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## Article

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# First impressions of digital pitches, innovation, and venture funding performance: An evolutionary psychology approach

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## ABSTRACT

We draw from evolutionary psychology to predict that the immediate recognition of certain traits significantly impacts funding outcomes. Four such traits that are recognizable in potential entrepreneurs and play a role in funding decisions are: aggressiveness, attractiveness, competence, and trustworthiness. These initial impressions guide the behavior and decision-making processes of funders. We hypothesize that immediate trait assignments shape initial interpretations, lead to further investigation, and represent qualities that funders view positively or negatively when deciding which campaigns to back. These hypotheses are tested using the first ten seconds of entrepreneurial pitch videos in the crowdfunding context. Our results suggest that these evolutionary-driven traits play a crucial role in funder perception and crowdfunding success and, specifically, that entrepreneurs benefit from displaying aggressiveness and competence in pitches.

## Introduction

Online venture funding has grown at an exceptional rate in the last decade, with the entrepreneurial pitch determining funding outcomes. Crowdfunding pitches are often considered the primary method of interaction with potential investors (Scheaf, Davis, Webb, Coombs, Borna, & Holloway, 2018). Decisions based on these pitches are expected to lead to funding transactions of more than 300 billion USD by 2025 (Allison, Davis, Webb, & Short, 2017; Davis, Hmieleski, Webb, & Coombs, 2017; EquityNet, 2014). Strategies and communication tools shape the tone of the message, build legitimacy, engage the audience, and set expectations for those involved, leading to funding decisions (Kraus, Richter, Brem, Cheng, & Chang, 2016; Soublière & Gehman, 2020). Yet, limited studies have methodically examined the impact of pitch videos on crowdfunding success (cf. McKenny, Fisher, Short, Ketchen, & Allison, 2024), resulting in a gap in understanding how cues from pitch videos determine funding outcomes (Li, Xiao, & Wu, 2021).

Thus, a fundamental question remains: what characteristics of an entrepreneur's online video pitch lead to funding? Indeed, researchers are just beginning to grasp how and why entrepreneurial pitches can persuade investors to back their emerging businesses (Clarke, Cornelissen, & Healey, 2019). The interaction between entrepreneurs presenting their ideas and investors assessing them for funding is characterized by much uncertainty.

Further, knowledge exchange between founders and creators is of critical importance to reducing information asymmetries and enhancing innovation. Crowdfunding campaigns have long been shown to effectively facilitate knowledge transfer between founders and backers (e.g., Frydrych, Bock, Kinder, & Koeck, 2014; Kraus et al., 2016; Lambert & Schwenbacher, 2010). Backers can share knowledge by privately contacting entrepreneurs or by publicly commenting on the entrepreneur's campaign page. In this manner, product design in crowdfunding is often the result of collaboration between an entrepreneur and numerous backers. Conversely, most of the campaign page is dedicated to

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knowledge dissemination from founders to their prospective backers, usually in the form of video or text. Thus, digital crowdfunding platforms allow founders and potential backers to influence one another (Jiao, Wang, & Yang, 2023). With increased knowledge sharing, entrepreneurs are more likely to exceed their funding targets (Malhotra, Burtch, & Wareham, 2024) as uncertainty is reduced. However, the key to this exchange may be determined in the first few seconds. Indeed, the process of knowledge innovation and keen insights may fail to occur if knowledge sources quickly click away.

We join the theoretical conversation in examining the role heuristics play in digital fundraising, more specifically regarding the online pitch. Recent research on digital fundraising has focused on the role of heuristics in diminishing uncertainty and determining online financing decisions. Relevant to pitch funding are an entrepreneur's linguistic styles (Parhankangas & Renko, 2017), confidence levels (Moy, Chan, Septianto, Mathmann, & Torgler, 2024), displays of joy (Jiang, Yin, & Liu, 2019), higher levels of distinctiveness (Taeuscher, Bounchken, & Pesch, 2021), and positive body movements (Clarke, Cornelissen, & Healey, 2019). Also relevant is a willingness to divulge the project as a personal dream (Allison et al., 2017), along with the ability to come across as warm, passionate (Hu & Ma, 2021), trustworthy (Duan, Hsieh, Wang, & Wang, 2020), and narcissistic (Anglin, Wolfe, Short, McKenny, & Pidduck, 2018), and the ability to express oneself analytically, confidently (Kim, Buffart, & Croidieu, 2016), and passionately (Davis et al., 2017), by demonstrating the right personality traits (Allison et al., 2022), having an entrepreneurial personality (Maurer, Creek, Allison, Bendickson, & Sahaym, 2024), and product creativity (Davis et al., 2017), or by showcasing a group identity (Allison et al., 2017). These studies and others (e.g., Mahmood, Luffarelli, & Mukesh, 2019) have demonstrated the significant role that heuristics play in providing subtle cues that funders consider when making funding decisions. While these studies have provided important insights, there is limited research into the first few seconds in which the online pitch is judged. Thus, we explore this nascent realm by focusing on the role of entrepreneurial first impressions and evolutionary psychology in funding outcomes. More specifically, the study produces new knowledge in this domain by hypothesizing and proving that evolutionary instincts do play a role in funding success in a very short period. Without these traits being indicated almost immediately, innovation, knowledge sharing, and products will be substantially more difficult to develop and fund.

As implied by recent research and the theoretical use of heuristics or automatic responses (e.g., Ren, Raghupathi, & Raghupathi, 2021; Schraven, van Burg, van Gelderen, & Masurel, 2020), most funding choices are relatively quick decisions based on gut reactions and heuristics, where, heuristics are simple and efficient rules guiding individual's judgments and influencing decision-making (Gilovich, Griffin, & Kahneman, 2002). This is often classified as automatic, implicit, and rapid (Kahneman, 2003; Scheaf et al., 2018). Further, research has shown that first impressions are developed almost instantaneously, creating a primacy effect (Rundus, 1971), a halo effect (Scheaf et al., 2018), and a confirmation bias (Schraven et al., 2020). From the standpoint of individual entrepreneurs making a pitch, others make instantaneous judgments about focal individuals and give similar trait assignments (e.g., aggressiveness, attractiveness, competence, and trustworthiness) with remarkable consistency (Markowitz, Kouchaki, Gino, Hancock, & Boyd, 2023). While the traits observers assign to a focal individual may not align with that individual's actual traits (Bar, Neta, & Linz, 2006; Todorov & Porter, 2014), trait assignments are consistent (Carré, McCormick, & Mondloch, 2009; Olivola & Todorov, 2010; Zebrowitz, Franklin Jr, Hillman, & Boc, 2013) and have significant consequences for those being judged (Blair, Judd, & Chapleau, 2004; Olivola & Todorov, 2010). Furthermore, these readily formed first impressions are perceived across diverse cultures and age groups (Zebrowitz et al., 2013). Thus, the traits potential funders assign to an entrepreneur may have very significant and consistent effects.

The social psychology evidence for first impressions (for a recent

review, see Swider, Harris, & Gong, 2022) and their repercussions are traceable to the primacy effect (e.g., Buda & Zhang, 2000; Haugtvedt & Wegener, 1994; Jones, Goethals, Kennington, & Severance, 1972; Kim & Fesenmaier, 2008) with further elaboration facilitated by confirmation bias and halo effect literature based on perceived visible traits (e.g., Eagly, Ashmore, Makhijani, & Longo, 1991). Despite these advancements, online video pitches have seen a lack of investigation, with recent notable exceptions and immediate perceptions almost altogether absent (e.g., Allison, Warnick, Davis, & Cardon, 2022; Li, Xiao, & Wu, 2021; Maurer et al., 2024; Scheaf et al., 2018; Schraven et al., 2020; Warnick, Davis, Allison, & Anglin, 2021). Given the immediacy of these perceptions and their lasting effects and determining role in decision-making, it is surprising that online funding research has not followed context with similar mass investigations on immediate heuristics (e.g., first impressions and the decision-making consequence).

