

Fostering Serial Entrepreneurial Intention in Chinese College Students: Examining Grit Personality Mechanisms

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Abstract. This study investigated the relationship between grit (perseverance of effort and consistency of interest) and serial entrepreneurial intention (SEI) among 705 Chinese college students. Moreover, it examined the mediating roles of entrepreneurial self-efficacy (ESE) and locus of control. Results showed grit positively predicted SEI, and this relationship was mediated by entrepreneurial self-efficacy and locus of control individually as well as sequentially. The findings highlight the importance of grit in reinforcing college students' SEI by enhancing their entrepreneurial self-beliefs. Researchers should utilize experimental and longitudinal designs to establish causality. Practical implications point to incorporating grit interventions and training self-efficacy in entrepreneurial education programs.

Keywords: Grit Personality, Serial Entrepreneurial Intention, Entrepreneurial Self-efficacy, Locus of Control

1. Introduction

Autonomous entrepreneurial success which achieved by college students is a vital means of facilitating and obtaining work, significantly contributing to increased employment rates and the advancement of economic growth (Zheng et al., 2022). Entrepreneurial intention, a crucial precondition for successful entrepreneurship, is individual commitment and confidence in starting new ventures (Krueger, 1993; Tomy & Pardede, 2020). Research in this area remains further explored. SEI is an extension of entrepreneurial intention into the domain of serial entrepreneurial efforts (Z. Li et al., 2022). It mostly describes a mental condition in which people who have previously been entrepreneurs but left the field decide they want to start their own business again (Simmons et al., 2016). Over 90% of first-time entrepreneurs fail in an unpredictable environment (Startup Genome, 2022). However, serial entrepreneurs are more likely to succeed than those who fail in their initial tries (Lafontaine & Shaw, 2016). As a result, fostering SEI in college students is a pressing practical topic that needs to be addressed right now.

A prior study found that individual traits could affect SEI (Bai et al., 2022). As a vital trait, grit, that is, persistent attention to and focus on long-term goals (Butz et al., 2018), could exert a considerable impact on personal entrepreneurship, including entrepreneurial intention (e.g., Arco-Tirado et al., 2019; Barrientos Oradini et al., 2022; Butz et al., 2018; Mooradian et al., 2016; Mueller et al., 2017). Grit is becoming a more essential subject in entrepreneurial contexts, especially for Chinese college students. It has received broad interest in the recent past from the public, users, and experts in entrepreneurship. College students are the most capable group in terms of potential entrepreneurial supply (Israr & Saleem, 2018), and given the emphasis placed on grit in Chinese Confucian culture (Teuber et al., 2021). Notably, these students have little social exposure and low-risk tolerance, which could deter them from pursuing business ventures. (Wang & Jiang, 2021). Thus, their intention to pursue entrepreneurship once again is more likely to be influenced by grit. In existing research, there is literature discussing the relationship between grit and entrepreneurial intention (Butz et al., 2018; Karimi, 2020; Syed et al., 2020; Urban & Richard, 2015). However, the relationship between grit and SEI still requires further exploration. In contrast to entrepreneurial intention, the uniqueness of SEI lies in its specific focus on re-entrepreneurship (Bao & Dou, 2021). Therefore, investigating whether and how grit influences the relationship with SEI is necessary.

Previous studies on the relationship between grit and individual entrepreneurship have mostly examined its function in passion and persistence toward long-term objectives (e.g., Duckworth et al., 2007 as cited in Asante et al., 2023, Mueller et al., 2017, and Salisu et al., 2020). It's worth noting that grit falls into two categories: POE and COI. According to earlier research, grit and individual entrepreneurship could be associated either directly or indirectly (Arco-Tirado et al., 2019; Asante et al., 2023). To comprehend in full the process behind the link between grit and SEI, further study is required. According to social cognitive theory (SCT), states of individuals could influence their degree of self-efficacy, which in turn can impact their action choices (Bandura, 1997, 2012). Thus, the two categories of grit which belongs to individual states, may influence SEI by impacting ESE. For instance, individuals with high POE denotes conscientious and ongoing entrepreneurial endeavors, which could raise their ESE (Asante et al., 2023) and increase their SEI (Maheshwari & Kha, 2022). Individuals with high COI, indicating entrepreneurs who do not constantly change interests, might enhance ESE (Asante et al., 2023), thereby boosting SEI. Therefore, in existing research, the examination of two types of grit influencing SEI through their effect on ESE has been conducted. However, there is few literature testing whether these two types of grit can affect ESE and subsequently influence SEI.

