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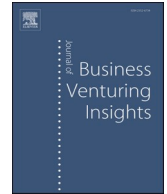
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# To reopen or not to reopen? How entrepreneurial alertness influences small business reopening after the COVID-19 lockdown

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## ABSTRACT

COVID-19 lockdowns have been effective in curbing the spread of the virus and saving lives. Government-imposed restrictions and lockdowns have required that businesses close temporarily. While many businesses survived in lockdown, others, particularly small businesses, did not, or were not able to reopen when the lockdowns were relaxed. We sought to study the phenomenon of small businesses still being squeezed and explore the internal drivers for their reopening after the lockdowns. We collected two-wave data from 303 small businesses in China during the COVID-19 pandemic in 2020. Our findings indicated that entrepreneurs with higher level of alertness were less likely to reopen their businesses after the lockdowns were lifted. In addition, the negative relationship between alertness and reopening was attenuated for older firms. Our findings underscore the role of entrepreneurs' cognitive characteristic in determining the reopening of businesses during the pandemic.

## 1. Introduction

The unprecedented COVID-19 pandemic has led to catastrophic consequences for businesses as well as economic and social disruptions around the world (Giones et al., 2020; Wolfe and Patel, 2021). In order to reduce and control the transmission of the infectious disease, governments have imposed social distancing restrictions and more drastic measures such as lockdowns, which forced millions of businesses to shut down temporarily. By April 2020, about half the world was under lockdowns of varying stringency. While lockdowns are effective at reducing the contagion of the virus, there have been mounting concerns over the long-term social and economic impact of the lockdowns, particularly the effects on small businesses (Brown and Rocha, 2020). With the threat of resurgence waning, some countries have eased restrictions to restart the economy for business recoveries.

Nonetheless, only a small percentage of businesses shuttered temporarily reopened successfully following the lifted lockdowns, while more businesses remained closed or delayed reopening (Cerullo, 2021). Many factors could affect the reopening of business subsequent to the relaxation of the lockdowns. For example, Bella-Elloitt and colleagues (2021) found that reopening delays were more likely to be driven by expectations of stricter regulations and pessimistic demand projections than by public health concerns. Lack of available resources to plan for a safe and responsible return to operations poses another barrier to reopening (Prunk and Kassler, 2020). For small businesses, government stimulus aid programs (Ludvig, 2021) and labor market dynamics (Cheng et al., 2020) also play a role in entrepreneurs' reopening of their businesses.

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As more and more countries are planning for reopening, partially or fully, the economy after the lockdowns, it is not only critical but timely to understand why entrepreneurs choose to reopen or not to reopen their businesses. The limited research to date has primarily focused on macro, environmental factors (Bella-Elloitt et al., 2021; Cheng et al., 2020) and generally overlooked entrepreneurs' psychology as determinants of business reopening. New venture creation constitutes one of the most salient moments in entrepreneurs' lifetime (Pennings, 1980), and entrepreneurs' values, beliefs, behaviors, and cognitive models fundamentally shape the characteristics, survival, and growth of their businesses. Thus, reopening, like all strategic behaviors of small businesses, can be predicted by entrepreneurs' psychological-cognitive attributes (Baron and Tang, 2011).

In order to offset this paucity in the extant literature, we seek to shed light on the underlying cognitive driver of business reopening during the pandemic to contribute to the understanding of this important phenomenon. In order to do so, we draw upon one of the most salient cognitive characteristics of entrepreneurs: entrepreneurial alertness, which refers to individuals' readiness and ability to identify and process information suggesting new opportunities (Kirzner, 1973). It has been widely acknowledged as a core component, with the longest history, in the opportunity recognition, evaluation, and exploitation process (e.g., Ardichvili et al., 2003; Tang et al., 2012; Valliere, 2013).

Two dominant yet distinct perspectives of alertness exist. The first, and earlier, perspective of alertness is economics-based and originated by Kirzner (1973, 1979). From an Austrian economics view, Kirzner conceptualized alertness as entrepreneurs' response to market disequilibrium and focused on market-level opportunities. More recently, a significant portion of the follow-on alertness research has gravitated towards an individual and cognitive construct (e.g., Baron, 2006; Gaglio and Katz, 2001; Lvasseur et al., 2020; Tang et al., 2021a; Tang et al., 2021b). In particular, Tang et al. (2012) articulated alertness as consisting of three dimensions. *Information scanning and search* refers to scanning and searching for new information and environmental changes. *Information association and connection* refers to connecting multiple pieces of information to build coherent options. *Opportunity evaluation and judgment* refers to evaluations and decisions about the profit potential of newly acquired and connected pieces of information.