As Schraven et al. (p. 3) state, "...crowdfunding campaigns provide valuable information about demand for the product, service, or project, and can serve as a low-cost marketing tool (Bernardino & Santos, 2020; Mollick, 2014; Miglo, 2020)." To say that online funding does not subscribe to the same rules as webpages, internet viewership, consumer behavior, product interest, and social networks seems limited (Pengnate, Sarathy, & Lee, 2019; Teixeira, Wedel, & Pieters, 2012; Wang, Lu, Li, Khamitov, & Bendle, 2021). Since the advent of the internet, studies have flourished, arguing that immediate reactions matter and that the back button is the most dominant choice when using the internet (Bilal, 2000; Kim & Fesenmaier, 2008; Large, Beheshti, & Moukdad, 1999; Wang, Hawk, & Tenopir, 2000). Indeed, a vast percentage of consumer web-searchers spend only a few seconds on any given webpage before moving on to a different website (Peracchio & Luna, 2006), social website, or video (Susarla, Oh, & Tan, 2012) due to the limited attention spans of most web users (Susarla et al., 2012; Szabo & Huberman, 2010). As such, given the vast array of content competing for users' attention, we believe that crowdfunders, like other internet users, follow similar patterns. That is, they do not spend an exorbitant amount of time on a single project if an initial interest does not manifest before an option with more immediate gratification is presented.

To this end, we seek to understand the first few moments of online funding pitches and motivate others toward the vigor used in similar online first impression veins. Specifically, we examine four evolutionary traits (aggressiveness, attractiveness, competence, and trustworthiness) linked to entrepreneurial funding. This approach aligns with the traits continually recognized as dominant and separate in the two-factor and three-factor models of vocal and physical first impressions' influence (e.g., Mileva & Lavan, 2023). These four traits are observable by any person, and the entrepreneurship literature has linked each to entrepreneurial performance, making these conceptually well-suited to examining potential thin-slice, first impression influences on entrepreneurial funding. This study was conducted in the crowdfunding context. Our results affirm the importance of first impressions, suggesting that people naturally and quickly recognize these traits given their detectable influence on funding outcomes.

We provide three contributions to the literature. First, we build on the bias theories stemming from first impressions to hypothesize that evolutionary embedded trait assignments matter for online venture funding. That is, funders use visual heuristics (an automatic, quick, and effortless cognitive process) and the traits they unconsciously apply to entrepreneurs from their videos to instinctively make funding decisions. We find that visual stimuli in the form of video imprint potential backers with views about the entrepreneur's attractiveness, aggressiveness, competence, and trustworthiness that inform their funding decisions.

Second, we find preliminary evidence of the "mere exposure" phenomenon that is well-established, with numerous studies supporting its validity (Bornstein, 1992) in literature outside of entrepreneurship. This effect reinforces the idea that emotions or "feelings" are intertwined with cognitive processes. These feelings emerge early during the recognition and recall stages (LeDoux, 1996), and the emotional

responses that often accompany assessments of tangible attributes are beyond our conscious control (Zajonc, 1980). Emotions affect us regardless of our preferences and can manifest in just a few milliseconds. We find that these evolutionarily assigned traits influence an overall affective response, leading to quickly formed beliefs about the project's likelihood of success that then led to actual crowdfunding success.

Third, we highlight the significance of first impressions during online pitches. Within seconds, viewers quickly anticipate if the project will secure funding. This aligns with studies from other fields, indicating that potential consumers decide within the initial moments of an ad whether to keep watching, emphasizing the need to immediately engage the viewer (Teixeira et al., 2012). Moreover, we contribute by advancing an argument that first impressions are of great importance for this type of entrepreneurial funding because potential funders are viewers who can easily skip videos or projects that do not grab their attention. Similarly, in online environments, users typically move on very quickly if they view unfavorable first impressions (Lim et al., 2006; Sia et al., 2009). Building on this previous research, our hypotheses enrich the entrepreneurial pitch literature in two ways. First, we expand on earlier studies by investigating not just what makes pitches successful but also the critical timing of these factors (e.g., Jiang et al., 2019). Second, for professionals, our findings underscore the fact that entrepreneurial pitches swiftly capture and maintain viewer interest. Thus, founders should prioritize creating a positive initial impression on their audience, such as by incorporating a compelling pitch video and showcasing vibrant details on their crowdfunding webpage (Gierczak & Nitze, 2015). Allocating their limited resources toward establishing strong first impressions can help counteract the effects of negativity bias (Schraven et al., 2020) and diminish weaknesses. Together, positive first impressions and these associated biases can potentially lead funders to focus on positive confirmatory information.

## Theoretical background and hypothesis development

### *First impression cues*

Psychology and entrepreneurship research has indicated that financial backers use heuristics (Shanteau, 1992) to choose alternatives (Chen, Yao, & Kotha, 2009), employing only a few available cues despite the availability of more information (Brehmer & Brehmer, 1988). The outcome is often suboptimal decision-making (Zacharakis & Meyer, 2000). First impressions, a form of heuristics, ascribe attributes to the entrepreneur or the project, and financial backers use these attributes despite the availability of additional information. Some traits are evolutionary and provide immediate recognition of desirable and undesirable attributes. In such cases, further information is unlikely to impact a decision. Indeed, people are excellent at judging complex social characteristics and personality traits. First impressions facilitate survival and provide an understanding of external interaction (Roberts, Whittle, Cleland, & Wald, 2013). Heuristics can lead to a limited search for alternatives and cause a single alternative to be focused on and vigorously defended as an option (Alexander, 1979; Schwenk, 1984).

First impressions of physical appearance provide adequate information for decisions to be made. Individuals can assign attributes to others with astonishing ease and speed (Uleman, Blader, & Todorov, 2005). In time-limited situations characterized by risk and uncertainty (Shrestha, Thewissen, Arslan-Ayaydin, & Parhankangas, 2023), immediate trait recognitions are used to evaluate prospective competitors, partners, and mates in social contexts (Macapagal, Rupp, & Heiman, 2011). In the crowdfunding context, backers can immediately recognize various traits about unknown entrepreneurs (often subconsciously).

Crowdfunding is a novel form of financing produced by a knowledge economy (Paoloni, Paoloni, & Modaffari, 2019). Indeed, knowledge sharing is thought to impact the success rate of crowdfunding campaigns (Vrontis, Christofi, Battisti, & Graziano, 2021), and when trait impressions indicate knowledge, capability, and credibility, backers develop

positive beliefs about the entrepreneur and information asymmetry is reduced. Trait inferences from an entrepreneur's appearance are fast, intuitive, and unreflective (Chaiken & Trope, 1999; Kahneman, 2003; Willis & Todorov, 2006) and, more importantly, uncontrollable (Hassin & Trope, 2000). Inferences from appearance are an automatic process (Willis & Todorov, 2006) and are used to make decisions about investments.

First impressions are derived from visual cues. These cues play a significant role in investment decisions (Ambady & Gray, 2002; Chan & Park, 2014; Friedman & Förster, 2010) because individuals "tend to automatically attend to and process images more easily than written information [they cause] increased awareness, motivation, and cognitive evaluation by decision makers" (Chan & Park, 2014, p. 1). This is consistent with prior research showing that valuable objective beliefs can be construed from visual images (Grill-Spector & Kanwisher, 2005) and are particularly relevant in the online context where "person impressions are created effortlessly online from minimal information" (Willis & Todorov, 2006, p. 597). Findings support that specific trait inferences can be ingrained from just 100 milliseconds of exposure (Willis & Todorov, 2006).

In the context of crowdfunding, first impressions are especially relevant as a visual representation of the entrepreneur and typically occur in video format. Indeed, of the crowdfunding components the video pitch is the most important and placed in the most prominent position (Li, Xiao, & Wu, 2021; Scheaf et al., 2018). Further, visuals dominate other forms of pitch information and funders pay less attention to other content (Schraven et al., 2020).

