

# The Impact of Entrepreneurs' Social Identity and the Mediation Effect of the Decision-Making Logic on the Bootstrapping Behavior of Nascent Ventures

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## Abstract

**Purpose** – This article studies the impact of entrepreneurs' social identities on bootstrapping behaviors, and the mediation effect of the decision-making logic.

**Theoretical framework** – This article uses the theory of social identity and the theory of effectuation as its theoretical approach.

**Design/methodology/approach** – We used regressions and structural equation modeling based on a survey of 365 newly-created firms in China's Hangzhou Economic and Development Area (HEDA).

**Findings** – Our findings suggest that entrepreneurs who have a Darwinian identity prefer payment-related bootstrapping and owner-related bootstrapping, while those who have a missionary identity prefer joint-utilization bootstrapping. The empirical study also finds that causation mediates the relationship between Darwinian identities and payment-related bootstrapping, Darwinian identities and owner-related bootstrapping, and missionary identities and joint-utilization bootstrapping.

**Practical & social implications of research** – By exploring the influence of entrepreneurs' social identity on bootstrapping behaviors and the mediation effect of the decision-making logic, this study might help entrepreneurs choose suitable bootstrapping behaviors according to their corresponding social identity.

**Originality/value** – The findings contribute to our understanding of factors that drive the bootstrapping behaviors of nascent ventures from the perspective of entrepreneurs' social identity, and they provide a richer and more complete way of explaining bootstrapping behavior from the perspective of identity theory. The findings also contribute to the literature on the relationship between entrepreneurs' social identity and bootstrapping behaviors by depicting and empirically testing the mediation mechanisms of the decision-making logic.

**Keywords:** Entrepreneurs' social identity, bootstrapping, effectuation, causation.

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## I Introduction

Because of a lack of legitimacy caused by their newness and smallness, nascent ventures usually suffer from difficulties in acquiring resources through conventional channels. To overcome this constraint, they turn to exploiting unconventional methods to acquire resources. Bootstrapping behavior, that is, the activities of entrepreneurs relying on their own strengths to obtain resources and investing limited resources in multiple stages (Jayawarna et al., 2015), is considered an effective way for nascent ventures to respond to this inherent constraint (Grichnik et al., 2014; Vanacker et al., 2011). However, little is known about the antecedents of resource bootstrapping (Miao et al., 2017). According to the theory of social identity, entrepreneurs usually self-attribute their recognized social identity through social comparison and self-classification, and make subjective additions to their own beliefs and behaviors (De la Cruz et al., 2018; Su et al., 2020; Yuan et al., 2020). In the context of ambiguous goals, entrepreneurs often choose their behavior based on their identity rather than personal preferences or goals (Sarasvathy & Dew, 2005). Although it has been found that entrepreneurs with different social identities adopt different entrepreneurial behaviors (Alsos et al., 2016; Ge et al., 2022; Ko & Kim, 2020; Lerner et al., 2018), the mechanism of the effect of entrepreneurs' social identity on bootstrapping behavior is insufficiently understood and underdeveloped by empirical research. Recent research by Grichnik et al. (2014) studies the effect of entrepreneurs' human and social capital (identity) and bootstrapping activity, indicating that the entrepreneur's identity could be a potential antecedent of their bootstrapping behavior. Thus, the first purpose of this study is to explore the effect of entrepreneurs' identity on bootstrapping behavior.

Recently, there has been a growing body of research beginning to pay attention to the impact of entrepreneurs' social identity on their decision-making logic, regarded as an indirect channel to specific entrepreneurial behavior (e.g. Alsos et al., 2016; Estrada Cruz et al., 2019). However, little is known regarding how entrepreneurs' social identity affects their decision-making logic, which in turn affects bootstrapping behavior. The present study fills this research gap by introducing the decision-making logic to reveal the mediation mechanism of the causal/effectual decision-making logic in the relationship between entrepreneurs' social identity and bootstrapping behavior. Drawing on the theory of effectuation proposed by

Sarasvathy (2001), the study divides the decision-making logic into effectuation and causation. On one hand, the social identity of an entrepreneur affects their decision-making logic. The theory of effectuation argues that the effectual logic is based on the entrepreneur's identity cognition of "who I am" (Sarasvathy, 2001), such that entrepreneurs with Darwinian and missionary social identities prefer the causal logic, while entrepreneurs with a communitarian social identity prefer the effectual logic (Alsos et al., 2016). On the other hand, the decision-making logic influences resource bootstrapping behavior. Entrepreneurial action theory argues that the occurrence of entrepreneurial action is based on a variety of logics, ranging from deductive causation-based reasoning, to heuristic and effectual reasoning, and from disinhibition and a relative lack of ex-ante reasoning, to a shifting blend of all types (Lerner et al., 2018). Studies have also found that the decision-making logic affects the resource bootstrapping behavior of start-ups (Peng et al., 2019; Yang, 2014). Accordingly, it can be deduced that the influence of entrepreneurs' social identity on resource bootstrapping is mediated by the decision-making logic, and that the decision-making logic acts as an explanation mechanism for the influence of entrepreneurs' social identity on resource bootstrapping.

In summary, this article studies the influence of entrepreneurs' social identity on resource bootstrapping and the mediation effect of the decision-making logic. The study contributes to extant literature on the antecedents of the bootstrapping behavior of nascent ventures by shedding light on the effect of the entrepreneur's specific social identity on their specific bootstrapping behavior, revealing and providing empirical evidence of different bootstrapping behavior preferences of entrepreneurs with different social identities. The research also contributes to bootstrapping theory in that the black box of the influence mechanism of entrepreneurs' social identity on bootstrapping behavior is partially opened by revealing how the decision-making logic channels the effects of specific social identities on specific bootstrapping behaviors. Furthermore, the newly-constructed analytical framework encompassing entrepreneurs' social identity, the decision-making logic, and bootstrapping behavior contributes to entrepreneurs' social identity theory by checking a specific behavioral effect of entrepreneurs' social identity, thus extending our knowledge of the identity-cognition-behavior framework. For entrepreneurship practitioners, this study provides some direction as to how to exploit

a suitable bootstrapping behavior based on their social identity. The remainder of this article is organized as following: a literature review is conducted, from which research hypotheses are developed; this is followed by the introduction of the empirical research method of this study; then the empirical results and analysis are provided; and, finally, the discussion and conclusion are presented.

## 2 Literature review and hypotheses development

### 2.1 The impact of entrepreneurs' social identity on bootstrapping

Bootstrapping refers to informal access to resources, which may or may not be owned or controlled by the entrepreneur (Jayawarna et al., 2015). Bootstrapping was originally used in finance. Financial bootstrapping is a concept first introduced by Bhide (1992) that deals with how small companies manage their resource scarcity. One of the most used definitions of financial bootstrapping is highlighted by Winborg and Landström (2001) as the use of methods for meeting the need for resources without relying on long-term external finance from debt holders and/or new owners (Löfqvist, 2017). In one of the most comprehensive studies on bootstrapping to date, where it was used in the entrepreneurial field by Jayawarna et al. (2015), bootstrapping is divided into three types: payment-related bootstrapping, joint-utilization bootstrapping, and owner-related bootstrapping. Payment-related bootstrapping refers to informal resource acquisition strategies such as delaying payment to suppliers, speeding up invoicing, obtaining payments in advance from customers, negotiating best terms with suppliers, coordinating purchases with other businesses, and offering discounts on upfront payments. Joint-utilization bootstrapping refers to the informal resource acquisition strategies of borrowing equipment from other businesses, sharing employees and equipment with other businesses, and hiring temporary employees. Owner-related bootstrapping refers to the informal resource acquisition strategies of obtaining loans from relatives/friends, using income from outside employment, using personal credit cards for business, and withholding the owner's salary if necessary.

