19485506221086138

Mason CM, Harrison RT (2002) Is it worth it? The rates of return from informal venture capital investments. J Bus Ventur 17(3):211–236

Maula M, Autio E, Murray G (2005) Corporate venture capitalists and independent venture capitalists: what do they know, who do they know and should entrepreneurs care? Venture Capital 7(1):3–21

Mehdizadeh S (2010) Self-presentation 2.0: Narcissism and self-esteem on Facebook. Cyberpsychology Behav social Netw 13(4):357–364

Meinecke AL, Kauffeld S (2019) Engaging the hearts and minds of followers: leader empathy and language style matching during appraisal interviews. J Bus Psychol 34(4):485–501

Middleton KLW (2013) Becoming entrepreneurial: gaining legitimacy in the nascent phase. Int J Entrepreneurial Behav Res, 19(4)

Mohr V, Garnsey E, Theyel G (2014) The role of alliances in the early development of high-growth firms. Ind Corp Change 23(1):233–259

Moser KJ, Tumasjan A, Welpe IM (2017) Small but attractive: dimensions of new venture employer attractiveness and the moderating role of applicants' entrepreneurial behaviors. J Bus Ventur 32(5):588–610

Mumi A, Obal M, Yang Y (2019) Investigating social media as a firm's signaling strategy through an IPO. Small Bus Econ 53(3):631–645

Nahata R (2008) Venture capital reputation and investment performance. J Financ Econ 90(2):127–151

Newman ML, Pennebaker JW, Berry DS, Richards JM (2003) Lying words: predictingdeception from linguistic styles. Personal Soc Psychol Bull 29:665–675

Newman ML, Groom CJ, Handelman LD, Pennebaker JW (2008) Gender differences in language use: an analysis of 14,000 text samples. Discourse Processes 45(3):211–236

Nyström K, Elvung GZ (2014) New firms and labor market entrants: is there a wage penalty for employment in new firms? Small Bus Econ 43(2):399–410

O'Neil I, Ucbasaran D, York JG (2022) The evolution of founder identity as an authenticity work process. J Bus Ventur 37(1):106031

Obschonka M, Fisch C, Boyd R (2017) Using digital footprints in entrepreneurship research: a Twitter-based personality analysis of superstar entrepreneurs and managers. J Bus Venturing Insights 8:13–23

Payne GT, Davis JL, Moore CB, Bell RG (2009) The deal structuring stage of the venture capitalist decision-making process: exploring confidence and control. J Small Bus Manage 47(2):154–179

Pennebaker JW, Boyd RL, Jordan K, Blackburn K (2015) The development and psychometric properties of LIWC2015. University of Texas at Austin, Austin, TX

Petkova AP, Rindova VP, Gupta AK (2013) No news is bad news: sensegiving activities, media attention, and venture capital funding of new technology organizations. Organ Sci 24(3):865–888

Picken JC (2017) From startup to scalable enterprise: laying the foundation. Bus Horiz 60(5):587–595

Pollock TG, Fund BR, Baker T (2009) Dance with the one that brought you? Venture capital firms and the retention of founder-CEOs. Strateg Entrepreneurship J 3(3):199–217

Pollock TG, Rindova VP (2003) Media legitimation effects in the market for initial public offerings. Acad Manag J 46(5):631–642

Powell EE, Baker T (2017) In the beginning: Identity processes and organizing in multi-founder nascent ventures. Acad Manag J 60(6):2381–2414

Pratch L (2005) Value-added investing: a framework for early stage venture capital firms. J Private Equity 8(3):13–29

Quinton S, Wilson D (2016) Tensions and ties in social media networks: Towards a model of understanding business relationship development and business performance enhancement through the use of LinkedIn. Ind Mark Manage 54:15–24

Rudic B, Hubner S, Baum M (2021) Hustlers, hipsters and hackers: potential employees' stereotypes of entrepreneurial leaders. J Bus Venturing Insights, 15, e00220

Ryff CD (2019) Entrepreneurship and eudaimonic well-being: five venues for new science. J Bus Ventur 34(4):646–663

Salmony FU, Kanbach DK (2022) Personality trait differences across types of entrepreneurs: a systematic literature review. RMS 16(3):713–749

Sapienza HJ, Manigart S, Vermeir W (1996) Venture capitalist governance and value added in four countries. J Bus Ventur 11(6):439–469