An entrepreneur's appearance and pitch in video format provide important cues that are immediately recognizable to investors through automatic processes that influence funding decisions. Specifically, four such attributes or features that are immediately recognizable from images and enhance funders' impressions (or are in themselves desirable traits for the funders) are attractiveness, aggressiveness, competence, and trustworthiness (Willis & Todorov, 2006). Videos of entrepreneurs can attach these perceived attributable traits to the entrepreneur and their crowdfunding projects. In contrast, when an entrepreneur does not appear early on, and such cues are not discernable, funding is significantly diminished (Li, Xiao, & Wu, 2021), where first impressions may then be used as an immediate rejection technique, reducing effort requirements for assessments (Payne, Bettman, & Johnson, 1988) and allowing for potential funders to simply click away to something more interesting.

### *Early-stage entrepreneurial funding*

Prior early-stage entrepreneurial research argued a more systematic approach of effortful signal identification such as education and experience (Hsu, 2007; Knight, 1994), patent ownership (Ahlers, Cumming, Günther, & Schweizer, 2015), social capital (Colombo, Franzoni, & Rossi-Lamastra, 2015), media coverage (Deephhouse, 2000), geographical distance (Agrawal, Catalini, & Goldfarb, 2010), campaign purpose (Mollick & Kuppawamy, 2014), preparedness (Chen et al., 2009; Mollick, 2014), and product stage (Davis & Allison, 2013) to make informed decisions. These emphasized systematic processing (e.g., identifying valuable signals) by investors (Hsu, 2007; Shane & Cable, 2002), as opposed to the more automatic processing, mental shortcuts (i.e., heuristics) or cues used by investors (e.g., Chen et al., 2009; Mitte-ness, Sudek, & Cardon, 2012; Sudek, 2006).

However, most online funding is characterized by high information asymmetry and uncertainty (Ahlers et al., 2015). "In uncertain situations and when facing complex tasks, individuals (including investors) are known to use mental shortcuts (i.e., heuristics), rather than extensive, rational algorithmic processing to form judgments and make decisions" (Mahmood, Luffarelli, & Mukesh, 2019, p. 43). Given this, heuristics and automatic decision processes have gained momentum in online funding with crowdfunding the dominant online funding model.



"Crowdfunding refers to the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries" (Mollick, 2014, p. 2). Nascent entrepreneurs and ventures have difficulty in attracting initial finance during early venture stages through traditional means (Cassar, 2004; Cosh, Cumming, & Hughes, 2009) due to insufficient collaterals or their inability to convince investors of their potential (Chen et al., 2009; Shane & Cable, 2002). Crowdfunding platforms have been described as a funding avenue deliberately designed for early-stage entrepreneurs to showcase prototypes and new ventures, increase brand attitudes and consumer recommendations (Maier, Baccarella, Block, Wagner, & Voigt, 2023), and as a stepping-stone for diverse and increased financing, providing explicit information on how funds will be used (Agrawal et al., 2010). Crowdfunding fills the gap between traditional sources of venture funding that require prolonged development with evidence of market traction and the limited sources of funds accessible at earlier stages of venture development (Ley & Weaven, 2011).

This allows entrepreneurs to reach thousands of potential funders for raising capital (Allison et al., 2015; Mollick, 2014). However, entrepreneurs must convince potential backers to fund their projects through positive beliefs about their desired outcomes and the reduction of information asymmetries (Agrawal et al., 2010). Crowdfunding involves decision-making by individuals for benefit, while information asymmetry has yet to be fully resolved. More specifically, digital crowdfunding platforms differ significantly from conventional financial sources, as highlighted by Agrawal, Catalini, and Goldfarb (2014) and Burtch et al. (2015). Specifically, the online, fluid, and information-intensive nature of crowdfunding platforms emphasizes less reliable visual indicators more prominently than in conventional financing methods, which depend on face-to-face interactions. Supporters frequently do not have the resources, expertise, or experience to thoroughly assess the projects they fund (refer to Ahlers et al., 2015) compared with more traditional, non-digital finance providers.

Additionally, those who provide funds are relatively inexperienced and do not gain equity for their financial contributions (as noted by Ordanini, Miceli, Pizzetti, & Parasuraman, 2011). Instead, individuals supply capital for an intangible benefit or a physical reward in return, typically the product being funded (Scheaf et al., 2018). Such individuals commonly rely on cues to assess if those trying to persuade them will fulfill their commitments (Wang et al., 2021), leading to greater reliance on less tangible cues and perceptions of the pitch (Davis et al., 2017; Mahmood et al., 2019), like those involved in first impressions.

While the research on crowdfunding to date has been substantial (see, for example, Bouncken, Komorek, & Kraus, 2015; He, Tröbinger, & Murray, 2024), the research on first impressions within the crowdfunding context is extremely limited. However, a recent empirical study examining campaign video clips found that immediate assessments of entrepreneurial personality traits were shown to positively impact crowdfunding success (Maurer et al., 2024). Their findings are built on the premise that crowdfunding backers can effectively use heuristics to guide funding decisions even when information and time are limited (Schraven et al., 2020). Our hypotheses build upon this work.

### Hypothesis development

Temporal aspects influence perceptions, that is, the pitch video sets initial impressions and casts a halo effect on subsequent evaluations (Scheaf et al., 2018). In contrast, the quality of pitch text is less significant because potential backers have likely already extracted crucial information from the earlier video cues (Scheaf et al., 2018). Indeed, videos are substantially more influential in molding perceptions and decisions compared to text in an online setting (e.g., Lim, Sia, Lee, & Benbasat, 2006). In unclear circumstances, people tend to trust their gut

feelings (South Palomares & Young, 2018), and those perceptions of the entrepreneur are trusted most when making unknowable-risk decisions (Huang & Pearce, 2015). Similarly, those exploring temporal aspects of crowdfunding videos have identified the beginning as the most influential or crucial part (e.g., Jiang et al., 2019) and that those initial impressions create a halo effect influencing the rest of the decision process, thus limiting the relevance of the textual components (Scheaf et al., 2018).

For reward-based funding, backers are more inclined to prioritize cues indicating the entrepreneur's capability to efficiently provide the promised reward (Cholakova & Clarysse, 2015; Scheaf et al., 2018) and to make their funding choices based on non-monetary benefits (Allison et al., 2017; Davis et al., 2017) such as prosocial motives (Dai & Zhang, 2019; Simpson, Schreier, Bitterl, & White, 2021) and varying paths to gaining legitimacy (Soublie & Gehman, 2020; Taeuscher et al., 2021). These cues create impressions almost immediately (Ambady & Rosenthal, 1993; McAleer, Todorov, & Belin, 2014; Willis & Todorov, 2006), creating gut feelings and beliefs before critical facts and information regarding the project or entrepreneur can be understood or received (Scheaf et al., 2018). These extremely short observations are used to judge affect, characteristics, traits, intentions, trustworthiness, and emotions (Ambady, Krabbenhoft, & Hogan, 2006; Schraven et al., 2020). First impressions are also used as an immediate rejection technique, reducing effort requirements for assessments (Payne et al., 1988).

These initial impressions also lead to confirmation bias, given that initial perceptions can shape later assessments (Mynatt, Doherty, & Tweney, 1977; Nickerson, 1998; Oswald & Grosjean, 2004; Rabin & Schrag, 1999). Individuals interpret any new information in a way that supports their pre-existing views rather than questioning them. In combination, the halo effect and confirmation bias paint those automatically perceived as having desirable traits in a continued favorable light while also disregarding contrary information found through later examination.

Positive first impressions reduce information asymmetry and increase the project's external value due to perceived deliverability and quality. The lack of automatically assigned positive traits causes ambiguity and, at its worst (negative trait assignment), assumptions of limited ability on the part of the entrepreneur, causing external parties to question deliverability and quality, leading them to click away. Indeed, there is uncertainty associated with crowdfunding campaigns, especially regarding their quality and potential for success (Agrawal et al., 2010; Colombo et al., 2015). Resource providers are unsure of an entrepreneur's capabilities and trustworthiness, which are essential to decision-making (Colombo et al., 2015). However, this information asymmetry is reduced through unconscious trait assignments (e.g., competence and trustworthiness) via first impressions and expectancies.

