Break or Compromise? Examining the impact of poverty-related life stressors on persistence in entrepreneurship

Abstract

Entrepreneurial persistence is a key behavior leading to entrepreneurial success. However, the drivers and cognitive processes shaping persistence in entrepreneurship in contexts of poverty have rarely been explored. The inconsistent findings on the impact of economic poverty on entrepreneurial motivation from previous studies may be due to a failure to distinguish the perceived poverty intensity of entrepreneurs. Drawing on transactional theory of stress, we examined the double-edge-sword effect of poverty-related life stressors (PLS) on entrepreneurial persistence. From primary and cross-sectional data on 119 entrepreneurs from Fugong, a low income location in China, we found entrepreneurs in poor areas persist in running business depend on the intensity of PLS. A U-shape relationship exists between PLS and entrepreneurial persistence, and we also found such a relationship is mediated by cognitive appraisal. Our findings have important implications in expanding the scope of entrepreneurship-related work concerned with poverty contexts.

Keywords: poverty-related life stressors; entrepreneurial persistence; challenge appraisal; SDG1: No poverty

1. Introduction

Poverty presents a significant challenge to economic and social development (Cumming et al., 2020). Poverty elimination is a key sustainable development goal of the United Nations (United Nations, 2015), with 47% the global population living on less than US$6.85 per day (World Bank, 2022). Among them, the number of poor in the East Asia Pacific including China reached 556 million (World Bank, 2023). Existing literature has provided evidence that poverty can be alleviated through entrepreneurship (Korosteleva & Stępień-Baig, 2020; Si et al., 2015; Kimmitt et al., 2020; Scott et al., 2012; Matos & Hall, 2020), and stimulation of entrepreneurial activities in poverty-stricken areas can effectively promote local employment, increase

income and wealth accumulation (Sutter et al., 2019; Lin et al., 2020; Santos et al., 2022; Bruton et al., 2013; Prahalad, 2005). In this study, we focus on transitional entrepreneurs who are marginalized by poverty (Pidduck & Clark, 2021). In doing so, we recognize the need for more entrepreneurial research on individuals operating in disadvantaged geographies (Zhang et al., 2010), and the need to understand why marginalized individuals pursue entrepreneurship for positional advantage (Pidduck & Tucker, 2022).

Entrepreneurship is one of the most stressful career choices (Cardon & Patel, 2015). Uncertainty, lack of control, unanticipated setbacks, peaks and valleys, and chaos fill in the entrepreneurial process (Morris et al., 2012). The entrepreneurial journey makes entrepreneurs face many stressors in different areas (Lerman et al., 2020), especially in economically underdeveloped areas. Numerous stressors can arise from unfavorable entrepreneurial environments (Morris & Tucker, 2020), including work-family conflicts (Yuan et al., 2023) or economic or life-related hardship such as hunger, decent shelter and clothes, tired, struggling to pay bills without sufficient funds (Pearlin et al., 2005; Mayo et al., 2022). Entrepreneurs in poverty-stricken areas not only face the challenges of "liability of newness and smallness" but also suffer liability of poorness, such as literacy shortcomings, intense non-business disturbance/pressures and safety nets (Morris, 2020; Morris et al., 2022; Morris & Tucker, 2023). Poverty-related life stressors (PLS) are non-business stressors, directly linked to entrepreneurs' daily life in poverty-stricken areas, such as inadequate and unaffordable housing, food insecurity, insufficient heating system and non-business debt obligations (Morris & Tucker, 2023).

These stressors are not directly linked to the running of the entrepreneur's business but add an additional burden beyond the challenges that all entrepreneurs must address, and require large amounts of the entrepreneur's time and emotion commitment to solve the problem in the process of entrepreneurship (Morris & Tucker, 2023). Impoverished entrepreneurs struggle for their day-to-day necessities (Su et al., 2020) or live at/near subsistence (Shi et al., 2020) and face direct financial obligations for paying household expenses (Sinclair & Cheung, 2016). Poverty-related life stressors arise from economic poverty, which signifies low income and lacks money (Santos et al., 2022; World Bank, 2022; Su et al., 2020). Money is of great importance for many people to acquire resources necessary for survival and/or desired for comfort and indicator of personal accomplishment (Sinclair & Cheung, 2016). Households with low-income may experience financial stress more often (American Psychological Association, 2015). In poverty-stricken areas, small market size and limited access to financial resources make entrepreneurs under pressure not making enough money to pay rent, the bills, and buying food. These inabilities to pay rent, utility bills and food are related to lack of income. The insufficient income may arise from marginal and inefficient businesses which poor entrepreneurs typically run, generating little money and even possible to exacerbate the shortage of income (Shane, 2009; Santos et al., 2022). Poverty-related stress causes significant physical and mental health problems (Wadsworth, 2012; Mayo et al., 2022). To mitigate the problem, it partially relies on an individual's cognitive judgement toward the facing stress. Experiencing poverty can significantly impact an individual cognitive process and behaviors (Morris et al., 2018). The transactional

theory of stress emphasizes that an individual cognitive appraisal is a process which the individual evaluates whether external and/or internal circumstances are threats or challenges (Lazarus & Folkman, 1984; Chen et al., 2022).

We posit that PLS forces individuals into entrepreneurship because of limited access to formal employment and a need to fulfil basic needs (e.g. food, shelter) which pushes them to look for income-generating opportunities to escape from poverty (Goel & Karri, 2020). Entrepreneurship appears to be the only option available to cope with the adversity that they face. We adopt the transactional theory of stress and explore whether poverty-related stressors can have positive impacts, with stressors being a motivator for impoverished entrepreneurs to continue to run their business. To satisfy basic life needs, impoverished entrepreneurs need to continue making efforts to maintain their business regardless of failures, barriers or threats. Such efforts (Holland, 2011) or behaviors characterized by constant goal-directed energy aimed at achieving entrepreneurial success (Seo et al., 2004) or a trait that involves sustaining goal-directed action and energy when faced with barriers (Baum & Locke, 2004) is viewed as entrepreneurial persistence. Even though scholars have not reached an agreement on whether entrepreneurial persistence is a behaviour or a trait, the recent literature review paper on the topic discovered that most scholars view entrepreneurial persistence is a behaviour with continuous efforts in a venture despite of obstacles and setbacks (Yan et al., 2023). Thus, in our study, we follow the existing understanding of entrepreneurial persistence and define it as a continuous and effortful behavior for achieving goals regardless of failures, impediments or threats, either real or imagined (Holland, 2011; Gimeno et al., 1997; Cardon & Kirk, 2015). A substantial number of scholars call for exploring the mechanism that underpins the relationship between poverty and entrepreneurship (Cumming et al., 2020; Si et al., 2020; Korosteleva & Stępień-Baig, 2020). Yet, the relation between poverty-related stress and entrepreneurship keeps further silence. Entrepreneurs in poverty-stricken areas struggle for basic necessities (e.g. water, food, shelter, clothes) (Allen et al., 2023). Will these entrepreneurs persist in running their business when facing these sorts of poverty-related life stressors?

Furthermore, scholars call for exploring the nonlinear relationship between poverty and entrepreneurship (Kimmitt et al., 2020). The existing literature has shown that there is a curvilinear relationship either U-shaped (Zaefarian et al., 2023) or inverted U-shaped (Kavitha et al., 2022) or both U-shaped and inverted U-shaped (Lindberg et al., 2013; Zhang et al., 2016) between stressors and individual behaviour. The effect of stressors on behaviour is influenced by how the individual assesses the stressors. Will a nonlinear effect exist between PLS and entrepreneurial persistence? Our research aims to address the questions by exploring the impact of poverty-related life stressors on entrepreneurial persistence.