Identity is a general framework of self-understanding formed through social interaction, mainly answering the questions of "who am I?" and "what role do I play in society?" (Akerlof & Kranton, 2005; Fauchart &

Gruber, 2011; Gruber & Macmillan, 2017). Social identity theory argues that an entrepreneur's social identity affects their entrepreneurial behavior in a predictable and meaningful way (Sieger et al., 2016). Entrepreneurs take entrepreneurial actions that are consistent with their social identities through self-categorization and social comparison processes (Hogg & Terry, 2000; Leavitt et al., 2012; Murnieks et al., 2014). Entrepreneurs define themselves through their own understanding of "who I am" and "who I want to be" and position themselves in relation to particular social groups (Chen et al., 2021; Zuzul & Tripsas, 2020). Fauchart and Gruber (2011) divided entrepreneurs' social identity into the Darwinian social identity, communitarian social identity, and missionary social identity based on three standards: (1) individual basic social motivation – while Darwinian entrepreneurs aim to create a strong, profitable, and thus surviving business or personal wealth, communitarian entrepreneurs focus on belonging to a social group and thus serving a community, and missionary entrepreneurs are geared toward causes and political goals, and aim to promote the development of a specific social cause (such as a social mission or environmental mission). The missionary social identity often motivates innovation and creative solutions with a political mission rather than a competitive advantage in certain industries; (2) personal self-evaluation – while Darwinian entrepreneurs are based on their performance in business competition and whether they show their professional skills, the evaluation basis of communitarians is authenticity (whether they bring something truly useful to the community), and the evaluation basis of missionaries is whether they have fulfilled their social responsibilities; (3) personal framework of reference – while the framework of reference for Darwinian entrepreneurs is the competitors in the same industry, for communitarians it is their own social group, and for missionaries it is the whole of society (De la Cruz et al., 2018; Fauchart & Gruber, 2011; Lewis, 2013).

Entrepreneurs with a Darwinian social identity prefer payment-related resource bootstrapping. First, the Darwinian social identity describes "a typical businessman" with the goal of building a strong and successful business and focused on pursuing personal economic interests and creating personal wealth (Estrada Cruz et al., 2019; Liu et al., 2022; Vanacker et al., 2011). Payment-related bootstrapping such as delaying the payment period and obtaining advance payment by providing discounts (Jayawarna et al., 2015) can help enterprises increase cash

turnover and gain financial advantages. Second, Darwinians adhere to the principle of commercial business to create and operate companies, they have a rigorous business logic, and they evaluate themselves through professionalism (Chen et al., 2021; Liu et al., 2016). Therefore, Darwinian entrepreneurs are more inclined to payment-related bootstrapping such as active negotiation, formulating strict trading terms, and terminating cooperation with less efficient customers (Vanacker et al., 2011). Third, Darwinian entrepreneurs use competitors in the same industry as a personal reference framework, aiming to produce industry-leading products or provide services superior to competitors in their own field, and they seek to compete with mainstream brands with fair prices and technically similar or even better products (Chen et al., 2021; Fauchart & Gruber, 2011). This makes them more inclined to exploit payment-related bootstrapping such as seeking the best supply conditions from suppliers, coordinating procurement with others, seeking more bargaining space, and controlling procurement costs. For these reasons, we hypothesize the following:

*H<sub>1</sub>*: The Darwinian social identity has a positive effect on payment-related bootstrapping.

Entrepreneurs with a Darwinian social identity prefer owner-related resource bootstrapping. First, as economic egoists with a high sense of self-efficacy and an adventurous spirit (Brändle et al., 2018; Lerner et al., 2018), Darwinian entrepreneurs are willing to invest in new ventures with funds from external income or through personal credit card loans. Second, respecting business laws and being good at using the business management logic (Chen et al., 2021), Darwinian entrepreneurs are willing to utilize bootstrapping behavior such as using their own homes and other shareholder resources as office space to mitigate the resource constraint problem (Li & Alvarado, 2021). Third, regarding competition as the main external reference point of their social space, Darwinian entrepreneurs hope to use differentiated strategies to establish a unique competitive advantage. They pursue scale production and property rights protection (De la Cruz et al., 2018; Fauchart & Gruber, 2011). Access to resources through close social network relationships such as borrowing money from relatives and friends can protect business secrets to a greater extent and maintain a competitive advantage (Ebben & Johnson, 2006). For these reasons, we hypothesize the following:

*H<sub>2</sub>*: The Darwinian social identity has a positive effect on owner-related bootstrapping.

Entrepreneurs with a communitarian social identity prefer joint-utilization bootstrapping. First, regarding start-ups as a kind of community entity with mutual benefits and win-win as the basis of their entrepreneurial decisions, communitarian entrepreneurs hope to build start-ups that can support a specific community, and to be supported by the community (Fauchart & Gruber, 2011; Lewis, 2013). Therefore, communitarian entrepreneurs are willing to share employees, equipment, and other resources and they are good at it. Second, communitarian entrepreneurs generally have a background in their communities, such as the founder of a sporting goods company being a sports enthusiast. Communitarian identities are similar to the concept of “user entrepreneurs,” where users stumble upon ideas through their own use and share them with the community (Estrada Cruz et al., 2019). As a result, communitarian entrepreneurs often have a group of like-minded friends in the community and establish a trust-based social network. These help communitarian entrepreneurs improve their entrepreneurial legitimacy, reduce the uncertainty among resource providers, and promote the effective flow of equipment, employees, and other resources (Vanacker et al., 2011). Third, the relationship between the members of a community who share a common enthusiasm for something is highly emotional and has a strong sense of “us” (Sieger et al., 2016). Communitarian entrepreneurs in the same field belong to “the people on their own side.” The sense of providing real products for the community and the environment, where a group of like-minded people work together to make the community better, is the source of their sense of achievement. Therefore, communitarian entrepreneurs prefer joint-utilization bootstrapping such as sharing equipment, employees, and other resources. For these reasons, we hypothesize the following:

*H<sub>3</sub>*: The communitarian social identity has a positive effect on joint-utilization bootstrapping.