The four common traits of aggressiveness, attractiveness, competence, and trustworthiness have been shown to create first impressions producing favorable outcomes in entrepreneurship (e.g., Baron, Markman, & Bollinger, 2006; Busenitz, Fiet, & Moesel, 2005; Todorov et al., 2005; Welter, 2012). These survival traits are judged quickly and are associated with the evolutionary fight or flight response because they

are immediately recognizable using the amygdala<sup>1</sup>—the primary structure of the brain responsible for fight or flight response (Rule et al., 2010; Winston, Strange, O'Doherty, & Dolan, 2002). As such, these specific traits are important to economic and social interactions as they help remove information asymmetries (Colombo et al., 2015; Willis & Todorov, 2006).

### Aggressiveness

Findings suggest that evolutionary pressures shaped human minds and the perceptual system to be particularly attuned to external cues of aggression (Carré et al., 2009). Indeed, the ability to distinguish aggression is an evolved skill leading to success as it helps in judging competition for resources, potential mates, and social status versus rivals, as well as adapting strategies (Macapagal et al., 2011). Furthermore, this instinctual information is used not only to accrue resources, status, or mates but also to identify threats to resources, social status, or personal relationships, which informs decisions to assert social status or protect mates (Macapagal et al., 2011). Similarly, individuals who are aggressive or dominative are advantaged in receiving valued resources (i.e., those important for propagation and survival) because they are seen as physically and socially dominant by potential rivals (Carré et al., 2009).

Although first impressions of aggressiveness may have evolved to act as an early warning signal of danger (negative stimuli), recent research has illustrated that the context matters and that negative stimuli can produce positive views of a stranger's outcomes (e.g., Todorov & Porter, 2014) and a desire for team-membership, especially when advantages can be gained (Melnikoff & Bayley, 2018). That is, having someone act aggressively and get things done on your behalf is to your advantage. Aggression leads to success, or at least perceived superiority, in competition for scarce rewards (Greenlees, Bradley, Holder, & Thelwell, 2005) and can be viewed as positive and expected given the correct context (e.g., new ventures and entrepreneurs; Felson, 1978; Macapagal et al., 2011). That is, aggressiveness may paint an entrepreneur in a positive light because they pose no immediate threat. Observers may infer that the entrepreneur is more likely to get things done to the extent that their intimidating presence may dissuade others from interfering.

Indeed, for entrepreneurs, aggressiveness is associated with the ability to get the job done (Bolino & Turnley, 2003) and, in turn, testing and removing faults plaguing initial nascent ideas (Carter et al., 1996). Investors look to aggressiveness as it represents future expectations because it is helpful for overcoming barriers, efficiency and product development. In the crowdfunding context, aggressiveness is expected by backers and has been shown to result in quicker funding times (Anglin, Milanov, & Short, 2023). Aggression is immediately recognizable and represents a desired entrepreneurial attribute. It provides positive future expectations about the entrepreneur and potential rewards, thus increasing the project's likelihood of receiving funding. Formally:

**Hypothesis 1.** As first impression perceptions of aggressiveness increase, so does the likelihood of crowdfunding success.

<sup>1</sup> The amygdala is involved in immediate external valuations of others' attractiveness, aggressiveness, competence and trustworthiness, providing responses for the assignment of traits and an overarching belief about the person or items judged, as confirmed by studies using functional magnetic resonance imaging (fMRI; Rule et al., 2010; Winston et al., 2002). Damages to this region of the brain can alter the ability to determine first impressions of particular traits (e.g., trustworthiness; Adolphs, Tranel, & Damasio, 1998). The amygdala plays a vital role in processing both negative (fearful, threatening and aversive stimuli) and positive valence events (pleasant) (Anderson, Christoff, Stappen, Panitz, Ghahremani, Glover, & Sobel, 2003; Hamann, Ely, Grafton, & Kilts, 1999; Hamann, Ely, Hoffman, & Kilts, 2002) leading to an overall positive or negative impression of the project and or beliefs about future actions or performance.

### Attractiveness

Heuristics are used to efficiently judge initial reactions, and attractive, likable entrepreneurs are evaluated more positively (Baron et al., 2006). Previous research consistently indicates that attractive individuals have an advantage over others (Judge, Hurst, & Simon, 2009) and receive more favorable outcomes than unattractive individuals in almost every aspect of life (Hamermesh & Biddle, 1994; Zebrowitz, 1999). Indeed, attractiveness has been linked to favorable treatment and greater attention (Zebrowitz, Collins, & Dutta, 1998), education attainment (Judge et al., 2009), and higher earnings or financial success (Frieze, Olson, & Russell, 1991; Judge et al., 2009). Within the context of entrepreneurship, new ideas and projects are viewed as having more potential when more attractive people back them (Baron et al., 2006; Brooks, Huang, Kearney, & Murray, 2014). Attractiveness also strongly influences people's evaluations of entrepreneurs (Baron et al., 2006; Langlois et al., 2000).

Some researchers argue that an entrepreneur's attractiveness shapes the way people react to them and their proposed new venture (Brooks et al., 2014). In line with this notion, Baron et al. (2006) find support for their hypothesis that proposals of new products and services are rated more favorably when they are coupled with an attractive entrepreneur (negligible differences otherwise). Specifically, attractiveness can strongly influence evaluations of entrepreneurs by others and their proposed new venture (Langlois et al., 2000). Attractiveness can serve as an efficient way to judge reactions to individuals and conclude their likeability (Forgas, 1998).

When funders watch crowdfunding videos or see the image of an entrepreneur, they develop an initial impression of that entrepreneur. Entrepreneurs who are more physically appealing are judged more positively (Jackson, Hunter, & Hodge, 1995; Langlois et al., 2000), receive more attention, and are judged less harshly in comparison to their less attractive counterparts (Judge et al., 2009; Langlois et al., 2000). From a first impression perspective, this bias toward attractiveness allows for ignored faults and inflated beliefs about other attributes. Thus, when crowds view projects containing an attractive entrepreneur, they ignore the negatives and view the entrepreneur more favorably. As such, funders are likely to pay more attention to and scrutinize less severely any projects containing an attractive entrepreneur. Subsequently, we argue that an entrepreneur's attractiveness increases the likelihood of crowdfunding success. This argument aligns with recent research showing facial attractiveness, especially for women, increases reward-based crowdfunding performance (Seigner & Milanov, 2023). Attractiveness is immediately recognizable, inflates the desired attributes of entrepreneurs, and provides positive future expectations (through inflated attribute assignment) about the entrepreneur, potential rewards, and the new venture. Consistent with these arguments, we hypothesize:

**Hypothesis 2.** As first impression perceptions of an entrepreneur's physical attractiveness increase, so does the likelihood of crowdfunding success.

### Competence

Judgments of competence influence funding decisions (Carter et al., 2003; Ciuchta Letwin, Stevenson, McMahon, & Huvaj, 2018) because an entrepreneur's perceived ability leads investors to believe they have a higher chance of establishing a prosperous enterprise (Johnson, Stevenson, & Letwin, 2018). The perception of competence plays a role in determining if listeners believe that those persuading them will meet their objectives (Fiske, Cuddy, & Glick, 2002, 2007; Kervyn, Fiske, & Malone, 2012; Wang et al., 2021).

Funders expect entrepreneurs to be competent to bring their rewards to fruition. If entrepreneurs lack competence, funders will avoid investment due to limited expectations of a reward, the lack of perceived product development, and/or the unlikelihood of on-time delivery without intervention. Competence can be perceived quickly from

appearance and matters because funders' decisions rely on it. In election studies, which are also decision-based outcomes, competence is perceived as the most important attribute to obtaining votes, and the visual-based perception of competence alone can predict congressional elections (Todorov et al., 2005). By examining the faces of those running against each other for one second, inferences about competence have accurately predicted Senate election outcomes (Willis & Todorov, 2006). This result is not unexpected because competence is a desired trait for political representatives; it is required for basic social interaction and hoped for among those making decisions on one's behalf. Similarly, funders look for an entrepreneur who is competent enough to take responsibility for progression and quality and ensure outcomes for project development (their potential reward or reason for initial investment). Like how a depicted level of trust is necessary to be successful in crowdfunding campaigns (Colombo et al., 2015), funders are unlikely to back entrepreneurs who lack competence, deliverability, and execution. Indeed, funding an entrepreneur who is perceived to be not capable enough to create and deliver as expected (Wang et al., 2021) seems illogical.