Schifeling T, Demetry D (2021) The new food truck in town: geographic communities and authenticity-based entrepreneurship. Organ Sci 32(1):133–155

Schwartz HA, Eichstaedt JC, Kern ML, Dziurzynski L, Ramones SM, Agrawal M, …, Ungar LH (2013) Personality, gender, and age in the language of social media: the open-vocabulary approach. PLoS ONE, 8(9), e73791

Seigner BDC, Milanov H, Lundmark E, Shepherd DA (2023) Tweeting like Elon? Provocative language, new-venture status, and audience engagement on social media. J Bus Ventur 38(2):106282

Shi Y, Zou B, Santos RS (2021) Dr. Jekyll and Mr. Hyde: how do academic entrepreneurs deal with identity conflict? RMS 15:2165–2191

Shih CC, Lin TM, Luarn P (2014) Fan-centric social media: the Xiaomi phenomenon in China. Bus Horiz 57(3):349–358

Smith C, Smith JB, Shaw E (2017) Embracing digital networks: entrepreneurs' social capital online. J Bus Ventur 32(1):18–34

Sørensen M (2007) How smart is smart money? A two-sided matching model of venture capital. J Finance 62(6):2725–2762

Soto-Simeone A, Kautonen T (2021) Senior entrepreneurship following unemployment: a social identity theory perspective. RMS 15:1683–1706

Steinmann B, Ötting SK, Maier GW (2016) Need for affiliation as a motivational add-on for leadership behaviors and managerial success. Front Psychol 7:1972

Taecharungroj V (2017) Starbucks' marketing communications strategy on Twitter. J Mark Commun 23(6):552–571

Tausczik YR, Pennebaker JW (2010) The psychological meaning of words: LIWC and computerized text analysis methods. J Lang Social Psychol 29(1):24–54

Ter Wal AL, Alexy O, Block J, Sandner PG (2016) The best of both worlds: the benefits of open-specialized and closed-diverse syndication networks for new ventures' success. Adm Sci Q 61(3):393–432

Tov W, Ng KL, Lin H, Qiu L (2013) Detecting well-being via computerized content analysis of brief diary entries. Psychol Assess 25(4):1069–1078

Tumasjan A, Braun R, Stolz B (2021) Twitter sentiment as a weak signal in venture capital financing. J Bus Ventur 36(2):106062

Wang W, Hernandez I, Newman DA, He J, Bian J (2016) Twitter analysis: studying US weekly trends in work stress and emotion. Appl Psychol 65(2):355–378

White RJ, D'Souza RR, McIlwraith JC (2007) Leadership in venture backed companies: going the distance. J Leadersh Organizational Stud 13(4):121–132

Winter DG (1998) A motivational analysis of the Clinton first term and the 1996 presidential campaign. Leadersh Q 9(3):367–376

Witt U (2007) Firms as realizations of entrepreneurial visions. J Manage Stud 44(7):1125–1140

Wu S, Dagher GK (2007) Need for achievement, business goals, and entrepreneurial persistence. Manage Res News 30(12):928–941

Yang JH, Liu S (2017) Accounting narratives and impression management on social media. Acc Bus Res 47(6):673–694

Yang S, Berger R (2017) Relation between start-ups' online social media presence and fundraising. J Sci Technol Policy Manage 8(2):161–180

York JG, O'Neil I, Sarasvathy SD (2016) Exploring environmental entrepreneurship: Identity coupling, venture goals, and stakeholder incentives. J Manage Stud 53(5):695–737

Zhang J (2011) The advantage of experienced start-up founders in venture capital acquisition: evidence from serial entrepreneurs. Small Bus Econ 36(2):187–208

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Authors and Affiliations

Jörn H. Block[1,2] · Walter Diegel[1] · Christian Fisch[3]

✉ Jörn H. Block
    block@uni-trier.de

    Walter Diegel
    diegel@uni-trier.de

    Christian Fisch
    christian.fisch@uni.lu

[1] Faculty of Management, Trier University, Universitaetsring 15, 54296 Trier, Germany

[2] Erasmus School of Economics, Erasmus University Rotterdam, P.O. Box 1738, Rotterdam 3000 DR, The Netherlands

[3] Interdisciplinary Centre for Security, Reliability, and Trust (SnT), University of Luxembourg, Campus Kirchberg, 6, rue Richard Coudenhove-Kalergi, Esch-sur-Alzette L-1359, Luxembourg