Entrepreneurs with a missionary social identity prefer joint-utilization bootstrapping. First, regarding start-ups as a political entity aiming to promote the overall development of society and their mission fulfillment and taking the overall interests of society as the focus of their entrepreneurial decisions (Sieger et al., 2016), missionary entrepreneurs have high willingness to achieve social goals

rather than low willingness to achieve the financial growth. They therefore prefer joint-utilization bootstrapping such as sharing resources with other enterprises, which is good for environmental protection and helps employment by hiring temporary staff (Ko & Kim, 2020). Second, missionary entrepreneurs pursue production methods that are green, efficient, and matched with resources (Fauchart & Gruber, 2011). For example, joint-utilization bootstrapping such as borrowing, renting, or even sharing equipment, hiring temporary employees, bartering, etc., can achieve the purpose of improving the overall rate of utilization of social resources and reducing the cost of resource acquisition (Miao et al., 2017; Vanacker et al., 2011). Third, missionary entrepreneurs take the whole of society as their reference framework and have a high sense of social responsibility, which results in weak control of the enterprise in the early stage of entrepreneurship and low self-efficacy and risk tolerance (Brändle et al., 2018; Hand et al., 2020). Therefore, they tend to exploit joint-utilization bootstrapping such as sharing employees and equipment with other enterprises, and purchasing raw resources together with others to reduce entrepreneurial risks. For these reasons, we hypothesize the following:

*H<sub>4</sub>*: The missionary social identity has a positive effect on joint-utilization bootstrapping.

## 2.2 The mediation role of the decision-making logic

Effectuation and causation are widely acknowledged as alternative decision-making logics employed by entrepreneurs (Peng et al., 2020; Smolka et al., 2018; Yu et al., 2018). While the effectual logic regards the means as given and goals come into being based on those given means, the causal logic regards the target as given and actions are determined by the given goals (Sarasvathy, 2001; Sarasvathy et al., 2014). In addition to the difference between means and goal orientation, effectuation and causation are different in their strategic alliance and competition analysis, power change and avoidance, control orientation, and prediction orientation (Futterer et al., 2018; Peng et al., 2020).

Causation mediates the relationship between the Darwinian social identity and payment-related bootstrapping. On one hand, the Darwinian social identity positively affects causation. First, Darwinian entrepreneurs focus on building strong and profitable companies and accumulating personal

wealth (Sieger et al., 2016). Their goal orientation enables them to integrate entrepreneurial resources based on the principle of expected return and they choose investment projects according to the principle of return maximization (Harms et al., 2021; Peng et al., 2020; Sarasvathy, 2001). Under the goal-oriented principle, entrepreneurs choose the corresponding means according to their pre-set goals (Berends et al., 2014; Sarasvathy, 2001). In an environment where there is a lack of resources, entrepreneurs will often use their personal capital to mobilize the necessary entrepreneurial resources (Fan et al., 2021; Grichnik et al., 2014). Second, Darwinian entrepreneurs' decisions are based on their self-evaluation of professionals, and so the choice of a certain field is often decided upon after careful consideration. Darwinian entrepreneurs usually have professional business knowledge and a clear business plan and use a professional "business school" approach to create and run a company (Fauchart & Gruber, 2011). Third, using competitors as a reference framework for self-evaluation, Darwinian entrepreneurs determine their market status through competition analysis and clarify their competitive advantages based on collected market information (Fauchart & Gruber, 2011). Sarasvathy (2001) argues that entrepreneurs often use a fundamental aspect of their identity to explain their actions and decisions. Alsos et al. (2016) and Estrada Cruz et al. (2019), for example, found that the Darwinian identity is more closely related to causality, whereas the communitarian identity is more significantly related to effectuation. Estrada Cruz et al. (2019) found that the missionary identity is positively related to both the effectual and causal logic. Based on the above logic, the Darwinian social identity has a positive impact on the causal logic.

Entrepreneurs with the causal logic choose investment projects and carry out entrepreneurial activities based on the principle of expected return and income maximization (Brettel et al., 2012; Shirokova et al., 2021; Yang et al., 2019). This will enable the entrepreneurs to seek the best supply conditions from suppliers, coordinating procurement with other companies, and seeking the best purchase price for raw materials (Winborg & Landström, 2001). The entrepreneurs assess their competitive status based on analyses of internal and external environments, and use self-reliance such as speeding up invoicing, obtaining payments in advance from customers, and negotiating best terms with suppliers to improve the resource turnover rate and competitive advantage (Futterer et al., 2018). Using the principle of previous knowledge to avoid incidents, the

entrepreneurs are encouraged to stop business relationships with customers with overdue payments and deal only with quick-paying customers (Winborg & Landström, 2001). To sum up, the causal logic has a positive impact on payment-related bootstrapping. We therefore hypothesize the following:

*H<sub>5</sub>*: Causation mediates the relationship between the Darwinian social identity and payment-related bootstrapping.

Causation mediates the relationship between the Darwinian social identity and owner-related bootstrapping. On one hand, the positive effect of the Darwinian social identity on causation was reasoned in *H5*. On the other, under the principle of avoiding accidents, entrepreneurs carefully examine the external environment to avoid accidents in the entrepreneurial process, to ensure a smoother realization of their established goals (Futterer et al., 2018). They may use their credit cards, withhold their own wages, and use their homes as an office (Winborg & Landström, 2001). Jayawarna et al. (2015) found that lower risk-taking was positively related to owner-related bootstrapping. Since causation means a relatively lower risk-taking preference, the causal logic has a positive impact on owner-related bootstrapping. For the above reasons, we hypothesize the following:

*H<sub>6</sub>*: Causation mediates the relationship between the Darwinian social identity and owner-related bootstrapping.

Effectuation mediates the relationship between the communitarian social identity and joint-utilization bootstrapping. On one hand, the communitarian social identity has a positive effect on effectuation. Firstly, most communitarian entrepreneurs who have a relevant background in their communities are themselves consumers of what they produce, and develop careers based on their personal interests. This entrepreneurial behavior based on personal interests affects the entrepreneur's identity cognition of "who I am" and "what I know" (Alsos et al., 2016; Sarasvathy & Dew, 2005). Secondly, communitarian entrepreneurs believe that authenticity is the core asset of the enterprise (Fauchart & Gruber, 2011). Internal community membership enables them to timely capture changes in products or services and to obtain first-hand information about consumer preferences, so they need to be flexible to develop ideas and optimize products and

services based on the opportunities that arise. Finally, communitarian entrepreneurs take the community as a reference framework and work with like-minded people to make the community better, which is the source of a sense of achievement for communitarian entrepreneurs (Fauchart & Gruber, 2011). Communitarian entrepreneurs obtain previous commitments from potential partners through strategic alliances to reduce uncertainty in the entrepreneurial process. Alsos et al. (2016) and Estrada Cruz et al. (2019), for example, found that the communitarian identity was more significantly related to effectuation. Therefore, the communitarian social identity of an entrepreneur has a positive impact on effectuation.

On the other hand, effectuation has a positive impact on joint-utilization bootstrapping. Firstly, under the principle of means orientation, entrepreneurs make full use of "who I know" social network resources to carry out entrepreneurial activities, and constantly expand their entrepreneurial network through the self-choice process of stakeholders (Sarasvathy et al., 2014; van Mumford & Zetting, 2022). Joint-utilization bootstrapping behavior such as sharing equipment, houses, personnel, and other resources with partners (Fauchart & Gruber, 2011) can promote new enterprises to expand the scale of the entrepreneurial network and control the entrepreneurial process. Secondly, the principle of flexibility increases the opportunity for entrepreneurs to exploit joint-utilization bootstrapping such as employing temporary workers and borrowing equipment (Winborg & Landström, 2001). Finally, the principle of strategic alliance encourages entrepreneurs to obtain greater incremental resources by exploiting joint-utilization bootstrapping, such as sharing equipment and employees, and bartering. For the above reasons, we hypothesize the following:

*H<sub>7</sub>*: Effectuation mediates the relationship between the communitarian social identity and joint-utilization bootstrapping.