New venture performance and funding are often predicated on the competence of the corresponding entrepreneur (e.g., Busenitz et al., 2005; Chandler & Hanks, 1994; Chandler & Jansen, 1992). Within the context of crowdfunding, education and experience send valuable signals that reduce information asymmetries representing aspects of competence and increase the likelihood of crowdfunding success (Hsu, 2007; Knight, 1994). When crowdfunding backers perceive competence, it reinforces the idea that the entrepreneur has the skillsets necessary to carry out a crowdfunding campaign (Kulkarni, Tzabbar, & Lo, 2024). Competence represents a desired trait that stimulates reaction and influences decisions. It is valued as an indication of product development or scale delivery and is efficiently recognized and used in the selection process. Competence is also immediately recognizable. Thus, we posit that immediate perceptions of competence help entrepreneurs garner support in crowdfunding:

**Hypothesis 3.** As first impression perceptions of competence increase, so does the likelihood of crowdfunding success.

#### *Trustworthiness*

"As soon as a face is there, you know whether to trust it" (Willis & Todorov, 2006 p. 597). Neuroimaging studies, through evaluations of activity in the amygdala, show that individuals detect trustworthiness through an automatic and spontaneous process (Winston et al., 2002). Through images, individuals recognize trustworthiness and, in many cases, do so in less than a tenth of a second (Willis & Todorov, 2006). Thus, the human mind almost instantaneously determines the perceived trustworthiness of unknown individuals encountered. Similarly, evolutionary psychologists argue that immediate recognition of trustworthiness is beneficial, given that it facilitates the recognition of dangerous stimuli (Amaral, 2002). These findings support the notion that evaluations of trustworthiness are especially efficient.

Like in other organizational settings (e.g., Colquitt, Greenberg, & Zapata-Phelan, 2005) and nearly all social interaction, "trust is critical for entrepreneurship and has the potential to fulfil different roles; it can reduce some risks inherent within entrepreneurial activities and act as a governing mechanism for various entrepreneurial relationships" (Welter, 2012, p. 205). Indeed, trust is necessary for cooperation to occur (Low & Srivatsan, 1995), aids in economic relations (Fukuyama, 1995; Gambetta, 1990; Kramer, Brewer, & Hanna, 1996), lowers transaction costs (Creed & Miles, 1996; Mishra, 1996) and is necessary for the creation of social capital and valuable networks that provide entrepreneurs key resources (Welter, 2012; Welter & Smallbone, 2006). All of these are essential ingredients for expectations about continued success. Similarly, trust is generally regarded as a key factor in the funder-entrepreneur relationship (Sapienza & Korsgard, 1996). A priority for venture capitalists is to determine if they can trust new venture

team members (Sweeting, 1991). Similarly, perspectives about trustworthiness are crucial in the determination of support for crowdfunding campaigns (Colombo et al., 2015). The primary reason for this is that trust involves a reciprocity expectation (Creed & Miles, 1996; Lewicki & Brinsfield, 2011). That is, when providing funds to an entrepreneur, there is an expectation or trust that something is received in return (e.g., a promised reward, on-time delivery, or completion of an interesting product). When there is no expectation of reciprocity, potential backers are more likely to withhold funds. Therefore, crowdfunding videos that portray an entrepreneur to be trustworthy indicate that a product will be developed and delivered. Trust is imperative in environments involving online transactions (Moysidou & Hausberg, 2020). The absence of trust renders an online crowdfunding campaign and any promised deliverables moot. As such, trustworthiness represents a desired trait that stimulates reaction and influences decisions by indicating that a reward will be given, and the product will be developed and delivered. Moreover, trust is quickly and automatically recognized and used in the selection process. Thus:

**Hypothesis 4.** As first impression perceptions of trustworthiness increase, so does the likelihood of crowdfunding success.

#### *Perceived success and actual funding success*

The first impressions literature delves into people's ability to make swift assessments about unfamiliar individuals (Todorov & Porter, 2014), resulting in three related types of response (Greenlees et al., 2005; Warr & Knapper, 1968). The first response, the "attributive response," focuses on judgments related to characteristics such as aggressiveness, attractiveness, competence, and trustworthiness. This understanding forms the theoretical basis for our earlier hypotheses. The second, the "affective response," represents a broader evaluation of the individual, reflecting a general positive or negative sentiment—often an unconscious overall judgment influenced by specific traits. The third response, the "expectancy response," involves predictions about the individuals' future behavior (Greenlees et al., 2005; Warr & Knapper, 1968).

Positive or negative affective responses to first impressions can aid in shaping expectations regarding potential outcomes. In other words, a favorable affect might result in the expectation that a crowdfunding campaign will be successful, while an unfavorable affect could lead to the expectation that the campaign will fail. Due to the interconnected nature of responses to first impressions, various cues—such as aggressiveness, attractiveness, competence, and trustworthiness—are identified as influential factors in forming these impressions (Argyle, 1994; Knapp, 1978). These cues contribute to a generalized emotional response toward another individual, such as feelings of intimidation, hostility, or respect (Greenlees et al., 2005; Warr & Knapper, 1968), which subsequently shape expectations of success or failure. Consequently, first impressions allow individuals to perceive specific traits that form an overall opinion of the project, setting performance expectations for both the entrepreneur and their campaign.

Empirical research indicates that individuals are more inclined to support ventures they believe will succeed (Colombo et al., 2015), which aligns with earlier findings suggesting that individuals rely on heuristic shortcuts such as first impressions to make decisions about financing new ventures and that these decisions frequently remain unchanged even when additional information is available (Zacharakis & Meyer, 1998).

Potential backers are also more inclined to support projects they perceive as having a high chance of success due to time and resource constraints. This tendency is often influenced by herding behavior, where people act based on what they believe others will do (Banerjee, 1992), even when making funding decisions. Research shows that investment rates increase as the perceived likelihood of a project's successful funding increases (Agrawal et al., 2010). In crowdfunding, backers who anticipate a campaign's success tend to view their



contributions as having a more significant impact (Kuppuswamy & Bayus, 2015). However, backers still occasionally contribute to campaigns that appear less likely to succeed. Such contributions can support the entrepreneur and provide insights into market demand, although the perceived impact of these contributions is generally less than that of participating in a successful campaign.

Specifically, attributive responses trigger an affective and expectancy response in regard to the outcome of the campaign. When positive affective responses arise from favorable automatic trait assignments (attributive response), it leads to positive views or expectations about the campaign, thereby increasing the likelihood of supporting it. Conversely, negative feelings associated with these automatic trait assignments generate negative affective responses, which diminish expectations about the campaign's potential. These positive or negative beliefs about the campaign's success or funding prospects influence whether individuals decide to act (by funding) or remain inactive (by not funding). Thus, a positive affect (stemming from an attributive response) fosters positive expectations about the project's outcomes, prompting individuals to support and fund projects they believe are likely to succeed:

**Hypothesis 5.** Perceived (a) aggressiveness, (b) attractiveness, (c) competence, and (d) trustworthiness indirectly affect actual crowdfunding performance via perceived success.

## Methods

### Data and process

In 2017, we used Kickstarter to gather a random sample. Kickstarter is the largest crowdfunding platform (i.e., by 2020, Kickstarter facilitated nearly five billion USD in funding) and has also been used in many prior studies (e.g., Mollick, 2014; Mollick & Kuppuswamy, 2014; Soublière, Lo, & Rhee, 2023). Like other platforms, such as Startnext or Indiegogo, Kickstarter connects project creators with backers (Bürger & Kleinert, 2021). We randomly selected 2045 videos from Kickstarter campaigns, following the recommendations of Colombo et al. (2015) and Mollick and Kuppuswamy (2014). These researchers suggest excluding certain categories that differ significantly from typical new ventures or lack comparability with those ventures commonly recognized by venture capitalists. Based on these recommendations and considering that some categories may inherently require specific variables (e.g., attractiveness in film), categories such as art, dance, fashion, film & video, photography, theatre, and music were excluded from the analysis.

