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Trust, fast and slow: A comparison study of the trust behaviors of entrepreneurs and non-entrepreneurs

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ABSTRACT

Following the cognitive and behavioral approach, this study compares the trust behaviors of entrepreneurs and non-entrepreneurs in a dynamic environment. Due to the differences in the contexts that they face, the thinking frameworks they adopt, and the knowledge structures they form from experience, we argue that entrepreneurs display different trust behaviors from non-entrepreneurs when facing volatile environments in the decision-making process. Adopting established paradigms from behavioral game theory (trust game), we examine the evolution of trust behaviors of the two groups for trust building, trust violation, and trust recovery. In a Singapore-based sample, we find that entrepreneurs build trust more quickly, decrease trust more quickly when faced with trust violations, and recover more quickly from trust violations than non-entrepreneurs. This study contributes to a better understanding of entrepreneurs' trust behaviors over time, their responses to variations in social exchanges, while contributing to overall ongoing discussions of the unique characteristics of entrepreneurs.

1. Introduction

Entrepreneurship research has long been interested in examining what differentiates entrepreneurs from the rest of the population. It is believed that entrepreneurs are different, and such differences matter when attempting to create a fundamental understanding of why some individuals choose to start new ventures while others do not—a core and critical question for entrepreneurship researchers (Baron, 1998; Busenitz and Barney, 1997; Holcomb et al., 2009). Early studies began with the investigation of entrepreneurs' traits and personalities, such as risk-taking propensity and need for achievement, but they have often found non-significant differences between entrepreneurs and other groups of people (Stewart and Roth, 2007). The traits approach attempts to identify traits and dispositions of individuals, focusing on the question of "who" the entrepreneur is, which researchers have suggested to be the "wrong question" to ask (Gartner, 1988).

Entrepreneurship scholars have thus shifted their investigations to examine patterns of cognition and behavior that account for unique entrepreneurial actions (e.g., Krueger, 2003; Mitchell et al., 2000; Simon et al., 2000). The cognitive and behavioral approach has shown more promise, with evidence indicating that entrepreneurs think and behave differently from others (e.g., Burmeister and Schade, 2007; Moore et al., 2007). For example, recent empirical studies have repeatedly found that entrepreneurs are more likely to rely on intuitions and hunches to make decisions compared to managers and employees in established organizations. It is believed that such behavioral differences in decision-making are largely influenced by the contexts entrepreneurs face. Entrepreneurs work in

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environments that involve high levels of uncertainty and ambiguity. Quickly changing decision contexts may compel them to make quick decisions to move forward. They have little historical information to reference and few organizational routines to follow. Often, entrepreneurs must make decisions under significant time pressure and information overload as well as at a very fast pace (Shepherd et al., 2015; Zhang and Cueto, 2017).

However, existing research following the cognitive and behavioral approach has largely focused on examining constructs relating to individual characteristics and their impacts on entrepreneurial outcomes. Topics examined include entrepreneurs' overconfidence, optimism, illusion of control, and risk-taking behaviors. Researchers generally either compare the similarities and differences of such cognition and behaviors between entrepreneurs and non-entrepreneurs or investigate how they influence entrepreneurial opportunity identification and firm performance. What is rarely studied is whether and how entrepreneurs differ in their decision-making processes from non-entrepreneurs in social settings and how entrepreneurs and non-entrepreneurs behave in the development of interpersonal relationships. As researchers have long been interested in examining how entrepreneurs interact with and respond to their external environment (Awais Ahmad Tipu and Manzoor Arain, 2011), it is particularly important to study the cognition and behaviors of entrepreneurs in the process of interactions with partners.

In new venture creation and implementation, start-up founders often need to engage in relational exchange and partnership formation (Inkpen and Tsang, 2005). A key building block in this process is trust. Trust facilitates information transfer, eliminates opportunistic behaviors, and reduces transaction costs (Scarbrough et al., 2013). As the foundation and facilitator of relationship building, trust is particularly important for entrepreneurs who intend to bring innovative products or services to the market. Trust is the groundwork upon which robust relationships are founded between entrepreneurs and their customers as well as suppliers and partners when entering the market (Aldrich, 2000). Establishing trusting relationships with a broad group of stakeholders greatly influences the success of new venture creation (Pollack et al., 2017). The commitment-trust theory further notes that relationship commitment and trust are important mediators in relationship marketing, which help firms establish, develop and maintain successful relational exchanges (Morgan and Hunt, 1994).

Traditionally, entrepreneurial trust has been extensively studied as a psychological state or personal characteristic (e.g., trust propensity and dispositional trust) or from a network perspective (see the review of Welter and Smallbone, 2006). Recently, however, entrepreneurship scholars have begun to adopt a cognitive and behavioral lens for the examination of this construct. One example is Maxwell and Lévesque (2014), who followed a behavioral interaction approach and examined the trust behaviors of entrepreneurs throughout the process of seeking investors. They found that the trust-building behaviors of entrepreneurs encouraged investors to make positive evaluations of their ventures and provide investment offers. Furthermore, the trust-violating and trust-damaging behaviors of entrepreneurs can be devastating, as they often lead to the termination of a relationship. Due to the importance of trust in the venture building process, as well as the fact that differences between entrepreneurs and non-entrepreneurs are likely to affect their trust behaviors, it is critical to examine how trust development differs for entrepreneurs versus non-entrepreneurs.

As trust influences individuals' interactions with others and relationships that are developed over time, an exploration of the dynamic development and changes in trust over time is crucial for this study. The contrast in how trust develops over time for entrepreneurs and non-entrepreneurs will provide a much greater understanding of how entrepreneurs differ from non-entrepreneurs in their cognition and behaviors with respect to interpersonal relationship development (Idrissou et al., 2013). In addition, entrepreneurs are often exposed to uncertain and quickly changing decision contexts. Such contextual uncertainty may induce their unique thinking frameworks and decision making styles. Investigating the manifested trust behaviors will also enhance our understandings about different ways of thinking of entrepreneurs and non-entrepreneurs.

In this study, we focus on the dynamic development of trust in a social setting involving interpersonal relationships and investigate differences in trust behaviors between entrepreneurs and non-entrepreneurs. The research questions we aim to answer are as follows: How do entrepreneurs and non-entrepreneurs develop trust when faced with changing environments? Do entrepreneurs and non-entrepreneurs display different trust behaviors in the development of interpersonal relationships? To answer these questions, we adopt a game-experimental approach and simulate the development of interpersonal relationships in a game format. We design three phases, simulating trust building, trust violation, and trust recovery as the changing environments. We then invited 354 entrepreneurs, 105 professionals, and 57 managers to play the game and observed how they made decisions in the given phases. Our results show that entrepreneur participants exhibit different trust behaviors from non-entrepreneurs. They adapt more quickly in trust judgment toward the trustee than professionals and managers when decision contexts change. Specifically, we find that entrepreneurs build trust more quickly, decrease trust more quickly when facing trust violations, and recover more quickly from trust violations than non-entrepreneurs.

2. Literature review

2.1. Behavioral tradition of trust

Trust has been studied throughout history in a wide range of disciplines, such as psychology (e.g., Cook, 2005; Simons and Peterson, 2000), sociology (e.g., Sztompka, 1999) (e.g. Sztompka, 1999), management (e.g., Schilke and Cook, 2015), organizational science (e.g., Zaheer et al., 1998), behavioral economics (e.g., Ashraf et al., 2006), and neuroscience (e.g., Adolphs, 2002; Fehr et al., 2005; Zak, 2017). Due to the context-dependent nature of the topic, scholars have adopted different ontological and epistemological perspectives with which to investigate trust. Examples of trust concepts examined by researchers include the following non-exhaustive list: personal trust versus institutional trust (Zuker, 1986), impersonal trust versus interpersonal trust (Humphrey and Schmitz, 1998), cognitive trust versus affective trust (Johnson and Grayson, 2005; Parayitam and Dooley, 2009), and dispositional trust versus

relational trust (McKnight et al., 1998). While the vast array of trust concepts advances our understanding of the phenomenon, the fragmentation of trust conceptualization and the lack of integration across studies create significant challenges for researchers (Inkpen and Currall, 2004). Given the rich history of trust research and the large volume of studies on the topic, we cannot provide a comprehensive review of the literature on trust. Rather, we intend to highlight the trust concepts that are most pertinent to our research, with a focus on explaining the behavioral tradition of trust. Readers can refer to other systematic reviews to gain an in-depth understanding of trust concepts, such as the reviews discussing trust conceptualizations across disciplines by Rousseau et al. (1998), trust across organizational levels by Fulmer and Gelfand (2015), the distinctions between trust bases by McAllister (1995), measures of trust by McEvily and Tortoriello (2011), trust in entrepreneurship research by (Welter, 2012; Welter and Smallbone, 2006), and the recent review on trust motivations by van der Werff et al. (2019).