Causation mediates the relationship between the missionary social identity and joint-utilization bootstrapping. On one hand, the missionary social identity has a positive impact on causation. First, missionary entrepreneurs regard their company as a platform committed to promoting the development of a social or environmental protection cause, proving that personally founded enterprises can handle social challenges and become a powerful promoter of social change (Fauchart & Gruber, 2011). This entrepreneurship

targeting a certain social or environmental cause, while not targeting profit or expected returns, still embodies a goal-oriented causal logic (Alsos et al., 2016). At the same time, in order to achieve the ideal goal of building a socially or environmentally responsible company, entrepreneurs with a missionary social identity pay great attention to access to production capacity and resources (Fauchart & Gruber, 2011). Therefore, they invest based on the expected return to obtain these capabilities and resources, making the company a paradigm for “best” practice. In the existing research, Estrada Cruz et al. (2019) found that a missionary identity is positively related to both the effectual and causal logic.

On the other hand, causation has a positive effect on joint-utilization bootstrapping. Firstly, under the goal-orientation principle, entrepreneurs choose resource integration based on pre-set goals (Kerr & Coviello, 2020; Sarasvathy & Dew, 2005). The use of existing social network resources, such as sharing equipment or office space with others, is an effective means to achieve the goals of resource integration. Secondly, entrepreneurs make investment decisions and carry out resource integration based on the evaluation of expected return, they determine the resource integration method according to the expected return, they consider potential losses or downside risks of investment projects, and they are committed to promoting the entrepreneurial process with the lowest resource costs. Therefore, entrepreneurs with the causal logic prefer joint-utilization bootstrapping such as exchanging things rather than buying or selling, leasing rather than buying, buying second-hand equipment, and hiring temporary workers (Winborg & Landström,

2001). Finally, under the principle of avoiding accidents, entrepreneurs tend to use their social networks to work with familiar stakeholders to reduce uncertainty (Futterer et al., 2018; Peng et al., 2020). Collaboration is also conducive to spreading responsibility and limiting the potential losses of entrepreneurship to a more affordable range. Therefore, entrepreneurs are inclined to exploit joint-utilization resource bootstrapping such as sharing resources like equipment and other resources. Actually, Jayawarna et al. (2015) found that lower risk-taking was positively related to joint-utilization bootstrapping. Since causation means a relatively lower risk-taking preference, the causal logic has a positive impact on joint-utilization bootstrapping. Considering the above analysis, we hypothesize the following:

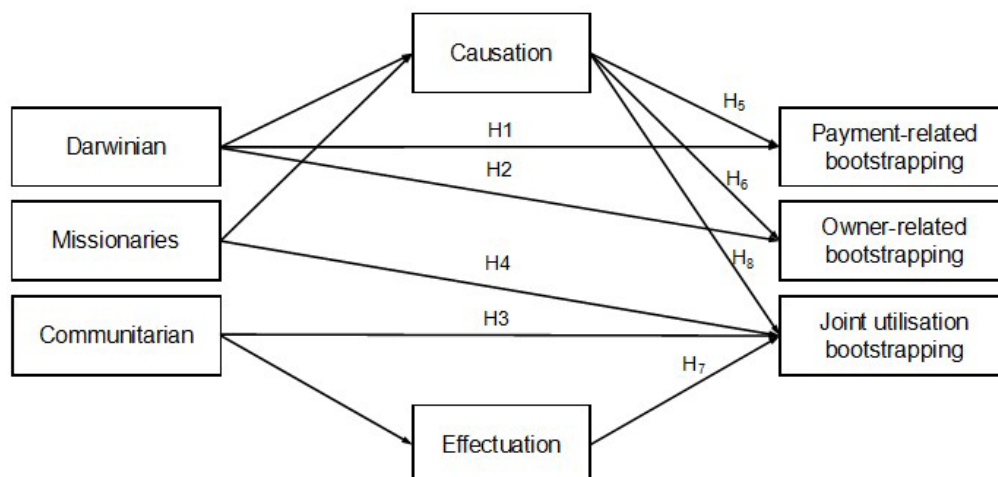
$H_8$ : Causation mediates the relationship between the missionary social identity and joint-utilization bootstrapping.

The theoretical model is presented in Figure 1 below.

### 3 Methodology

#### 3.1 Sample

To conduct this research, we collected data through surveys of novice entrepreneurs in China's Hangzhou Economic and Development Area (HEDA), from which 2,266 enterprises established within the previous eight years were selected as research objects. Seven graduate students invited entrepreneurs by telephone to complete the survey



**Figure 1.** This study's theoretical model

and an electronic link to the questionnaire (Appendix A) was sent to the entrepreneurs who gave their consent. In the first round of the survey, 1,142 entrepreneurs were contacted, of which 794 agreed to complete the survey. One week later, 305 completed questionnaires were received, representing a 38.4% response rate. In the second round, household surveys were carried out on those entrepreneurs who did not respond in the first round. A week later, another 106 completed questionnaires were received, representing a 15.4% response rate. After removing invalid questionnaires, we finally obtained 365 valid questionnaires (Appendix B), which represents a 31.96% response rate. To assess the non-response bias, respondents of the first-round survey (305) and the second-round survey (106) were compared in terms of firm age, number of employees, and annual sales. No statistically significant difference was found between the two groups, indicating that there was no apparent non-response bias in the survey. The characteristics of the sample are presented in Table 1.

### 3.2 Measurement

The scales of bootstrapping behavior developed by Jayawarna et al. (2015) were adopted as the measurement instrument. The original scale includes 14 items measuring three dimensions: payment-related bootstrapping, joint-utilization bootstrapping, and owner-related bootstrapping. Respondents were asked to rate each one on a Likert scale ranging from 0=not at all to 7=extensive use. Five items from the original scale were excluded after factor analysis due to low factor loadings, high cross loadings, and/or low reliability. The remaining nine items provided a three-factor solution with an eigenvalue > 1. These three factors explained 64.2% of the variance in the sample and items within these factors provided high internal reliability (Cronbach's alphas ranging from 0.703 to 0.714). The study's CFA fit indexes support the three-factor structure of resource bootstrapping ( $\chi^2=47.81$ ,

$df=24$ ,  $\chi^2/df=1.99$ ,  $RMSEA=0.05$ ,  $NFI=0.94$ ,  $CFI=0.97$ ,  $IFI=0.97$ ,  $TLI=0.95$ ).