Moreover, Locus of control is associated with a person's perception of self-influence over outcomes, akin to ESE (Eren et al., 2023). Previous studies show that variations in individuals' traits might affect their locus of control. Big Five personality, for instances, is correlated to locus of control, (Boysan & Kiral, 2017; Johnson et al., 2009). Little study has, however, been done on grit and locus of control. On the other hand, prior studies have explored how locus of control affects entrepreneurial intention (e.g.,

Arkorful & Hilton, 2021; Molino et al., 2018; Uysal et al., 2022). However, there is few literatures examining whether locus of control can act as a mediating variable between grit and SEI. Therefore, there is still an empirical gap to be tested in the relationship among these three variables. As was previously noted, ESE and locus of control might serve as potential mediating factors with SEI. Remarkably, locus of control is significantly linked to ESE (Auna, 2020; Uysal et al., 2022). Thus, it is possible that locus of control and ESE act as serial mediating mechanisms in the links between grit and SEI in college students. Further addressing research gaps and improving our understanding of how the two dimensions of grit exert influence can be accomplished by looking into the role of grit on SEI among college students as well as the link among locus of control, ESE, and serial mediation effect of them under this setting.

This study aims to investigate the effect of grit on SEI of college students and its underlying mechanisms. The specific research questions and objectives are as follows: (a) whether and how the two dimensions of grit are linked to college students' SEI, (b) how locus of control mediates this association, and (c) how ESE mediates this association, and (d) how locus of control and ESE chain mediate this association.

2. Literature Review and Hypothesis Development

2.1. Relationship between Grit and Serial Entrepreneurial Intention

According to SCT of self-regulation, individuals might shape their development (Bandura, 1991). For self-directed entrepreneurial individuals, internal individual factors are critical (Asante et al., 2023). Grit manifests as persistence when facing of hardship and passion when facing of barriers to long-term objectives (Christopoulou et al., 2018; Duckworth et al., 2007). According to prior studies, two characteristics could be used to describe grit: POE and COI (Datu et al., 2017; Duckworth et al., 2021). Previous studies found that grit has been shown to positively affect entrepreneurial intention (Butz et al., 2018). Grit may also influence on SEI, which is derived from entrepreneurial intention and emphasize the intention to resume business (Bao & Dou, 2021). Unlike typical initial entrepreneurial intention, SEI, also known as subsequent entrepreneurial intention, centers on an individual's ongoing desire to pursue entrepreneurship (Bao & Dou, 2021). Various personal factors such as individual traits, psychological perceptions, entrepreneurship-level factors like entrepreneurial cognition, human capital, and environmental factors like social capital, legal aspects, and societal elements all contribute to SEI (Bai et al., 2022). The association between grit and SEI has not been thoroughly studied. Nonetheless, research in domains like as medicine and education has shown that people with more grit could enhance their involvement in prior activities (e.g, Casali et al., 2023; Jiang et al., 2019; Klappa et al., 2022).

Studies on entrepreneurship have looked at specific individual characteristics, such as Big Five personality, and how these relate to SEI (Bai et al., 2022). Furthermore, individual serial entrepreneurs may be influenced by their personal traits (Simmons et al., 2023). Hence, grit, which covers POE and POI, as a type correlated with conscientiousness in the Big Five but with unique trait oriented towards long-term goals (Butz et al., 2018), might also impact SEI (Costa et al., 2023). While there is limited research directly exploring the relationship between grit and SEI of college students, studies have found that college students with a tendency towards grit, specifically possessing traits of POE and POI, are more likely to believe in their ability to succeed in entrepreneurship, demonstrating stronger entrepreneurial intentions (Butz et al., 2018; Karimi, 2020; Y. Li et al., 2023). These findings provide support for the close association between grit and SEI. Given the significance of grit in the individual entrepreneurial process, it is essential to delve into the relationship between the two and uncover the underlying mechanisms through which grit influences SEI. This study proposes the following hypothesis.

H1: POE positively affects SEI.

H2: COI positively affects SEI.

2.2. Relationships between Grit, Entrepreneurial Self-efficacy, and Serial Entrepreneurial Intention

2.2.1. Grit and Entrepreneurial Self-efficacy

Individuals with grit tend to stick with their decisions over the long run, which helps them succeed in difficult pursuits (Duckworth, 2016). Grit is a critical component of an individual's entrepreneurial success in the complex and dynamic environment of entrepreneurship (Butz et al., 2018), increasing self-efficacy (Alhadabi & Karpinski, 2020; Devisakti & Ramayah, 2022). SCT of self-efficacy indicates that persons' psychological and physiological conditions might affect their level of self-efficacy (Bandura, 1977). Rooted in self-efficacy, ESE is a person's belief in their ability to plan, perform, and succeed in entrepreneurial endeavors (Chen et al., 1998; McGee & Peterson, 2019). Prior studies showed that individual differences, including personality, can impact an individual's physiological state assessment, thereby influencing ESE (Newman et al., 2019). The two dimensions of grit: POE and COI, constitute significant individual differences capable of affecting ESE (Asante et al., 2023).