According to Lewicki et al. (2006), existing research on trust development for interpersonal interactions can be categorized into two traditions: the psychological and the behavioral tradition. The psychological tradition conceptualizes trust as a psychological state that is associated with individuals' expectations, intentions, affects, and dispositions with respect to the other party. This stream of work often measures trust at a single point in time using survey methodology. By contrast, the behavioral tradition of trust is grounded in observable decisions, individuals' choice behaviors, and the expectations of the other party and measures trust based on cooperative behaviors, which are usually observed via experimental games. In this study, we follow the behavioral tradition of trust and explore the trust behaviors of entrepreneurs. As Gartner (1988) suggests, entrepreneurship research should investigate what the entrepreneur does rather than who the entrepreneur is. The behavioral tradition of trust allows us to examine entrepreneurs' trust behaviors based on their actions, providing us with the opportunity to better understand the dynamic aspects of trust development. As Lewicki et al. (2006) noted, prior empirical studies on trust have largely adopted static or snapshot views that measure trust at a single point in time. This provides limited insights into the dynamic nature of trust and impedes our understanding of how entrepreneurs develop trust over time in interpersonal relationships. We thus follow the behavioral tradition of trust to examine how entrepreneurs' trust develops and evolves differently compared to that of non-entrepreneurs when faced with changing environments.

Researchers who work within the behavioral tradition typically use simulated games to capture the trust behaviors of participants. One popular game is the *trust game*, which has a number of variations (e.g., one-time interaction versus repeated interactions). In a typical trust game, participants are placed in a relational context in which they interact with each other in a limited fashion. Consequently, their actions can be used to infer their trust in each other. The decision-maker (i.e., trustor) infers the trustee's intentions and trustworthiness from the extent of cooperative behaviors exhibited by the trustee in order to decide how much the trustor would want to cooperate with the trustee (Lewicki et al., 2006). Thus, trustors assess how much trust they want to place in the trustee based on observable choices made by the trustee (Sutherland and Yoshida, 2015). In turn, researchers infer how much trust the trustor places in the trustee through the observable choices made by the trustor. Researchers are able to examine the trust building, trust violation, and trust recovery processes based on observations of the participants' repeated interactions with others. This approach to measuring trust provides advantages compared to cross-sectional surveys using self-reporting methods, as the latter requires introspection and post-hoc assessments of past behaviors, and such recollections can bias the responses when compared to real experienced effects.

Studies in the behavioral tradition of trust explain that people's behaviors in the trust game show that the trustor's trust is grounded in reliability and predictability, gradually developing from the iterative reciprocation of the trusting acts of the trustee. Trust is built because the trustee has reliably exhibited trustworthy behavior on past occasions (LaRosa and Danks, 2018). Therefore, in such scenarios, the trustor's knowledge is based on the behaviors of others from which the trustor infers the likely behaviors in particular situations.

Trust can also be affected when individuals use heuristics to cope with new situations and environments and to reduce cognitive efforts. Lewicki and Brinsfield (2011) propose that individuals make use of heuristics to interpret new situations, thus reducing the amount of effort required to monitor and analyze the developments pertaining to a relationship. Such cognitive heuristics help individuals to quickly interpret the situation and enable actors to see how they and others are involved in a situation. Recent studies in psychological science also confirm that trust stimulates automatic and intuitive responses in atypical social situations when individuals are studied in laboratory experiments (see Montealegre and Jimenez-Leal, 2019; Rand et al., 2014). Entrepreneurs are found to rely more extensively on heuristics than non-entrepreneurs. Building upon these perspectives, we examine and compare the trust behaviors of entrepreneurs with those of non-entrepreneurs. This will reveal differences in how entrepreneurs rely on the trust behaviors of their partners to make decisions based on their tendency to rely on decision-making heuristics. Thus, the trust game constitutes an appropriate tool with which to examine the different trust cognition patterns and behaviors between entrepreneurs and non-entrepreneurs.

2.2. Conceptualizing and measuring trust in entrepreneurship research

Entrepreneurs' trust plays a critical role in the venture creation process, and its importance has been recognized and highlighted by various scholars (e.g., Bauke et al., 2016; Liao and Welsch, 2005; Moro et al., 2018; Welter, 2012; Welter and Smallbone, 2006). For example, Caliendo et al. (2012) found that trusting people are more willing to take risks and are more likely to start their own businesses. According to effectuation logic (Sarasvathy, 2001), entrepreneurs are constantly pursuing ambiguous and changing goals that entail significant risks and uncertainties. The limited protection of business ideas in the early stages makes it even more critical for entrepreneurs to develop trust with external partners and ensure greater transparency in their communication (Smith and Lohrke, 2008). Entrepreneurs' trust also reduces the time and effort necessary to negotiate deals (Shi et al., 2015). Existing entrepreneurship research often conceptualizes trust using the psychological tradition and tends to adopt a static view when investigating trust. The dynamic aspects of trust development have received limited attention from entrepreneurship scholars (Welter, 2012; Welter and

Smallbone, 2006), largely due to the empirical difficulties of studying trust from a process-based view and the challenging nature of capturing trust development (Welter and Smallbone, 2006).

In recent years, entrepreneurship scholars have begun to pay attention to the trust behaviors and dynamic trust development of entrepreneurs. In a recent study, Maxwell and Lévesque (2014) examined the trust behaviors of entrepreneurs in the process of seeking investors. They find that certain behaviors of entrepreneurs—such as voluntary self-disclosure of information, reliance on delegation, and receptiveness to others' influence—help build trust with angel investors, as they signal the trustworthiness of the entrepreneurs. In contrast, behaviors such as displaying inconsistencies between words and actions, exhibiting self-interest, or the sharing of confidential information tend to damage trust, while behaviors that misrepresent experiences or are associated with blaming others and refuting feedback tend to violate trust. The trust-building behaviors of entrepreneurs encourage investors to make positive evaluations of their ventures and provide investment offers, while trust-violating and trust-damaging behaviors can be devastating, as they may lead to the termination of a relationship.

In line with the above research, we focus on and compare the trust behaviors of entrepreneurs versus non-entrepreneurs, following the behavioral tradition of trust conceptualization. Furthermore, we adopt the trust game as a tool for capturing trust behaviors and the development of trust. The trust game allows researchers to examine dynamic responses—for example, how participants respond to a changing environment—over many iterations and in controlled situations. As noted by Hsu et al. (2017), this approach falls into the category of passive participation manipulation in experimental studies, where participants are asked to observe a phenomenon or read text descriptions of the phenomenon and make judgments within the given scenario. This interjects real-world context into the experimental study and allows participants to make decisions based on who they are. One of the advantages of using such passive participation methods is that participants' self-concepts are not influenced, and thus, they make decisions as they usually would in real-world contexts. Other examples of passive participation manipulation in entrepreneurship studies include Denrell and Fang (2010), who studied the relationship between information signals and entrepreneurs' decision-making, and Shepherd and DeTienne (2005), who studied the impact of financial rewards and prior knowledge on entrepreneurs' opportunity identification. Hsu et al. (2017) provides more details through a comprehensive review of the experimental approach in entrepreneurship studies.

In this study, we follow the game-experimental approach and examine the development of trust by using the trust game. The trust game and its variants have been successfully used in numerous human brain neuroimaging studies, providing further support for the validity and sensitivity of this methodology in detecting trust-related responses. For instance, behavioral and neurological responses during the trust game have been found to be potential biomarkers of social psychopathology, and the trust game serves as a potent probe of mentalizing abilities, as it requires participants to make inferences about the mental state of others in the game (Sripada et al., 2009). Indeed, neurobiological responses related to trust have also entered the body of management literature (Riedl et al., 2010). Thus, we have adapted the trust game to investigate entrepreneurs' trust behaviors.

3. Theory and hypotheses

3.1. Theoretical foundation

Early studies following the trait approach have often failed to identify the unique characteristics of entrepreneurs compared to non-entrepreneurs. Sarasvathy and Dew (2008) note a "deep skepticism about classifying human beings into separate species called 'entrepreneurs' and 'non-entrepreneurs'" (p. 732). Accumulating evidence in empirical studies shows that entrepreneurs, especially expert entrepreneurs, do have different patterns of cognition and exhibit different behaviors in decision making (e.g., Busenitz and Barney, 1997; Sarasvathy, 2001; Thomas, 2018). We propose that entrepreneurs and non-entrepreneurs develop trust differently, as they differ in how they make sense of the interpersonal situations they face. We expect that these two groups will exhibit significant differences in trust behaviors when facing volatile environments because they have been conditioned to behave differently due to differences in the contexts they face and the thinking frameworks they adopt.