The scales of entrepreneurs' social identity developed by Sieger et al. (2016) were also adopted as a measurement instrument. The original scales include 15 items measuring three dimensions: Darwinian, communitarian, and missionary, each with five items. Respondents were asked to rate each one on a Likert scale ranging from 0=not at all to 7=extensive use. Two items from the original scale were excluded after factor analysis due to low factor loadings, high cross loadings, and/or low reliability. The remaining 13 items produced three factors, which explained 62.1% of the variance in the sample. Items within these three factors provided high internal reliability (Cronbach's alphas ranging from 0.76 to 0.825). The CFA fit indexes support the three-factor structure of entrepreneurs' social identity ( $\chi^2=208.17$ ,  $df=62$ ,  $\chi^2/df=3.36$ ,  $RMSEA=0.08$ ,  $NFI=0.90$ ,  $CFI=0.92$ ,  $IFI=0.92$ ,  $TLI=0.90$ ).

The scales to measure effectuation and causation were based on Brettel et al. (2012) and Futterer et al. (2018), whose measurement inventories were converted into a seven-point effectuation and a seven-point causation scale. Both effectuation and causation are second-order constructs. While effectuation is captured by four formative first-order factors, which are focus on means, affordable loss, partnerships, and acknowledging the unexpected, causation is captured by four formative first-order factors, which are focus on goals, expected returns, competitive market analysis, and overcoming the unexpected. Each of these first-order factors is assessed by four formative items from the original battery of Futterer et al. (2018) with minor context adaptations. The partnerships and expected return factors were excluded due to low factor loading, high cross loading, and/or low reliability of their measurement scales. The CFA fit indexes support a three-factor second-order structure of effectuation ( $\chi^2=51.24$ ,

Table 1  
Characteristics of the sample (n = 365)

Age of Firms	Number of Employees	Type of Industry	Annual Sales (RMB)
<1 year (32.6%)	< 20 (50.1%)	High-Tech (20.3%)	<1 million (27.1%)
1-3 years (44.1%)	21-50 (26.0%)	Traditional Manufacturing (9.0%)	1-10 million (33.7%)
3-5 years (14.8%)	51-100 (14.5%)	Business/Services (38.9%)	10.1-30 million (16.2%)
5-8 years (8.5%)	101-250 (6.3%)	Others (31.8%)	30.1-100 million (15.1%)
	251-500 (2.5%)		101-150 (4.4%)
	>500 (0.5%)		>150 million (3.6%)



$df=32$ ,  $\chi^2/df=1.60$ ,  $RMSEA=0.04$ ,  $NFI=0.94$ ,  $CFI=0.98$ ,  $IFI=0.98$ ,  $TLI=0.97$ ) and a three-factor second-order structure of causation ( $\chi^2=48.11$ ,  $df=32$ ,  $\chi^2/df=1.50$ ,  $RMSEA=0.04$ ,  $NFI=0.95$ ,  $CFI=0.98$ ,  $IFI=0.98$ ,  $TLI=0.98$ ). To get the indicators of effectuation and causation, we calculated the mean of each dimension by averaging the corresponding items for each dimension following much of the previous research (e.g., Cai et al., 2017; Peng et al., 2020; Smolka et al., 2018; Yu et al., 2018).

With reference to the existing literature on bootstrapping (e.g., Grichnik et al., 2014; Vanacker et al., 2011), the entrepreneur's gender, their educational level, the entrepreneurial experience of the team or family members, as well as the enterprise's age, number of employees, and industry type, were included as control variables.

### 3.3 Model diagnostics

To check the common method bias (CMB), we firstly used the Harman's single factor test. Exploratory factor analysis revealed that there were 30 principal components with eigenvalues greater than 1, and the first factor explained 21.97% of the total variance, thus not exceeding the threshold of 40% (Malhotra et al., 2006). Secondly, when comparing the one-factor, eight-factor, and nine-factor models (the latter with the latent factor for increasing common method bias in the eight-factor model), there was a better fit between the eight-factor ( $\chi^2/df=1.94$ ,  $RMSEA=0.05$ ,  $GFI=0.90$ ,  $TLI=0.91$ ,  $CFI=0.93$ ) and nine-factor models ( $\chi^2/df=1.35$ ,  $RMSEA=0.03$ ,  $GFI=0.94$ ,  $TLI=0.97$ ,  $CFI=0.98$ ). However, the addition of a latent factor failed to significantly improve the fit. Furthermore, comparison of the strength of the item loadings and significance of the correlations between the models with and without the latent factor indicated no major difference. Thus, common method bias does not pose a significant threat to the findings of this study.

### 3.4 Reliance and validity analysis

The reliability and validity of the measurement model were evaluated using Cronbach's alpha (CA), composite reliability (CR), and average variance extracted (AVE). As shown in Table 2, the CR values are above the required threshold of 0.7 for all constructs, and the AVE is above 0.50 for all constructs, indicating good reliability of the measurements; and all items loaded significantly on their corresponding constructs. Therefore, the measurements have good convergent validity. As for discriminant validity,

different models were compared with the single-factor model, with the results in Table 3 showing that the eight-factor model fits the data well ( $\chi^2/df=1.943$ ,  $RMSEA=0.051$ ,  $GFI=0.902$ ,  $TLI=0.909$ ,  $CFI=0.926$ ), and is significantly better than the other models compared. In addition, the square root of the AVE for each factor is larger than the values of pairwise correlations between each of the eight latent constructs. Therefore, there is good discriminant validity of the measurements.

## 4 Empirical results and analysis

### 4.1 Descriptive statistics and correlations

Table 4 presents the descriptive statistics and correlations. As shown in the table, the correlation coefficients of all research variables are not high (<0.65), indicating that the multicollinearity problem is not apparent. The table also shows that there are significant positive relationships between the entrepreneur's social identity (Darwinian, communitarian, or missionary) and payment-related bootstrapping. In addition, while the Darwinian social identity has a positive correlation with owner-related bootstrapping, the missionary social identity has a positive correlation with joint-utilization bootstrapping.

### 4.2 Regression analysis

We tested the hypotheses using hierarchical OLS regression. According to the suggestion proposed by Baron and Kenny (1986), we used three steps to test the mediation effect. In the baseline models (M1, M5, and M10), only control variables were included. In the first-order main effects models (M2, M6, and M11), independent variables were added to the baseline models. In the second-order mediation effects models (M4, M8, and M13), the mediation variable causation or effectuation was added to the first-order main effect models. The results of the hierarchical OLS regression analysis are presented in Table 5. All VIFs were lower than 2 in our regression models, further indicating little possibility of multicollinearity problems.