The cognitive and psychological construct of entrepreneurial alertness (e.g., Tang et al., 2012) has increasingly gained traction in the past decade. Although entrepreneurial alertness is intricately interwoven with opportunity recognition, recent research has explored its influence in diverse domains outside opportunity development. For example, alertness has been found to predict individual and organizational outcomes such as career attitudes (Uy et al., 2015); entrepreneurial intentions (Obschonka et al., 2018; Westhead and Solesvik, 2016); incremental innovation (Lvasseur et al., 2020); business model innovation (Zhao et al., 2021); and firm performance (e.g., Xie and Lv, 2016). Research has also offered evidence that alertness can be predicted by a large array of individual characteristics such as schematic richness, association and priming (Valliere 2013); valor, industriousness, and critical thinking (Pirhadi et al., 2021); positive affect (Lvasseur et al., 2020); future time perspective (Tang et al., 2021a); prior knowledge (Hajizadeh and Zali, 2016); knowledge acquisition (Ma and Huang, 2016); regulatory modes (Amato et al., 2017); leadership, creativity, and proactivity (Obschonka et al., 2017); and psychological capital such as optimism and self-efficacy (Tang et al., 2021b).

Positively, alertness research has opened some important channels, with a focus on how entrepreneurs think, to investigate the cognition-behavior link (Tang et al., 2021c). In particular, alertness characterizes how entrepreneurs apply their schemata to "impute meaning to environmental change" (Valliere, 2013). It enhances entrepreneurs' ability to identify changes, shifts, objects, incidents, and patterns of behavior in the external environment (Ardichvili et al., 2003). Accordingly, entrepreneurial alertness will be most relevant and salient for entrepreneurs to respond to environmental disruptions because disruptions bring unique and unprecedented changes and opportunities (Roundy et al., 2018). Given the dynamic influence alertness has on individual judgments, decisions, and actions, we suggest that alertness will impact entrepreneurs' decision to reopen or not to reopen business during the pandemic. Specifically, we address the following research question: *How does entrepreneurial alertness impact small business reopening during the pandemic?* We further examine whether the alertness-reopening relationship varies by firm age.

Although COVID-19 started less than two years ago at the beginning of 2020, a multitude of scholarly research has addressed its impact on education, healthcare, economic development, social mobility, etc. At the interface of entrepreneurship and COVID-19, the majority of academic publications have taken the form of commentaries, conceptual pieces, and editorials (Kuckertz and Brändle, 2021). Constituting one of the first structured literature review on the empirical studies of the impact of COVID on entrepreneurial activities, Kuckertz and Brändle (2021) identified 34 studies published between January 2020 and January 2021. These studies fall into three general perspectives: uncertainty, resilience, and opportunity. The uncertain stream focused on the health and economic uncertainty generated by the COVID-19 crisis. The resilience stream shed light on resilience as a crucial characteristic for entrepreneurs to survive in the harsh environment. The opportunity perspective focused on the unique entrepreneurial opportunities brought forth by COVID-19. More importantly, Kuckertz and Brändle (2021) proposed that an integration of these three perspectives provided a promising path for future research to enhance entrepreneurship as "creative reconstruction" beyond the crisis.

In this research, we seek to provide empirical evidence for the relationship between entrepreneurial alertness and business reopening with two-wave data collected from 303 entrepreneurs of small businesses in March (during the most stringent lockdown period) and July (when the lockdowns were lifted) 2020 in China. By recognizing entrepreneurial alertness as an antecedent to entrepreneurs' decisions to reopen or not to reopen their business during the pandemic, we add to important cognitive foundations for understanding how entrepreneurs' characteristics shape their businesses' response to exogenous shocks.

## 2. Method

### 2.1. Sample and procedures

We tested hypotheses with entrepreneurs (i.e., founder-CEOs) of small businesses in China during the COVID-19 crisis. We selected this research setting for the following reasons. First, business lockdowns were enforced in China in January 2020. The crisis was largely

under control by May 2020, when the average daily number of cases dropped to single digits and government-imposed lockdowns were lifted in China.<sup>1</sup> China is generally believed to be the first country to experience the COVID crisis, the first to implement government-ordered lockdowns (with no public debate), and one of the first few countries to lift the lockdowns in early 2020. With many countries/regions around the world still experiencing the lockdowns, gradually reopening, or planning to fully reopening businesses, the empirical evidence obtained in China can inform theory and practice inside as well as outside China post-pandemic (Zhang et al., 2020). Second, founder-CEOs are the highest-level decision makers as well as major owners of small businesses. Therefore, investigating their cognitive characteristics provides implications for business reopening amid the pandemic.