3.1.1. Different decision contexts

Knight's (1921) theory of entrepreneurship emphasizes the critical role of uncertainty in new venture creation. In Knight's view, uncertainty is inherent to the entrepreneurial process and forms the basis for firm creation. New ventures often introduce innovative products, services, or business models to the market, and it takes time to validate their market value. Due to the novelty of entrepreneurial ideas, entrepreneurs must make numerous decisions without relying on previous performance data, historical trends, or specific market information (Busenitz and Lau, 1996).

Busenitz and Barney (1997) argue that compared to managers in large corporations, entrepreneurs face higher levels of environmental uncertainty. Managers can rely on previous track records and historical information, while entrepreneurs often lack such information to reduce the uncertainty they face. Established organizations have structured policies and procedures set in place, and managers and employees have routines to follow that simplify their decision-making processes. For entrepreneurs, efforts to reduce uncertainty can be costly, as they are often required to make decisions in uncertain and complex situations without complete knowledge of relevant facts.

In addition, entrepreneurs often confront situations of significant resource constraints due to the liabilities of newness and smallness of new ventures (Bruderl and Schussler, 1990; Fisher, 2012). In many cases, entrepreneurs only rely on their own savings to finance the venture, and have limited experience, knowledge and network (Aldrich, 1999; Shane, 2003). As such, entrepreneurs often engage in adaptive resource recombinations, using different combinations of resources at hand to solve new problems and pursue opportunities (Baker and Nelson, 2005). In contrast, managers and employees of large corporations do not need to worry about the

resources when performing specific tasks.

3.1.2. Thinking frameworks

Constant exposure to certain environments can develop people's unique thinking frameworks and situated cognitions (Wilson and Myers, 2000). Prior research has found that the highly unpredictable and complex contexts have "trained" expert entrepreneurs to adopt a different logic of thinking from novices to cope with the unknowns (e.g., Sarasvathy, 2001), and motivated them to rely on heuristics and cognitive biases to reduce the time pressure and information overload in decision making (e.g., Baron, 2000; Zhang and Cueto, 2017). For example, Dew et al. (2015) find that expert entrepreneurs learn the hard way from their experience that the new venture building process is often unpredictable and the most interesting ventures are the ones with open possibilities. To cope with such uncertainty and tap on future opportunities, these expert entrepreneurs tend to adopt an effectual logic of thinking. In contrast to causation, which is defined as the process that "takes a particular effect as given and focus[es] on selecting between means to create that effect", effectuation refers to the process by which an individual "takes a set of means as given and focus[es] on selecting between possible effects that can be created with that set of means" (Sarasvathy, 2001, p. 245). The effectual logic provides a thinking framework for entrepreneurs which guides their thinking and decision making, and help them minimize the uncertainty and to shape the future.

Furthermore, research on entrepreneurs' cognition has showed that entrepreneurs are more likely to employ heuristics in their decision making, and rely more on intuitions (Baron, 2006). Bird (1988) argues that intuitions help entrepreneurs skip deliberate information processing so to shorten the judgemental process. Through the simplified strategies, entrepreneurs are able to reduce complex decision making tasks to relatively simple cognitive operations. When facing fast changing and uncertain environments, it is often impossible to make deliberate and comprehensive decisions. As a result, entrepreneurs use heuristics to assist their decision making to achieve acceptable results under uncertain contexts (Busenitz and Barney, 1997). In addition, some researchers argue that heuristics and cognitive biases generate the behaviors that are necessary for behaving entrepreneurially (Simon et al., 2000). For example, entrepreneurs are often considered as risk takers. Part of the reasons that motivates entrepreneurs to plunge into the water is due to their cognitive biases, such as overconfidence. Hayward et al. (2006) find that the overconfident people are more likely to display behaviors such as engaging in new venture creation. They tend to overestimate their abilities and underestimate the need for key resources.

In summary, entrepreneurs face higher levels of uncertainty in their environments and more resource constraints than non-entrepreneurs, which condition them to adopt different thinking frameworks and decision making styles. We argue that these differences will be reflected in their decision-making processes regarding trust development.

3.2. Hypotheses development

3.2.1. Trust building

For entrepreneurs, obtaining resources and commitments from partnerships and leveraging these partnerships to co-create a new market play critical roles in new venture creation. To some extent, the process of partnership development largely depends on trust between the parties involved. For entrepreneurs, decision contexts often require them to quickly evaluate the trustworthiness of the other party and make decisions about whether to continue developing the relationship within a short period of time. Faced with dynamic environments, entrepreneurs must remain alert and respond quickly to contingencies and seize opportunities before they disappear or are exploited by competitors (Stevenson and Gumpert, 1985). This suggests that entrepreneurs are likely to build trust quickly when establishing new partnerships in order to respond to changes. Furthermore, rapid engagement in a partnership may also signal to the other party the entrepreneur's commitment to the relationship, which could potentially increase the quality of the partnership. The rate of relationship building thus becomes a prominent factor in the partnership formation process.

In contrast, the managers and employees of existing organizations have the option to rely on institutional infrastructures to develop relationships with external parties, which will influence their decision-making processes. Unlike the effectuation logic used by entrepreneurs, managers and employees are more likely to follow traditional goal-directed thinking logic, which places more focus on identifying and following steps to achieve one's goal (Sarasvathy, 2001) and less emphasis on quick adaptation to the environment. Thus, we expect employees to be more careful and less enthusiastic when building trust compared to entrepreneurs.

Hypothesis 1. Entrepreneurs build trust more quickly than non-entrepreneurs.

3.2.2. Trust violation

Due to the dynamic nature of interpersonal relationships, trust may not always be stable between partners. A trust violation occurs when "evidence disconfirms the confident positive expectations regarding another's conduct and redefines the nature of the relationship in the mind of the injured party" (Tomlinson et al., 2004, p. 167). Prior research shows that trust erodes and perceptions of trustworthiness decrease following trust violations (Kim et al., 2004). Interpersonal trust takes time to build, but it can be fragile, easily violated, and broken. When faced with contingencies such as trust violations, people are often guided by their thinking frameworks and habitual decision making styles, especially when there is insufficient time for thorough evaluation and analysis. Psychologists have found that decisions relying on existing mental structures require limited deliberate effort (Chen and Bargh, 1997) and may even occur unconsciously, with little to no awareness on the part of the decision-maker.

Entrepreneurs are often forced to cope with uncertain environments by remaining flexible in their decision-making (Dew et al., 2009; Wiltbank et al., 2006). When situations change and contingencies arise, entrepreneurs are found to be adept maneuvers who

quickly switch paths to create new paths for themselves (Sarasvathy, 2001) or pivot to correct their course of action (Ries, 2011). Therefore, entrepreneurs are often alert to changes in the environment and react by making quick decisions to ensure their firms survive and stand out from fierce competition. In contrast, employees who work in organizations with standard procedures, policies, and guidelines may have less room to pivot and react to changes in their environments, as they may not have the power to make changes. The differences in decision contexts faced by entrepreneurs and non-entrepreneurs should influence their decision making processes. When trust violation happens, entrepreneurs should be more alert than employees and managers. This will be reflected in their trust behaviors, that entrepreneurs adjust their trust levels toward the betrayer more quickly, consequentially decrease their trust more quickly than non-entrepreneurs.

We thus expect that entrepreneurs and non-entrepreneurs will show different rates of response to trust violations. When trust violation happens, we expect that entrepreneurs will be more alert than employees and managers. This will be reflected in their trust behaviors. Entrepreneurs are expected to adjust their trust levels toward the "betrayer" more quickly, consequentially decreasing their trust more quickly than non-entrepreneurs. As such, we propose:

Hypothesis 2. Entrepreneurs' trust will decrease more quickly than non-entrepreneurs when faced with trust violations.