It can be seen that the Darwinian social identity has significantly positive effects on both payment-related bootstrapping (M2,  $\beta=0.171$ ,  $p<0.01$ ) and owner-related bootstrapping (M11,  $\beta=0.170$ ,  $p<0.05$ ). While the missionary social identity has a significantly positive effect on joint-utilization bootstrapping (M6,  $\beta=0.224$ ,

**Table 2**  
**Analysis of measurement model variables**

Variable	Items	Factor Loading	CA	CR	AVE
Payment-related bootstrapping	Indicator1	0.810	0.702	0.821	0.605
	Indicator2	0.765			
	Indicator3	0.757			
Joint-utilization bootstrapping	Indicator1	0.763	0.703	0.826	0.613
	Indicator2	0.763			
	Indicator3	0.822			
Owner-related bootstrapping	Indicator1	0.848	0.714	0.840	0.639
	Indicator2	0.856			
	Indicator3	0.683			
Darwinian	Indicator1	0.779	0.825	0.863	0.612
	Indicator2	0.693			
	Indicator3	0.823			
	Indicator4	0.827			
Communitarian	Indicator1	0.754	0.817	0.861	0.556
	Indicator2	0.761			
	Indicator3	0.665			
	Indicator4	0.841			
	Indicator5	0.695			
Missionary	Indicator1	0.703	0.760	0.823	0.539
	Indicator2	0.779			
	Indicator3	0.693			
	Indicator4	0.757			
Causation Goals			0.740	0.932	0.577
	Indicator1	0.732	0.769	0.830	0.551
	Indicator2	0.671			
	Indicator3	0.755			
Competition analysis	Indicator1	0.796	0.701	0.800	0.572
	Indicator2	0.749			
	Indicator3	0.721			
Avoiding accidents	Indicator1	0.772	0.701	0.829	0.618
	Indicator2	0.808			
	Indicator3	0.778			
Effectuation Means			0.727	0.934	0.587
	Indicator1	0.717	0.733	0.824	0.540
	Indicator2	0.707			
	Indicator3	0.779			
Affordable loss	Indicator1	0.746	0.707	0.824	0.610
	Indicator2	0.812			
	Indicator3	0.784			
Acknowledging the unexpected	Indicator1	0.781	0.699	0.833	0.625
	Indicator2	0.844			
	Indicator3	0.743			

$p < 0.01$ ), the coefficient of the impact of the communitarian social identity on joint-utilization bootstrapping is not significant ( $M6, \beta = -0.005, p > 0.05$ ). Thus, H1, H2, and H4 are strongly supported, while H3 is not supported by the data.

The table also shows that the Darwinian social identity has a significantly positive effect on payment-related bootstrapping ( $M2, \beta = 0.171, p < 0.01$ ) and causation ( $M15, \beta = 0.212, p < 0.01$ ), and causation also has a significantly positive effect on payment-related bootstrapping ( $M3,$

**Table 3**  
**Differential validity and common method bias test of the variables**

Model	$\chi^2$	df	$\chi^2/df$	RMSEA	GFI	TLI	CFI
One-factor model <sup>a</sup>	1636.972	252	6.496	0.123	0.701	0.467	0.514
Three-factor model <sup>b</sup>	1276.834	249	5.128	0.106	0.723	0.6	0.639
Four-factor model <sup>c</sup>	1268.123	246	5.155	0.107	0.725	0.597	0.641
Five-factor model <sup>d</sup>	896.878	242	3.706	0.086	0.782	0.738	0.770
Six-factor model <sup>e</sup>	888.535	237	3.749	0.087	0.734	0.735	0.771
Seven-factor model <sup>f</sup>	471.496	231	2.041	0.053	0.893	0.899	0.916
Eight-factor model	435.255	224	1.943	0.051	0.902	0.909	0.926
Eight-factor model + CMV	269.937	200	1.350	0.031	0.940	0.966	0.975

Note: DARW represents Darwinian social identity, COMT is community social status, MISN is mission social status, CAUS is causal logic, EFCT is effectual logic, PBST is payment-related bootstrapping, JBST is joint-utilization bootstrapping, and OBST is owner-related bootstrapping. <sup>a</sup>DARW+COMT+MISN+PBST+JBST+OBST+CAUS+EFCT; <sup>b</sup>DARW+COMT+MISN;PBST+JBST+OBST;CAUS+EFCT; <sup>c</sup>DARW+COMT+MISN;PBST+JBST+OBST;CAUS; EFCT; <sup>d</sup>DARW+COMT+MISN;PBST;JBST;OBST;CAUS+EFCT; <sup>e</sup>DARW+COMT+MISN;PBST;JBST;OBST;CAUS;EFCT; <sup>f</sup>DARW;COMT;MISN;PBST;JBST;OBST;CAUS+EFCT.

**Table 4**  
**Descriptive statistics and correlations**

	mean	S.D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. firm age	1.99	0.90	1															
2. employees	1.87	1.09	.358**	1														
3. high-tech	0.20	0.40	.118*	.106*	1													
4. manufacture	0.09	0.29	.035	-.075	-.159**	1												
5. commerce	0.39	0.49	.007	-.010	-.402**	-.396**	1											
6. gender	0.66	0.47	-.032	-.104*	.132*	-.066	-.068	1										
7. education	4.81	0.75	.152**	.136**	.076	.064	-.048	-.016	1									
8. experience	0.76	0.43	.052	.048	.109*	-.155**	.016	-.039	-.010	1								
9. Darwinian	5.61	1.00	-.065	-.133*	-.003	.018	.076	.012	.082	-.058	(.076)							
10. community	4.89	1.16	-.064	.022	.042	.023	-.005	.030	.024	-.002	.270**	(.070)						
11. missionary	5.45	1.02	-.106*	-.101	.000	-.001	-.018	.039	.089	-.007	.464**	.398**	(.072)					
12. causation	5.32	0.68	-.059	-.074	-.021	-.026	.103*	-.056	.056	-.022	.532**	.409**	.565**	(.074)				
13. effectuation	5.38	0.66	-.046	-.065	-.081	.022	.042	-.003	.092	-.011	.460**	.473**	.480**	.636**	(.073)			
14. PBST	4.98	0.86	.009	-.018	-.064	.041	.031	.023	.081	.036	.240**	.121*	.179**	.291**	.307**	(.072)		
15. JBST	4.03	1.28	.024	-.076	.014	.037	-.015	-.054	-.032	-.011	.071	.055	.162**	.174**	.148**	.210**	(.070)	
16. OBST	4.44	1.17	.115*	.028	-.091	.087	.040	-.102	.021	-.059	.154**	.065	.076	.198**	.236**	.289**	.183**	(.070)

Note: N = 365; \*p <0.05; \*\*p <0.01. S.D represents standard deviation.

$\beta=0.365, p<0.01$ ). After adding the mediation variable causation to the first-order main effect model, the effect of the Darwinian social identity on payment-related bootstrapping is still significant ( $M4, \beta=0.107, p<0.05$ ) but the coefficient decreases. In addition, causation still has a significantly positive effect on payment-related bootstrapping ( $M4, \beta=0.303, p<0.01$ ). Since we do not know whether the reduction of the coefficient from 0.171 to 0.107 is significant, we further used bootstrapping technology to test the mediation effect of causation in the relationship between the Darwinian social identity and payment-related bootstrapping. As shown in Table 6, the p value of the path from the Darwinian social identity to causation and payment-related bootstrapping is less

than 0.05, and the confidence interval does not contain 0, indicating that causation mediates the relationship between the Darwinian social identity and payment-related bootstrapping. Therefore, H5 is supported by the data.