Throughout the entrepreneurial process, COI helps individuals stay committed to a single objective (Duckworth et al., 2021). This focus allows them, amid the uncertainty of the entrepreneurial environment (McKelvie et al., 2011), to uphold long-term commitments even when faced with setbacks and uncertainties (Duckworth & Gross, 2014), persevering through deliberate and undistracted practice (Cheng et al., 2023). This perseverance enhances their confidence in their entrepreneurial abilities, potentially bolstering their ESE (Devisakti & Ramayah, 2022). People who exhibit POE feel that problems can be overcome by perseverance (Cheng et al., 2023; Duckworth & Gross, 2014). This belief motivates them to gain expertise in entrepreneurship and face barriers head-on. An increasing feeling of self-efficacy in the business process is facilitated by this belief (Devisakti & Ramayah, 2022).

2.2.2. Entrepreneurial Self-efficacy and Serial Entrepreneurial Intention

ESE is not only influenced by individual personality traits but also influences SEI. SCT points that the primary factor influencing behavioral choices is self-efficacy, which substantially affects people's choices of action (Bandura, 1997, 2012). Consistent with this view, numerous research showed that there is a connection between ESE and entrepreneurial intention (e.g., Hsu et al., 2019; Naktiyok et al., 2010; Pihie & Bagheri, 2013; Schlaegel & Koenig, 2014). Moreover, people with higher self-efficacy—a measure of self-perceived behavioral control—may also be more confident in their capacity to succeed in re-entrepreneurship following an experience with failure, which could result in a stronger SEI (Fuentelsaz et al., 2023). Furthermore, it has been shown that ESE mediates the positive link between personality and entrepreneurial intention (Mei et al., 2017). Hence, ESE could mediate the connection between the two dimensions of grit and SEI. This study proposes the hypothesis.

H3: ESE mediates the link between POE and SEI.

H4: ESE mediates the link between COI and SEI.

2.3. Relationships between Grit, Locus of Control, and Serial Entrepreneurial Intention Grit and Locus of Control

As a quality of attentional control (Lin et al., 2023), a person's belief in self-ability to determine and control life things via self-actions and resources is known as locus of control (Eren et al., 2023; Rahmawati et al., 2023; Rotter, 1966). There is little research investigating the influence of grit on locus of control. Nonetheless, prior studies have shown a connection between Big Five personality and locus of control (Filipiak & Łubianka, 2021; Johnson et al., 2009). Like self-efficacy, studies on the effect of personality factors on locus of control can also be rooted in SCT. For example, prior studies have shown that the extraversion trait of Big Five personality contributes to the locus of control by establishing interpersonal behaviors that enhance individuals' sense of internal control through building relationships (Filipiak & Łubianka, 2021). Furthermore, due to the significant correlation between certain dimension of grit and the Big Five personality and considering the apparent similarities between locus of control

and self-efficacy, both being cognitive (Chen et al., 1998), and the analysis of grit's impact on ESE as mentioned earlier, it can be inferred that grit might also influence locus of control.

Entrepreneurs with COI tend to stay focused on the same long-term objective (Duckworth et al., 2021). As they are more likely to attribute success or failure to their own decisions and actions—believing that their capabilities are shaped more by themselves than by external factors—this kind of goal orientation could affect some self-regulation routes and lead to an inclination toward internal control (Radosevich et al., 2004; Tolentino et al., 2014). Entrepreneurs who are endowed with the trait of POE often demonstrate dedication and persistent effort in the face of difficulty (Asante et al., 2023). People employ self-regulatory methods because of this increased emphasis on effort (Tolentino et al., 2014), which shows up as increased autonomy (Xu et al., 2023). As a result, rather than placing the blame elsewhere, individuals may tend to think that perseverance and hard work may help them overcome obstacles.

2.3.2. Locus of Control and Serial Entrepreneurial Intention

Locus of control and self-efficacy are related in that they both deal with people's perceptions of their ability to exercise agency. Locus of control could also affect SEI. According to SCT, an entrepreneur's confidence in their ability to organize and execute their future endeavors may have an impact on how far along their entrepreneurial career is (Uysal et al., 2022). Previous studies have indicated that locus of control can predict entrepreneurial intention (Arkorful & Hilton, 2021; Brockhaus, 1975; Uysal et al., 2022). Moreover, despite the paucity of research on the link between locus of control and SEI, individuals' beliefs about self-control reinforce their propensity for re-entrepreneurship (Fuentelsaz et al., 2023). Therefore, drawing from the existing research on personality mediating entrepreneurial intention in ESE (Mei et al., 2017), akin to ESE, locus of control may also mediate the association between two kinds of grit and SEI. This study constructs these hypotheses.