As our research focuses on examining first impressions, we targeted videos appearing at the top of the campaign page. On Kickstarter, a video typically occupies a prominent position at the top of each campaign page, making it the first substantial content encountered on a project page. Additionally, the sample was further refined to include only videos where the entrepreneur appears for a minimum of seven out of ten seconds. This process resulted in a final sample of 234 video clips. Following established video testing methodologies (Davis et al., 2017; Elpers, Mukherjee, & Hoyer, 2004), respondents viewed and evaluated the entrepreneur's pitch through a randomized video order (i.e., using one of five randomly determined order sets). This approach helped minimize potential biases from order effects.

The study involved 387 participants who responded to an open invitation on Amazon Mechanical Turk, specifically targeting individuals with previous crowdfunding experience. Some demographic information was collected regarding participants, including sex (247 men; 140 women), race (262 white; 125 non-white), and age (31-year-old average). Approximately 86 percent of participants reported having previously backed a crowdfunding campaign, with around 40 percent supporting more than one campaign. These demographics are consistent with previous findings on crowdfunding contributors, which indicate

that the average age of funders typically falls between 24 and 35 years, and approximately 31 percent have funded multiple ventures (Davis et al., 2017; Fundable, 2014). All participants were informed that their responses would remain anonymous and used only for research; in return for their involvement, participants received a two USD incentive.

Previous studies have analyzed crowdfunding campaign videos to assess outcomes (e.g., Davis et al., 2017). Using actual funding pitches introduces variation among the entrepreneurs, that is, 83 percent White, 82 percent male, and with a median age of 30. Alongside data from a proprietary survey conducted via Qualtrics (e.g., Sahaym, Datta, & Brooks, 2021), we also gathered additional data points from Kickstarter, the crowdfunding platform. Kickstarter is recognized as the largest rewards-based crowdfunding platform globally, both in terms of total funds pledged and entrepreneur engagement (Davis et al., 2017), making it an ideal context for studying the first impressions of new entrepreneurs and their early-stage ventures. Entrepreneurship research has similarly employed data from Kickstarter to examine nascent entrepreneurs and their success (e.g., Colombo et al., 2015; Mollick, 2014). Our study, however, differs in focusing specifically on the initial ten seconds (e.g., Albright et al., 1997; Berry, 1990; Eisenkraft, 2013) of the main video within each campaign. To ensure consistency, each video was edited to include exactly the first ten seconds using commercial video editing software.

### Ten seconds

Research in zero-acquaintance contexts (Albright, Kenny, & Malloy, 1988) and the thin slices of behavior framework (Ambady & Rosenthal, 1993) consistently shows that just a "few seconds" are sufficient for people to evaluate or infer another person's personality traits or likely performance (e.g., Eisenkraft, 2013; Praetorius et al., 2015). Notably, observers tend to show consensus in their trait judgments within a six to ten-second window (Thoresen, Vuong, & Atkinson, 2012). For instance, a six-second video clip of teachers was used to assess personality traits, with ratings aligning closely with actual teacher evaluations (Ambady & Rosenthal, 1993). Similarly, an eight-second interval was employed to study first impressions and the influence of distractions (Waroquier, Marchiori, Klein, & Cleermans, 2010). Recent studies also used an eight-second timeframe to examine first impressions related to webpage aesthetics and trust (Lim et al., 2006; Sia et al., 2009). Moreover, observing for 10 s—whether in person (Albright et al., 1997), via photographic exposure (Berry, 1990), or through video (Eisenkraft, 2013)—is considered sufficient for individuals to extract cues and reach a consensus regarding various traits.

Crowdfunding campaigns are usually presented as webpages, so similar reasoning can be applied to the first impressions formed via online video pitches. Lim et al. (2006) emphasize the critical role of first impressions, noting that the initial few seconds are decisive in whether a user chooses to stay on a site or move on (Everard & Galletta, 2005; Robins & Holmes, 2008). Eighty percent of consumers take only a few seconds on a site before navigating away (Peracchio & Luna, 2006). The impressions formed in these short periods are vital to the success of websites or the firms behind them (Everard & Galletta, 2005; Lowry et al., 2008).

The first ten seconds of crowdfunding videos are useful because they represent a conservative threshold for trait attribution, aligning with the literature on first impressions from websites. Practically, ten seconds is sufficient to form an initial impression without offering much additional information. This timeframe allows viewers to quickly develop a first impression while deciding whether to remain interested in the entrepreneur or move on to another campaign or website. Crucially, it also limits the possibility that viewers who would have exited sooner receive extra information that could alter their initial judgment.



## Measures of constructs

We analyzed video clips because body language, expressiveness, and movements are also taken into consideration regarding first impressions (Thoresen et al., 2012). “These include “static” cues (such as height, appearance, and clothing style) and “dynamic” cues (such as facial expression, posture, body movement), all of which have been shown to communicate accurate impressions of personality” (Howlett, Pine, Orakcioglu, & Fletcher, 2013, p. 39). Similarly, sound or an entrepreneur’s voice has been indicated as important in forming first impressions (McAleer, Todorov, & Belin, 2014) and trait predictions in the crowdfunding context (Allison, Warnick, Davis, & Cardon, 2022). Existing measures were used for this study. Prior research using these measures has primarily focused on still photographs over various timeframes (e.g., Todorov, Pakrashi, & Oosterhof, 2009; Willis & Todorov, 2006). Inter-rater reliability was measured using Krippendorff’s alpha, a reliability coefficient used by previous entrepreneurship research (e.g., Chan & Park, 2014) specifically developed to measure the agreement among coders (Krippendorff, 2004). The scores indicated reliability: Aggressive (0.865), attractive (0.927), competence (0.805), trustworthiness (0.919), and perceived success (0.817).

## Variables

The survey underwent pre-testing with 54 respondents on Amazon Mechanical Turk, after which it was deemed suitable for further use. The final survey was administered to 289 participants, who evaluated these attributes based on five videos sourced from Kickstarter’s archives of real campaigns, culminating in 1878 usable observations (36 respondents reported that the video did not play).

## Dependent and mediating variables

**Actual crowdfunding success.** Crowdfunding success is identified as crowdfunding performance in previous studies (Colombo et al., 2015; Mollick, 2014) and was coded 1 if the campaign was successful (passed its goal and received funding) or 0 otherwise (i.e., the goal was not met, and no funds were received).

**Perceived crowdfunding success.** Using scales from Brooks et al. (2014), similar to those used by Davis et al. (2017), two coders rated the project’s likelihood of success in crowdfunding where all judgments were made on a 9-point scale ranging from 1 (very unlikely to succeed) to 9 (very likely to succeed). Krippendorff’s alpha was 0.817. Discrepancies were resolved through discussion between the coders. Respondents then judged perceived success using the same scale.

## Independent and control variables

**Independent variables.** All the independent measures were scored using a nine-point scale ranging from 1 (not at all) to 9 (extremely). These variables and their scales have been widely used and documented in the first impressions literature (e.g., Macapagal et al., 2011; Todorov et al., 2005, 2009; Willis & Todorov, 2006). In accordance with this literature, respondents had to judge the degree to which the person in the video was aggressive, attractive, competent, or trustworthy.

**Control variables.** In this study, we controlled for entrepreneur demographics to reduce both alternative explanations of first impressions and the possibility of homophily (Davis et al., 2017; Willis & Todorov, 2006). Specifically, we controlled for entrepreneur gender, ethnicity, and age. Gender was coded 0 for female-led campaigns and 1 for male-led ones. Ethnicity was coded 0 for those identified as Caucasian and 1 otherwise. Age was coded based on the following ranges: 18–25 years, 26–35 years, 36–45 years, 46–55 years, and 56 years or older.