3.2.3. Trust recovery

Trust violations may happen for a variety of reasons and are sometimes caused by events that are out of a partner's control. In many cases, trust that is lost may never be rebuilt or restored (Slovic, 1993). Recovery, on the other hand, refers to behaviors used by the transgressor to attempt to remedy the wrong and return to the process of relationship building. Researchers have found that trust can be repaired or restored through a number of trust-recovering methods, including "cheap talk" (Farrell and Rabin, 1996), promises, denials (Kim et al., 2006), and compensation (Bottom et al., 2002). Research shows that trust is likely to increase following successful trust repair strategies. For example, in studies of verbal communication in game experiments, economists find that non-verifiable talk (cheap talk) may offer the speaker significant benefits, as it can signal intentions, offer private information to the partner, and serve as a valuable method of communication for good faith dealing (Tomlinson et al., 2004). Similarly, apology has been recognized as an effective response to mitigate the negative consequences of trust violation and restore trust (Bansal and Zahedi, 2015).

Entrepreneurs are expected to be more adaptive to the trust recovery process than non-entrepreneurs. New firms are often at a disadvantage in bilateral partnerships, as they do not have bargaining power when dealing with more established corporations. We thus expect entrepreneurs to be conditioned to focus more on opportunities and long-term benefits in potential partnerships. As a result, they are likely to react positively and quickly to actions taken by the transgressor to rebuild trust. In contrast, managers and employees may have more concerns about risks and engage in more systematic and thorough risk evaluation when a trust violation occurs, resulting in a slower trust recovery process compared to entrepreneurs. Moreover, the institutionalized environment of existing organizations may further shape the behaviors of managers and employees toward risk control. They are thus more likely to adopt a "wait-and-see" attitude, exhibit more care, and be more guarded in trust recovery situations. Therefore, we expect entrepreneurs to recover from trust violations more quickly than non-entrepreneurs.

Hypothesis 3. Entrepreneurs recover from trust violations by exhibiting increase of trust more quickly than non-entrepreneurs.

4. Methods

4.1. The trust game

The trust game has been widely used in hundreds of studies in economics, psychology, and neuroscience to elicit participants' trust (e.g., Balliet and Van Lange, 2013; Brülhart and Usunier, 2012; Cesarini et al., 2008; Tzieropoulos, 2013). In the trust game, individuals are placed in a decision-making context that involves a certain level of uncertainty. Typically, two players are paired anonymously to make decisions involving monetary investment. Trust is inferred through participants' decisions in simulated interactions. To capture the trust behaviors in different scenarios, we adopt the *repeated trust game* from Berg et al. (1995) and Haselhuhn et al. (2010). We illustrate the game's design in Fig. 1. In the briefing session, we inform participants that they are going to play an interactive investment game in a general business context with a randomly paired local entrepreneur named *Participant A*, who (unknown to the participants) is a computer- simulated counterpart. Participants are told the game will have several rounds, but they are not told the exact number of rounds. This is to avoid the well-documented "end-effect" in which participants may change the amount of money sent to Participant A because they know the game is about to be over.

In the trust game, the participants act as the *trustor* for 15 trials. At the beginning of each trial, participants are given 100 game dollars. Participants must decide how much they are willing to invest in Participant A. They can keep the 100 dollars, invest all, or only invest a portion. They are told that the amount given to Participant A will be tripled, and Participant A can decide how much money to return to the participant. After participants make a decision, they will be given information about the money they invest, the money Participant A returns, and the gains or losses incurred from their investments. Then, the next trial begins. Each trial is independent, and the money received in the previous trial will not accumulate or roll over to the next. This is to ensure that the trustor does not increase her/his wealth after each trial to avoid the so-called wealth effects, i.e. behavior changes because the participant is (within the experiment) "richer". As the focus is on participants' responses as the game evolves, we explain to our participants that each round is reset in terms of wealth, by the clear instruction "All the games are independent of each other and should be viewed in that light". We have designed an intuitive computer interface to facilitate the experiment, with clear indications of the rules and a bar participants can drag to make decisions. After participants submit their investments, the program will lead them to the next trial automatically until the

experiment is complete. Following most trust game designs, participants are told that game dollars will later be translated to real money at an unspecified rate.

We simulated the responses of the participants to reflect three phases of trust dynamics: (1) trust building, (2) trust violation, and (3) trust recovery.

(1) *Phase 1: Trust building*. The first five trials simulated the trust building phase between the trustor and Participant A based on organic interpersonal relationship development, with the investment return rate to be received by the trustor set between 50% and 70%.
(2) *Phase 2: Trust violation*. In the second phase, occurring between the 6th and 10th trials, the investment rate was reduced to a lower range, between 10% and 30%. This intervention simulated a violation of trust and had the potential to harm the relationship built in the trust building phase. This allowed us to measure participants' reactions to trust violations.[1]
(3) *Phase 3: Trust recovery*. Finally, after the 10th round, an apology message was presented to the participants: "Hey, sorry I gave you a bad deal. I can change and give better deals from now on." This message is similar to the one used in Haselhuhn et al. (2010). From the 11th round until the end of the game, the investment return rate range increased to between 50% and 70% again. The apology message and the increased investment return rate were designed to measure participants' ability to recover in the aftermath of a trust violation. After every participant finished the experiment, we invited them to fill in a survey with questions asking about their backgrounds, including their age, gender, education, nationality, industry experience (i.e., years working in the industry), company experience (i.e., years working in current company), company size (i.e., number of full-time employees), and industry sectors the company resides in. We also debriefed and thanked them.

4.2. Data collection and sample characteristics

We collected data from three different groups of participants: entrepreneurs, professionals, and (at a later stage, for robustness reasons) a third group of managers.

(1) *Entrepreneurs:* We collected data for the entrepreneur sample from founders, co-founders, business owners, and managing directors of SMEs and start-ups in Singapore. Our research team worked with government agencies, industry associations, start-up incubators, and co-working spaces that had direct contact with small business owners and start-up founders to recruit participants. We also actively engaged with local communities and attended business networking events to recruit potential participants. The administration of data collection was conducted through scheduled face-to-face meetings. Two trained researchers visited each entrepreneur and collected data in a one-hour research meeting. After a one-year data collection effort, we managed to recruit 354 entrepreneurs to participate in this study.
(2) *Professionals:* The data collection for professionals was conducted through Qualtrics' panel services. We targeted professionals who share similar demographic characteristics with our entrepreneur sample in terms of age and industry experience. Ultimately, we collected data from 105 Singaporean professionals who met the following criteria: (1) had at least two years' working experience; (2) had not started or co-founded a company before; (3) had a highest education level of at least a bachelor's degree or equivalent, and (4) had a minimum monthly income of SGD 2500. All professionals received the same game experimental design as the one given to the entrepreneur sample.
(3) *Managers:* As the sample of professionals was diverse, we conducted a robustness test by adding another sample of non-entrepreneurs made up of a more targeted group of Singaporean managers ($N = 57$) using the identical version of the trust game.

After an initial screening of the data, we excluded participants who did not have a bachelor's degree and foreign passport holders to make sure the samples were comparable. We summarize the demographics and characteristics of the final sample in Table 1. Both entrepreneur sample and professional sample have about 60% participants between 31 years old to 50 years old; the manager sample has slightly more participants (about 70%) in this age group. Both entrepreneur sample and professional sample have about 80% male participants and the manager sample has 63% male participants. Unsurprisingly, more than 60% entrepreneur participants were from companies with less than 10 full-time employees, in comparison with 10% of the professional sample and 30% of the manager sample. The majority of the professional sample (44%) was from the companies with more than 500 full-time employees. About half of the professional sample (56%) and the manager sample (49%) have been working in the current company for more than five years, while the majority (66%) of the entrepreneur sample has been working in the current company for less than five years. For industry sectors, 43% of the entrepreneur sample, 39% of the professional sample, and 39% of the manager sample came from the high-tech industry sectors (i.e., biomedical, healthcare & technologies, electronics, engineering & engineering services, information & communications, and manufacturing). Other industry sectors all three groups came from include business services, finance, and wholesale and retail trade.

[1] To operationalize "trust violations" in the second phase, we implemented a return rate of between 10% and 30%. This is lower on average than the return rate used by Bohnet, Greig, Hermann, and Zeckhauser (2008) ($8/$30–26%) to operationalize "betrayal" (see also Aimone, Ball, and King-Casas, 2015). Although some studies have implemented zero returns (0%; i.e., the trustee keeping the whole endowment), we avoid doing so, as such returns are not realistic. Previous experiments show that returning 0% or even lower than 10% is very rare (e.g., Berg et al., 1995; Croson and Buchan, 1999; Ortmann, Fitzgerald, and Boeing, 2000).