H5: Locus of control mediates the link between POE and SEI.

H6: Locus of control mediates the link between POE and SEI.

2.4. Relationship between Locus of Control and Entrepreneurial Self-efficacy

Despite their similarities, locus of control differs from self-efficacy in the aspect of individual trait factors. Self-efficacy focuses on a person's belief in achieving the goal of task, while locus of control is more concerned with the belief in reaching task objectives (Uysal et al., 2022). SCT argues that psychological traits such as personality, ability, and type of self-control could influence individual's self-efficacy (Bandura, 1986). People who tend to have an internal locus of control is easier to assign results to oneself and have greater expectations of good outcomes from the whole self-assessment. This affects their cognitive assessments and helps to establish and reinforce self-efficacy (Ashagi & Beheshtifar, 2015; Bandura, 1986). Prior studies suggested that locus of control could serve as a factor influencing ESE (Auna, 2020; Uysal et al., 2022). In conclusion, the effect of the two kinds of grit on SEI may be chain-mediated via locus of control and ESE. The hypotheses model is shown in Figure 1.

H7: Locus of control and ESE chain mediates the link between POE and SEI.

H8: Locus of control and ESE chain mediates the link between POE and SEI.

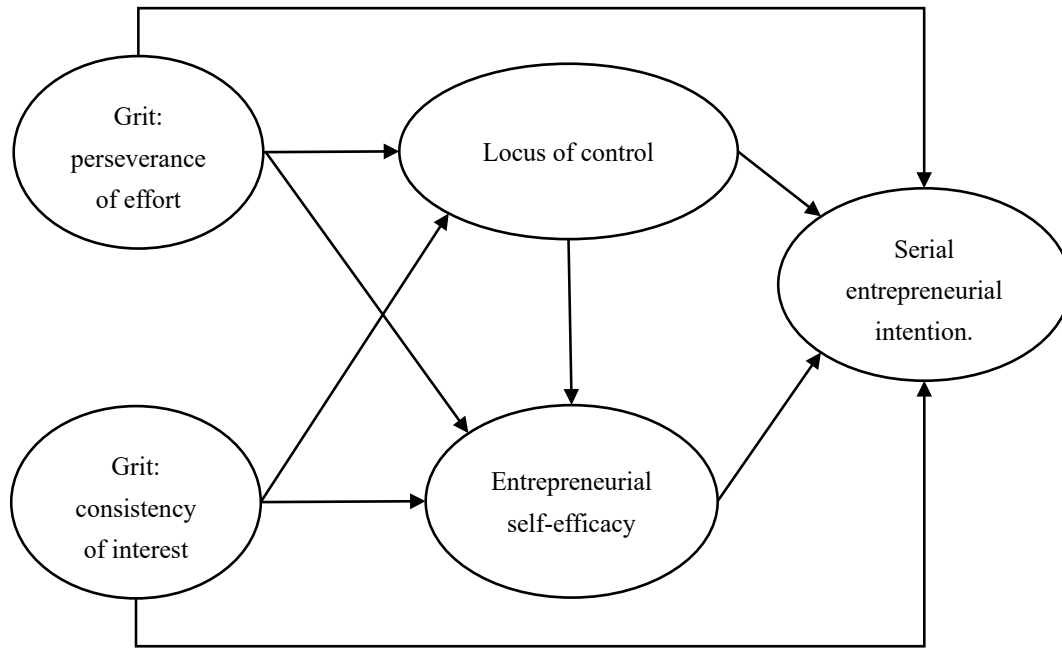


Fig. 1: The hypothetical model

3. Method

3.1. Participants

This study utilized the questionnaire platform powered by www.wjx.cn to randomly distribute questionnaire links to Chinese college students, encouraging their participation in an online survey. A total of 705 valid responses were collected. The questionnaire encompassed descriptive information about the participants, as well as measurements of grit, locus of control, ESE, and SEI. Participation was voluntary, and respondents' answers were anonymous and kept confidential. All participants provided informed permission, and the researchers' institution granted ethical approval.

Among sample, the gender distribution was relatively balanced (49.93% male, 50.07% female). As the study targeted college students, the age range was between 18 and 23, with representation from various age groups. Most of the sample consisted of second and third-year students (63.83% combined), while first-year students were the least represented (15.89%). A minority of respondents held positions as student cadres (25.53%), and the majority hailed from rural areas (62.55%). Most respondents reported a monthly family income between 5001 to 15000 RMB (80.70%).