We employed a two-wave survey design involving two informants in each firm. We first collected data from the founder-CEOs of each business on the independent variable (entrepreneurial alertness), moderator variable (firm age), and the control variables in March 2020, the toughest lockdown time in China. Following existing research (e.g., Chin et al., 2021), we asked founder-CEOs to identify their top management team members. Then the top management team members completed a brief survey to report on their firms' status (reopening or not reopening) in July 2020, when the lockdowns were lifted. We developed the survey in English and followed the double-back-translation procedure (Brislin, 1970) to ensure accuracy.

The authors hired a 10-person data collection team from a professional market research firm in Shandong province. This market research firm maintains a large database of businesses and direct contact with founders of a representative panel of small and medium-sized enterprises. The data-collection team identified 581 small businesses and approached their entrepreneurs in-person to explain the nature of the study. To ensure the confidentiality of the survey responses, the entrepreneurs and top management team members returned their surveys in sealed envelopes. 305 firms agreed and participated in Wave 1, and we obtained 303 valid, matching responses and in wave 2, yielding a final response rate of 52.1%. The firms in the final sample did not differ significantly from the nonresponding firms in terms of firm age, firm size, or gender of the entrepreneurs. The industries in which these firms operate match the industrial distribution in Shandong province.

## 2.2. Measures

**Entrepreneurial alertness.** We adopted the six-item measure (on a scale of 1–5) by Roundy et al. (2018) to measure alertness. Example items include: "I see favorable patterns in my business circumstances that other people don't," and "I am skillful at recognizing positive changes in my business climate." The Cronbach's alpha value was 0.83.

**Reopening.** Respondents were asked to select the current status of their business: reopened; shut down permanently; or closed temporarily. In our sample, 254 firms reopened (coded as "1"), and 49 firms remained closed temporarily (coded as "0"). No firm was shut down permanently.

**Firm age.** Respondents were asked to indicate that the number of years since their firms were founded. The average firm age in our sample was approximately three years old.

**Control variables.** At the individual level, we controlled founder-CEOs' age, gender ("1" = "female" and "0" = "male"), and education ("1" = "high school or lower," "2" = "some college," "3" = "professional education," "4" = "bachelor degree," "5" = "master degree," and "6" = "doctoral degree"). The average entrepreneurs' age was 38.9 years old and 29% of the respondents were female. At the firm level, we controlled firm size (measured with the number of employees) and slack resources (on a scale of 1–5) (Tang et al., 2020).

## 2.3. Analysis and results

STATA 16.1 was used to analyze the data. Table 1 summarized the descriptive statistics and the correlations among all the variables. Table 2 reported the logistic regression results predicting business reopening. Model 1 presented the baseline model. Model 2 introduced founder-CEOs' alertness, and indicated that the odds ratio (OR) is less than 1, revealing a negative relationship between alertness and reopening (OR = 0.31;  $p = 0.001$ ). Model 3 added the interaction term. The interaction term was greater than 1 (OR = 2.20;  $p = 0.016$ ), indicating a significant positive interaction where the negative relationship between alertness and business reopening was stronger for younger firms.

Margin analysis, illustrated in Fig. 1, reveals the relationship between alertness and business reopening is significantly negative for firms one year old or younger ( $b = -0.24$ ;  $p = 0.000$ ; 95% CI = [-0.34 to -0.14]), two years old ( $b = -0.19$ ;  $p = 0.000$ ; 95% CI = [-0.28 to -0.11]), and three years old ( $b = -0.13$ ;  $p = 0.000$ ; 95% CI = [-0.20 to -0.06]). However, the impact of alertness on reopening was not significant for businesses four years old ( $b = -0.05$ ;  $p = 0.270$ ; 95% CI = [-0.15 to 0.04]) or five years old ( $b = 0.04$ ;  $p = 0.634$ ; 95% CI = [-0.13 to 0.22]).

**Robustness test.** We ran two robustness tests. First, we conducted ordinary least squares regression to test the hypotheses, and the findings remained the same. Second, we added the industry of the businesses as a categorical control variable, and the findings were largely aligned with the results reported in Table 2.

## 3. Theoretical interpretations

This study explores a critical and timely topic on the relationship between entrepreneurial alertness and business reopening after the COVID-19 lockdowns. With a two-wave sample of 303 entrepreneurs of small businesses, we find that entrepreneurs with higher levels of alertness were less likely to reopen their businesses. A finer-grained analysis indicates that the negative relationship between

<sup>1</sup> <https://www.worldometers.info/coronavirus>.