To account for differences in the first ten seconds of funding pitches, we controlled for idea quality, project quality, and venture type. For idea quality, we relied on the validated three-item scale developed by Ciuchta et al. (2016). Two raters watched each video in the sample to judge the extent to which the idea was practical, clever, and high

quality. An assessment of inter-rater reliability suggested strong agreement between the raters (Cohen’s kappa = 0.804), and any disagreements were then resolved through discussion. Project quality and venture type are controlled for using the natural log of funding goals and dummy variables for categories (crafts, product design, foods, computer games, and technology), respectively. These controls have been used in previous crowdfunding literature (e.g., Colombo et al., 2015; Davis et al., 2017; Josefy, Dean, Albert, & Fitza, 2017) and may influence first impressions or perceived crowdfunding success.

## Analysis

To test our hypotheses, we relied on generalized structural equation modeling (GSEM). There are several advantages to using this statistical analysis in our study. First, allowance for clustering. Specifically, we clustered analyses by rater since our 387 survey participants rated a total of 1878 videos. Second, in contrast to simple structural equation models, which only work with continuous outcome variables, dichotomous outcomes can easily be integrated (Vismara, 2018).

## Results

Descriptive statistics and correlations are presented in Table 1. All four evolutionary traits are significantly correlated with perceived and actual success. As multicollinearity is often associated with first impression traits (Todorov & Porter, 2014), variance inflation factors were examined. All were 2.5 or less; thus, we proceeded to test our hypotheses. Table 2 presents our generalized SEM models. Models 1 through 4 depict the four evolutionary traits individually, and Model 5 presents them together. Hypothesis 1 suggested that perceptions of aggressiveness in entrepreneurs would be positively related to crowdfunding success. The positive and significant coefficients in Models 1 and 5 support this notion. Similarly, the competency coefficients in Models 3 and 5 are positive and significant, supporting Hypothesis 3. Entrepreneurs perceived as attractive (Model 2) or trustworthy (Model 4) were not significantly more likely to succeed; we thus failed to support Hypotheses 2 or 4.

For robustness, we reran our models, this time including demographic qualities collected from the participants (rater race, gender, and age). The inclusion of these variables did not change our results, nor were any of them statistically significant on their own.

Table 3 displays the results of the indirect effects of the evolutionary trait assignments on actual crowdfunding success via perceived crowdfunding success. To test Hypothesis 5 (5a–5d), we again relied upon GSEM. While Table 3 does not depict control variables, they were included in each of the four models. The indirect effect of aggressiveness perceptions on actual crowdfunding success via perceived beliefs about success was positive but not significantly so ( $p = 0.241$ ; 95% CI: -0.003 to 0.011). Thus, Hypothesis 5a was not supported.

For perceptions of physical attractiveness, the indirect effect on actual crowdfunding success via perceived beliefs about success was positive and significant ( $p = 0.007$ ; 95% CI: 0.007 to 0.042), supporting Hypothesis 5b. In combination with the direct effect finding, these results indicate indirect-only mediation. That is, the mediated effect does exist, but the direct effect does not (Zhao et al., 2010). This finding suggests that the perception of physical attractiveness contributes to actual crowdfunding success only through its effects on beliefs about potential success.

Table 3 also shows a positive, significant indirect effect of perceived competence on actual crowdfunding success via perceived beliefs about success ( $p = 0.002$ ; 95% CI: 0.029 to 0.135), supporting Hypothesis 5c. In combination with the direct effect (Table 2), complementary mediation appears to exist: both effects are significant and point in the same direction (Zhao et al., 2010). This finding implies that perceptions of competence contribute to actual crowdfunding success both directly and through its effect on beliefs about potential success.

**Table 1**  
Descriptive statistics.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9
1. Actual Success	0.233	0.423									
2. Perceived Success	4.153	1.543	0.138**								
3. Gender	0.824	0.381	0.060**	0.005							
4. Ethnicity	0.167	0.373	0.0732**	0.013	0.002						
5. Goal Amount (NL)	9.555	1.673	-0.362**	0.003	-0.017	0.092**					
6. Idea Quality	2.850	0.684	0.053*	0.116**	0.040	-0.059*	0.175**				
7. Aggressive	3.381	1.981	0.056*	0.101**	0.052*	-0.037	-0.005	0.008			
8. Attractive	5.016	1.943	0.049*	0.456**	.189**	0.031	-0.009	0.001	0.177**		
9. Competent	5.867	1.832	0.123**	0.670**	-0.001	0.028	0.008	0.077**	0.088**	0.491**	
10. Trustworthy	5.740	1.780	0.064**	0.545**	-0.055*	0.024	0.003	0.043	0.005	0.431**	0.732**

Note: Age and project category dummy variables are also included as categorical control variables in each analysis.

**Table 2**  
Generalized SEM results.

	Model 1	Model 2	Model 3	Model 4	Model 5
Controls					
Category Dummies	Included	Included	Included	Included	Included
Age Dummies	Included	Included	Included	Included	Included
Gender	0.25	0.27	0.27	0.27	0.20
Ethnicity	1.17**	1.16**	1.16**	1.16**	1.18**
Goal Amount (NL)	-0.68**	-0.68**	-0.69**	-0.68**	-0.69**
Idea Quality	0.51**	0.51**	0.52**	0.51**	0.51**
Perceived Success	0.28**	0.29**	0.18**	0.28**	0.19**
Main Effects					
Aggressive	0.07*				0.07*
Attractive		-0.00			-0.04
Competent			0.15**		0.22**
Trustworthy				0.01	-0.08
Constant	0.92	1.14	0.72	1.09	0.72

Notes: \*p < 0.05; \*\*p < 0.01; N = 1878

**Table 3**  
GSEM indirect effects.

	Coef.	s.e.	z	p >  z	[95% C.I.]
Indirect Effect					
Aggressive → Perceived Success → Crowdfunding Success	0.004	0.004	1.17	0.241	-0.003 0.011
Attractive → Perceived Success → Crowdfunding Success	0.025	0.009	2.70	0.007	0.007 0.042
Competent → Perceived Success → Crowdfunding Success	0.082	0.027	3.04	0.002	0.029 0.135
Trustworthy → Perceived Success → Crowdfunding Success	0.017	0.007	2.29	0.022	0.003 0.032

Note: N = 1878

Last, for perceptions of trustworthiness, the indirect effect on actual crowdfunding success via perceived beliefs about success was positive and significant ( $p = 0.022$ ; 95% CI: 0.003 to 0.032), supporting Hypothesis 5d. Thus, perceptions of trustworthiness impact actual crowdfunding success by influencing beliefs about the campaign's success. However, no direct effect was found. Summarizing Table 3 indicates support for three of our four mediation hypotheses. That is, attractiveness (H5b), competence (H5c), and trustworthiness (H5d) indirectly affect actual crowdfunding performance via perceived success.

## Discussion and implications

Our results inform and add to the prior literature by empirically demonstrating that the perceptions of competency and aggressiveness are associated with crowdfunding success. Further, our results show that

the first ten seconds are sufficient for the potential backers to extract cues and form perceptions about the presenter-entrepreneur's evolutionary traits (e.g., aggressiveness, competence, attractiveness, and trustworthiness). To the best of our knowledge, our research represents the first examination of the role of evolutionary traits in judging digital venture pitches adding to prior literature which has primarily focused on examining underlying mechanisms for new venture funding (e.g., Chen et al. 2009; Mitteness et al., 2012; Sudek, 2006) and the influence of heuristics on crowdfunding decisions (e.g., Mahmood, Luffarelli, & Mukesh, 2019; Ren et al., 2021; Schraven et al., 2020). Theoretically, our findings contribute to the first impressions and zero acquaintance literature, biases-related literature, and entrepreneurial pitch literature in the context of crowdfunding.