5. Results

5.1. Descriptive analysis

We analyze the data using the statistical software R version 4.0.3 (R Core Team, 2020), equipped with a number of packages, such as ggplot2 (Wickham, 2011) and lme4 (Bates et al., 2007). Fig. 2 presents an overview of the investment behaviors of the three groups across the three phases, i.e., trust building, trust violation, and trust recovery. To help visualize the effects and focus on the development of trust, we normalize the investments by subtracting the investment value of the first trial from that of all trials in order to show the change in investment value from the first trial, irrespective of initial trust investment.

We first present qualitative results and formal statistical analysis. A visual inspection of Fig. 2 indicates that participants behaved in accordance with the manipulations imposed throughout the different phases. In Phase 1 (trust building), participants (playing the role of the trustor) gradually increased the amount invested, thus indicating that their trust in the trustee (Participant A) adaptively increased in response to the high investment return rate (between 50% and 70%) demonstrated by the trustee. Table 2 presents the descriptive statistics of the investments by entrepreneurs, professionals and managers in three phases. For all three groups, the average investment was between SGD 58.4 to SGD 67.9 during Phase 1 (trust building), suggesting that the participants expressed trustworthy behavior toward the trustee, Participant A. In Phase 2 (trust violation), the trustee's return percentage decreased to between 10% and 30%; this triggered an immediate decrease in investments in the seventh trial, which further intensified until the 10th trial. Entrepreneurs' average investments in Phase 2 (trust violation) decreased by 24% compared to their average investments in Phase 1 (trust building), whereas the average decreases for professionals and managers were 14% and 10%, respectively. This suggests that participants were sensitive to the decreased investment returns and accordingly reduced their investments to signal their dissatisfaction. Finally, in Phase 3 (trust recovery) and after receiving an apology message, the participants of all three groups immediately increased their investments and continued to gradually increase them, although they never reached the original levels of Phase 1, again reflecting an adaptive response. The recovery signaled that the participants understood that they could increase their investments in response to the more trustworthy behavior of the trustee. Specifically, entrepreneurs and non-entrepreneurs increased their investments by 14% and 9%, respectively. Overall, these data suggest that the participants not only understood the game but also used their responses to signal their intentions to their counterparts.

In addition, we notice that at the end of Phase 1 (trust building), in the sixth trial, entrepreneurs offered higher investments than professionals and managers, thus exhibiting more trust toward the trustee Participant A. However, at the end of Phase 2 (trust violation), in the 10th trial, entrepreneurs' investments were lower than those of the other two groups, although they started with higher investments in the fifth and sixth trials, thus exhibiting a sharper reduction in their trust toward the trustee Participant A. Finally, in Phase 3 (trust recovery), entrepreneurs overtook the two other groups in terms of investment—again, despite the fact that their investments at the beginning of this phase, the 10th trial, were the lowest among the three groups. This suggests that entrepreneurs were more willing to recover their trust in the trustee Participant A. Below, we formally test these observations.

5.2. Sensitivity to the behavior of the trustee (proportion returned) during the three phases

We first test whether participants' responses were sensitive to the amount of the investment from the previous trial that was returned by the trustee. This analysis additionally serves as a manipulation check to determine if participants had been monitoring the game and responding according to returns received in the previous trial in the game. We run a hierarchical mixed model with *Invest* (the amount invested in current trial by the trustor) as the dependent variable and *Return Percentage in Previous Trial*, i.e. the percentage of the proceedings (3 × Invest) returned back to the trustor by the trustee (recall again that the amount received by the trustee was the amount invested by the trustor tripled by the experimenter, to symbolize a return) as the independent variable, nested by *Participant*. Results indeed confirm that in all three stages, the investments made by the trustor depended on the percentage returned in the previous trial [Phase 1 (trust building), $\beta = 37.67$, $t(2542) = 16.24$, $p < .001$; Phase 2 (trust violation), $\beta = 11.66$, $t(2120) = 4.16$, $p < .001$; Phase 3 (trust recovery), $\beta = 23.3$, $t(2544) = 8.64$, $p < .001$].

5.3. Hypotheses testing

The descriptive data (Fig. 2) suggest that, compared to professionals and managers, entrepreneurs' investments increased more quickly in Phase 1 (trust building) (Hypothesis 1), decreased more quickly in Phase 2 (trust violation) (Hypothesis 2), and, finally, increased more quickly in Phase 3 (trust recovery) (Hypothesis 3). To formally test the different dynamic responses, for each phase, we perform a nested linear regression with the following mixed-effects model using the R package lme4 (Bates et al., 2007):

$$\text{Invest} \sim \text{Trial} + \text{Group} + \text{Trial} \times \text{Group} + (1|\text{Participant}) + \text{Controls},$$

where *Invest* is the amount invested by the trustor (normalized to the initial investment in the first round of the phase examined), *Trial* is the trial number for each phase, which represents the number of times the trustor has played the repeated trust game in each phase (i.e., in Phase 1, Trials 1 to 6 represent the first to the sixth trials of the repeated trust game; in Phase 2, Trials 1 to 5 represent the sixth to the 10th trials of the repeated trust game; and, finally, in Phase 3, Trials 1 to 5 represent the 11th to the 15th trials of the repeated trust game), the variable *Group* represents each group (1 = entrepreneur, 0 = non-entrepreneur, including both professionals and managers), and the (*1*|*Participant*) denotes that the regression is nested within each participant. *Controls* represent the control variables, including age, gender,

education, nationality, industry experience, company experience, company size, and whether the company is in high-tech industry sectors.

The main effect of *Group* is to indicate a difference between the groups; the main effect of *Trial* indicates that the amount invested changes as a function of the round; and the interaction term *Trial* × *Group* shows that the changes differ between the two groups. This analytical approach considers the non-independence of responses from the same participant while also testing trial-by-trial differences in investment rates (i.e., testing for changes in investment), regardless of the original level of investment. The interaction term tests whether the investment of one group changes differently over rounds compared to other groups.

Results support all three hypotheses—that, for all three stages, the interactions of *Trial* and *Group* are significant (Table 3), meaning that the development of investments (signaling adaptive trust behavior) significantly differs between entrepreneurs and the other two groups in all three phases. Specifically, entrepreneurs not only invest more but also invest faster than non-entrepreneurs [Phase 1 (trust building), $\beta = 1.39$, $t(1722) = 2.33$, $p < .05$]; furthermore, entrepreneurs decreased their investments more quickly when faced with trust violations than non-entrepreneurs [Phase 2 (trust violation), $\beta = -2.77$, $t(1435) = -2.88$, $p < .01$], and entrepreneurs recovered from trust violations more quickly than non-entrepreneurs [Phase 3, $\beta = 2.11$, $t(1722) = 3.48$, $p < .001$]. To help in the interpretation of these results, Fig. 3 depicts the model-estimated means from the three stages. The results hold when controlling for demographic variables, including age, gender, education, company experience, and industry experience.

5.4. Acute responses of entrepreneurs to changes in behavior

The previous analysis shows that, throughout the duration of each phase, entrepreneurs respond to changes in behavior more quickly and to a greater extent than professionals and managers. We thus explored whether this distinctive response appears the very first time the trustee displays a change in behavior in order to test acute responses to decreases and increases in returns by the trustee. This would demonstrate that entrepreneurs are more extreme in their responses not only in terms of investment but also in terms of time. in other words, the very first time their expectations are violated, they immediately signal their dissatisfaction—and, similarly, if they receive an apology, they are flexible enough to quickly restore their trust. We also examined the behaviors of the three groups during the two transitional phases: 1) between the sixth and the seventh trials, after the participant sees unexpectedly lower returns from the trustee (trust violation) in the sixth trial, and 2) the 10th and the 11th trials, after the participant sees the apology message from the trustee and the return rates are restored to their original levels in the 10th trial (trust recovery). The results indicate that entrepreneurs responded more quickly than non-entrepreneurs—that is, professionals and managers [$\beta = -10.85$, $t(574) = -2.98$, $p < .01$]—signaling their dissatisfaction when their trust was violated between the sixth and the seventh trials. However, the immediate change in investment between the 10th and the 11th trials, just after the apology message appeared, was not significantly different between entrepreneurs and non-entrepreneurs [$\beta = -2.82$, $t(574) = -0.72$, $p = .47$].

6. Discussion and conclusion

Our results reveal several findings about the ways in which entrepreneurs differ from non-entrepreneurs. All three hypotheses are supported by our data, displaying significant differences in trust development between entrepreneurs and non-entrepreneurs. Our analysis shows the robustness of the findings, as we demonstrate that trust behaviors differ between entrepreneurs and both groups of non-entrepreneurs—professionals and managers. Furthermore, we found limited differences in trust behaviors between working professionals and managers. These findings reinforce the fact that there are significant differences in decision-making processes related to trust development between entrepreneurs and non-entrepreneurs. Namely, we find that entrepreneurs adapt more quickly to changing environments than non-entrepreneurs, as they build trust more quickly, react more quickly to trust violations, and display faster trust recovery.