Our paper makes the following contributions to research. First, we respond to the calls for further exploration on the relationship between poverty and entrepreneurship (Cumming et al., 2020), specifically the impacts of poverty in specific contexts (Korosteleva & Stępień-Baig, 2020) and what mechanisms enable entrepreneurial activities to influence poverty (Cumming et al., 2020). Our study focuses on the effect of impoverished entrepreneurs' non-business life stressors (e.g. unable to pay utility bills on time, unable to heat home, missed meals because of lack of money) on entrepreneurial persistence in an emerging country. It extends the existing literature on this specific type of liability of poorness which are fundamental stressors impoverished entrepreneurs bear (Morris & Tucker, 2023), and adds to the literature by revealing how poverty-related life stressors can be perceived by entrepreneurs as threats but also as challenging situations instead of threats in the whole entrepreneurship journey (Mayo et al., 2022; Yuan et al., 2023), that lead to a positive coping response - *entrepreneurial persistence*. Second, our research makes up for the lack of quantitative evidence to explain how entrepreneurship impacts poverty (Korosteleva & Stępień-Baig, 2020). We analyze primary data on 119 impoverished entrepreneurs in an emerging economy which presents similar poverty characteristics as those in transitional economies, made an empirical analysis and shed some light on the mechanism how poverty-related life stressors impact entrepreneurial persistence. Furthermore, our empirical study argues that poverty-related life stressors have a U-shaped effect on entrepreneurship persistence. Our research findings show that both low and high poverty-related life

stressors increase challenge appraisal and entrepreneurial persistence, and moderate poverty-related life stressors lower challenge appraisal and entrepreneurial persistence. It enriches the fact that the relationship between poverty and entrepreneurship is complex, multi-conjunctural and non-linear (Kimmitt et al., 2020), and contributes to the literature body by providing quantitative evidence to show the nonlinear effect of poverty-related life stressors on entrepreneurial persistence. Moreover, we employ the transactional theory of stress also called cognitive appraisal theory in our study, to explore how the positive evaluation of challenges intermediates the impact of poverty-related life stressors on entrepreneurial persistence. Our research extends the application of transactional theory of stress to the field of entrepreneurship, enriching the existing literature on entrepreneurship. Third, our study extends the current theorizing on unstable and dynamic contexts of poverty (Welter et al., 2018), expanding the research on entrepreneurial behavior to poverty settings while focusing on the positive impact of poverty-related life stressors on impoverished entrepreneurs in the world's largest developing country - China, thus responding to Sutter et al.'s (2019) call to closely examine entrepreneurial circumstances affected by poverty and more variety of contexts.

Our paper is organized as follows. We begin by setting out the theory that we draw upon and present our hypotheses. We then outline the research methodology and results, and then provide a number of conclusions and implications.

2. Theory and hypotheses

Poverty is widely viewed as a source of stress. Poverty-related stress is associated with financial, physical, and psychosocial challenges specific to marginal areas (Wadsworth, 2012; Allen et al., 2023; Yessoufou et al., 2018). The measure assessing poverty-related stress is often linked to general life stressors, such as lack of food,

without utilities and enough money (Allen et al., 2023; Morris & Tucker, 2023). To help individuals meet basic necessities, and achieve physiological and psychological equilibrium, scholars have highlighted transitional entrepreneurship (Pidduck & Clark, 2021) necessity entrepreneurship (Lent, 2022) and entrepreneurial aspiration (Goel & Karri, 2020) as a solution, and highlight the importance of entrepreneurial persistence for dealing with PLS (Yessoufou et al., 2018).

2.1 Poverty-related Life Stressors and Entrepreneurial Persistence

The characteristics of life for the poor usually include: low and insecure income, a low level of education for themselves as well as no guarantee of education for their children, a low level of asset accumulation and no guarantee of housing security, little room for personal skill improvement, no prospect of career development, and uneven medical coverage, all of which contribute to their low social status (Shafir, 2017). A poverty environment promotes necessity entrepreneurial activities, as secure livelihood options are scarce (O'Donnell et al., 2021). However, the term necessity is ambiguous and the distinction between necessity and opportunity entrepreneurship is often based on arbitrary criteria (Williams & Williams, 2012). Mueller & Pieperhoff (2023) state that necessity entrepreneurs are less future-oriented and less likely to strive for growth compared to those who are opportunity entrepreneurs. Yet research has also found that conditions of extreme poverty renders individuals likely to show risk-taking tendencies (Zhang et al., 2022), which will push them to solve their life problems in risky and non-traditional ways to survive, such as by coming up with new ideas and increasing input in existing business activities.

Research on ‘underdog’ entrepreneurship holds that adversity can help entrepreneurs become more effective by cultivating their relevant characteristics (Miller & Le Breton-Miller, 2017). Personal characteristics related to poverty situations, such as self-reliance and resourcefulness (Cheng et al., 2021) can assist them in persisting in entrepreneurship. In this sense, entrepreneurs in contexts of poverty are akin to transitional entrepreneurs who can be defined as actors socially, institutionally, culturally, or resourcefully marginalized by virtue of community membership pursuing new ventures as a vehicle for positional advancement (Pidduck & Clark, 2021). Transitional entrepreneurs are able to overcome adversity and harness opportunities even in constrained contexts (Morris et al., 2018). At the same time, in facing the future, positive prosperity expectation has been proved to enhance entrepreneurship in a resource-constrained context (Kimmitt et al., 2019).

Stressors stemming from life-related poverty can be hungry, tired, and juggle to pay bills without sufficient funds (McLoyd, 1990). These life-related poverty stressors together with literacy weakness, a scarcity mindset and lack of financial resources are labeled liability of poorness which impoverished entrepreneurs bear (Morris, 2020). To overcome these barriers, public policies and entrepreneurial qualities (e.g. persistence, adaptability) should be reconciled (Morris, 2020).

Persistence is viewed as an important factor for continuing entrepreneurial effort (Cardon & Kirk, 2015). In our study, we define entrepreneurial persistence as a behavior involving continuous and effortful hand work to achieve goals regardless of failures, impediments or threats, either real or imagined (Holland, 2011; Gimeno et al.,

1997; Cardon & Kirk, 2015). Individual characteristics, attributes of the new venture, entrepreneurial passion, institutional support economic conditions and regulatory environments are viewed as factors which influence entrepreneurs to persist or leave (Ahsan et al., 2021; Wu et al., 2007; Caliendo et al., 2020; Millán et al., 2012). However, the existing literature has not reached an agreement on the factors considered to explain persistence (Caliendo et al., 2020). Our study focuses on an important, yet underresearched, factor: poverty-related life stressors (PLS) and aims to explore whether PLS influences entrepreneurial persistence. These type of stressors are prominent in poor areas, which causes entrepreneurs to face more barriers compared with those entrepreneurs in non-poor areas. Indeed, we posit that PLS forces individuals into entrepreneurship because it appears to be the only option available to cope with the adversity that they face. In order to be entrepreneurial and sustain a business, persistence is of great importance. This factor considers the liability of poorness (e.g. non-business pressures) which is largely neglected by existing literature (Morris, 2020; Morris et al., 2022).

Economic geography, government policies, environmental resources and other external factors may be key influencing factors in initiating and supporting entrepreneurial schemes. As external features that are difficult to improve in a short period of time, the characteristics of a poverty environment may influence entrepreneurial behavior (Morris et al., 2020). Entrepreneurship theories have pointed out the important impact of adversity on entrepreneurial behavior (Shepherd et al., 2020; Baron et al., 2018); however, a unified conclusion on the results of such impacts has

not been achieved. Some scholars believe that adversity shapes certain individual characteristics (Miller & Le Breton-Miller, 2017) and improves the ability to start a business (Alvarez & Barney, 2007); others propose that adversity hinders the acquisition of resources and is an obstacle to effective entrepreneurship (Shepherd et al., 2020). Thus we ask, when impoverished entrepreneurs face the adversity, will they persist in entrepreneurship? We argue that for entrepreneurs in poverty-stricken areas there may be a nonlinear relationship between PLS and entrepreneurial persistence, and the intensity of perceived living poverty could influence this relationship.

The beliefs of entrepreneurs in poverty-stricken context in running a business are also affected by constant and occasional non-business pressures. These forms of pressure place an additional burden described as the 'liability of poorness' on entrepreneurs that goes beyond the challenge of the 'liability of newness and smallness' that all entrepreneurs must face (Morris, 2020) and that may make it difficult for individuals to persist in venture creation. Entrepreneurs in poor areas exhibit a variety of additional traits, including literacy shortcomings, lack of entrepreneurial mindset, non-business disturbance and safety nets (Morris, 2020; Morris et al., 2022). They are more likely to have a high number of negative poverty-related life events caused by lack of income (Morris, 2018). Economic poverty usually manifests in problems such as insufficient food, poor housing quality and limited access to living loans, which constrains entrepreneurial potential and ambition, often exposing entrepreneurs in poverty-stricken areas to noncommercial pressures that are difficult to overcome, as limited resources are available not only for business activities but also for basic living

needs. When PLS is at a low level, impoverished entrepreneurs are able to afford the majority of basic necessities (e.g. food, utility, shelter). In this case, the entrepreneurs may neither be aware of PLS as a problem nor view the PLS as a big problem. The low level of PLS does not need the entrepreneurs to utilise lots of energy, emotion and commitment in handling the non-business stressors, and allows them to focus on their venture business and hold a high level of entrepreneurial persistence. When PLS moves to a moderate level, it signifies impoverished entrepreneurs are unable to afford half of the basic necessities. These unfavorable life stressors consume a large portion of the time and attention of entrepreneurs in poor areas (Morris, 2020), distract entrepreneurs from solving core business problems, which will reduce the resources available in other domains, hindering cognitive functioning in business creation. Moreover, start-ups in poor areas are usually labor-intensive ventures (Rijkers et al., 2010) that rely heavily on entrepreneurs to manage them and perform core tasks (such as construction, cleaning or cooking). Life stressors may consume business hours, postpone or change key business decisions, or occupy business resources (Morris & Tucker, 2021). Likewise, as entrepreneurs are distracted by these external stressors, the motivation to make business decisions may be affected. In addition, low-income individuals experience long-term stress (Baum et al., 2010), and a series of life stressors such as difficulty with repaying debts, insufficient food and other problem disrupt their financial situation, making it difficult for them to continuously devote enough financial resources to business activities, not to mention in the face of external shocks and unexpected events in this scenario (e.g. entrepreneurial constraints due to the Covid-19 pandemic). Some

people enter entrepreneurship because of no or little choice (Shepherd et al., 2022). Thus, the moderate level of PLS decreases the entrepreneurs' efforts to continuously run their businesses and lowers the level of entrepreneurial persistence.