**Table 1**  
Descriptive statistics and correlations (N = 303).

Variable name	Mean	S.D.	1	2	3	4	5	6	7
1 Firm age	3.07	1.07							
2 Firm size	2.87	1.43	0.12*						
3 Slack resources	3.75	0.64	0.07	0.10†					
4 Founder-CEO gender	0.29	0.45	0.05	-0.03	0.07				
5 Founder-CEO age	38.93	6.29	0.06	0.19***	0.07	-0.14*			
6 Founder-CEO education	3.82	1.02	0.00	0.24***	0.20***	0.04	-0.18**		
7 Entrepreneurial alertness	3.49	0.63	0.06	0.27***	0.35***	0.04	0.04	0.16**	
8 Reopening	0.84	0.37	0.00	-0.07	-0.23***	-0.13*	0.13*	-0.27***	-0.30***

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

**Table 2**  
Logistic regressions predicting the likelihood of business reopening (N = 303).

	Model 1		Model 2		Model 3	
	Odds Ratio	P > z	Odds Ratio	P > z	Odds Ratio	P > z
Firm age	1.031	0.851	1.009	0.958	0.050	0.017
Firm size	0.963	0.745	1.084	0.530	1.083	0.547
Slack resources	0.403	0.003	0.595	0.125	0.652	0.224
Founder-CEO gender	0.504	0.052	0.529	0.081	0.485	0.050
Founder-CEO age	1.050	0.119	1.052	0.113	1.057	0.089
Founder-CEO education	0.468	0.001	0.493	0.002	0.493	0.003
Entrepreneurial alertness			0.320	0.001	0.026	0.001
Entrepreneurial alertness * firm age					2.209	0.016
LR chi2	42.220	0.000	55.060	0.000	61.050	0.000
Pseudo R2	0.157		0.205		0.228	

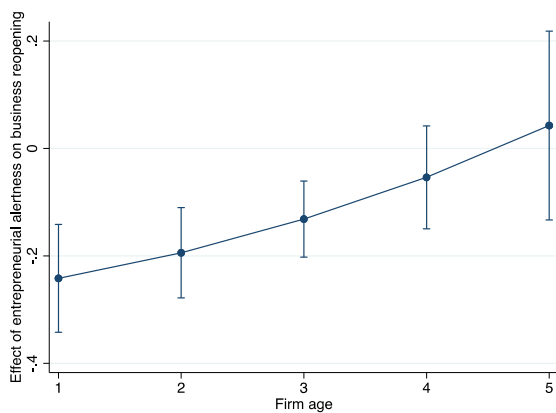


Fig. 1. The effect of entrepreneurial alertness on business reopening by firm age (with 95% confidence interval).

alertness and reopening occurs for younger businesses (i.e., three years and younger), but not for older businesses that were four or five years old.

These findings extend research on entrepreneurial alertness beyond the identification of business opportunities (e.g., Baron, 2006; Grégoire et al., 2011; Mitchell et al., 2007) to how entrepreneurs act in crisis situations. Alertness is well known as a tacit, day-to-day, and knowledge-related resource (Dutta and Crossan, 2005) that allows individuals to see business opportunities that others do not see (Kirzner, 2009). Extending this line of researching to COVID-19 as a crisis situation, we uncover a negative effect of alertness on business reopening and offer three rationales for this relationship drawn upon the entrepreneurial alertness theory.

First, entrepreneurial alertness has been suggested to be most useful when entrepreneurs respond to exogenous shocks because environmental disruptions often bring new business prospects (Roundy et al., 2018). Under such circumstances, individuals or organizations vary in their ability to identify changes and the associated entrepreneurial opportunities. Entrepreneurs with higher level of alertness (i.e., higher information search, information connection and evaluation capabilities) are better able to detect market changes and potential opportunities associated with these changes. Hence, they may spend more time searching and evaluating these changes for more promising new opportunities rather than focusing on reopening existing businesses. As entrepreneurs with higher alertness are more alert to external changes, they may be less likely to resume their businesses in the same old way but instead are more

likely to pivot their businesses given the new situation and the associated new opportunities under the pandemic (e.g., digital solutions, health and safety products) (Scheidgen et al., 2021). This reasoning is echoed by the phenomenon that COVID-19 and lockdowns have led to a surge in new businesses targeting the stay-at-home economy (Tai, 2021). As another case in point, more than 4.4 million new businesses were started between March 2020 and March 2021 in the U.S. (Fox, 2021).

Second, as highly alert entrepreneurs constantly seek new information, connect new pieces of information, and evaluate the new information, they may be more likely to reassess their existing businesses under the crisis situation rather than rushing to operate with business-as-usual. As alert entrepreneurs chronically activate their schemata (Gaglio, 1997), they will more frequently evaluate the resources and capabilities at hand, with the COVID-19 crisis in mind, to make sense of the external environment, to analyze the complexity of the situation, and to assess the costs and benefits of reopening their existing businesses. Alert entrepreneurs are unafraid of opposing information that may contradict their existing beliefs and are courageous to unlearn their cognitive frameworks (Pirhadi et al., 2021). Highly alert entrepreneurs are also curious to reach out to unfamiliar sources for more extensive information searching and integrating (Pirhadi et al., 2021). Thus, alert entrepreneurs will be less likely to take new information as it is, reducing the likelihood to reopen their businesses.