These results provide support for the overall premise of our paper: that the higher levels of uncertainty faced by entrepreneurs condition them to adopt different thinking frameworks and cognitive structures than non-entrepreneurs. This is consistent with the results of prior research—for example, the work of Lewicki and Brinsfield (2011), who note that individuals' prior experiences generate cognitive frameworks that help them to quickly assess situations and make decisions. Our findings show that such cognitive frameworks can function as mental shortcuts or heuristics to guide decision-making processes, which, in turn, influence trust behaviors. Our findings contribute to the cognitive and behavioral approach to entrepreneurship research. Prior research in this field has largely focused on general heuristics and cognitive biases such as overconfidence (Simon and Shrader, 2012), optimism (Hmieleski and Baron, 2009), status quo bias (Burmeister and Schade, 2007), and the anchoring effect (Lévesque and Schade, 2005). This study shows that cognitive frameworks generated by entrepreneurs' environments and contexts can also be extended to help entrepreneurs make sense of and develop trust in interpersonal relationships.

Our game was designed in such a way that participants were required to make decisions quickly within short periods of time. Such a design tends to elicit reactions that are based on cognitive schemas and heuristics that help individuals to perceive their environments and decide how to react. When faced with volatile environments and contextual changes, people may not be able to make deliberate and systematic evaluations of their situations. Their decision-making largely depends on simplified strategies. Entrepreneurs and non-entrepreneurs are believed to have distinct decision making styles that have been conditioned differently due to differences in working environments and context uncertainty. A sudden change resulting in a new situation may trigger these mental shortcuts that dominate the decision-making process. In the first five rounds of the repeated trust game, participants received positive returns on their investments and eventually developed trust in the trustee. We observe that when trust violations occurred, entrepreneurs adjusted their investments in the trust game more quickly than those of non-entrepreneurs. This supports our arguments that entrepreneurs' cognitive frameworks affect their trust behaviors in a volatile environment. When participants received much lower returns on their investments

in the sixth round, their immediate responses in the seventh round were likely to be based on instinctive reactions rather than deliberate evaluations, as they had little time to ascertain exactly what was going on. Similarly, when faced with an apology message and trust recovery, participants depended on their cognitive frameworks to monitor and make sense of the new situation (Lewicki and Brinsfield, 2011) and made quick decisions based on intuitive judgments.

Our findings also show that the different behavioral patterns of entrepreneurs in the trust game may be partially attributed to the entrepreneurial alertness entrepreneurs have been conditioned to develop due to the uncertainty of their environments and the importance of such alertness to the entrepreneurial process (Kirzner, 1973, 1979). Entrepreneurial alertness refers to an individual's ability to notice, without searching, opportunities that are invisible to others. People with entrepreneurial alertness are more likely to notice changes in the environment and match environmental stimuli to information they have stored in their memories (Gaglio and Katz, 2001). This allows entrepreneurs to respond to environmental changes in a timely fashion in order to identify new opportunities. In the trust game, entrepreneur participants had an extraordinary sense of environmental changes and were able to adjust their strategies immediately. This supports our underlying premise that differences in trust development between entrepreneurs and non-entrepreneurs are rooted in the uncertain context and thinking frameworks and decision-making styles. Our study makes several contributions to the entrepreneurship field. First, our research adds to existing understandings of entrepreneurs, showing that entrepreneurs differ from non-entrepreneurs in their trust behaviors. Specifically, we use the trust game to examine how quickly entrepreneurs' trust behaviors change over time and in reaction to different trust scenarios in experiment settings, in comparison to non-entrepreneurs. Our result show that entrepreneurs adapt more quickly in their trust judgments toward trustees than non-entrepreneurs. Researchers have repeatedly found that entrepreneurs rely more on heuristics and biases in their decision making and tend to adopt effectuation logic in their thinking frameworks. This study contributes to this stream of work, with evidence in a decision context related to trust. We show that entrepreneurs differ from non-entrepreneurs in their trust behaviors, and we argue that this is a result of how they have been conditioned to think and behave. Second, our research investigates how entrepreneurs develop trust in interpersonal relationships compared to non-entrepreneurs. Following the behavioral tradition of trust research, we use the trust game to examine the pace of change of entrepreneurs' trust behaviors over time and in reaction to different trust scenarios in experiment settings. In line with the existing research such as Maxwell and Lévesque (2014), we adopt a process-based view and collect data across a series of time points in this study. The game experiment approach allows us to investigate dynamic entrepreneurs' behaviors in a cost-effective way. Third, while research on entrepreneurship has paid significant attention to differences between entrepreneurs and non-entrepreneurs, there have been limited studies that investigate comparisons of trust development between the two groups. Given the importance of trust in the venture building process, such an investigation is critical to provide insight into how entrepreneurial trust behaviors are uniquely different from those of others. Our study supports the potential of investigating behavioral processes and tendencies in the pursuit of attempting to understand what makes entrepreneurs unique and different compared to non-entrepreneurs. Our research also points to underlying reasons for differences in trust behaviors between entrepreneurs and non-entrepreneurs, suggesting that entrepreneurs have been conditioned to behave differently due to the decision contexts they face and the thinking frameworks they adopt. Future research could explore entrepreneurs' approaches to coping with uncertainty and their enduring effects of their strategies.

This study also has methodological implications. To the best of our knowledge, this is one of the first studies to use the trust game to study entrepreneurs' trust behaviors and compare such behaviors to those of non-entrepreneurs. This endeavor showcases an example of the game experimental approach in entrepreneurship research. According to Hsu et al. (2017), the game experimental method is underutilized in the field, and the use of such game simulations is increasingly attracting attention from entrepreneurship researchers. Existing studies often adopt the passive participation approach for pragmatic reasons, such as cost and time constraints. In future research, it would be worth exploring the possibilities of other approaches, such as role-playing, that are based on the trust game. For example, to study the relationship between entrepreneurs and investors, we could ask participants to play the roles of entrepreneur and investor and examine their decision-making processes in real time. Such passive role-playing manipulation is cost-effective and allows researchers to collect data from a larger sample with mixed participants, such as students, entrepreneurs, bankers, and management teams (Hsu et al., 2017).

Additionally, this study has practical implications. Trust is an important lubricant for facilitating partnerships and cooperation, both for new ventures and in well-established organizations. Understanding how entrepreneurs are distinct from non-entrepreneurs in their trust behaviors can help us to gain a better understanding of how entrepreneurs make decisions involving trust as they develop interpersonal relationships. Our results reveal that entrepreneurs are more alert than professionals and managers to behaviors signaling changes in trust behaviors, and entrepreneurs react more quickly to such changes. Unlike the managers and employees of large organizations, who often rely on established institutional structures for decision making, entrepreneurs are conditioned to be alert to changes and react quickly due to their need to adapt quickly to volatile environments, which increases their alertness to new information. A greater understanding of differences in how trust develops for entrepreneurs versus non-entrepreneurs may help us to understand why entrepreneurs sometimes make bad managers and enable managers of large organizations to better manage and more effectively leverage individuals with entrepreneurial skills (Busenitz and Barney, 1997). Our results suggest that it may be more suitable to assign someone with entrepreneurial skills to develop partnerships in situations requiring quick reactions and response times due to highly uncertain conditions, while it may be more suitable to assign managers without entrepreneurial skills to develop partnerships in situations that require time for trust building.