3.2. Measurements

3.2.1. Grit

It used the Chinese version of the Grit Scale (Guan et al., 2015), which was adapted from Duckworth et al. (2007), was employed in this study. There are 12 items on the scale, measuring two dimensions of grit, with six items each: (a) COI (e.g., "New ideas and projects sometimes distract me from previous ones") and (b) POE (e.g., "I finish whatever I begin"). Participants rated their responses on a 5-point scale, spanning from 'completely disagree' to 'completely agree,' scores ranging from 1 to 5, separately. Notably, items in the COI dimension are reverse-scored. The study did not utilize a total score for the scale but rather utilized scores for each dimension separately. The internal consistency coefficient (α) for both dimensions was 0.887. Confirmatory Factor Analysis (CFA) at the item level indicated strong structural validity for the scale ($\chi^2/df = 1.296$, RMSEA = 0.010, CFI = 0.996, TLI = 0.996, SRMR = 0.018).

3.2.2. Entrepreneurial Self-efficacy

The single-dimensional ESE scale developed by Dimov (2010) was translated into Chinese to measure ESE. The scale consists of 6 items (e.g., "Overall, my skills and abilities will help me start a business"). Participants used a 5-point scale, ranging from 'strongly disagree' to 'strongly agree,' with scores assigned from 1 to 5, separately. The α for this scale was 0.900. At the item level, the CFA confirmed the scale's strong structural validity. ($\chi^2/df = 1.771$, RMSEA = 0.033, CFI = 0.997, TLI = 0.995, SRMR = 0.012).

3.2.3. Locus of Control

The study employed the "Internality" subscale from the "Internal, Powerful Others, and Chance Scale" developed by Levenson (1981) to measure locus of control. In previous research, this subscale has been identified as suitable for individual use, effectively capturing whether participants lean towards an internal or external locus of control (Judge et al., 1998). The scale consists of 8 items (e.g., "My life is determined by my own actions"). Participants used a 6-point scale, from 'strongly disagree' to 'strongly agree,' scored from 1 to 6, separately. The scale demonstrated high reliability with an α of 0.942, and the CFA conducted at the item level affirmed its strong structural validity ($\chi^2/df = 1.522$, RMSEA = 0.027, CFI = 0.998, TLI = 0.997, SRMR = 0.010).

3.2.4. Locus of Control

The assessment of SEI utilized the Chinese version of the SEI Scale (Xu, 2012), which was adapted from Chen et al.'s (1998) original scale and subsequently translated into Chinese. This scale has been locally validated and shown to possess good applicability (Zhu & Yan, 2021), which comprises 4 items (e.g., "If I have the idea of starting a business again, I will immediately take action."). Participants used a 5-point scale, varying from 'strongly disagree' to 'strongly agree,' scored from 1 to 5, respectively. The scale demonstrated high reliability with an α of 0.853, and the item-level CFA affirmed its strong structural validity ($\chi^2/df = 0.601$, RMSEA = 0.000, CFI = 1.000, TLI = 1.002, SRMR = 0.004).

3.3. Data Processing

Initially, Mplus 8.3 was utilized to examine common method bias in the data collected from 705 Chinese college students. SPSS 27.0 was utilized to conduct descriptive statistics and correlation. Finally, a structural equation model was constructed using Mplus 8.3. The model was diagnostically tested with respect to reliability and validity, and, in conjunction with bootstrapping methods (repeated 1000 times to calculate 95% confidence intervals), hypotheses H1-H8 were examined. Establishing a structural equation model for multiple mediation analysis allows for simultaneous handling of manifest variables and latent variables. It also enables the simultaneous analysis of relationships among multiple independent variables, multiple dependent variables, and multiple mediator variables. Mplus 8.3 software can perform multiple mediation analysis using structural equation models. Compared to other software, its advantage lies in the convenient implementation of the bootstrapping method (Fang et al., 2014). These hypotheses involve testing whether and how the two dimensions of grit were related to SEI, as well as investigating the mediating roles of locus of control and ESE in the relationship between grit and SEI.

3.4. Common Method Variance

Following the practice of Huang et al. (2019), this study employed procedural measures such as anonymous measurement and reverse-coding of certain items to control for common method variance. To identify common technique bias, the gathered data were subjected to Harman's single-factor test. This led to identifying five unidentified factors with eigenvalues less than 1, the biggest of which explained 37.83% (less than 40%) of the variance. Hence, this study did not exhibit significant common method bias.

4. Results

4.1. Preliminary Analysis

Table 1 displays the key variables' descriptive statistics and correlation analysis findings. Results show that these variables were significantly correlated with each other.