Yet, after experiencing a moderate level of PLS, entrepreneurs may hold a high level of entrepreneurial persistence when PLS is at a high level. Exposure to moderate stressors is associated with facilitating mastery and control and developing a propensity for managing well in the future (Seery et al., 2013). This is because the entrepreneurs have accumulated experience in facing the PLS and are not afraid of the stressors as before. The gained experience positively impacts impoverished entrepreneurs' persistence in entrepreneurship. In addition, many impoverished entrepreneurs engage in business activities to survive (Matos & Hall, 2020). In poverty stricken areas, addressing basic needs is of paramount importance (Morris et al., 2018). These needs may motivate entrepreneurs to keep their business rather than doing nothing to possible eliminate such adverse conditions and generate income for the individual and their household (Santos et al., 2022). The adversity stimulates people to take risks for undertaking entrepreneurship, which often comes from the hardships of life (Miller & Le Breton-Miller, 2017). Compared to developed countries, poor countries tend to have more entrepreneurial activities, as the financial returns provided by being employed are not better than owning a business in economically underdeveloped countries and regions (Shane, 2009). Based on the above research, we propose Hypothesis 1:

H1: Poverty-related life stressors have a U-shaped effect on entrepreneurial persistence.

2.2 The mediating role of cognitive appraisal

The transactional theory of stress demonstrates a process-oriented approach in which individuals appraise the specific external and/or internal circumstances when they encounter a stressful transaction or event endangering to their well-being (Lazarus & Folkman, 1984). It describes two-stage cognitive appraisals related to people and environment. In primary appraisal, the individual evaluates the internal and external environment demands and personal capabilities, beliefs and goals to determine the extent to which environmental stressors are threatening or challenging (Lazarus & Folkman, 1984; Chen et al., 2022). 'Challenge' appraisal signifies that situational stressors are perceived as a danger within the individual's abilities or resources to cope with the stressors (Tomaka et al., 1993) yet are important and beneficial to personal gains and achievements (Wang et al., 2023) as well as potential for positives or growth from the experience (Peacock & Wong, 2001). 'Threat' appraisal results means the situational stressors are perceived as the possible loss and existing damage to the individual (Peacock & Wong, 1990) and beyond the individual's control (Wang et al., 2023). In secondary appraisal, individuals assess various coping options to see what they can do to overcome the problem or prevent harm or manage the initial stressors (Genoese et al., 2023). The secondary appraisal occurs during the courses of the

individual's assessment of situational stressors and coping resources before initiating coping options (Lazarus & Folkman, 1984).

The transactional theory of stress has been applied to a variety of fields including organizational behavior (Meral et al., 2022; Sliter et al., 2014; McCarthy et al., 2019), health (Pratt & Tolkach, 2022; Genoese et al., 2022); information (Bermes, 2021; Siah et al., 2022), sports (Lim et al., 2023), human resource management (Tlaiss, 2022) and education (Wang et al., 2023). However, the theory is underexplored in the field of entrepreneurship. Entrepreneurship is the most stressful career (Cardon & Patel, 2015) and is a complicated and multifaceted concept (Cumming et al., 2020). Impoverished entrepreneurs suffer diverse stressors (Morris & Tucker, 2023) and the experience of poverty can significantly influence an individual's cognitive processes and behaviors (Morris et al., 2018). Poverty is a multidimensional and holistic phenomenon embodied in a region, and the most important individual feature of poverty-stricken areas is the difficulty of generating enough income to cover basic living needs (Fox et al., 2015; Amir-Ud-Din et al., 2018). People living on less than US$2.15 a day in poor areas (World Bank Group, 2022) are more likely to face poverty-related living problems such as unsafe (Bhattacharya et al., 2004) and inadequate (O 'Connor et al., 2016) food, substandard housing conditions and excessive indebtedness (Krumer-Nevo et al., 2016), which often cause high stress levels and continuous fatigue (Banerjee et al., 2011; Ross, 2000; Pickett et al., 2001). Our study focuses on poverty-related life stressors, which are non-business stressors and are the constraints and difficulties facing entrepreneurs in poverty-stricken areas who have difficulty meeting their basic living

needs due to income poverty (Morris, 2020; Bhattacharya et al., 2004). We use transactional theory of stress to explore the role of cognitive appraisal between poverty related-life stressors and entrepreneurial persistence and discuss whether poverty related-life stressors can positively impact the behavior of impoverished entrepreneurs.

The transactional theory of stress distinguishes positive challenge stressors and negative hindrance stressors (LePine et al., 2005; 2016). This theory has been used in the entrepreneurial field to study how cognitive appraisal of stress impacts entrepreneurs' well-being (Wach et al., 2021) and entrepreneurship proclivity (Churchill et al., 2023). The cognitive appraisal process of stress is an important consideration in understanding subsequent entrepreneurial outcomes such as expected business growth and exit intention (Bennett et al., 2021). According to the transactional theory of stress (Lazarus & Folkman, 1984), individuals not only perceive variable features in the environment but also judge the meaning of such features and their future effects based on information and stimuli provided by the surrounding environment and their own psychological characters and resources. This psychological process involves the cognitive appraisal of the "challenge" or "threat" of an incident affecting one's goals and value orientation and of the severity of the incident, which affects one's interests or expectations of an aim. When PLS is at a low level (namely able to afford the majority of basic necessities), impoverished entrepreneurs tend to ignore it and are likely to view it as a "challenge". When an event is evaluated as a "challenge", entrepreneurs believe that they are able to meet environmental requirements through their own efforts and then adhere to their goals. Although events in the environment

will consume their own resources, individuals expect them to also bring potential rewards (e.g., personal/business growth and future achievements), making them more inclined to view such events as a "challenge". The cognitive appraisal of entrepreneurial circumstance is positive and keeps a high level. The cognitive appraisal process of challenge stressors has a positive effect on entrepreneurs' well-being, such as expected financial well-being and expected life-satisfaction (Bennett et al., 2021; Wach et al., 2021). When PLS increases to a moderate level (namely able to afford half of basic necessities), entrepreneurs probably think that the situation demands are beyond their control or unable to meet. As a result, they lower the evaluation on their abilities/resources to meet the external environment requirements. Engaging in venture business has consumed lots of their efforts. The stressors from non-business (namely PLS) requires them to input extra more energy, effort, emtions, which decreases the level of their positive cognitive appraisal entrepreneurial circumstances to a moderate level. This is because the higher level of stress arising from struggling for day-to-day necessities can cause a negative psychological consequence. In emerging economies like China entrepreneurs may have greater vulnerability to stress and turbulence (Su et al., 2020). When impoverished entrepreneurs are unable to satisfy half of their basic needs (e.g. food, utilities, house rent), they have a sense of insecurity and uncertainty, and may feel concern over their ability to control changes in their environment (Zhang et al., 2016). When PLS increases from a moderate level to a high level, impoverished entrepreneurs may interpret external stressors positively and perceive them as a "challenge". As a consequence, they raise the evaluation on their abilities/resources to

meet the external environmental requirements. Their cognitive appraisal of entrepreneurial circumstances is positive and reaches a high level. This is because individuals tend to be more motivated to improve their circumstance when they perceived high uncertainty (Anseel & Lievens, 2007). Previously perceived barriers promote a motivating influence prompting greater effort and focus on achieving entrepreneurial aspirations (Hunter et al., 2020). Exposure to previously perceived adversity in case of moderate level of PLS helps impoverished entrepreneurs develop a propensity for managing well in the face of stressors (Seery et al., 2013). Given the above, we propose the following hypothesis:

> *H2: Poverty-related life stressors have a U-shaped effect on the cognitive appraisal of entrepreneurial circumstances.*

Scholars call for a deeper understanding of how individual entrepreneurs assess their context and their reaction behaviors (Shepherd et al., 2022). Cognitive appraisal can be used to explain how individuals assess and respond to their external environment (Lazarus & Folkman, 1984). Satisfying basic living needs drives entrepreneurship in resource-constrained environments (Kimmitt et al., 2019). When PLS is at a low level, entrepreneurs in poverty-stricken areas may assess it as a small “challenge”, which they feel confident to handle. External stressors (e.g. negative life events/shocks) can be viewed as business opportunities and promote people to become entrepreneurs (Churchill et al., 2023). Perceived challenge stressors usually stimulate positive cognition linked to achievement and potential fulfillment, and enhance motivation (Cavanaugh et al., 2000). Holding positive cognitive appraisal of the external

environment, entrepreneurs in poverty-stricken areas are highly motivated to change their unfavorable situation, and believe that they are able to meet environmental requirements through their own efforts and then adhere to their goals: persist in running their business and achieve success. This is because when entrepreneurs are experiencing poverty, they are eager to change the status quo by meeting their urgent needs (Chen et al., 2014). The impact of challenge appraisal on entrepreneurial persistence is positive as the change of psychological priorities, which is oriented toward meeting one's most pressing needs, makes entrepreneurs keep a high level of persistence.