However, we acknowledge the limitations of this research. First, our entrepreneur sample displayed some heterogeneity, as it included a range of individuals from small business owners who have been running their firms for a number of years to nascent entrepreneurs. Participants also came from different industries and possessed different levels of entrepreneurial experience. Despite this heterogeneity, we saw significant differences across groups rather than within groups. This shows that entrepreneurial experience can have significant influence on individuals, even if the experience might not be extensive. Second, our research participants come from Asia, which might influence the generalizability of the results. However, the average investment amounts for all of our three samples in

the first trust game trial were comparable to those of subject samples from Western countries (e.g., Bellemare and Kröger, 2007), thus mitigating this concern. Third, although we tried to simulate real-life experiences in the game experiment, our participants were ultimately reacting to a hypothetical context. Researchers have argued that what happens in a hypothetical world does not necessarily reflect what would happen in the real world, which may influence the study's external validity (Hsu et al., 2017). Future research can explore the possibilities of using other approaches such as active role playing to examine the trust behaviors of entrepreneurs and non-entrepreneurs. Third, we only controlled for the high-tech industry sectors versus low-tech industry sectors in this study. Some industries may significantly rely on building partnerships and as such the dependence on relationship building may affect the trust behaviors of entrepreneurs and non-entrepreneurs. We encourage future research to explore this direction. In addition, although the so-called "wealth effect" in the trust game (i.e., participant's behavioral change because of a significant change in wealth status) is not a major concern in our study and has been addressed following established methods, future research should be cautious about the potential impact of accumulated wealth on participant's investment behaviors in the trust game, especially if researchers want to test within-participants effects. Generally, researchers are advised to carefully review the methodology adopted in the present paper as well as previous literature (see Cubitt et al., 1998; Hey and Lee, 2005; Starmer and Sugden, 1991) to help reduce any wealth or portfolio effects following established methods that separate each trial.

CRediT authorship contribution statement

Qingqing Bi: Investigation, Software, Formal analysis, Data Curation, Writing - Original Draft, Visualization, Project administration.

Wai Fong Boh: Conceptualization, Investigation, Writing - Review & Editing, Supervision, Resources, Funding acquisition.

Georgios Christopoulos: Conceptualization, Methodology, Validation, Visualization, Writing - Review & Editing, Supervision, Funding acquisition.

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Appendix A

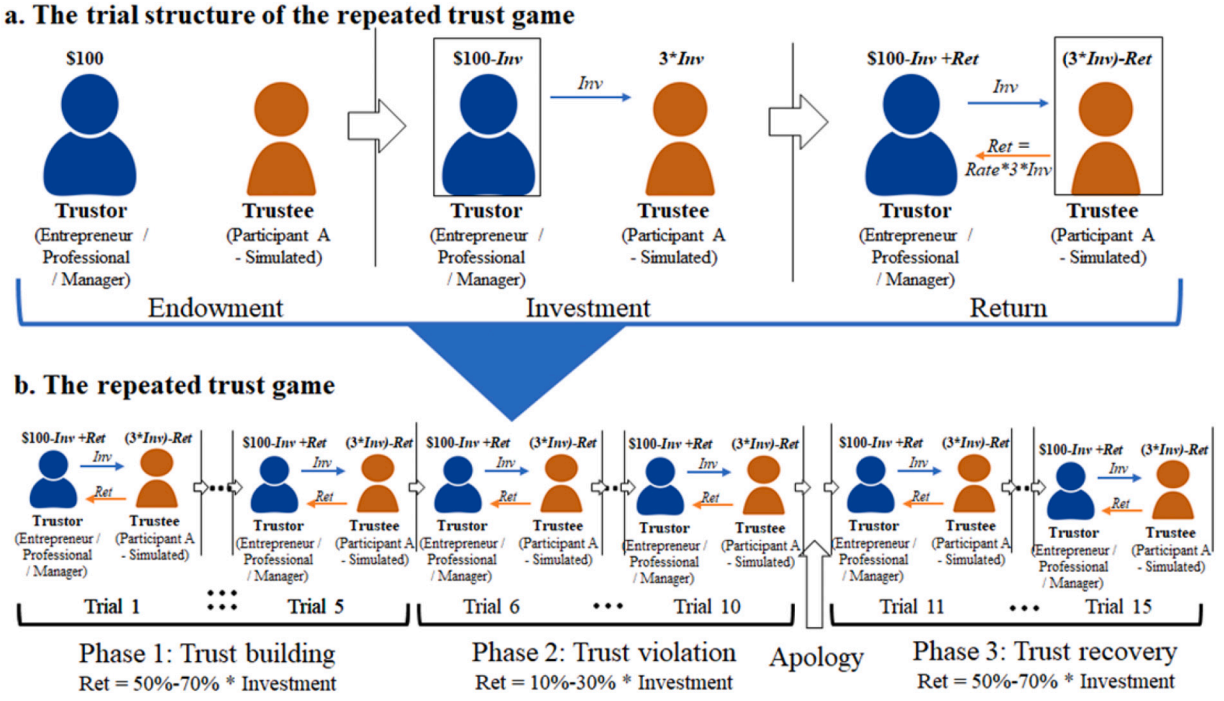

Fig. 1. Repeated trust game. a. The trial structure of the trust game: On each trial, the participant (the trustor) is endowed with $100 (representing experimental monetary units). Subsequently (Investment), the trustor has to decide to allocate an amount (*Inv*) to the trustee (the amount could be any value ranging from $0 to $100). The amount invested is tripled by the experimenter and delivered to the trustee (3**Inv*). Return: The (simulated) trustee allocates back a percentage (Rate) of the amount received. At the end of the trial, the trustor's outcome is $100 minus the amount invested

plus the return (*Ret*). See immediately below for numerical examples. b. The Repeated Trust Game (adapted from Haselhuhn et al., 2010, 2015): Each participant (*the trustor*) undergoes 15 consecutive trials. During the first five (5) trials (Trust Building phase), the trustee reciprocates with a high repayment rate (Rate) of between 50% and 70% (thus, if the trustor allocates $50, the trustee receives $150 and allocates back 50% × $150 = $75). During the second phase (Trust Violation, Trials 6–10), the repayment rate is lowered to 10%–30%—thus, the return would be 10% × $150 = $15. Finally, during the third stage (Trust Recovery, Trials 11–15) a repayment rate of 50–70% is restored, following an apology message delivered after Trial 10. Variables: *Inv*: The amount (out of total $100) passed by the trustor to the trustee; this amount is tripled by the experimenter (3*Inv) *Ret:* The amount returned to the trustor by the trustee.

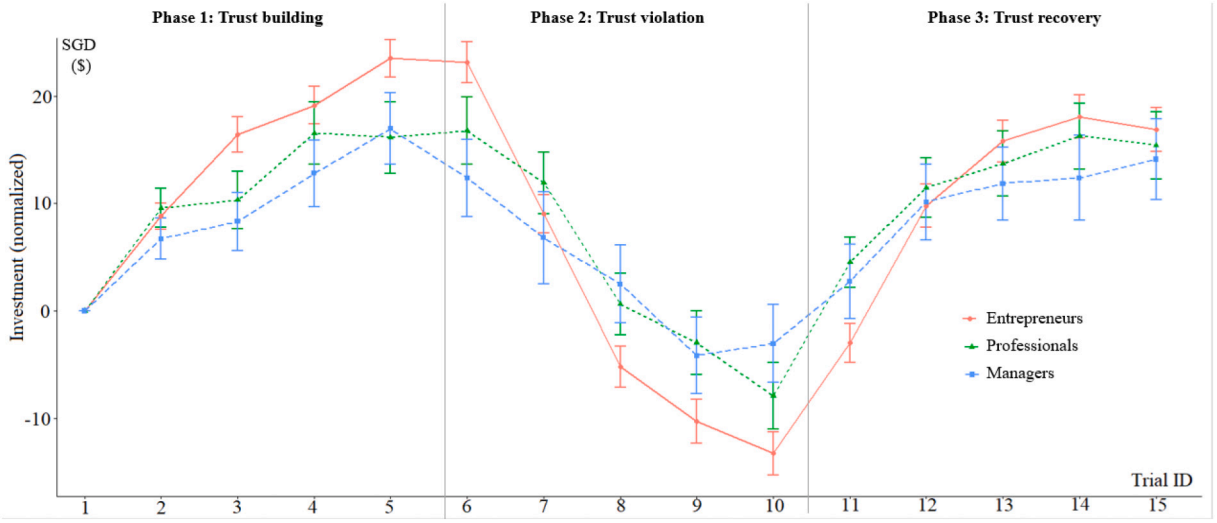

Fig. 2. Average investment of the three groups, i.e., entrepreneurs, professionals and managers over the fifteen trials standardised to the initial investment of the first trial. Error bars represent the standard errors of measurement.