Table 1. Mean (*M*) and standard deviation (*SD*) of the main variables and correlations between them

	Variable name	Variable code	<i>M</i>	<i>SD</i>	1	2	3	4
1	Perseverance of effort	POE	3.306	0.931	1			
2	Consistency of interest	COI	3.264	0.985	0.439***	1		
3	Locus of control	LOC	4.170	1.123	0.427***	0.442***	1	
4	Entrepreneurial self-efficacy	ESE	3.246	0.981	0.442***	0.427***	0.455***	1
5	Serial entrepreneurial intention	SEI	3.267	0.988	0.419***	0.473***	0.424***	0.444***

^a *** $p < 0.001$

4.2. Direct Effects of Grit on Serial Entrepreneurial Intention

Here, a direct effects model was established with grit as the independent variable and SEI as the dependent variable. The data were well-fitted by the direct model with the routes from grit to SEI ($\chi^2/df = 1.073$, RMSEA = 0.003, CFI = 1.000, TFI = 1.000, SRMR = 0.025), confirming the construct validity of the measurements used in this study. The standardized path analysis results demonstrated that POE positively influenced SEI ($\beta = 0.286$, $p < 0.001$), and COI also positively influenced SEI ($\beta = 0.397$, $p < 0.001$). Moreover, utilizing bootstrapping with 1000 repetitions to examine the direct effects of POE and COI from grit on SEI, the 95% confidence intervals were [0.198, 0.363] and [0.311, 0.481] separately, neither of which included 0. This indicates support for H1 and H2, confirming that POE and COI can positively predict SEI.

4.3. Chain Mediating Roles of Locus of Control and Entrepreneurial Self-efficacy

Subsequently, a chain mediating model was constructed, incorporating locus of control and ESE to elucidate the chain mediating role in the relationship between grit and SEI. Results indicated a good fit for the whole model structure ($\chi^2/df = 1.007$, RMSEA = 0.010, CFI = 0.996, TFI = 0.996, SRMR = 0.025), validating the effectiveness of the constructs measured in this study. The standardized path analysis results from Figure 2 demonstrated that POE exerted a positive influence on SEI, while COI also positively affected SEI. Additionally, both POE and COI positively impact ESE, as well as the locus of control. The locus of control significantly positively predicts ESE and SEI, while ESE also significantly positively predicts SEI.

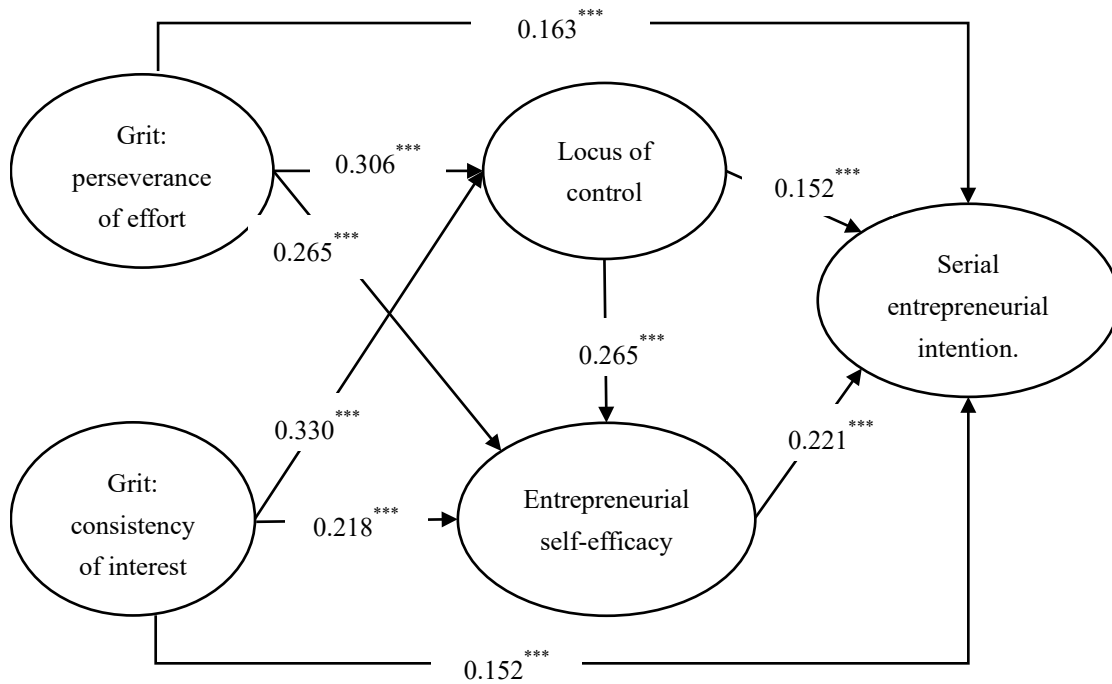


Fig. 2: The Chain mediating model

^a standardized coefficient is shown.