When PLS is at a moderate level, entrepreneurs in poverty-stricken areas may negatively appraise their abilities to handle the poverty-related life stressors, due to their liabilities of newness and smallness as well as poorness (Morris, 2020; 2022) and lack of confidence in their skills (Matos et al., 2018). Their perception of PLS as a moderate level of "threat" may lead to lower persistence to a moderate level. This is because impoverished entrepreneurs are less rational in resource-constrained context (Matos & Hall, 2020). When holding the negative assessment of PLS, they may elicit negative emotions (Genoese et al., 2023), behavioral disengagement (Carver et al., 1989) and retain inert to avoid the threat (Baker and Nelson, 2005). Stress and its resulting emotions lead people to make habitual choices instead of adhering to goal-oriented choices (Molotsky & Handa, 2021). Evidence shows that a negative emotional state caused by poverty may lead to short-sighted decision-making, sacrificing goal-oriented behavior by limiting attention and valuing habitual behavior (Haushofer &

Fehr, 2014). For entrepreneurs in poverty-stricken areas, available psychological and cognitive resources must be used to cope with current life pressures, limiting efforts to adopt resources in poverty-stricken areas to meet their entrepreneurial needs. Moreover, individuals who have difficulties meeting their basic living needs are risk averse and more likely not to calculate future returns (Tanaka et al., 2010). Such individuals follow a safety-first principle that values minimizing the likelihood of possible adverse consequences. Such cognitive characteristics stifle the risk-taking spirit needed for the entrepreneurship process, leading individuals to be more cautious in evaluating whether they should continue to input resources to meet entrepreneurial expectations. In addition, a poverty-stricken environment has a negative effect on individual self-regulation ability; individuals living in poor areas are more likely to show behavioral regulation problems (Piotrowski et al., 2013; Vandenbrocke et al., 2016), which means that entrepreneurs may involuntarily perform short-term behaviors such as procrastination and impulsiveness in business activities (Johnson & Mortimer, 2011), limiting their efforts in continuing a business. Such temporal myopia and misregulation of their abilities result in non-productive entrepreneurship (Mato & Hall, 2020) and risk-adverse behaviors make entrepreneurs remain inert (Baker & Nelson, 2005). Thus, a moderate level of PLS causes impoverished entrepreneurs to hold a moderate level of "challenge" appraisal and entrepreneurial persistence.

Yet, stress is not necessarily detrimental to one's life and can enhance performance and well-being (Crum et al., 2020). Stressors may elicit positive emotions (i.e., enthusiasm) and creativity to change the state of being unsafe (Jiang et al., 2022). When

PLS is at a high level, in the midst of running an ongoing venture business, entrepreneurs would have accumulated more experience after suffering PLS at low and moderate levels, gained more skills through learning by doing and become more confident in handling the environment stressors. They are more likely to appraise entrepreneurial circumstances as a “challenge” at a high level and be optimistic to overcome the challenge. This positive appraise of stressors would trigger positive emotions, increase motivation, engagement, performance (LePine et al., 2005) so as to attain a high level of their entrepreneurial persistence. Challenge appraisal reflects expectations of achieving growth from stressful experiences (Peacock & Wong, 1990). People with high levels of challenge appraisal believe that they are able to achieve personal growth by overcoming surrounding stresses and will be more likely to seek challenges that help them achieve this goal (Lin et al., 2014). Challenge appraisal is associated with a sense of enthusiasm and thriving in challenging environments (Cavanaugh et al., 2000), more active behavior and creativity (Ohly & Fritz, 2010), more strategy usage and better performance in negotiation (O'Connor et al., 2010), which help an individual persist through the entrepreneurial process. Chadwick et al. (2020) developed a process model that captures entrepreneurs' psychological and cognitive drivers of strategic behaviors (including challenging appraisal) that influence their persistence as new entrepreneurs. In addition, the self-congruence model proposes that when individuals enjoy the process of pursuing goals and/or agree with the values represented by their goals, they pursue goals for a longer period (Houser & Sheldon, 2006). Individuals in poverty-stricken areas self-select entrepreneurship because of no

or little choice (Shepherd et al., 2022). These impoverished entrepreneurs tend to be self-confident, optimistic and forward-looking (Baron et al., 2016) and possess a strong belief in their ability to overcome challenges. Their high level of challenge appraisal is associated with strong self-efficacy and entrepreneurs' expectancy, which is consistently linked to high entrepreneurial persistence (Cardon & Kirk, 2015; Holand, 2011). We thus propose the following hypothesis:

H3: Cognitive appraisal mediates the U-shaped relationship between PLS and entrepreneurial persistence.

Taking this research together Figure 1 sets out our conceptual framework. This framework draws on the transactional theory of stress emphasizing that poverty-related life stressors are not necessarily detrimental for entrepreneurship but rather make entrepreneurs evaluate unfavorable entrepreneurial circumstances as a challenge. As a result, cognitive appraisal motivates entrepreneurs to keep non-linear entrepreneurial persistence. As Figure 1 exhibits, cognitive appraisal can be conceptualized as a mediator. H1 presents the main effect; H2 and H3 show the mediating process.

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3. Method

3.1 Data collection in a poor context

We followed the sampling procedure proposed by Aguinis et al. (2019) to collect our

data. Our research examines entrepreneurs based in Fugong County which was one of the poorest regions of China where people live on less than US$6.85 per day in 2017PPP before the end of 2020: China has contributed over 70% of the world's poverty reduction in recent years and lifted 98.99 million Chinese people out of absolute poverty by the end of 2020. China has become the most contributor to reducing the world's poverty (UN, 2015; Si et al., 2015; 2020). Our study roots in China's campaign experience against poverty, which can provide some implications for other transitional and low-income economies. The Fugong region is located in northwestern Yunan Province and is under the administration of Nujiang Prefecture. We study entrepreneurs in Fugong County due to the following principles proposed by Aguinis and Lawal (2012) and Cohen and Manion (2000). First, the representativeness of the observations: we study individuals identified as entrepreneurs in a poverty-stricken area encompassing a variety of ethnicities (e.g., Han, Yi, Bai, Nu, Su, Tibetan and Du). Second, the generalizability of results and conclusions: poor areas in China have some common characteristics, such as geographic positioning far from central cities and often in mountainous areas; poor transportation infrastructure; the presence of minority populations; and access to some natural resources but a lack of human capital, technology, education and other resources. Fugong County reflects these common features. It is a minority area with a total population of 114372 mainly represented by the Li, Su, and Nu ethnic groups. The area is located in the Nujiang River Canyon, surrounded by two mountains and adjacent to Myanmar. Bridges and limited arterial roads serve as the main transportation infrastructure for access to other areas. It takes 9

hours to reach the capital city of Yunan Province (i.e., Kun Ming) (8 hours by road transportation and 55 minutes by flight). This area is rich in water but lacks many other value-added resources. Thus, the results and conclusions arising from this research meet the generalizability requirements of social behavior research. Third, the availability of data: One of our colleagues was working in Fugong County as Deputy Fugong County Chief when we conducted the survey. He assisted us in organizing one-week field study in July 2020 in Fugong County that involved contacting, interviewing and surveying entrepreneurs. In collecting data, we employed multiple data sources and triangulation techniques to address our research questions (Cohen & Manion, 2000). We held a round-table meeting with seven entrepreneurs who were available and willing to be interviewed. Before asking these entrepreneurs questions, we informed them clearly the purpose of our study and made them feel comfortable to address our questions. After getting their approval, we asked them basic questions about their entrepreneurial experience with a focus on entrepreneurship drivers, entrepreneurial barriers, business performance and future business plans. During the field study, we traveled to four different locations to hold face-to-face interviews with four entrepreneurs and obtain more detailed information about their views on poverty-life stressors and persistence in entrepreneurship. Based on the record of round-table meeting, face-to-face interviews as well as published documents on entrepreneurial activities and circumstances in Fugong county, we then redesigned our questionnaire items and sent the updated version to our colleague working in the county.