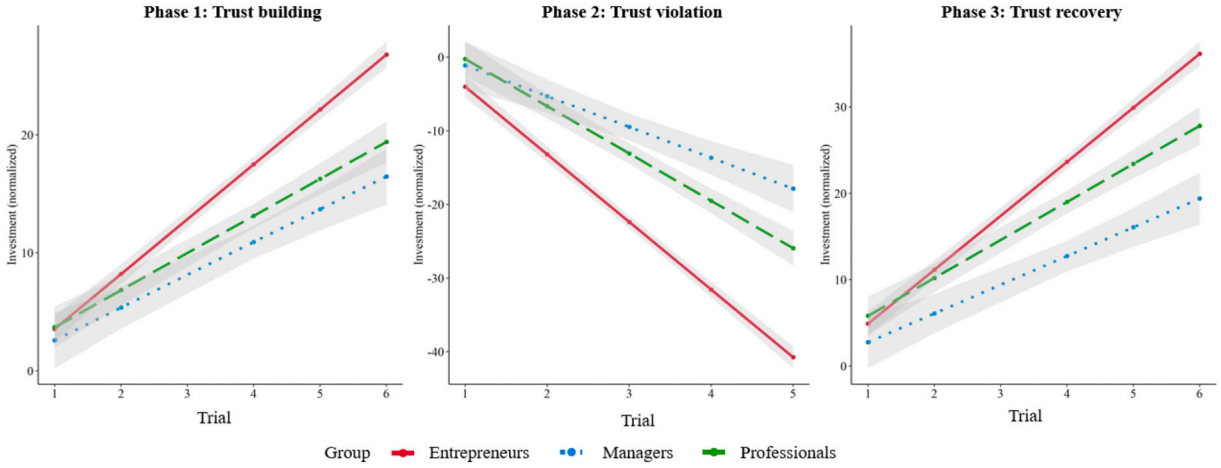

Fig. 3. Model-based estimated means of *Invest* of the three groups (*Group*) as a function of *Trial* during each of the three phases.

Table 1
Sample characteristics.

		Frequency (%)					Frequency (%)		
		Entrepreneurs	Professionals	Managers			Entrepreneurs	Professionals	Managers
Age	21 to 30 years old	60 (23%)	30 (29%)	7 (12%)	Education	Bachelor	148 (56%)	80 (76%)	23 (40%)
	31 to 40 years old	96 (37%)	37 (35%)	25 (44%)		Bachelor above	107 (41%)	25 (24%)	24 (42%)
	41 to 50 years old	71 (27%)	27 (26%)	17 (30%)		NA's	7 (3%)	0	10 (18%)
	51 to 60 years old	26 (10%)	10 (10%)	7 (12%)	Number of years working in	Less than 1 year	13 (5%)	4 (4%)	0
	More than 60	4 (2%)	1 (1%)	1 (2%)	current industry	1 to 2 years	55 (21%)	6 (6%)	0
	NA's	5 (2%)	0	0		3 to 4 years	41 (16%)	19 (18%)	0
Gender	Male	212 (81%)	84 (80%)	36 (63%)		5 to 6 years	32 (12%)	11 (10%)	0
	Female	50 (19%)	21 (20%)	21 (37%)		7 to 8 years	38 (15%)	14 (13%)	0
Nationality	Citizen	178 (68%)	91 (87%)	36 (63%)		9 to 10 years	76 (29%)	12 (11%)	0
	Permanent residence	84 (32%)	14 (13%)	12 (21%)		More than 10 years	0	39 (37%)	0
	NA's	0	0	9 (16%)		NA's	7 (3%)	0	57 (100%)
Number of employees of current company	Less than 10 FTE	166 (63%)	11 (10%)	17 (30%)	Industry sectors	Accommodation & Food services	5 (2%)	6 (6%)	0
	11 to 50 FTE	67 (26%)	10 (10%)	10 (18%)		Biomedical, Healthcare & Medical Technologies	11 (4%)	6 (6%)	3 (5%)
	51 to 100 FTE	16 (6%)	8 (8%)	8 (14%)		Business Services	43 (16%)	5 (5%)	10 (18%)
	101 to 200 FTE	6 (2%)	8 (8%)	6 (11%)		Construction	12 (5%)	1 (1%)	0
	201 to 500 FTE	4 (2%)	22 (21%)	2 (4%)		Education	4 (2%)	0	4 (7%)
	More than 500 FTE	3 (1%)	46 (44%)	13 (23%)		Electronics	6 (2%)	3 (3%)	2 (4%)
	NA's	0	0	1 (2%)		Engineering & Engineering Services	14 (5%)	9 (9%)	5 (9%)
Number of years working in current company	Less than 1 year	41 (16%)	11 (10%)	8 (14%)		Finance & Insurance	7 (3%)	18 (17%)	1 (2%)
	1 to 2 years	89 (34%)	13 (12%)	16 (28%)		Information & Communications	68 (26%)	9 (9%)	4 (7%)
	3 to 4 years	41 (16%)	22 (21%)	5 (9%)		Manufacturing	15 (6%)	13 (12%)	8 (14%)
	5 to 6 years	19 (7%)	16 (15%)	11 (19%)		Marine	2 (1%)	0	3 (5%)
	7 to 8 years	18 (7%)	15 (14%)	4 (7%)		Wholesale & Retail Trade	24 (9%)	10 (10%)	13 (23%)
	9 to 10 years	33 (13%)	10 (10%)	4 (7%)		Transportation & Storage	2 (1%)	4 (4%)	0
	More than 10 years	2 (1%)	18 (17%)	5 (9%)		Others	49 (19%)	21 (20%)	4 (7%)
	NA's	19 (7%)	0	4 (7%)					

Note: FTE = Full-time employee; NA = Missing data; $N_{(Entrepreneurs)} = 262$, $N_{(Professionals)} = 105$, $N_{(Managers)} = 57$.

Table 2
Investments (SGD) in three phases.

	Entrepreneurs		Professionals		Managers	
	Mean	SD	Mean	SD	Mean	SD
Phase 1 (Trust building)	60.8	21.9	58.4	23.6	67.9	22.0
Phase 2 (Trust violation)	46.2	19.2	50.5	24.7	61.2	24.9
Phase 3 (Trust recovery)	52.8	24.6	55.7	26.1	66.4	24.2

Note: $N_{(Entrepreneurs)} = 262$, $N_{(Professionals)} = 105$, $N_{(Managers)} = 57$.

Table 3
The results of mixed effects model regressions.

Phases Variables	Phase 1 (Trust building)			Phase 2 (Trust violation)			Phase 3 (Trust recovery)		
Dependent variable: Investment per subject	*β* (*SE*)	*t*	*p*	*β* (*SE*)	*t*	*p*	*β* (*SE*)	*t*	*p*
(Intercept)	2.25 (7.04)	0.32	0.75	1.05 (9)	0.12	0.91	5.14 (9.69)	0.53	0.59
Age	−0.4 (1.43)	−0.28	0.78	−0.21 (1.81)	−0.11	0.91	1.14 (1.97)	0.58	0.56
Gender (1 = male, 0 = female)	−0.46 (2.89)	−0.16	0.87	−3.73 (3.65)	−1.02	0.31	4.36 (3.97)	1.1	0.27
Education	2 (2.5)	0.79	0.43	−3.84 (3.16)	−1.21	0.23	4.19 (3.44)	1.22	0.22
Nationality	3.41 (2.6)	1.31	0.19	−0.19 (3.29)	−0.06	0.95	−1.19 (3.59)	−0.33	0.74
Company experience	0.55 (0.76)	0.73	0.46	−0.06 (0.95)	−0.06	0.95	0.22 (1.04)	0.21	0.84
Industry experience	0.1 (0.84)	0.12	0.9	0.08 (1.06)	0.07	0.94	−0.93 (1.15)	−0.81	0.42
Industry sector (1 = high-tech, 0 = low-tech)	0.55(2.28)	0.24	0.81	−1.68 (2.88)	−0.58	0.56	0.74 (3.13)	0.24	0.81
Trial	3.26 (0.5)	6.52	<0.001	−6.24 (0.8)	−7.77	<0.001	4.32 (0.51)	8.5	<0.001
Group (1 = entrepreneur, 0 = non-entrepreneur)	3.09 (2.68)	1.16	0.25	−9.09 (3.39)	−2.68	<0.001	2.06 (3.69)	0.56	0.58
Trial × Group	1.39 (0.59)	2.33	<0.05	−2.765 (0.95)	−2.88	<0.01	2.11 (0.61)	3.48	<0.001
Marginal R-squared	0.08			0.14			0.11		
Conditional R-squared	0.48			0.53			0.65		
AIC	15,541.6			13,554.9			15,768.6		
DIC	15,565.3			13,590.9			15,804		
No. of observations	1722			1435			1722		
Group: Participant	287			287			287		

Note: For the variable *Industry sector*, we code the following industries as high-tech: biomedical, healthcare & technologies, electronics, engineering & engineering services, information & communications, and manufacturing, and the other industries as low-tech.
The analysis is based on the R packages lme4 and MuMIn.

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