Third, with regard to COVID-related information, instead of accepting any new information as given, alert entrepreneurs will be more likely to ask such questions as: Is the curve flattened? Are the customers ready to walk in yet? Is the government decision to lift lockdowns premature? Are safe workplace protocols established yet to reopen? What are the worst-case scenarios? In order to seek answers to these questions, alert entrepreneurs will engage in more information search, connection, and evaluation. These entrepreneurs can be more alert to the potential disaster of reopening too soon and need more time to evaluate the current status of the situation, rather than simply reopening immediately following the lifting of lockdowns. This reasoning is consistent with the phenomenon that many retailers delayed reopening for Christmas 2020 due to COVID scare (Hogan, 2020). This rationale is also in line with the true story of Justin Amick, CEO of a hospitality company in Georgia. In his interview with USA Today (Wingard, 2020), he outlined the dilemma many small businesses were facing: "Small businesses, including restaurants, bars and entertainment venues, are currently fighting for their lives due to the nationwide forced closures. We need to be open to be able to survive, but we only have one opportunity to get it right, there are no second chances."

Our findings also demonstrate that the negative relationship between alertness and reopening is stronger for younger businesses. These findings are congruent with the multitude of research positing that older firms have more entrenched routines, processes and social embeddedness. Hence, older firms carry heavier inertia, which make it harder for such businesses to pivot or to reorient with external developments (Sorensen and Stuart, 2000). As a result, when encountering a major environmental disruption such as COVID, older firms may be more likely to resume their routines with their existing businesses, hence reducing the influence of alertness on reopening.

#### 4. Discussion

Our data with 303 founder-CEOs collected during the pandemic in 2020 indicated that entrepreneurs with higher alertness were less likely to reopen their businesses after the lockdowns were eased. This study makes several contributions to entrepreneurship theory and practice. First, we acknowledge the burgeoning research to examine entrepreneurial alertness outside the opportunity recognition domain by exploring the role of alertness in business reopening during the pandemic. Our study extends the role of alertness into firm response to environmental disruptions and confirms that the influence of alertness is not limited to opportunity development or new venture creation. Rather, our significant results point towards the potential of entrepreneurial alertness in helping us further uncover entrepreneurs' strategic actions in unprecedented crises.

Second, there is already a large influx of research on the impact of COVID-19 on businesses and economy since the start of the pandemic (Grashuis, 2021). Considering the increase in the number of small business closures (Crane et al., 2020), the majority of this research has focused on small business survival and growth as well as macro-environmental factors (e.g., government policies) assisting shuttered small businesses during the pandemic. Nonetheless, efforts to investigate small business response to eased lockdowns (e.g., business reopening) are in severe paucity. To reopen or not to reopen business after the lifting of lockdowns is important because it is directly relevant to the restoration of the economic functions of these businesses and employment opportunities for people in the businesses, and the ultimate survival and growth of small businesses. Our study is among the first to draw upon entrepreneurial cognition research to examine the current phenomenon of business reopening. By recognizing the influence of entrepreneurial alertness on business reopening, we add to important psychological and cognitive foundations for understanding small businesses' strategic actions in response to the world crisis.

Our study offers policy and practical implications as well. The COVID-19 public health crisis and subsequent economic crisis have created unique challenges for small businesses around the world. Policy makers at varying levels have introduced various, critical assistance programs to support small businesses (Grashuis, 2021) as they not only persevere, but attempt to recover. Our study suggests that policymakers should take actions more carefully and more effectively by considering the underlying mechanisms behind the phenomenon of small business reopening or not reopening. More specifically, it is worth exploring whether small businesses delay reopening due to health concerns and labor shortage or identification of more promising opportunities created by the pandemic. If former, more assistance should be provided for small businesses to help them maintain and survive their existing businesses, such as small business tax credit programs, economic disaster loans, and paycheck protection program. If latter, policymakers should shift their focus to support small businesses in their further identification and evaluation of new opportunities with more advanced elements in the entrepreneurial ecosystem such as government-granted incubators, co-working spaces, mentorship programs, and so on. By doing so, more focused and effective support can be provided to help small businesses survive and grow amid and post-pandemic. In



addition, as economists predicted: “For each additional week a business is closed, that reduces its probability of reopening by about two percentage points” (Cerullo, 2021). Therefore, it is crucial for small business owners and entrepreneurs to understand that time is not on their side so that they can reopen quickly or to further engage in alertness tasks of searching, connecting, and evaluating new information for new business opportunities, in order to not fall into “economic long-haulers.”