Specifically, we examined the immediate visual perceptions of four evolutionary traits (attractiveness, aggressiveness, competence, and trustworthiness) and their impact on entrepreneurs' actual financial backing. In doing so, we contribute to the first impressions and zero acquaintance literature by finding support that automatically assigned evolutionary trait judgments have considerable and important consequences for those being judged (e.g., Olivola & Todorov, 2010; Willis & Todorov, 2006; Zebrowitz et al., 2013) in the context of entrepreneurial funding. Our findings also provide nuanced insights into the role of first impressions in digital funding contexts. The results show that perceived aggressiveness and competence have a direct positive effect on crowdfunding success, while attractiveness and trustworthiness indirectly affect success through perceived success. Thus, we find confirmation of the importance of evolutionary traits in funding decisions. More specifically, we show that aggressiveness and competence are pivotal in initial funding decisions. These traits are perceived as indicative of an entrepreneur's ability to overcome challenges and deliver results, aligning with the evolutionary psychology view that such traits are critical for survival and success. Second, we show the role perceived evolutionary traits play through indirect effects. Attractiveness and trustworthiness do not directly lead to funding success but exert their influence indirectly through perceived success. This finding suggests that while these traits may not directly convince funders of an entrepreneur's ability, they enhance funders' perceptions of potential success, which in turn influences their funding decisions.

Interestingly, while aggressiveness had a direct positive effect on crowdfunding success, it did not have a significant indirect effect through perceived success. This finding could imply that while funders view aggressiveness as a necessary trait for overcoming obstacles, it does not necessarily enhance their perception of the project's likelihood of success in the same way as competence, trustworthiness, or attractiveness. This finding warrants further exploration to understand the conditions under which aggressiveness is perceived positively or negatively in entrepreneurial contexts. Moreover, the mediation results in combination may be more indicative of the halo effect, where initial positive impressions lead to favorable overall evaluations. For instance, those traits commonly associated with positive feelings (attractiveness, competence, and trustworthiness) all significantly impacted

crowdfunding success through perceived success, while aggressiveness, mostly associated with negative effects, did not. Indeed, our inability to produce significant results for the indirect effect of aggressiveness (via perceived success) on funding success may suggest that aggressiveness is more nuanced. Since aggressiveness is found to contribute to a successful campaign and is significantly correlated with perceived success, we were surprised that the indirect effect was not significant. Upon reflection, a halo effect may be driving our mediation analyses to some extent. Prior crowdfunding research suggests that a halo effect can make backers who have a favorable first impression also evaluate other aspects of a campaign or entrepreneur favorably (Chen, Wang, Fang, & Wang, 2023). In our study, attractiveness, competence, and trustworthiness may be more easily viewed as positive, eliciting the halo effect and subsequently causing backers to perceive higher likelihoods of success. Aggressiveness, which can be seen as negative in some cases (e.g., Calic & Shevchenko, 2020; Yasar, Yilmaz, Hatipoğlu, & Salih, 2022), may not produce the desired halo effect. An examination into the halo effect of different (positive and negative) traits on entrepreneurial fundraising would be an interesting avenue for future research.

Moreover, contrary to expectations, trustworthiness did not have a significant direct effect on funding success. This result is surprising given the abundance of importance prior research placed on trust. Online funders may rely more on visible cues of competence or aggressiveness, interpreting these as more reliable indicators of an entrepreneur's ability to execute a project successfully. Alternatively, perhaps after a certain level, trust is decided, and an even more trustworthy attribution does not matter. Future research should explore trust's multifaceted nature, perhaps distinguishing between cognitive-based and affect-based trust or examining the impact of trust in different online and offline contexts. Indeed, this finding may be due to nuances pertaining to trust. That is, trust may be viewed more effectively in less generic terms. Future research may wish to examine trust and first impressions using a finer-grain approach, such as one that distinguishes between benevolence and competence trust (Lui, Zhu, & Liu, 2023) or cognition-based and affect-based trust (Oo, Creek, & Sheppard, 2022).

Our findings contribute to theories about biases relating to first impressions by demonstrating that traits embedded in evolutionary psychology are significant in online venture funding. Specifically, by strategically displaying themselves early in pitch videos, entrepreneurs can counteract the effects of negativity bias (Schraven et al., 2020) and leverage confirmation bias (Altmeier & Fisch, 2024). While the latter has recently been suggested to drive angel investments to fund ventures (Blohm, Antretter, Sirén Grichnik, & Wincent, 2022), confirmation bias within crowdfunding has received less attention. The broader entrepreneurship literature has not examined these biases using a thin-slice approach. Our study extends the bias literature by showing that visual stimuli, particularly in the form of video presentations, immediately shape potential backers' perceptions of an entrepreneur's attractiveness, aggressiveness, competence, and trustworthiness. These trait perceptions, formed unconsciously and almost instantaneously, influence funding decisions. This aligns with the broader literature on heuristics in decision-making, which posits that such biases guide judgments even when more extensive information is available (Schraven et al., 2020). In the context of online environments, where users can easily skip content that does not capture their attention, first impressions are crucial. If these initial perceptions are unfavorable, users quickly leave (Lim et al., 2006; Sia et al., 2009). Our study builds on this body of research, enriching the entrepreneurial pitch literature by focusing not only on the elements that make pitches successful but also on the timing of these factors (Jiang et al., 2019).

#### *Practical implications for entrepreneurs*

For practitioners, our findings emphasize the importance of swiftly capturing and maintaining viewer interest. Entrepreneurs should prioritize creating compelling pitch videos that make a strong initial

impact, such as by presenting engaging, visually appealing content that immediately communicates the desired traits (Gierczak & Nitze, 2015). Allocating resources to establish strong first impressions can reduce negativity bias (Schraven et al., 2020) and enhance the likelihood of securing funding. These findings also underscore the importance of carefully managing first impressions in pitch videos. Entrepreneurs aiming to maximize crowdfunding success should focus on presenting themselves as competent and, to a lesser extent, aggressive. They should also be mindful of the indirect benefits of being perceived as attractive or trustworthy, as these traits can positively influence perceptions of potential success. Entrepreneurs might consider strategies such as selecting spokespersons or adopting presentation styles that enhance these traits. Finally, given the significant role of first impressions, entrepreneurs should ensure that their pitch videos immediately capture funders' attention and convey the desired traits by, for example, incorporating professional video production, strategically crafting the opening moments of a pitch, and highlighting traits like competence through confident delivery and clear articulation of the business idea.

#### *Limitations and further research opportunities*

While this study provides valuable insights, it is not without limitations. The reliance on a specific crowdfunding platform (Kickstarter) and a fixed, limited timeframe (first ten seconds of videos) may limit the generalizability of the findings. Future research could explore whether these results hold across different crowdfunding platforms, which may cater to different types of projects and backers. Additionally, future studies should examine the interplay between different traits and how they collectively influence crowdfunding outcomes. For instance, is there a threshold or optimal combination of traits that maximizes funding success? Investigating interactions between traits, such as competence and trustworthiness or aggressiveness and attractiveness, may yield insights into the complexities of funder decision-making processes.

Last, the unexpected non-significant direct effect of trustworthiness suggests that trust may play a complex role in online funding contexts. Future research could differentiate between types of trust (e.g., cognitive vs. affective) and examine how these influence funding decisions in both online and offline settings. Exploring cultural differences in how these traits are perceived and valued could also provide a richer understanding of global crowdfunding dynamics.

#### *Conclusion*

This study enhances our understanding of the role of first impressions in crowdfunding success, offering both theoretical and practical insights. By highlighting the importance of perceived aggressiveness, competence, attractiveness, and trustworthiness, we provide a foundation for future research on the cognitive biases and heuristics that shape entrepreneurial funding decisions. Entrepreneurs seeking to leverage digital funding as a viable financing strategy should carefully consider these findings when crafting their pitch videos, as the first few seconds can indeed make a lasting impact.

#### **CRedit authorship contribution statement**

**Joshua D. Maurer:** Writing – review & editing, Writing – original draft, Methodology, Data curation, Conceptualization. **Steven A. Creek:** Writing – review & editing, Writing – original draft, Methodology. **Thomas H. Allison:** Writing – review & editing, Supervision, Conceptualization. **Joshua S. Bendickson:** Writing – review & editing, Conceptualization. **Arvin Sahaym:** Writing – review & editing, Supervision.



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