^b *** $p < 0.001$

From Table 2, it was evident that the distinct mediating influence of ESE in the relationship between POE and COI with SEI has 95% confidence intervals of [0.031, 0.090] and [0.024, 0.078], separately, both do not include 0, supporting H3 and H4. Moreover, the unique mediating effect of the locus of control in the link between POE and COI with SEI has 95% confidence intervals of [0.016, 0.075] and [0.019, 0.084], separately, both of which do not include 0, supporting H5 and H6. Additionally, in the chain mediation of POE and COI with SEI through the locus of control and ESE, the 95% confidence intervals are [0.009, 0.029] and [0.010, 0.032], separately, neither of which includes 0, supporting H7 and H8.

Table 2. Parameters and 95% CIs of the indirect effects

Pathway	Estimate	S.E	<i>p</i>	95%CI
POE→ESE→SEI	0.059	0.015	0.000	[0.031, 0.090]
POE→LOC→SEI	0.047	0.015	0.002	[0.016, 0.075]
POE→LOC→ESE→SEI	0.018	0.005	0.001	[0.009, 0.029]
COI→ESE→SEI	0.048	0.014	0.001	[0.024, 0.078]
COI→LOC→SEI	0.050	0.016	0.002	[0.019, 0.084]
COI→LOC→ESE→SEI	0.019	0.006	0.001	[0.010, 0.032]

5. Discussion

This research looked at the relationship between grit (POE and COI) and SEI. It revealed mediated functions of ESE and locus of control in this connection, and the presence of chain mediation effects.

5.1. Role of Grit on Serial Entrepreneurial Intention

This study found that grit which covers POE and COI, positively influences SEI. This finding is similar to earlier research on the positive association between personality and entrepreneurial intention (Bai et al., 2022; Butz et al., 2018; Karabulut, 2016). Consistent with the effect of the Big Five personality on

individual SEI, grit is also a critical trait affecting an individual's intention to pursue serial entrepreneurship. Higher POE trait owners are more likely to continually put out effort toward long-term objectives; this tendency is directly linked to diligence (Schmidt et al., 2018), which strengthens their SEI (Corner et al., 2017). On the other hand, COI constitutes a goal-oriented element within grit (Lam & Zhou, 2019), closely linked to self-discipline (Van Doren et al., 2019). This focus helps to make people more inclined to become entrepreneurs (Bullough et al., 2014) and, when contemplating re-engagement in entrepreneurship, fortifies their intentions for serial entrepreneurship. Thus, grit which includes POE and COI, is positively related to SEI.

5.2. Chain Mediating Roles of Locus of Control and Entrepreneurial Self-efficacy

This study further demonstrates that locus of control and ESE mediate the link between grit (i.e., POE and COI) and SEI. This signifies how important locus of control and ESE are for enabling SEI in grit. Consistent with existing research that highlights how personality and individual differences can positively influence ESE (Newman et al., 2019), the results align, indicating that COI and POE within grit can impact ESE. Furthermore, like self-efficacy, locus of control represents a person's belief in self-ability to influence outcomes (Chen et al., 1998) and is also influenced by the Big Five personality (Filipiak & Łubianka, 2021). These results concur with previous research, indicating a positive relationship between both aspects of grit and locus of control. Moreover, as both locus of control and ESE involve beliefs in an individual's subjective agency, these factors influence an individual's SEI, aligning with previous research findings on these factors' relationship with entrepreneurial intention (e.g., Arkorful & Hilton, 2021; Hsu et al., 2019; Schlaegel & Koenig, 2014; Uysal et al., 2022). Therefore, locus of control and ESE plays crucial intermediary roles between grit and SEI.

Furthermore, via the chain mediation of ESE and locus of control, grit positively predicts SEI. People who has high COI trait show that they are focused on a single goal throughout the whole entrepreneurial process (Duckworth et al., 2021). Their dedication to long-term objectives fosters a belief in self-regulation and goal orientation throughout entrepreneurship (Devisakti & Ramayah, 2022; Tolentino et al., 2014), which raises self-efficacy and control in the entrepreneurial process. POE trait leads to a tendency for sustained effort during entrepreneurship (Xu et al., 2023). This, in turn, promotes an increase in ESE and locus of control in the entrepreneurial route. ESE in this process could be influenced by the locus of control (Auna, 2020; Uysal et al., 2022). Moreover, locus of control might impact entrepreneurial goals by influencing self-efficacy (Molino et al., 2018; Uysal et al., 2022). The grit and SEI are therefore sequentially positively mediated by the locus of control and ESE.