As with all research, our study is not without limitations. Although producing knowledge of the relationship between entrepreneurial alertness and business reopening is a critical step in the current situation, finer-grained investigation is necessary to understand the mediating mechanisms in terms of how alertness influences business reopening. In addition, although great efforts were exerted in the survey design to ensure two-wave responses provided by two informants in each firm, it is important to acknowledge that we assessed reopening at one point in time and we could not continuously monitor these firms’ status, which limits the generalizability of our results. Future research is warranted to examine the temporality of small business reopening, that is, whether and when they eventually reopen, in addition to whether they reopen right after the lockdowns were ceased. Finally, we look forward to more future research endeavors to draw upon the robust entrepreneurial cognition research (e.g., time perspective, affect, biases; Baron, 2006; Tang et al., 2021a; Zhang and Cueto, 2017) to investigate small business strategies, behaviors, and decisions during “black swan events” (Winston, 2020) such as a worldwide pandemic.

## 5. Conclusion

As we were revising this manuscript, Tokyo 2020 Olympics was being held with no spectators in stadiums; the Delta variant was surging all around the world; some businesses were reopened at a reduced capacity; and more and more major businesses were delaying return-to-office plans as they mandated all employees get vaccinated. As entrepreneurs are encountering such unprecedented exogenous shocks and adapting to the new normal, to reopen or not to reopen business would continue to be a critical decision. The burgeoning entrepreneurial alertness research in the past decade has established alertness as a key cognitive antecedent to a large range of business decisions and behaviors. Examining business reopening during COVID-19 from the theoretically grounded perspective of entrepreneurial alertness represents a new research stream embedded in the larger discussion of entrepreneurship and crises (Kuckertz and Brändle, 2021). We hope our research sparks meaningful paths forward to extend entrepreneurial alertness research into the phenomenon of global crises.

## Author statement

Jintong Tang: Conceptualization; Investigation; Methodology; Project administration; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Stephen Zhang: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Song Lin: Data curation; Investigation; Project administration; Resources.

## Declaration of competing interest

None.

Data are available upon request from the corresponding author.

## References

- Amato, C., Baron, R.A., Barbieri, B., Bélanger, J.J., Pierro, A., 2017. Regulatory modes and entrepreneurship: the mediational role of alertness in small business success. *J. Small Bus. Manag.* 55, 27–42.
- Ardichvili, A., Cardozo, R., Ray, S., 2003. A theory of entrepreneurial opportunity identification and development. *J. Bus. Ventur.* 18, 105–123.
- Baron, R.A., 2006. Opportunity recognition as pattern recognition: how entrepreneurs “connect the dots” to identify new business opportunities. *Acad. Manag. Perspect.* 20 (1), 104–119.
- Baron, R.A., Tang, J., 2011. The role of entrepreneurs in firm-level innovation: joint effects of positive affect, creativity, and environmental dynamism. *J. Bus. Ventur.* 26 (1), 49–60.
- Bella-Elliott, D., Cullen, Z., Glaeser, E., Luca, M., Stanton, C., 2021. Business Reopening during the COVID-19 Pandemic. *Harvard Business School Entrepreneurial Management Working Paper No. 20-132*. Harvard Business School NOM Unit Working Paper No. 20-132, Available at: SSRN: <https://ssrn.com/abstract=3634162>. (Accessed 30 May 2021).
- Brislin, R.W., 1970. Back-translation for cross-cultural research. *J. Cross Cult. Psychol.* 1 (3), 185–216.
- Brown, R., Rocha, A., 2020. Entrepreneurial uncertainty during the Covid-19 crisis: mapping the temporal dynamics of entrepreneurial finance. *Journal of Business Venturing Insights* 14, e00174.
- Cerullo, M., 2021. Many small services businesses won’t be able to reopen after COVID-19. May 6, Available at: <https://www.cbsnews.com/news/small-businesses-services-sector-wont-reopen-after-closing-covid-19/>. (Accessed 8 June 2021).
- Cheng, W., Carlin, P., Carroll, J., Gupta, S., Rojas, F., Montenegro, L., Nguyen, T., Schmutte, I., Scrivner, O., Simon, K., Wing, C., Weinberg, B., 2020. Back to Business and (Re)Employing Workers? Labor Market Activity during State COVID-19 Reopenings. National Bureau of Economic Research. Working Paper 27419. Available at: <https://www.nber.org/papers/w27419>. (Accessed 30 May 2021).
- Chin, M.K., Zhang, S., Jahanshahi, A.A., Nadkarni, S., 2021. Unpacking political ideology: CEO social and economic ideologies, strategic decision-making processes, and corporate entrepreneurship. *Acad. Manag. J.* <https://doi.org/10.5465/amj.2019.1228>.
- Crane, L.D., Decker, R.A., Flaaen, A., Hamins-Puertolas, A., Kurz, C., 2020. Business Exit during the COVID-19 Pandemic: Non-traditional Measures in Historical Context. *Finance And Economic Discussion Series 2020-089*. Federal Reserve System, Washington, D.C.
- Dutta, D., Crossan, M., 2005. The nature of entrepreneurial opportunities: understanding the process using the 4I organizational learning framework. *Enterpren. Theor. Pract.* 29 (4), 425–449.
- Gaglio, C., 1997. Opportunity identification: review, critique and suggested research directions. In: Katz, J. (Ed.), *Advances in Entrepreneurship, Firm Emergence, and Growth*, vol. 3. JAI Press, Greenwich, CT, pp. 139–202.
- Gaglio, C.M., Katz, J.A., 2001. The psychological basis of opportunity identification: entrepreneurial alertness. *Small Bus. Econ.* 16 (2), 95–111.