Returning to Table 5, it can be seen that the Darwinian social identity has a significantly positive effect on owner-related bootstrapping ( $M11, \beta=0.170, p<0.05$ ) and causation ( $M15, \beta=0.212, p<0.01$ ). After adding the mediation variable causation, the loading of the Darwinian social identity on owner-related bootstrapping becomes insignificant ( $M13, \beta=0.103, p>0.05$ ), while causation still has a significantly positive effect on owner-related bootstrapping ( $M13, \beta=0.323, p<0.01$ ). Therefore, it is believed that causation plays an intermediary role in the

**Table 5**  
**Regression analysis**

	Payment-related bootstrapping				Joint-utilization bootstrapping				
	M1	M2	M3	M4	M5	M6	M7	M8	M9
Constants	4.471**(.334)	3.169**(.431)	2.575**(.463)	2.46**(.469)	4.457**(.501)	2.516**(.448)	2.775**(.714)	2.976**(.715)	2.773*(.724)
Firm age	.031(.057)	.043(.055)	.041(.054)	.082(.054)	.094 (.085)	.104(.084)	.103(.084)	.100(.084)	.103(.084)
Number of employees	-.021(.046)	.005(.044)	-.003(.044)	.007(.044)	-.133*(.069)	-.122*(.069)	-.117*(.068)	-.122(.068)	-.120*(.069)
High-tech	-.101(.145)	-.162(.142)	-.147(.139)	-.170(.140)	.209(.217)	.208(.217)	.167(.215)	.238(.215)	.200(.216)
Traditional manufacturing	.125(.147)	.061(.144)	.089(.141)	.062(.141)	.258(.220)	.253(.219)	.226(.217)	.246(.218)	.255(.218)
Commerce	.071(.124)	.003(.122)	-.008(.119)	-.034(.120)	.094(.185)	.101(.186)	.024(.184)	.082(.184)	.067(.186)
Gender	.063(.097)	.059(.094)	.096(.093)	.092(.093)	-.179(.145)	-.191(.144)	-.150(.143)	-.180(.144)	-.160(.144)
Age of boss	-.071(.059)	-.056(.059)	-.056(.057)	-.060(.058)	-.035(.089)	.010(.089)	-.021(.088)	-.028(.088)	.006(.089)
Education	.106*(.061)	.073(.060)	.081(.059)	.074(.059)	-.057(.092)	-.092(.092)	-.079(.091)	-.086(.092)	-.091(.091)
Entrepreneurial experience	.080(.109)	.102(.107)	.096(.105)	.104(.105)	-.032(.164)	-.021(.163)	-.017(.162)	-.032(.162)	-.019(.162)
Darwinian		.171**(.051)		.107*(.053)		-.023(.078)			-.082(.082)
Communitarian		.034(.042)		.001(.042)		-.005(.064)			-.036(.065)
Missionary		.048(.052)		-.023(.055)		.224**(.080)			.159*(.085)
Causation			.365**(.064)	.303**(.086)			.324**(.099)		.278*(.132)
Effectuation								.293**(.102)	
R <sup>2</sup>	.021	.081	.102	.113	.019	.046	.047	.041	.058
ΔR <sup>2</sup>		.060	.081	.032		.027	.029	.022	.012
F	.846	2.583**	4.040**	3.428**	.748	1.404	1.755 <sup>†</sup>	1.515	1.650*
ΔF	.846	7.652**	9.832**	12.550**	.748	3.329*	10.637**	8.278**	4.439*

	Owner-related bootstrapping				Causation	
	M10	M11	M12	M13	M14	M15
<b>Constants</b>	4.451**(.449)	3.375**(.564)	2.704**(.637)	2.634**(.647)	5.190**(.264)	2.338**(.264)
Enterprise age	.193*(.076)	.204**(.076)	.203*(.075)	.203**(.072)	-.027(.045)	.004(.034)
Number of employees	-.026(.062)	-.003(.062)	-.009(.061)	.000(.061)	-.050(.036)	-.009(.028)
High-tech	-.122(.195)	-.182(.195)	-.165(.192)	-.191(.193)	.128(.115)	.029(.087)
Traditional manufacturing	.259(.197)	.197(.197)	.226*(.194)	.199(.195)	.098(.116)	-.004(.088)
Commerce	.124(.166)	.056(.167)	.051(.164)	.018(.166)	.217*(.098)	.121(.075)
Gender	-.219 <sup>†</sup> (.130)	-.221 <sup>†</sup> (.129)	-.189(.128)	-.187(.129)	-.089(.076)	-.110(.058)
Age of entrepreneur	-.095(.080)	-.090(.080)	-.082(.078)	-.094(.080)	-.041(.047)	.013(.036)
Education level	.014(.083)	-.011(.083)	-.009(.081)	-.010(.082)	.069(.048)	-.005(.037)
Entrepreneurial experience	-.171(.124)	-.152(.146)	-.156(.144)	-.150(.145)	-.045(.086)	-.007 (.065)
Darwinian		.170*(.070)		.103(.074)		.212**(.031)
Communitarian		.038(.057)		.002(.0586)		.111**(.026)
Missionary		.004(.070)		-.070(.076)		.234**(.032)
Causation			.337**(.089)	.323**(.117)		
R <sup>2</sup>	.043	.068	.080	.086	.032	.453
ΔR <sup>2</sup>		.025	.037	.019		.422
F	1.771 <sup>†</sup>	2.134*	3.095**	2.556**	1.300	24.333**
ΔF	1.771 <sup>†</sup>	3.125**	14.405**	7.179**	1.300	90.492**

Note: N = 365; \*p < 0.05; \*\*p < 0.01; <sup>†</sup>p < 0.1.

**Table 6**  
**Standardized bootstrapping mediation effect test**

Path	SE	Bias-corrected 95% CI			Percentile 95% CI		
		Lower	Upper	P	Lower	Upper	P
Darwinian → causation → payment-related bootstrapping	0.056	0.162	0.382	0.001	0.159	0.377	0.001
Darwinian → causation → owner-related bootstrapping	0.042	0.032	0.198	0.006	0.029	0.195	0.007
Missionary → causation → joint-utilization bootstrapping	0.035	0.02	0.162	0.011	0.016	0.157	0.015

relationship between the Darwinian social identity and owner-related bootstrapping. Hypothesis H6 is therefore supported by the data.

The missionary social identity has significant positive effects on both joint-utilization bootstrapping (M6, β=0.224, p<0.01) and causation (M15, β=0.234,



$p < 0.01$ ), and causation also has a significantly positive effect on joint-utilization bootstrapping ( $M7, \beta = 0.324, p < 0.01$ ). After adding the mediation variable causation to the first-order main effect model, the effect of the missionary social identity on joint-utilization bootstrapping becomes insignificant ( $M8, \beta = 0.159, p > 0.05$ ); while causation still has a significant positively effect on joint-utilization bootstrapping ( $M8, \beta = 0.293, p < 0.05$ ). It is therefore reasonable to surmise that causation plays a full intermediary role in the relationship between the missionary social identity and joint-utilization bootstrapping. Hypothesis H8 is thus supported by the data.