6. Contribution, Limitations, and Future Research

Locus of control and ESE have significant impacts on individual SEI, and grit is positively related with SEI. Focusing on the role of grit in SEI, this study comprehensively considers the mechanisms of grit, locus of control, and ESE on individual SEI. The results of this study summarize the positive effect of grit on individual SEI, as well as the positive chain mediating roles of locus of control and ESE in the relationship between grit and individual SEI, validating SCT. Contributions, limitations, and suggestions for future research related to the variable relationships in this study are presented.

These are some of the aspects that this study contributes. Firstly, the research findings underscore and substantiate the relationship between elements of POE and COI in the context of grit, establishing their respective connections with SEI. This contribution offers empirical support for the proposition that personality traits and individual differences play pivotal roles as antecedents of SEI. More specifically, the POE trait demonstrates a proclivity towards stimulating SEI through diligence and industriousness, while COI leans towards nurturing SEI by emphasizing a singular long-term goal and unwavering commitment. Furthermore, the study elucidates the psychological pathways in which the locus of control and ESE serve as multiple mediators in enhancing SEI within the framework of grit. This research not only furnishes evidence that aligns with SCT but also elucidates intricate multivariate

relationships, thereby theoretically enriching our understanding of the factors influencing SEI and the underlying mechanisms at play.

On the practical level, college students with grit who score lower on traits related to POE and COI might find it challenging to spontaneously initiate SEI. Educators and policymakers should prioritize this group, sustaining and igniting their passion for serial entrepreneurship. By implementing grit-focused interventions and assigning specific tasks aimed at purposefully cultivating college students' grit in facing obstacles and challenges. In particular, when it comes to the grit component of COI, educators and policymakers may foster grit in college students by fostering, motivating, and upholding their interest in serial entrepreneurship. By creating engaging entrepreneurial activities, entrepreneurship mentors may inspire students to participate in and regularly engage in classroom learning actively. Educators and policymakers could speculate about enhancing scientific grit education from the POE viewpoint. Setting difficult practical assignments might help college students develop the resilience and tenacity they need to overcome failures. Furthermore, educational institutions should place equal emphasis on developing grit qualities and imparting entrepreneurial knowledge and abilities while offering entrepreneurial coaching to college students. By improving non-cognitive elements like LOC and ESE, this strategy could encourage and support college students' SEI. Specifically, educators should include the idea of grit in entrepreneurial education in order to support students' SEI. Non-cognitive elements like locus of control and ESE in college students' serial entrepreneurship should be the focus of mentor-led instruction. It's also critical to pay attention to students' psychological states. Creating a more personalized entrepreneurship education curriculum requires a deep grasp of the psychological circumstances and traits of students. This entails using instructional strategies and organizational structures that are more suited to college students' psychological and physical needs. By fusing courses in psychological counseling with entrepreneurial education, educators may foster the grit, locus of control, and ESE of college students, which will raise their SEI.

This study presents development opportunities and acknowledges certain shortcomings that merit exploration in subsequent research endeavors. Notably, the use of cross-sectional data in this study to infer causal relationships among variables introduces limitations, as these associations cannot be definitively established. To achieve more causally explanatory outcomes, future investigations could employ precise research paradigms, such as experimental manipulations of grit or longitudinal tracking of entrepreneurial pursuits. Additionally, considering the intricate and dynamic processes involved in the genesis of ESE, locus of control, and SEI, longitudinal investigations may offer a more nuanced understanding. Addressing concerns raised by Butz et al. (2018), future research should consider SEI's limitations as a dependent variable and explore its correspondence to successful entrepreneurial endeavors. Employing longitudinal designs or comparable methodologies can facilitate the examination of grit's influence on serial entrepreneurial conduct and its underlying processes. Furthermore, the potential impact of cultural variations on the applicability of conclusions underscores the necessity of investigating diverse demographics and nations. To enhance the generalizability of findings, future research should extend its focus to various groups and nations, thus fortifying the robustness of the conclusions derived from this study (Cai et al., 2021). Finally, this study only investigates the SEI of college students through psychological aspects such as grit, locus of control, and ESE. The scope of the study is not comprehensive enough. In the future, objective conditions such as gender and entrepreneurial experience can be considered as moderating variables to explore whether there are differences in the conclusions of this study. This would enable more targeted suggestions for improving the SEI of college students.

Acknowledgements

This study was supported by 2023 Scientific research project of Anhui higher Education institutions (2023AH050394) and General Project of Humanities and Social Sciences Research in Fuyang City (Suzhou-Fuyang Joint Project; FYSK2022LH02). Authors express immense gratitude for this.

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