With our survey, we follow the definition of entrepreneurs given by Stephan and

Roesler (2010) and target business owners with a registered business in Fugong Market Supervision and Administration Bureau and self-employed independents who work independently for their own interests, run their own very small business and usually do not employ other people and are willing to take risks in Fugong County as our research objects. With the help of the Deputy County Chief, the local government administration helped us identify qualified and voluntary participants to distribute copies of the questionnaire. It is often necessary to select participants through intermediaries to relief distrust in outsiders in poor rural communities (Mair et al., 2012). The involvement of intermediaries in entrepreneurship research shows effectiveness (Castellanza, 2022). As some entrepreneurs had very poor education and do not understand Mandarin well, we asked a local administrator who is a NuShu minority, got her university degree and has no mandarin language problem to translate the questions from Mandarin to the local dialect. We held an online meeting with the local administrator prior to translation to ensure that she understood every item of the questionnaire and was capable of explaining the meaning of each item in the local dialect to the participants. Furthermore, due to scattered living places of survey targets in Mountains and poor transport infrastructure, it was difficult to gather all qualified entrepreneurs at the same location to complete the questionnaire. Local administrators helped us distribute copies of the questionnaire during meetings with the entrepreneurs in Fugong downtown and the cost of a round journey from the entrepreneur's home to downtown was refunded by the local government. Due to difficulties of collecting a large amount of data, we adopted a nonprobabilistic random sampling method and received 159 returned questionnaires

between September 2020 and February 2021, of which 119 were valid. Those with incomplete responses or a large number of questions with the same options were excluded in our valid responses. The effective response rate reached 74.8%, and all participants belonged to the traditional tertiary industry (e.g. catering services, retailing, beauty, garage, copy and print business, hospitality and so on). For the data finally included in the analysis, a few missing values are replaced with sequence averages. The sample characteristics are reported in **Table 1**.

INSERT TABLE 1 ABOUT HERE

3.2 Measurement

We identified our measurement tools based on the existing literature and our research topic. Two doctoral students in entrepreneurial research were responsible for translating the adopted scales from English to Chinese, and a reverse translation and the final version were verified by a senior researcher to ensure the accuracy of the items. All of our measurements were measured on Likert's 5-point score mature scales, which have been widely used, including in the Chinese context, ranging from 1 very much disagree to 5 very much agree.

Poverty-related life stressors (independent variable). Poverty-related life stressors refer to a series of difficulties experienced by entrepreneurs in poverty-stricken areas. The main living-related factors related to poverty include housing problems, food, debt and other basic living needs (Kalichman et al., 2005). In this study, we adopt Morris's (2020) and Black and Hendy's (2019) definition and measurement tools of PLS and select stressors directly related to money

expenditures because both life support and entrepreneurial inputs require money, which is shared between two of these different needs. Four items are included in the scale, and an example item is "I am unable to pay my utility bills on time." The Cronbach α value for this variable is 0.944.

Cognitive appraisal (mediator). Cognitive appraisal is viewed as a mediator of stressfulness of events (Lazarus & Folkman, 1984). Peacock and Wong (1990) propose an appraisal measurement focusing on person-environment transaction and to assess specific components of cognitive appraisal. Eight items from their validated measure of cognitive appraisal has been used to measure individual stress appraisals in workplace (Johnstone & Feeney, 2015) and entrepreneurship (Chadwick & Raver, 2020). As the scale of Peacock and Wong (1990) is suitable to measure the subjective view of entrepreneurial cognition (Barreto, 2012; Chadwick & Raver, 2020) and the eight items highly relevant for our research where we measure impoverished entrepreneurs' appraisals on PLS in entrepreneurial circumstances, we adopt the eight items with entrepreneurial situations by asking entrepreneurs to think and evaluate various problems and challenges encountered in entrepreneurial circumstances. One example item is "Do I have the ability to do well in this situation?" The Cronbach α value for this variable is 0.923.

Entrepreneurial persistence (dependent variable). Entrepreneurial persistence is a behavior resulting from the interaction between entrepreneurial traits and the entrepreneurial context (George, 1992). We use the entrepreneurial persistence scale of Baum and Locke (2004), which includes 6 items, and an

example item is “no matter how challenging my work becomes, I do not give up.” The Cronbach α value for this variable is 0.875.

Control variables. We control some variables that may affect entrepreneurial persistence and the cognitive appraisal process and add them to the model as covariates. First, we control for a series of demographic characteristics, including the gender, age, educational background and marital status of entrepreneurs. Second, we control relevant characteristics at the business level, including the age of the enterprise, the number of employees and annual sales revenue. In addition, we control for possible social experiences, including whether individuals are registered as living in poor households (which means that the government offers them greater support for basic living needs in areas such as education and health care coverage) and whether they have prior entrepreneurial experience (Meek & Williams, 2017). Finally, we control for intrinsic motivation via *entrepreneurial self-efficacy* (Cardon & Kirk, 2015), which may impact entrepreneurial persistence in entrepreneurship. Zhao et al. (2005) proposed a scale for measuring entrepreneurial self-efficacy that includes 4 items. The Cronbach α value for this variable is 0.898.

4. Results

4.1 Preliminary analysis

We used SPSS 22.0 for our data analysis. Data from a single source usually present risks of common method bias. We measured our independent and dependent variables, mediators and moderators in different parts of our paper questionnaire, which is considered a reasonable and effective means to avoid homologous bias (Podsakoff et al., 2003). In setting topic items, we ensured the accurate expression of topics and emphasized the anonymity of the participants in our research. After obtaining the returned questionnaires, we conducted the Harman single-factor test; if a single factor accounted for more than 50% of the variance, the threat of common method bias was considered to be high (Harman, 1976; Shiau & Luo, 2012). We performed a principal component factor analysis to exclude the potential for common method deviation. After all variables are included in the analysis, the results of the factor analysis without rotation show that the variance of the first (maximum) principal component interpretation is 39.605%, which is lower than the recommended critical value of 50%. We also conducted a single-factor confirmatory factor analysis (CFA) using the Herman approach (Podsakoff et al., 2012). The results revealed that when all indicators were fitted to a single latent factor, the fit indices were as follows: $\chi 2 = 1320.156^{**}$, df = 135, CFI = 0.283, TLI = 0.187, RMSEA = 0.272, and SRMR = 0.333. All indicators exhibited significant differences from the critical values, suggesting poor model fit; the fit indices for the four-factor model were significantly better than those for the single-factor model. Additionally, a bifactor model approach was employed to further test for common method bias. Firstly, a first-order baseline model (M1) was constructed for the three research variables, and then a bifactor model (M2) was constructed by adding a

CMV method factor. The fit indices of the two models were compared (M2-M1) and as follows: ΔCFI = -0.021, ΔTLI = -0.045, ΔRMSEA = 0.014, and ΔSRMR = 0.214. The improvement of M2 in fit indices was not significant, suggesting that the bifactor model with the inclusion of the CMV method factor did not outperform the baseline model. Therefore, it can be concluded that there is no substantial evidence of severe common method bias in this study. In addition, we tested the variance inflation factor (VIF) values of the independent and control variables, which range from 1.069 to 1.555, placing them below the limit of 10 (Foxall & Yani-de-Soriano, 2005). Thus, we find no serious signs of multicollinearity between the variables.

4.2 Descriptive Statistics

Table 2 shows mean and standard deviation values and correlations between the main variables. The results show no direct correlation between PLS and entrepreneurial persistence ($r=-0.\ 063$, $p>0.05$), but cognitive appraisal ($r=0.\ 638$, $p<0.01$) is significantly correlated with entrepreneurial persistence. These results provide preliminary support for some of our hypotheses. In addition, we used construct reliability (CR), the average variance extracted (AVE) and Cronbach's alpha to test the reliability and validity of the scale. The results listed in Table 3 show that the CR values of each variable are higher than 0.7 while the AVE values are higher than 0.5, indicating that the convergent validity of each scale meets the requirements.