### 4.3 Model robustness check

In order to further test the research hypotheses, we adopted structural equation modeling (SEM) to test the robustness of the mediation effect model. The results show that the model fits the data well ( $\chi^2/df = 2.00, RMSEA = 0.05, GFI = 0.90, TLI = 0.90, CFI = 0.91$ ). The path coefficient and significance levels between the variables are shown in Table 7. It is found that both Darwinian and missionary social identities have significantly positive effects on causation ( $\beta = 0.638, p < 0.001; \beta = 0.504, p < 0.001$ ). It is also seen that causation has a significantly positive effect on payment-related bootstrapping ( $\beta = 0.410, p < 0.001$ ), joint-utilization bootstrapping ( $\beta = 0.159, p < 0.05$ ), and owner-related bootstrapping ( $\beta = 0.159, p < 0.05$ ). The above results prove the robustness of all mediation effect models.

## 5 Conclusion and discussion

Based on social identity theory, resource bootstrapping theory, and effectuation theory, this study examined the impact of entrepreneurs' social identities on resource bootstrapping, and the mediation effect of the decision-making logic. We obtained some valuable findings through both theoretical and empirical studies.

Firstly, to overcome resource constraints, Darwinian entrepreneurs prefer to adopt payment-related bootstrapping and owner-related bootstrapping, while missionary entrepreneurs prefer to adopt joint-utilization bootstrapping. These conclusions not only indicate that entrepreneurs' social identities are important antecedent variables for explaining bootstrapping behaviors, but they also reveal that entrepreneurs' different social identities lead them to exploit different bootstrapping behaviors. The conclusions support the finding by Jayawarna et al. (2015) that different entrepreneurs with different identities (genders) adopt different bootstrapping behaviors. However, their research studies the antecedents of bootstrapping from the perspective of entrepreneurs' natural identity (genders), whereas our research studies the antecedents of bootstrapping from the perspective of entrepreneurs' social identity. The findings are also different from extant research findings by Grichnik et al. (2014) in that their findings reveal the effect of the human and social capital of nascent entrepreneurs on the degree of bootstrapping behavior as a whole, while our findings reveal the match between entrepreneurs' different social identities and different bootstrapping behaviors. Thus, our findings provide a more elaborate explanation of the relationship between identity and bootstrapping behavior. To the best of our knowledge, our study is the first to reveal the antecedent mechanism of bootstrapping behaviors from the perspective of entrepreneurs' social identity. Thus, the findings not only contribute to the literature on social identity theory and bootstrapping, but also add to extant literature by providing a richer and more complete way of explaining bootstrapping behavior from the perspective of identity theory.

Secondly, causation mediates the relationship between the Darwinian social identity and owner-related bootstrapping, and the relationship between the missionary

Table 7  
Analysis of the structural equation model

Path	Standardized coefficient	S.E.	C.R.	P
Darwinian social identity → causation	0.638	0.033	4.485	***
Missionary social identity → causation	0.504	0.044	3.771	***
Causation → payment-related bootstrapping	0.410	0.284	3.86	***
Causation → joint-utilization bootstrapping	0.159	0.269	2.307	*
Causation → owner-related bootstrapping	0.179	0.349	2.567	**

Note: \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

social identity and joint-utilization bootstrapping. These findings indicate that the causal decision-making logic acts as an important explanatory mechanism of the effect of entrepreneurs' social identity on bootstrapping behavior. The findings contribute to our understanding on how the effect of the adoption of specific bootstrapping behaviors (e.g. owner-related bootstrapping and joint-utilization bootstrapping) by nascent entrepreneurs on entrepreneurs' specific social identities (e.g. the Darwinian social identity and missionary social identity) are channeled by causation. Furthermore, the research conclusion extends the literature on the relationship between social identity and the decision-making logic (e.g. Alsos et al., 2016; Estrada Cruz et al., 2019, etc.) by examining the relationship between social identity, the decision-making logic, and bootstrapping activities. In so doing, the black box of the mechanism of influence of entrepreneurs' social identity on bootstrapping behavior is opened by revealing how the decision-making logic channels the effects of specific social identities on specific bootstrapping behavior, allowing us to identify the intrinsic mechanisms underlying the influence of specific social identities on entrepreneurial behavior through the decision-making logic. The practical implication of the findings lies in helping nascent entrepreneurs to choose corresponding bootstrapping behaviors according to their identities and decision-making logic when they have different social identities and decision-making preferences.

Thirdly, the data from this research did not support the hypothesis that there is a positive effect of the communitarian social identity on joint-utilization bootstrapping, and that there is an intermediary role of effectuation between the communitarian social identity and joint-utilization bootstrapping. This might imply that not all types of feelings of belonging to a community have a positive impact on bootstrapping behavior such as joint-utilization bootstrapping. The reason for this may be related to the cognitive bias of communitarian entrepreneurs in China. Due to cultural differences, Chinese and Westerners understand the community differently. In the eyes of Westerners, friends, colleagues, and club members are all part of the community, while in Chinese minds, everyone except the family belongs to the whole of society. The community concept used to measure the social identity question items, such as friends, colleagues, and other people, are all part of society in the eyes of Chinese entrepreneurs. Therefore, under the influence of Chinese culture, Chinese entrepreneurs' cognition of

social identity is not clear. So, when a communitarian social identity is put into the regression model, the identity is likely mixed up with other identities.

Despite its contributions, this study is not without limitations. First, we only studied the impact of a single social identity of the entrepreneur on resource bootstrapping, and neglected the fact that entrepreneurs have multiple social identities because they sometimes identify with multiple social groups (Dong et al., 2021; Liu et al., 2016). Almost all entrepreneurs have multiple social identities, just as all colors can be made from just the three base colors of red, yellow, and blue (Gruber & Macmillan, 2017). Such entrepreneurs with a mixed social identity exist in most industries and will likely become more common in the future (Fauchart & Gruber, 2011). Therefore, the impact of entrepreneurs' mixed social identity on entrepreneurial behavior is worth further exploration in future research. Second, using cross-sectional data to test the corresponding research hypotheses may be another limitation. Causality of cross-sectional data cannot be inferred (Smolka et al., 2018). Ebben and Johnson (2006) found that specific bootstrapping activities increase or decrease over time. At the same time, entrepreneurs may have multiple social identities (Liu et al., 2016). Thus, using cross-sectional data to study the linear and net effect may neglect the complex causality of entrepreneurs' social identity and bootstrapping behavior. Accordingly, future studies could consider longitudinal research designs and use longitudinal data to elaborate on the robust causality between entrepreneurs' social identity and bootstrapping behavior. Using the QCA method and configuration analysis to reveal the complex causality (Hand et al., 2020) between entrepreneurs' social identity and bootstrapping behavior could also be an avenue for future research. Third, we did not find different mediation effects of causation and effectuation in relationships between entrepreneurs' specific social identities and specific bootstrapping activities as we initially thought we would. Previous research such as that of Estrada Cruz et al. (2019) and Dong et al. (2021) found that culture affects the relationship between entrepreneurs' social identities and the effectual/causal logic or job creation. Therefore, future research could check the cultural difference between entrepreneurs' social identities to shed light on the different mechanisms of effect of these identities on bootstrapping behavior.

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## APPENDIX A. Questionnaire

The questionnaire for this article can be found online at <https://www.wjx.cn/vm/Q0mTnmd.aspx#>

## APPENDIX B. Supplementary data

Supplementary data for this article can be found online at <https://sheet.zohopublic.com.cn/sheet/published/o9yvm40101d3154d44f3ebe32392d81bdfb15>

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