- Giones, F., Brem, A., Pollack, J., Michaelis, T., Klyver, K., Brinckmann, J., 2020. Revising entrepreneurial action in response to exogenous shocks: considering the COVID-19 pandemic. *Journal of Business Venturing Insights* 14, e00186.
- Grashuis, J., 2021. Self-employment duration during the COVID-19 pandemic: a competing risk analysis. *Journal of Business Venturing Insights* 15, e00241.
- Grégoire, D.A., Corbett, A.C., McMullen, J.S., 2011. The cognitive perspective in entrepreneurship: an agenda for future research. *J. Manag. Stud.* 48 (6), 1443–1477.
- Hogan, R., November 3, 2020. Once bitten, twice shy: why retailers will be nervous of a Covid Christmas. Available at: <https://insideretail.com.au/e-commerce/once-bitten-twice-shy-why-retailers-will-be-nervous-of-a-covid-christmas-202011>. (Accessed 8 June 2021).
- Hajizadeh, A., Zali, M., 2016. Prior knowledge, cognitive characteristics and opportunity recognition. *International Journal of Entrepreneurial Behavior & Research* 22 (1), 63–83.
- Kirzner, I.M., 1973. *Competition and Entrepreneurship*. University of Chicago Press, Chicago, IL.
- Kirzner, I.M., 1979. *Perception, Opportunity, and Profit: Studies in the Theory of Entrepreneurship*. University of Chicago Press, Chicago, IL.
- Kirzner, I.M., 2009. The alert and creative entrepreneur: a clarification. *Small Bus. Econ.* 32 (2), 145–152.
- Kuckertz, A., Brändle, L., 2021. Creative reconstruction: a structured literature review of the early empirical research on the COVID-19 crisis and entrepreneurship. *Management Review Quarterly*. <https://doi.org/10.1007/s11301-021-00221-0>.
- Levasseur, L., Tang, J., Karami, M., Busenitz, L., Kacmar, M., 2020. Increasing alertness to new opportunities: the influence of positive affect and implications for innovation. *Asia Pac. J. Manag.* <https://doi.org/10.1007/s10490-020-09724-y>.
- Ludvig, S., 2021. Everything you need to know about Coronavirus federal small business stimulus aid programs. U.S. Chamber of Commerce. Available at: <https://www.uschamber.com/co/start/strategy/federal-small-business-stimulus-aid-programs-guide>. (Accessed 30 May 2021).
- Ma, R., Huang, Y.C., 2016. Opportunity-based strategic orientation, knowledge acquisition, and entrepreneurial alertness: the perspective of the global sourcing suppliers in China. *J. Small Bus. Manag.* 54 (3), 953–972.
- Mitchell, R., Busenitz, L., Bird, B., Gaglio, C., McMullen, J., Morse, E., Smith, J., 2007. The central question in entrepreneurial cognition research 2007. *Enterpren. Theor. Pract.* 31 (1), 1–27.
- Obschonka, M., Hakkarainen, K., Lonka, K., Salmela-Aro, K., 2017. Entrepreneurship as a twenty-first century skill: entrepreneurial alertness and intention in the transition to adulthood. *Small Bus. Econ.* 48 (3), 487–501.
- Obschonka, M., Hahn, E., Bajwa, N., 2018. Personal agency in newly arrived refugees: the role of personality, entrepreneurial cognitions and intentions, and career adaptability. *J. Vocat. Behav.* 105, 173–184.
- Pennings, J.M. 1980. Environmental Influences on the Creation Process. In J.R. Kimberly & R.H. Miles (Eds.), *The Organizational Life Cycle* (pp. 134–160). San Francisco, CA: Jossey-Bass.
- Pirhadi, H., Soleimanof, S., Feyzbakhsh, A., 2021. Unpacking entrepreneurial alertness: how character matter for entrepreneurial thinking. *J. Small Bus. Manag.* <https://doi.org/10.1080/00472778.2021.1907584>.
- Pronk, N., Kessler, W., 2020. Balancing health and economic factors when reopening business in the age of COVID-19. *J. Occup. Environ. Med.* 62 (9), e540–e541.