INSERT TABLE 2 ABOUT HERE

INSERT TABLE 3 ABOUT HERE

4.3 Main effect

H1 and H2 suggest that PLS have a U-shaped relationship with cognitive appraisal and entrepreneurial persistence. Specifically, PLS were negatively associated with cognitive appraisal and entrepreneurial persistence at low to moderate levels of PLS, while at high levels of PLS, the relationship was positively correlated. To test the U-shaped relationship, we follow Lind and Mehlum's (2010) three-step procedure: first, ensure that the quadratic coefficients are significant and that their direction is consistent with theoretical expectations; second, the slope of the relationship between the dependent and independent variables must be significantly steep at the independent variable's minimum and maximum values; otherwise, the true relationship may be only half of the true relationship. The third step requires that the turning point's 95 percent confidence interval falls inside the range of the independent variable. Table 4 reports the hierarchical regression results, where M1-M3 use cognitive appraisal as the dependent variable and M4-M6 use entrepreneurial persistence as the dependent variable. M1 only considers covariates, M2 adds poverty life pressures (PLS) to M1, and M3 adds PLS to M2. M4, M5 and M6 follow the same hierarchical regression. From the results of M3, we can see that the quadratic of PLS is significant ($\beta=0.263$, $P<0.001$), and it remains significant in M6 ($\beta=0.127$, $P<0.01$). We plot the relationship between PLS and cognitive appraisal and entrepreneurial persistence in Figure 2. As illustrated in Figure 2, with the increase of PLS, cognitive appraisal and entrepreneurial persistence first decline and then rise, which conforms to the characteristics of the U-shaped curve; H1 and H2 are thus proven.

INSERT TABLE 4 ABOUT HERE

INSERT FIGURE 2 ABOUT HERE

4.4 Mediation effect

We used the Medcurve plug-in developed by Hayes and Preacher (2010) in SPSS 22.0 to test the mediating effect of cognitive appraisal on the U-shaped relationship, which has been widely used in nonlinear relations (Ete et al., 2020). Hayes and Preacher (2010) defined the variation in the indirect effect as an instantaneous indirect effect by assigning value X_n to independent variable X and using the bootstrap method to test the instantaneous mediating effect of value X_n. The results of 1000 bootstrap repeated samplings are listed in Table 5.

INSERT TABLE 5 ABOUT HERE

From Table 5, when X is X1, X2, and X3, the corresponding 95% confidence interval does not include 0, indicating that the instantaneous indirect effects are significant under different values of X. Specifically, when X=1.192 and 2.406, the instantaneous mediation effect values are -0.571 and -0.063, which are both less than 0. According to the explanation from Hayes and Preacher (2010), among entrepreneurs with minimal or moderate PLS, the fact that the indirect effect is negative and significantly different from zero signifies that increasing PLS would negatively impact entrepreneurial persistence by decreasing their cognitive appraisal. However, when X=3.620, the instantaneous mediation effect value is 0.445, and the interval estimate is well above 0, which means that with intense PLS, accumulating PLS can have a positive impact on

entrepreneurial persistence by increasing cognitive appraisal. H3 is thus supported.

5. Discussion and conclusion

Entrepreneurship is widely viewed as a means to alleviate poverty (Kuratko & Audretsch, 2021). Unlike their counterparts in wealthy settings, entrepreneurs in poverty-stricken context may face more poverty-related life stressors and need a higher level of entrepreneurial persistence. Entrepreneurs' appraisal of obstacles in entrepreneurial circumstances plays an important role whether they should continue their business when facing stressors. However, little attention has been given to the drivers and cognitive processes of entrepreneurship persistence in a developing economy poverty context. Our study samples 119 entrepreneurs in a poor-stricken area - Fugong County and explores the double-edged sword effect of poverty-related life stressors on their entrepreneurial persistence. Despite the sample size, it holds a high representativeness of impoverished minorities and minority entrepreneurs in China. The rationality of samples lays in the following four aspects: 1) Representativeness of poverty roots in China: disadvantages in geographic location, history and culture are the main poverty roots in China. Poverty stricken areas in China are distributed in mountainous, hilly, and plateau areas. Compared with plain areas, these areas lack fertile arable land resources, suffer frequent natural disasters, have poor production and living conditions. In addition, inland and western regions in China opened up relatively late in comparison with costal regions, lacking capital, human resource, technology, convenient infrastructure and other resources (Si et al., 2017). These areas are often the

gathering areas of ethnic minorities. Due to culture differences and slow modernization, ethnic minority gathering areas are economically lagged behind other majority gathering areas. Located in the Nujiang Canyon between the Biluo Snow Mountain and the Gaoligong Mountain in northwest Yunnan Province, Inland and Southwest of China, Fugong was one of the poorest areas in China before achieving the success of fighting against poverty. Thus, choosing impoverished entrepreneurs in Fugong to conduct a study enables us to present some common cognition and behaviors of entrepreneurs in poverty-stricken areas. 2) Representativeness of impoverished minority entrepreneurs in China: Over 20 ethnic groups live in Fugong, accounting for 98.88% of its total population and nearly half of the total ethnic groups in China. The diversity of ethnic groups in Fugong enables us to survey diverse ethnic entrepreneurs and make the study more representative. 3) Representativeness of a specific context-based study: Existing literature shows small samples are acceptable in a specific context-based study. For example, Ferreira et al. (2024) collected cross-section data through questioning 112 startup entrepreneurs in Portugal and studied the effect of knowledge strategies and digital technologies maturity on their small business performance. Lewellyn et al. (2024) collected cross-section data on 153 business owners (48 in USA and 105 in Scotland) through online survey and examined in a holistic manner how entrepreneurs' beliefs in climate change combine with psychological attributes and firm contextual conditions to produce high levels of personal resilience. Manzanera-Ruiz et al. (2023) interviewed 109 female agribusiness entrepreneurs in Uganda and analyzed the influence of education level on how they define business success. Furthermore, poverty stricken

areas with ethnic minority gathering have fewer entrepreneurial opportunities (Zhou & Xu, 2024). 4) Challenges in collecting first-hand data: Fugong is a hard to access location. In spite of improved public transportation, entrepreneurs in Fugong live scattered in remote mountains and villages. As such, it is a challenging context in which to gain a large survey size.

Due to the cross-sectional data, we adopt the technique proposed by Sande and Ghosh (2018) for addressing the endogeneity problem. We used the control variables to mitigate the omitted variable bias so as to reduce endogeneity. Although we endeavored to control for potential endogenous variables in the model construction process including individual demographic characteristics, social experiences and firm-level indicators, it is impossible to completely eliminate their impact on the results. An excessive number of control variables can also lead to endogeneity issues.

We add control variables to reduce the omitted variable bias; however, too many control variables may introduce noise, causing model overfitting and even multicollinearity issues, finally affecting the stability and reliability of the estimation results (Angrist & Pischke, 2009). To minimize the risk of excessive control variables, we adopted Anderson et al. (2020)'s suggestion to eliminate of alternate explanations, namely removed demographic characteristics, entrepreneurial self-efficacy, social experiences, and firm-level variables respectively on the basis of the original covariates, and found that our research results were not affected, demonstrating the robustness of the conclusions and supporting the causal inference to some extent. Moreover, following the approach of Pongelli et al. (2021), we constructed a regression model to

test the potential linear or nonlinear reverse relationship between entrepreneurial persistence and poverty-related life stressors. The test results did not provide supportive evidence for reverse causality.

Our research results show that (1) poverty-related life stressors have a U-shape effect on entrepreneurial persistence. (2) Cognitive appraisal mediates the effect of poverty-related life stressors and entrepreneurial persistence. Specifically, the low and high levels of poverty-related life stressors increase entrepreneurial persistence and cognitive appraisal of entrepreneurial circumstances; the moderate level of poverty-related life stressors lowers entrepreneurs' persistence and cognitive appraisal.

5.1 Theoretical implications

First, existing research on the factors influencing entrepreneurial persistence either focus on resource-based view or personality of entrepreneurs (Holland & Shepherd, 2013). We respond to Morris's (2020) and Morris et al.'s (2022) call to focus on entrepreneurs' 'liability of poorness' and explore the efforts poor entrepreneurs make to meet their basic living and business needs. Compared with other entrepreneurs, poor entrepreneurs face greater obstacles like literacy gaps, a scarcity mindset, intense personal pressures, and lack of financial slack (Morris, 2020). How poor entrepreneurs persist in their business in such difficult situations needs further exploration in developing and developed economies, as well as in environments that vary in their institutional support for entrepreneurial activity (Williams et al., 2022). As Cardon and Kirk (2015) mentioned, persistence in entrepreneurship is driven by the interaction

between individual traits and the external context (George, 1992). However, previous studies of poverty-stricken areas and other contexts of resource constraint have mainly focused on firm level but not on entrepreneurs (Bruton et al., 2013). We adopt the transactional theory of stress by focusing on poverty-related life stressors, construct and verify a theoretical framework of the poverty-entrepreneurship relationship based on entrepreneurial behaviors in the poverty setting to fill the above research gap. Our study demonstrates that entrepreneurs can hold a positive appraisal on PLS at different levels, which depends on their interpretation about external stressors in a different level (low, moderate or high). The research finding shows the appraisal process is dynamic and complex and extends the transactional theory of stress.

Second, our study provides a dynamic and integrated perspective for understanding the relationship between adversity and entrepreneurial actions. Unlike existing studies that provide conflicting conclusions (Cheng et al., 2021; Wu et al., 2020; Seguí-Mas et al., 2018), we explores the non-linear effect of poverty-related life stressors on their entrepreneurial persistence. Entrepreneurs in poor areas persist in running business depend on the intensity of PLS. Their temporal myopia or misjudgement of their abilities may result in non-productive entrepreneurship but their long-term orientation and positive attitude toward business success help them keep persistence in entrepreneurship. Our study extends the linear research findings that temporal myopia, misjudgement of their abilities, and counter-productive use of social networks result in Brazilian impoverished non-productive entrepreneurship (Matos & Hall, 2022) and positive attitude and behaviour as well as the willingness to delay

immediate reward of Chinese peasant entrepreneurs are of great importance to venture success (Si et al., 2015). This provides another theoretical contribution to entrepreneurial research of adverse contexts.

Third, the current lack of research on entrepreneurs in poverty-stricken areas has led scholars to call for more micro-entrepreneurial research on poverty settings, such as work on cognition and emotion as the behavioral drivers of entrepreneurs in poverty-stricken areas (Sutter et al., 2019), and for exploring the mechanism that underpins the relationship between poverty and entrepreneurship (Cumming et al., 2020; Si et al., 2020; Korosteleva & Stępień-Baig, 2020). In response to this call, our study considers the role of entrepreneur's cognitive appraisal under entrepreneurial circumstances between PLS and entrepreneurial persistence. We extend the literature by analyzing entrepreneur's fluctuations in cognitive appraisal toward entrepreneurship and provide a new perspective for research on mechanisms of adversity that affect entrepreneurs. We think that the influence of a poverty environment may bring unique cognitive characteristics to individual entrepreneurs: they are usually risk averse (Melesse & Cecchi, 2017), and they may also exhibit risk-taking and goal-oriented psychology in settings of extreme poverty (Nooteboom & Voorst, 2015).

5.2 Managerial implications

Our study has managerial implications for effectively stimulating entrepreneurial vitality in poverty-stricken areas. With the successful implementation of the "precise poverty alleviation" policy, China has achieved the important goal of "eliminating

extreme poverty" in 2020, but relative poverty may still exist for a long time. A series of gaps exist between poor and rich areas in terms of income, education, health care and transportation. To fill such gaps and help entrepreneurs in poverty-stricken areas rid themselves of the shackles of the ‘liability of poorness’ in business creation (Morris et al., 2022), we suggest that policy makers and practitioners provide not only business skills training for entrepreneurs but also help improve their cognitive ability through training by, for example, improving their ability to rationally evaluate current entrepreneurial circumstances; providing them with mentoring services over the course of entrepreneurship; keep dynamic and longitudinal attitude toward the effect of poverty-related life stressors on entrepreneurial persistence so as to be inclusive when offering loans and requiring money return. Although entrepreneurs in poor context may have a strong intention to persist, it may be difficult for them to make effective entrepreneurial decisions in identifying and developing entrepreneurial opportunities due to their lack of cognitive ability and attention bias (Finegood et al., 2017). Such individuals are usually occupied by noncommercial issues and have to make survival decisions every day, limiting their ability to gain advantages in the competitive environment by establishing positive entrepreneurial cognition and their determination to continue a business. Thus, the intervention and guidance of policy makers and practitioners are of great importance and can help entrepreneurs in poor areas not suffer setbacks.

6. Limitations and future research

Although our research makes contributions to the existing literature, some limitations remain. First, our study is cross-sectional, and our measurements of variables were reported by the studied entrepreneurs themselves. Although we adopted a series of process controls to avoid the potential influence of common method bias, there is still room for improvement in advancing research and design, which is also related to the particularities of our sample. The 119 entrepreneurs examined in this study come from Fugong County, Yunnan Province, which is one of the poor areas in China before the end of 2020, is surrounded by snow-capped mountains and has poor transportation infrastructure. These constraints prevented us from obtaining a larger sample. The current limited samples may not strongly support the U-Shaped relationship between PLS and entrepreneurial persistence.

Second, endogeneity problems, however small, may still pose a limitation to our study. Even though we randomly selected questionnaire samples, used control variables to ‘mitigate the omitted variable bias’ (Sande & Ghosh, 2018) and constructed a regression model to check the potential linear or nonlinear reverse relationship between entrepreneurial persistence and poverty-related life stressors (Pongelli et al., 2021). Our cross-section data limits our access to time series or panel data and fully establish causality (Wu et al., 2020). Future research can screen a wider range of entrepreneurial groups in poverty-stricken areas and adopt longitudinal methods (such as experience sampling) to capture dynamics of poverty and persistence in entrepreneurship and obtain a deeper understanding of how entrepreneurs' beliefs and motivation to persist

in entrepreneurship are affected by changes in poverty conditions (such as through comparisons drawn before and after poverty settings are experienced). In our paper, PLS forces individuals in poverty-stricken areas into entrepreneurship. These impoverished entrepreneurs need to persist in running their business for survival. Yet, it is worthy of exploring whether entrepreneurial persistence has a causality effect on PLS and using other ways to address endogeneity issue in future studies. Different countries have different availability of social security and different cultures. As such individuals may perceive support from the society differently in other contexts, and perceive optimism and aspiration in the face of PLS. What contextual and other moderating factors strengthen or weaken the causality between PLS and entrepreneurial persistence also need further exploration.

Third, poverty-related stressors cover a very broad area. This study considers life stressors related to money (because money is a common resource of the both life and entrepreneurship domains), but many other areas of life may also impact the entrepreneurial process, such as children's education and health as mentioned in the latest research (Shepherd et al., 2021). Future research on entrepreneurs in poor areas can be based on a broader definition of life stressors including medical conditions, diseases and crimes, which are pervasive hidden dangers in poor areas (Kalichman et al., 2005). In addition, our outcome variable is entrepreneurial persistence, which is a specific behavioral tendency rather than an outcome of entrepreneurial effectiveness. Therefore, it is difficult for us to explain how poverty is embedded in the process leading to business survival. Future research can expand on this topic by focusing on

how entrepreneurs' cognition and emotions help or hinder them in overcoming the 'liability of poorness' and achieving entrepreneurial success.

The contributions of our study are rooted in our systematic exploration of how and why entrepreneurs can persist despite adverse conditions in the context of poverty; we also contribute to the entrepreneurship persistence literature, which has predominantly focused on the cognitive and emotional factors driven from within (intrinsic motivation), such as entrepreneurial self-efficacy and passion. In extending previous research, we consider the different levels of poverty-related life stressors (extrinsic motivation) in persistence in entrepreneurship. Our research provides evidence to support the incentivizing level of entrepreneurship for overcoming the liability of poorness (Morris et al., 2022). It also responds to the call for more research into the diverse types of stressors in entrepreneurs (Wach et al., 2021) and enriches understanding of the effect of poverty-related stressors of cognitive demands. Practitioners and policy makers can benefit from this study's findings by gaining insight into how economic poverty plays a critical role in the behavioral decision-making of entrepreneurs in poverty-stricken areas.

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Figure 1: Conceptual framework

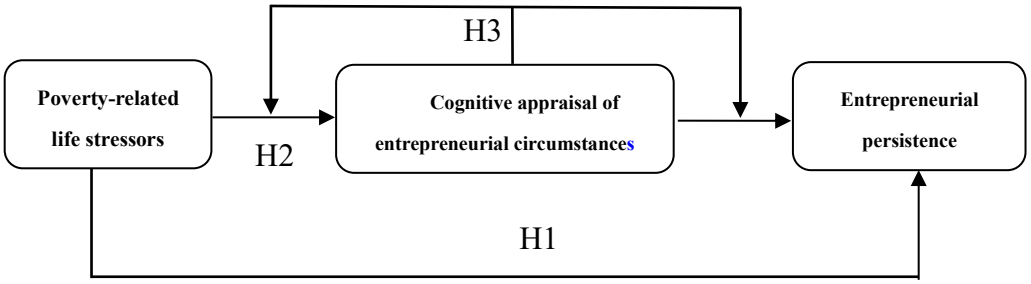

Table 1: Descriptions of the sample (n = 119)