- Roundy, P.T., Harrison, D.A., Khavul, S., Pérez-Nordtvedt, L., Mcgee, J.E., 2018. Entrepreneurial alertness as a pathway to strategic decisions and organizational performance. *Strat. Organ.* 16 (2), 192–226.
- Scheidgen, K., Gümüşay, A., Günzel-Jensen, F., Krlev, G., Wolf, M., 2021. Crises and entrepreneurial opportunities: digital social innovation in response to physical distancing. *Journal of Business Venturing Insights* 15, e00222.
- Sørensen, J.B., Stuart, T.E., 2000. Aging, obsolescence, and organizational innovation. *Adm. Sci. Q.* 45 (1), 81–112.
- Tai, J., January 20, 2021. Startup surge: pandemic causes new businesses to double. Available at: <https://www.forbes.com/sites/theyec/2021/01/20/startup-surge-pandemic-causes-new-businesses-to-double/?sh=3549de39635d>. (Accessed 7 June 2021).
- Tang, S., Nadkarni, S., Wei, L.Q., Zhang, S.X., 2020. Balancing the yin and yang: TMT gender diversity, psychological safety, and firm ambidextrous strategic orientation in Chinese high-tech SMEs. *Acad. Manag. J.* <https://doi.org/10.5465/amj.2019.0378>.
- Tang, J., Kacmar, M., Busenitz, L., 2012. Alertness in the pursuit of new opportunities. *J. Bus. Ventur.* 27 (1), 77–94.
- Tang, J., Levasseur, L., Karami, M., Busenitz, L., 2021a. Being alert to new opportunities: it is a matter of time. *Journal of Business Venturing Insights* 15, e00232.
- Tang, J., Baron, R.A., Yu, A., 2021b. Entrepreneurial alertness: exploring its psychological antecedents and effects on firm outcomes. *J. Small Bus. Manag.* <https://doi.org/10.1080/00472778.2021.1945071>.
- Tang, J., Yang, J., Ye, W., Khan, S., 2021c. Now is the time: The effects of linguistic time reference and national time orientation on innovative new ventures. *J. Bus. Ventur.* 36 (5), 106142.
- Uy, M.A., Chan, K.Y., Sam, Y.L., Ho, M.R., Chernyshenko, O.S., 2015. Proactivity, adaptability and boundaryless career attitudes: the mediating role of entrepreneurial alertness. *J. Vocat. Behav.* 86, 115–123.
- Valliere, D., 2013. Towards a schematic theory of entrepreneurial alertness. *J. Bus. Ventur.* 28 (3), 430–442.
- Westhead, P., Solesvik, M.Z., 2016. Entrepreneurship education and entrepreneurial intention: do female students benefit? *Int. Small Bus. J.* 34 (8), 979–1003.
- Wingard, J., 2020. Leaders: 3 reasons you shouldn't open your business quite yet. Available at: <https://www.forbes.com/sites/jasonwingard/2020/05/01/leaders-3-reasons-you-shouldnt-open-your-business-quite-yet/?sh=3123de8c3aca>. (Accessed 1 August 2021). Accessed.
- Winston, A., 2020. Is the COVID-19 Outbreak a Black Swan or the New Normal? *MIT Sloan Management Review*. March.
- Wolfe, M., Patel, P., 2021. Everybody hurts: self-employment, financial concerns, mental distress, and well-being during COVID-19. *Journal of Business Venturing Insights* 15, e00231.
- Xie, X., Lv, J., 2016. Social networks of female tech-entrepreneurs and new venture performance: the moderating effects of entrepreneurial alertness and gender discrimination. *Int. Enterpren. Manag. J.* 12 (4), 963–983.
- Zhang, S.X., Cueto, J., 2017. The study of bias in entrepreneurship. *Enterpren. Theor. Pract.* 41 (3), 419–454.
- Zhang, S.X., Wang, Y., Rauch, A., Wei, F., 2020. Unprecedented disruption of lives and work: health, distress and life satisfaction of working adults in China one month into the COVID-19 outbreak. *Psychiatr. Res.* 288, 112958.
- Zhao, W., Yang, T., Hughes, K.D., Li, Y., 2021. Entrepreneurial alertness and business model innovation: the role of entrepreneurial learning and risk perception. *Int. Enterpren. Manag. J.* 17, 839–864.