	Frequency	Percentage
Gender	-	-
Male	72	60.5%
Female	47	39.5%
Age		-
18–25	6	5.1%
26–30	29	24.6%
31–40	49	41.5%
41–50	20	16.9%
>50	14	11.9%
Educational background	-	-
Middle school and below	49	42.2%
High school	24	20.7%
Junior college	31	26.7%
Undergraduate	11	9.5%
Postgraduate	1	0.9%
Marital status	-	-
Single	15	12.6%
Married	101	84.9%
Divorced	2	1.7%
Widow/widower	1	0.8%
Registered poor household	-	-
Yes	23	19.3%
No	96	80.7%
Entrepreneurial experience	-	-
Yes	38	32.2%
No	80	67.8%
Firm age (in years)	-	-
<1	15	13.6%
1–2	32	29.1%

3–5	42	38.2%
6–10	12	10.9%
>10	9	8.2%
Annual sales	-	-
<100000 RMB	59	54.6%
100000–300000 RMB	30	27.8%
300000–500000 RMB	13	12.0%
500000–1000000 RMB	2	1.9%
>1000000 RMB	4	3.7%
Number of employees		
1–5	80	76.2%
6–10	17	16.2%
11–20	6	5.7%
21–50	1	1.0%
>50	1	1.0%

Table 2: Descriptive statistics

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Gender	1.395	0.491	-												
Age	3.059	1.048	-0.063	-											
Education	2.060	1.074	0.169	-0.296**	-										
Marriage	1.908	0.412	0.140	0.210*	-0.143	-									
Registered poor household	1.807	0.397	0.134	-0.443**	0.315**	-0.058	-								
Entrepreneurial experience	1.322	0.469	0.156	-0.062	0.001	-0.020	0.202*	-							
Firm age	2.709	1.095	-0.032	0.210*	0.084	0.037	-0.110	0.102	-						
Annual sales	1.722	1.003	-0.015	-0.026	0.112	-0.088	0.171	-0.014	0.301**	-					
Number of employees	1.343	0.718	0.035	-0.063	0.200*	0.057	0.055	0.088	0.291**	0.528**	-				
Entrepreneurial self-efficacy	3.811	0.744	-0.061	0.069	0.102	-0.009	0.055	-0.033	-0.037	0.116	0.114	-			
Poverty-related life stressors	2.406	1.214	-0.015	0.226*	-0.080	0.053	-0.210*	0.039	0.202*	-0.041	0.046	-0.082	0.944		
Cognitive appraisal	3.916	0.624	-0.006	-0.046	0.017	0.048	0.113	0.041	-0.130	0.048	0.074	0.154	-0.040	0.923	
Entrepreneurial persistence	3.748	0.693	0.157	-0.175	-0.006	-0.110	0.266**	0.277**	-0.249**	-0.115	-0.055	-0.033	-0.063	0.638**	0.875

* p<0.05 ** p<0.01

Numeric values shown on a diagonal are the Cronbach's alpha values of the variables.

Table 3: Convergent validity analysis

Factor	AVE	CR
Poverty-related life stressors	0.824	0.949
Cognitive appraisal	0.644	0.935
Entrepreneurial persistence	0.576	0.886

CR (Construction Reliability), AVE (Average Variance Extracted)

Table 4: Hierarchical Regression Results

IV	DV					
	Challenge Appraisal			Entrepreneurial persistence		
	M 1	M 2	M 3	M 4	M 5	M 6
Gender	-0.036(0.123)	-0.036(0.123)	-0.023(0.103)	0.133(0.126)	0.133(0.127)	0.139(0.123)
Age	-0.021(0.068)	-0.022(0.069)	-0.061(0.058)	-0.032(0.070)	-0.033(0.071)	-0.052(0.069)
Education	0.002(0.063)	0.002(0063)	0.012(0.052)	-0.049(0.064)	-0.049(0.065)	-0.044(0.063)
Marriage	0.236(0.192)	0.237(0.193)	0.124(0.161)	-0.015(0.197)	-0.015(0.198)	-0.069(0.193)
Registered poor household	0.111(0.177)	0.114(0.179)	0.152(0149)	0.347(0.182)	0.350(0.184)	0.369*(0.178)
Entrepreneurial experience	0.057(0.131)	0.056(0.131)	0.155(0.110)	0.351**(0.134)	0.350* (0.135)	0.397** (0.132)
Firm age	-0.082(0.061)	-0.083(0.062)	-0.095(0.052)	-0.137*(0.063)	-0.139* (0.064)	-0.145* (0.062)
Annual sales	0.022(0.071)	0.023(0.072)	0.026(0.060)	-0.051(0.074)	-0.050(0.074)	-0.048(0.072)
Number of employees	0.067(0.099)	0.066(0.100)	0.061(0.083)	0.013(0.102)	0.012(0.103)	0.009(0.100)
ESE	0.113(0.080)	0.114(0.081)	0.140(0.067)	-0.019(0.083)	-0.018(0.083)	-0.006(0.081)
PLS		0.006(0.051)	-1.344***(0.199)		0.008(0.052)	-0.645**(0.239)
PLS^2			0.263*** (0.038)			0.127** (0.045)

R^2	0.067	0.067	0.358	0.199	0.199	0.255
ΔR^2	-	0.000	0.291	-	0.000	0.056
F	0.779	0.703	4.929***	2.688**	2.423*	3.016**

Nonstandardized coefficients are listed in the table and SE are reported in parentheses.

PLS = Poverty-related life stressors ESE = Entrepreneurial self-efficiency

*P < 0.05, **P < 0.01, *** P < 0.001

Figure 2: U-shaped effect of poverty-related life stressors on cognitive appraisal and entrepreneurial persistence

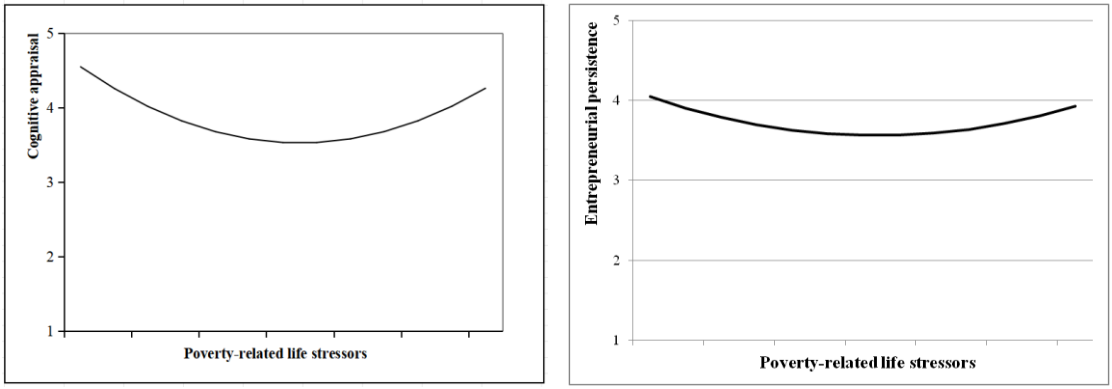

Table 5. Bias Corrected Bootstrap Confidence Interval for Instantaneous Indirect Effects

Mediator	Xn	Instantaneous Indirect Effect	95% CI	
			Lower	Upper
Cognitive Appraisal	X1 = 1.192	-0.571	-0.843	-0.380
		-0.063	-0.137	-0.001
	X2 = 2.406	0.445	0.319	0.624
	X3 = 3.620			

Bootstrap samples: 1000 X = Poverty-related life stressors

X1=MEAN(X)-SD X2=MEAN(X) X3=MEAN(X)+SD

Appendix

Variables	Measure of core variables
Poverty-related life stressors (Black and Hendy, 2019)	Have you experienced the following situations in the past year? Please rate your situations below: 1 = strongly disagree; 5 = strongly agree
	(1) unable to pay utility bills on time.
	(2) unable to pay the rent or mortgage on time.
	(3) unable to heat my home.
	(4) missed meals because of lack of money.
Cognitive appraisal (Peacock and Wang, 1990)	Please think about various problems you encounter in the process of entrepreneurship (such as your ‘‘current business situation’’). Please rate your perceptions of these challenges below: 1 = not at all, 5 = extremely
	(1) Is this going to have a positive impact on me?
	(2) How eager I am to tackle this problem?
	(3) To what extent can I become a stronger person because of this problem?
	(4) To what extent am I excited thinking about the outcome of this situation?
	(5) Do I have the ability to do well in this situation?
	(6) Do I have what it takes to do well in this situation?
	(7) Will I be able to overcome the problem?
	(8) Do I have the skills necessary to achieve a successful outcome to this situation?
Entrepreneurial persistence (Baum and Locke, 2004)	Please rate your actions below: 1 = strongly disagree; 5 = strongly agree
	(1) I continue to work hard on my business even when others oppose me.
	(2) I can think of many times when I persisted with entrepreneurship when others quit.
	(3) No matter how challenging my work is, I will not give up.
	(4) I frequently have to tear myself away from my work to satisfy other obligations.
	(5) Most of my satisfaction with life comes from entrepreneurship.
	(6) I work harder than most people I know.